

# CareerGuide.com

## IPMAT 2024

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## Mock Test Series

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## Mock TEST 1

### Question Paper

#### Quantitative Aptitude Short Answer (SA) type

**Q.1)** Let  $f : \mathbb{R} \rightarrow \mathbb{R}$  be a function defined by

$f(x) = \log_{\sqrt{m}}\{\sqrt{2}(\sin x - \cos x) + m - 2\}$ , for some  $m$ , such that the range of  $f$  is  $[0, 2]$ . Then the value of  $m$  is

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**Q.2)** Let  $A_1, A_2, A_3$  be the three A.P. with the same common difference  $d$  and having their first terms as  $A, A + 1, A + 2$ , respectively. Let  $a, b, c$  be the  $7^{\text{th}}, 9^{\text{th}}, 17^{\text{th}}$  terms of,

respectively such that  $\begin{vmatrix} a & 7 & 1 \\ 2b & 17 & 1 \\ c & 17 & 1 \end{vmatrix} + 70 = 0$ .

If  $a = 29$ , then the sum of first 20 terms of an AP whose first term is  $c - a - b$  and the

common difference is  $\frac{d}{12}$ , is equal to

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**Q.3)** Two numbers are in the ratio of 6 : 5. If their HCF is 3, then what is the LCM of the two numbers?

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**Q.4)** The number of square matrices of order 5 with entries from the set  $\{0, 1\}$ , such that the sum of all the elements in each row is 1 and

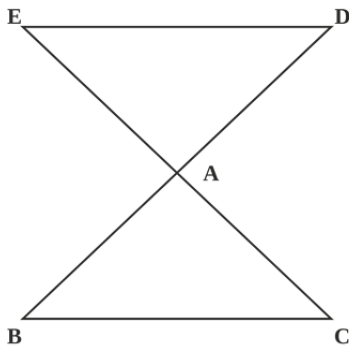
the sum of all the elements in each column is also 1, is

Q.5) Let  $a_1, a_2, a_3, \dots$  be a G.P. of increasing positive numbers. Let the sum of its 6<sup>th</sup> and 8<sup>th</sup> terms be 2 and the product of its 3<sup>rd</sup> and 5<sup>th</sup> terms be  $\frac{1}{9}$ . Then  $6(a_2 + a_4)(a_4 + a_6)$  is equal to

Q.6)  $96 \cos \frac{\pi}{33} \cos \frac{2\pi}{33} \cos \frac{4\pi}{33} \cos \frac{8\pi}{33} \cos \frac{16\pi}{33}$  is equal to:

Q.7) If  $x^2 + y^2 + 2y + 4x + 5 = 0$ , then  $\frac{x+y}{x-y} =$  \_\_\_\_\_.

Q.8) In the figure,  $AB = AD = 7$  cm and  $AC = AE$  and  $BC = 11$  cm, then find the length of  $ED$ .



Q.9) The average of two numbers is 8, and the average of the other three numbers is 3. The average of the five numbers is:

**Q.10)** The remainder left out when  $8^{2n} - (62)^{2n+1}$  is divided by 9 is

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**Q.11)** Suppose A is any 3×3 non-singular matrix and  $(A-3I)(A-5I)=O$ , where  $I=I_3$  and  $O=O_3$ . If

$\frac{x+y}{x-y}$   
 $\alpha A + \beta A^{-1} = 4I$ , Then  $\frac{x+y}{x-y}$  is equal to:

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**Q.12)** In part one, while solving a question, Suhas accidentally took a number as a dividend which was 10% less than the original dividend. He also mistakenly took as divisor a number that was 20% less than the original divisor. If the correct quotient of the original question of division was 24 and the remainder was 0, then what quotient did Suhas obtain, assuming there was no error in his calculations?

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**Q.13)** A copper sphere of diameter 18 cm is drawn into a wire of diameter 6 mm. Find the length of the wire.

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**Q.14)** On dividing a number by 56, we get 29 as the remainder. On dividing the same number by 8, what will be the remainder?

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**Q.15)** In an election contested between two candidates, 15% of the total voters did not cast their votes and 100 votes got disqualified. The candidate who won the election won by securing 45% of the total votes and won by a margin of 400 votes. Find the total number of voters.

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## Quantitative Ability MCQ type

**Q.1)** The number of functions  $f : \{1, 2, 3, 4\} \rightarrow \{a \in \mathbb{Z} \mid |a| \leq 8\}$  satisfying  $f(n) + \frac{1}{n}f(n+1) = 1, \forall n \in \{1, 2, 3\}$  is

- A) 1
  - B) 4
  - C) 2
  - D) 3
- 
- 

**Q.2)** The number of real values of  $\lambda$  for which the system of linear equations  $2x+4y-\lambda z=0$   $4x+\lambda y+2z=0$   $\lambda x+2y+2z=0$  has infinitely many solutions, is :

- A) 0
  - B) 1
  - C) 2
  - D) 3
- 
- 

**Q.3)** Aron bought some pencils and sharpeners. Spending the same amount of money as Aron, Aditya bought twice as many pencils and 10 less sharpeners. If the cost of one sharpener is 2 more than the cost of a pencil, then the minimum possible number of pencils bought by Aron and Aditya together is

- A) 33 B) 27 C) 30

D) 36

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**Q.4)** The number of ordered pairs  $(m, n), m, n \in \{1, 2, \dots, 100\}$  such that  $7^m + 7^n$  is divisible by 5 is

A) 1250 B) 2000 C) 2500 D) 5000

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**Q.5)** Let  $a_1 = 8, a_2, a_3, \dots, a_n$  be an A.P. If the sum of its first four terms is 50 and the sum of its last four terms is 170, then the product of its middle two terms is

A) 754 B) 377 C) 1508 D) 58

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**Q.6)** If  $\tan 15^\circ + \frac{1}{\tan 75^\circ} + \frac{1}{\tan 105^\circ} + \tan 195^\circ = 2a$ , then the value of  $\left(a + \frac{1}{a}\right)$  is:

A) 2

B)  $4 - 2\sqrt{3}$

C)  $5 - \frac{3}{2}\sqrt{3}$

D) 4

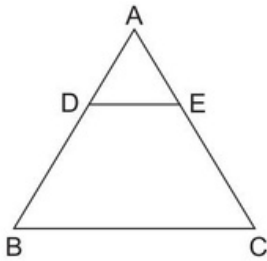
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**Q.7)** If  $x^4 + \frac{1}{x^4} = 194$  and  $x^3 + \frac{1}{x^3} = ?$

- A) 52
  - B) 58
  - C) 76
  - D) 67
- 
- 

**Q.8)** In the given figure,  $DE \parallel BC$  and  $\frac{AD}{DB} = \frac{3}{5}$ . If  $AC = 48$  cm, then the length of  $AE$  is



- A) 3.6 cm 1.8 cm
  - B) 2.2 cm None
  - C) Of these
  - D)
- 
- 

**Q.9)** Let  $f : \mathbb{R} - 0, 1 \rightarrow \mathbb{R}$  be a function such that  $f(x) + f\left(\frac{1}{1-x}\right) = 1 + x$ . Then  $f(2)$  is equal to:

A)  $\frac{9}{2}$

B)  $\frac{7}{4}$

C)  $\frac{9}{4}$

D)  $\frac{7}{3}$

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**Q.10)** Let A be any 3×3 invertible matrix. Then which one of the following is not always true ?

A)  $adj(A) = |A| \cdot A^{-1}$

B)  $adj(adj(A)) = |A| \cdot A$

C)  $adj(adj(A)) = |A|^2 \cdot (adj(A))^{-1}$

D)  $adj(adj(A)) = |A| \cdot (adj(A))^{-1}$

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**Q.11)** Among 100 students,  $x_1$  have birthdays in January,  $x_2$  have birthdays in February, and so on. If  $x_0 = \max(x_1, x_2, \dots, x_{12})$ , then the smallest possible value of is

A)8 B)9 C)10 D)12

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**Q.12)** Sum of all three-digit numbers (no digit being zero) having the property that all digits are perfect squares, is

A) 3108 6216

B) 13986 none

C) of these

D)

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**Q.13)** Let  $a_1, a_2, a_3, \dots$  be an A.P. If  $a_7 = 3$ , the product  $a_1 a_4$  is minimum and the sum of its first  $n$  terms is zero, then  $n! - 4a_{n(n+2)}$  is equal to :

A) 9

B)  $\frac{33}{4}$

C)  $\frac{381}{4}$

D) 24

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**Q.14)** Let

$f(\theta) = 3 \left( \sin^4 \left( \frac{3\pi}{2} - \theta \right) + \sin^4(3\pi + \theta) \right) - 2(1 - \sin^2 2\theta)$  and  $S = \left\{ \theta \in [0, \pi] : f'(\theta) = -\frac{\sqrt{3}}{2} \right\}$ . If  $4\beta = \sum_{\theta \in S} \theta$ , then  $f(\beta)$

is equal to

A)  $\frac{5}{4}$

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B)  $\frac{3}{2}$

C)  $\frac{9}{8}$

D)  $\frac{11}{8}$

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**Q.15)** Simplify the given expression.

$$(5x + 8y)(25x^2 + 64y^2 - 40xy)$$

A)  $125x^3 - 512y^3$

B)  $25x^3 - 64y^3$

C)  $125x^3 + 512y^3$

D)  $25x^3 - 64y^3$

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**Q.16)** An arc of length 23.1 cm subtends an  $18^\circ$  angle at the centre. What is the area of the circle?

A) 16978.50  $\text{cm}^2$

B) 16988.50  $\text{cm}^2$

C) 16878.50  $\text{cm}^2$

D) 16798.50  $\text{cm}^2$

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**Q.17)** The sum of the factors of  $9!$  which are odd and are of the form  $3m + 2$ , where  $m$  is a natural number is

- A) 40
  - B) 45
  - C) 51
  - D) 54
- 
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**Q.18)** If  $x + \frac{1}{x} = \sqrt{13}$ , then what is the value of  $x^5 - \frac{1}{x^5}$ ?

- A) 169
  - B)  $169\sqrt{3}$
  - C) 393
  - D) 507
- 
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**Q.19)** In a basket of 500 oranges, the probability of randomly selecting a ripe orange is 0.75. What is the number of ripe oranges in the basket?

- A) 250 B) 300 C) 375 D) 450
- 
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**Q.20)** Let  $a_1, a_2, a_3, a_4, \dots, a_n, \dots$  be in A.P. If  $a_3 + a_7 + a_{11} + a_{15} = 72$ , then the sum of its first 17 terms is equal to :

- A) 306 B) 153 C)

612

D) 204

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**Q.21)** Let A and B be two sets containing four and two elements respectively. Then the number of subsets of the set  $A \times B$ , each having at least three elements is :

**A) 219 B) 256 C) 275 D) 510**

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**Q.22)** A sum of money under compound interest doubles itself in 4 years. In how many years will it become 16 times itself?

**A) 12 years B) 16 years C) 8 years D) None of these**

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**Q.23)** Two trains A and B were moving in opposite directions, their speeds being in the ratio 5 : 3. The front end of A crossed the rear end of B 46 seconds after the front ends of the trains had crossed each other. It took another 69 seconds for the rear ends of the trains to cross each other. The ratio of length of train A to that of train B is

**A) 3:2 B) 5:3 C) 2:3 D) 2:1**

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**Q.24)** A, B and C can do a piece of work in 11 days, 20 days and 55 days respectively. If B works daily and is supported by A and C on alternate days beginning with A, then in how many days will the work be finished?

A) 10

B)  $9\frac{1}{3}$

C) 12

D) 8

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**Q.25)** The sum of a non-zero number and twice its reciprocal is  $\frac{33}{4}$ . Find the number.

A) 9

B) 10

C) 11

D) 8

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**Directions (Q.26-Q.30):**

A showroom is open on all seven days of the week throughout the year. There are five employees Alex, Bhabha, Cathy, Dilip and Ethan who work in the showroom. Every day except Sunday, two employees are required while on Sunday three employees need to work. Every employee works for three days in a week. Some additional information is also provided:

- Every employee works on two consecutive days while the third day is not consecutive.
- Alex and Dilip work together on Tuesday and Wednesday while the other working day differs for them.
- Neither Bhabha nor Cathy works with Alex on any day.
- Cathy does not work either on Saturday or on Monday.

**Q.26)** Number of days Bhabha and Cathy work together in a week is

A) 0

B) 1

C) 3

D) 2

**Q.27)** The consecutive days on which Ethan works are

A) Thursday and Friday

B) Sunday and Monday

C) Saturday and Sunday

D) Friday and Saturday

**Q.28)** Which among the following employees do not work together on any of the days?

A) Cathy and Dilip

B) Bhabha and Dilip

C) Dilip and Ethan

D) Bhabha and Ethan

**Q.29)** Employees who work on Sunday are

A) Alex, Dilip and Ethan

B) Bhabha, Cathy and Dilip

C) Bhabha, Cathy and Ethan

D) Cathy, Dilip and Ethan

**Q.30)** One of the days Alex works on is

A) Saturday

B) Friday

C) Monday

D) Sunday

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## Verbal Ability & Reading Comprehension

### Q.1) Comprehension:

Read the following passage and answer the questions given after it.

Tens of thousands of people who lost their homes in a catastrophic earthquake huddled around campfires in the bitter cold and clamoured for food and water on Thursday, three days after the temblor hit Turkey and Syria and killed more than 19,300 on Monday, February 6, 2023.

Emergency crews used pickaxes, shovels, and jackhammers to dig through twisted metal and concrete and occasionally pull out survivors.

In the Turkish city of Antakya, dozens scrambled for aid in front of a truck distributing children's coats and other supplies. Many of those who lost their homes found shelter in tents, stadiums, and other temporary accommodations, but others slept outdoors.

In Antakya, over 100 bodies were awaiting identification in a makeshift morgue outside a hospital.

Authorities called off search-and-rescue operations in the cities of Kilis and Sanliurfa, where destruction was not as severe as in other impacted regions.

The U.N. is authorized to deliver aid through only one border crossing, and road damage has prevented that thus far. U.N. officials pleaded for humanitarian concerns to take precedence over wartime politics.

The scale of loss and suffering remained massive. Turkish authorities said on Thursday that the death toll had risen to more than 16,100 in the country, with more than 64,000 injured.

In Syria, which includes government-held and rebel-held areas, more than 3,100 people have been reported dead and more than 5,000 injured.

Rescue teams urged quiet in the hope of hearing stifled pleas for help, and the Syrian paramedic group known as the White Helmets noted that every second could mean saving a life. But more and more often, the teams pulled out dead bodies.

It was not clear how many people were still unaccounted for in both countries.

Turkey's disaster-management agency said more than 110,000 rescue personnel were now taking part in the effort, and more than 5,500 vehicles, including tractors, cranes, bulldozers, and excavators, had been shipped.

The Foreign Ministry said 95 countries have offered help. More than half of that number have sent a total of nearly 6,500 rescuers. Another 2,400 more are still expected to arrive. International aid for Syria was far more sparse.

Efforts there have been hampered by the civil war and the isolation of the rebel-held region along the border that is surrounded by Russia-backed government forces.

**How many foreign rescue workers are engaged in the rescue work?**

- A) 2400 rescue workers
  - B) 110,000 rescue workers
  - C) 5000 rescue workers
  - D) 6500 rescue workers
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**Q.2) Comprehension:**

Read the following passage and answer the questions given after it.

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**Match the words with their meanings. Words meanings a. clamored; 1. checked b. scrambled; 2. screamed c. hampered; 3. jostled**

**A) a-2, b-3, c-1 B) a-2, b-1, c-3 C) a -3, b-1, c-2 D) a-1, b-3, c-2**

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### Q.3) Comprehension:

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Efforts there have been hampered by the civil war and the isolation of the rebel-held region along the border that is surrounded by Russia-backed government forces.

**The passage highlights all the following except.**

- A) Syria's rebel-held areas and the Civil war going on there
  - B) the foreign aid being offered to Turkey and Syria
  - C) the suffering of people in the earthquake-hit areas of Turkey and Syria
  - D) the rescue work being carried out in Turkey and Syria
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#### **Q.4) Comprehension:**

Read the following passage and answer the questions given after it.

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**Why is international aid much lower in Syria than in Turkey?**

- A) Because Syria is a war-torn country and there are areas under rebels.
  - B) Because the destruction was not as severe in Syria as in Turkey.
  - C) Because the UN is allowed only one border crossing, and Syria is not allowing that.
  - D) Because the roads have been damaged there
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**Q.5) Direction:**

The passage below is accompanied by a set of questions. Choose the best answer to each question. Sociologists working in the Chicago School tradition have focused on how rapid or dramatic social change causes increases in crime. Just as Durkheim, Marx, Toennies, and other European sociologists thought that the rapid changes produced by industrialization and urbanization produced crime and disorder, so too did the Chicago School theorists. The location of the University of Chicago provided an excellent opportunity for Park, Burgess, and McKenzie to study the social ecology of the city. Shaw and McKay found . . . that areas of the city characterized by high levels of social disorganization had higher rates of crime and delinquency.

In the 1920s and 1930s Chicago, like many American cities, experienced considerable immigration. Rapid population growth is a disorganizing influence, but growth resulting from the in-migration of very different people is particularly disruptive. Chicago's in-migrants were both

native-born whites and blacks from rural areas and small towns, and foreign immigrants. The heavy industry of cities like Chicago, Detroit, and Pittsburgh drew those seeking opportunities and new lives. Farmers and villagers from America's hinterland, like their European cousins of whom Durkheim wrote, moved in large numbers into cities. At the start of the twentieth century, Americans were predominately a rural population, but by the century's mid-point, most lived in urban areas. The social lives of these migrants, as well as those already living in the cities they moved to, were disrupted by the differences between urban and rural life. According to social disorganization theory, until the social ecology of the "new place" can adapt, this rapid change is a criminogenic influence. But most rural migrants, and even many of the foreign immigrants to the city, looked like and eventually spoke the same language as the natives of the cities into which they moved. These similarities allowed for more rapid social integration for these migrants than was the case for African Americans and most foreign immigrants.

In these same decades, America experienced what has been called "the great migration": the massive movement of African Americans out of the rural South and into northern (and some southern) cities. The scale of this migration is one of the most dramatic in human history. These migrants, unlike their white counterparts, were not integrated into the cities they now called home. In fact, most American cities at the end of the twentieth century were characterized by high levels of racial residential segregation . . . Failure to integrate these immigrants, coupled with other forces of social disorganization such as crowding, poverty, and illness, caused crime rates to climb in the cities, particularly in the segregated wards and neighbourhoods where the migrants were forced to live.

Foreign immigrants during this period did not look as dramatically different from the rest of the population as blacks did, but the migrants from eastern and southern Europe who came to American cities did not speak English, and were frequently Catholic, while the native-born were mostly Protestant. The combination of rapid population growth with the diversity of those moving into the cities created what the Chicago School sociologists called social disorganization.

**Question:**

Which one of the following sets of words/phrases best encapsulates the issues discussed in the passage?

- A) Chicago School; Native-born Whites; European immigrants; Poverty
- B) Chicago School; Social organisation; Migration; Crime
- C) Durkheim; Marx; Toennies; Shaw
- D) Rapid population growth; Heavy industry; Segregation; Crime

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question. Sociologists working in the Chicago School tradition have focused on how rapid or dramatic social change causes increases in crime. Just as Durkheim, Marx, Toennies, and other European sociologists thought that the rapid changes produced by industrialization and urbanization produced crime and disorder, so too did the Chicago School theorists. The location of the University of Chicago provided an excellent opportunity for Park, Burgess, and McKenzie to study the social ecology of the city. Shaw and McKay found . . . that areas of the city characterized by high levels of social disorganization had higher rates of crime and delinquency.

In the 1920s and 1930s, Chicago, like many American cities, experienced considerable immigration. Rapid population growth is a disorganizing influence, but growth resulting from the in-migration of very different people is particularly disruptive. Chicago's in-migrants were both native-born whites and blacks from rural areas and small towns, and foreign immigrants. The heavy industry of cities like Chicago, Detroit, and Pittsburgh drew those seeking opportunities and new lives. Farmers and villagers from America's hinterland, like their European cousins, of whom Durkheim wrote, moved in large numbers into cities. At the start of the twentieth century, Americans were predominately a rural population, but by the century's mid-point, most lived in urban areas. The social lives of these migrants, as well as those already living in the cities they moved to, were disrupted by the differences between urban and rural life. According to social disorganization theory, until the social ecology of the "new place" can adapt, this rapid change is a criminogenic influence. But most rural migrants, and even many of the foreign immigrants to the city, looked like and eventually spoke the same language as the natives of the cities into which they moved. These similarities allowed for more rapid social integration for these migrants than was the case for African Americans and most foreign immigrants.

In these same decades, America experienced what has been called "the great migration": the massive movement of African Americans out of the rural South and into northern (and some southern) cities. The scale of this migration is one of the most dramatic in human history. These migrants, unlike their white counterparts, were not integrated into the cities they now call home. In fact, most American cities at the end of the twentieth century were characterized by high levels of racial residential segregation . . . Failure to integrate these immigrants, coupled with other forces of social disorganization such as crowding, poverty, and illness, caused crime rates to climb in the cities, particularly in the segregated wards and neighbourhoods where the migrants were forced to live.

Foreign immigrants during this period did not look as dramatically different from the rest of the population as blacks did, but the migrants from eastern and southern Europe who came to American cities did not speak English, and were frequently Catholic, while the native-born were mostly Protestant. The combination of rapid population growth with the diversity of those moving into the cities created what the Chicago School sociologists called social disorganization.

**Question:**

A fundamental conclusion by the author is that:

**A)** according to European sociologists, crime in America is mainly in Chicago.

- B) the best circumstances for crime to flourish are when there are severe racial disparities.
- C) to prevent crime, it is important to maintain social order by maintaining social segregation.
- D) rapid population growth and demographic diversity give rise to social disorganization that can feed the growth of crime.
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**Q.7) Direction:**

The passage below is accompanied by a set of questions. Choose the best answer to each question. Sociologists working in the Chicago School tradition have focused on how rapid or dramatic social change causes increases in crime. Just as Durkheim, Marx, Toennies, and other European sociologists thought that the rapid changes produced by industrialization and urbanization produced crime and disorder, so too did the Chicago School theorists. The location of the University of Chicago provided an excellent opportunity for Park, Burgess, and McKenzie to study the social ecology of the city. Shaw and McKay found . . . that areas of the city characterized by high levels of social disorganization had higher rates of crime and delinquency.

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Foreign immigrants during this period did not look as dramatically different from the rest of the population as blacks did, but the migrants from eastern and southern Europe who came to American cities did not speak English, and were frequently Catholic, while the native-born were mostly Protestant. The combination of rapid population growth with the diversity of those moving into the cities created what the Chicago School sociologists called social disorganization.

**Question:**

The author notes that “At the start of the twentieth century, Americans were predominately a rural population, but by the century’s mid-point most lived in urban areas.” Which one of the following statements, if true, does not contradict this statement?

- A) Economists have found that throughout the twentieth century, the size of the labour force in America has always been largest in rural areas.
- B) A population census conducted in 1952 showed that more Americans lived in rural areas than in urban ones.
- C) The estimation of per capita income in America in the mid-twentieth century primarily required data from rural areas.
- D) Demographic transition in America in the twentieth century is strongly marked by an outmigration from rural areas.

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**Q.9) Direction:**

A set of questions accompanies the passage below. Choose the best answer to each question.

Interpretations of the Indian past . . . were inevitably influenced by colonial concerns and interests, and also by prevalent European ideas about history, civilization and the Orient. Orientalist scholars studied the languages and the texts with selected Indian scholars but made

little attempt to understand the worldview of those who were teaching them. The readings, therefore, are something of a disjuncture from the traditional ways of looking at the Indian past. . . .

Orientalism [which we can understand broadly as Western perceptions of the Orient] fuelled the fantasy and the freedom sought by European Romanticism, particularly in its opposition to the more disciplined Neoclassicism. The cultures of Asia were seen as bringing a new Romantic paradigm. Another Renaissance was anticipated through an acquaintance with the Orient, and this, it was thought, would be different from the earlier Greek Renaissance. It was believed that this Oriental Renaissance would liberate European thought and literature from the increasing focus on discipline and rationality that had followed the earlier Enlightenment. . . . [The Romantic English poets, Wordsworth and Coleridge,] were apprehensive of the changes introduced by industrialization and turned to nature and to fantasies of the Orient.

However, this enthusiasm gradually changed, to conform with the emphasis later in the nineteenth century on the innate superiority of European civilization. Oriental civilizations were now seen as having once been great but are currently in decline. The various phases of Orientalism tended to mould European understanding of the Indian past into a particular pattern. . . . There was an attempt to formulate Indian culture as uniform, with such formulations being derived from texts that were given priority. The so-called 'discovery' of India was largely through selected literature in Sanskrit. This interpretation tended to emphasize non-historical aspects of Indian culture, for example, the idea of an unchanging continuity of society and religion over 3,000 years; and it was believed that the Indian pattern of life was so concerned with metaphysics and the subtleties of religious belief that little attention was given to the more tangible aspects.

German Romanticism endorsed this image of India, and it became the mystic land for many Europeans, where even the most ordinary actions were imbued with complex symbolism. This was the genesis of the idea of the spiritual east, and, incidentally, the refuge of European intellectuals seeking to distance themselves from the changing patterns of their own societies. A dichotomy in values was maintained, with Indian values being described as 'spiritual' and European values as 'materialistic', with little attempt to juxtapose these values with the reality of Indian society. This theme has been even more firmly endorsed by a section of Indian opinion during the last hundred years.

It was a consolation to the Indian intelligentsia for its perceived inability to counter the technical superiority of the West, a superiority viewed as having enabled Europe to colonize Asia and other parts of the world. At the height of anti-colonial nationalism, it acted as a salve for having been made a colony of Britain.

**Question:**

It can be inferred from the passage that to gain a more accurate view of a nation's history and culture, scholars should do all of the following, EXCEPT:

**A)** develop an oppositional framework to grasp cultural differences.

- B) examine their own beliefs and biases.
  - C) read widely in the country's literature.
  - D) examine the complex reality of that nation's society.
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**Q.10) Direction:**

A set of questions accompanies the passage below. Choose the best answer to each question.

Interpretations of the Indian past . . . were inevitably influenced by colonial concerns and interests, and also by prevalent European ideas about history, civilization and the Orient. Orientalist scholars studied the languages and the texts with selected Indian scholars but made little attempt to understand the worldview of those who were teaching them. The readings, therefore, are something of a disjuncture from the traditional ways of looking at the Indian past. . .

Orientalism [which we can understand broadly as Western perceptions of the Orient] fuelled the fantasy and the freedom sought by European Romanticism, particularly in its opposition to the more disciplined Neoclassicism. The cultures of Asia were seen as bringing a new Romantic paradigm. Another Renaissance was anticipated through an acquaintance with the Orient, and this, it was thought, would be different from the earlier Greek Renaissance. It was believed that this Oriental Renaissance would liberate European thought and literature from the increasing focus on discipline and rationality that had followed from the earlier Enlightenment. . . . [The Romantic English poets, Wordsworth and Coleridge,] were apprehensive of the changes introduced by industrialization and turned to nature and to fantasies of the Orient.

However, this enthusiasm gradually changed, to conform with the emphasis later in the nineteenth century on the innate superiority of European civilization. Oriental civilizations were now seen as having once been great but currently in decline. The various phases of Orientalism tended to mould European understanding of the Indian past into a particular pattern. . . . There was an attempt to formulate Indian culture as uniform, with such formulations being derived from texts that were given priority. The so-called 'discovery' of India was largely through selected literature in Sanskrit. This interpretation tended to emphasize non-historical aspects of Indian culture, for example, the idea of an unchanging continuity of society and religion over 3,000 years; and it was believed that the Indian pattern of life was so concerned with metaphysics and the subtleties of religious belief that little attention was given to the more tangible aspects.

German Romanticism endorsed this image of India, and it became the mystic land for many Europeans, where even the most ordinary actions were imbued with complex symbolism. This was the genesis of the idea of the spiritual east and, incidentally, the refuge of European intellectuals seeking to distance themselves from the changing patterns of their own societies. A dichotomy in values was maintained, with Indian values being described as 'spiritual' and

European values as 'materialistic', with little attempt to juxtapose these values with the reality of Indian society. This theme has been even more firmly endorsed by a section of Indian opinion during the last hundred years.

It was a consolation to the Indian intelligentsia for its perceived inability to counter the technical superiority of the West, a superiority viewed as having enabled Europe to colonize Asia and other parts of the world. At the height of anti-colonial nationalism, it acted as a salve for having been made a colony of Britain.

**Question:**

It can be inferred from the passage that the author is not likely to support the view that:

- A) India's culture has evolved over the centuries.
- B) the Orientalist view of Asia fired the imagination of some Western poets.
- C) India became a colony, although it matched the technical knowledge of the West.
- D) Indian culture acknowledges the material aspects of life.

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**Q.11) Direction:**

A set of questions accompanies the passage below. Choose the best answer to each question.

Interpretations of the Indian past . . . were inevitably influenced by colonial concerns and interests, and also by prevalent European ideas about history, civilization, and the Orient. Orientalist scholars studied the languages and the texts with selected Indian scholars but made little attempt to understand the worldview of those who were teaching them. The readings, therefore, are something of a disjuncture from the traditional ways of looking at the Indian past. . .

Orientalism [which we can understand broadly as Western perceptions of the Orient] fuelled the fantasy and the freedom sought by European Romanticism, particularly in its opposition to the more disciplined Neoclassicism. The cultures of Asia were seen as bringing a new Romantic paradigm. Another Renaissance was anticipated through an acquaintance with the Orient, and this, it was thought, would be different from the earlier Greek Renaissance. It was believed that this Oriental Renaissance would liberate European thought and literature from the increasing focus on discipline and rationality that had followed the earlier Enlightenment. The Romantic English poets, Wordsworth and Coleridge, were apprehensive of the changes introduced by industrialization and turned to nature and fantasies of the Orient.

However, this enthusiasm gradually changed, to conform with the emphasis later in the nineteenth century on the innate superiority of European civilization. Oriental civilizations are now seen as having once been great but currently in decline. The various phases of Orientalism tended to mould European understanding of the Indian past into a particular pattern. . . . There

was an attempt to formulate Indian culture as uniform, such formulations being derived from texts that were given priority. The so-called 'discovery' of India was largely through selected literature in Sanskrit. This interpretation tended to emphasize non-historical aspects of Indian culture, for example, the idea of an unchanging continuity of society and religion over 3,000 years; and it was believed that the Indian pattern of life was so concerned with metaphysics and the subtleties of religious belief that little attention was given to the more tangible aspects.

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**Question:**

In the context of the passage, all of the following statements are true, EXCEPT:

- A) Indian texts influenced Orientalist scholars.
- B) Orientalist scholarship influenced Indians.
- C) India's spiritualism served as a salve for European colonisers.
- D) Orientalists' understanding of Indian history was linked to colonial concerns.

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**Q.12) Direction:**

A set of questions accompanies the passage below. Choose the best answer to each question.

Interpretations of the Indian past . . . were inevitably influenced by colonial concerns and interests, and also by prevalent European ideas about history, civilization and the Orient. Orientalist scholars studied the languages and the texts with selected Indian scholars, but made little attempt to understand the worldview of those who were teaching them. The readings, therefore, are something of a disjuncture from the traditional ways of looking at the Indian past. . .

Orientalism [which we can understand broadly as Western perceptions of the Orient] fuelled the fantasy and the freedom sought by European Romanticism, particularly in its opposition to the

more disciplined NeoClassicism. The cultures of Asia were seen as bringing a new Romantic paradigm. Another Renaissance was anticipated through an acquaintance with the Orient, and this, it was thought, would be different from the earlier Greek Renaissance. It was believed that this Oriental Renaissance would liberate European thought and literature from the increasing focus on discipline and rationality that had followed from the earlier Enlightenment. . . . [The Romantic English poets, Wordsworth and Coleridge,] were apprehensive of the changes introduced by industrialization and turned to nature and to fantasies of the Orient.

However, this enthusiasm gradually changed, to conform with the emphasis later in the nineteenth century on the innate superiority of European civilization. Oriental civilizations were now seen as having once been great but currently in decline. The various phases of Orientalism tended to mould European understanding of the Indian past into a particular pattern. . . . There was an attempt to formulate Indian culture as uniform, such formulations being derived from texts that were given priority. The so-called 'discovery' of India was largely through selected literature in Sanskrit. This interpretation tended to emphasize non-historical aspects of Indian culture, for example, the idea of an unchanging continuity of society and religion over 3,000 years; and it was believed that the Indian pattern of life was so concerned with metaphysics and the subtleties of religious belief that little attention was given to the more tangible aspects.

German Romanticism endorsed this image of India, and it became the mystic land for many Europeans, where even the most ordinary actions were imbued with a complex symbolism. This was the genesis of the idea of the spiritual east, and also, incidentally, the refuge of European intellectuals seeking to distance themselves from the changing patterns of their own societies. A dichotomy in values was maintained, Indian values being described as 'spiritual' and European values as 'materialistic', with little attempt to juxtapose these values with the reality of Indian society. This theme has been even more firmly endorsed by a section of Indian opinion during the last hundred years.

It was a consolation to the Indian intelligentsia for its perceived inability to counter the technical superiority of the west, a superiority viewed as having enabled Europe to colonize Asia and other parts of the world. At the height of anti-colonial nationalism it acted as a salve for having been made a colony of Britain.

**Question:**

Which one of the following styles of research is most similar to the Orientalist scholars' method of understanding Indian history and culture?

- A)** Studying artefacts excavated at a palace to understand the lifestyle of those who lived there.
- B)** Reading 18th-century accounts by travellers to India to see how they viewed Indian life and culture at the time.
- C)** Reading about the life of early American settlers and later waves of migration to understand the evolution of American culture.

D) Analysing Hollywood action movies that depict violence and sex to understand contemporary America.

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**Q.13) Select the option that gives the most appropriate meaning of the underlined idiom.**

I am working on too many projects. I think I have bitten off more than I can chew.

A) To take on more than one can handle

B) To find work dull

C) Not able to finish work

D) To be happy to multitask

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**Q.14) In the following question, an idiomatic expression or a proverb is highlighted. Select the alternative which best describes its use in the sentence.**

John is scared to go back with Rahul as he is a road hog.

A) Thief

B) Burglar

C) Drunkard

D) Rash driver

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**Q.15) In the following question, an idiomatic expression or a proverb is highlighted. Select the alternative which best describes its use in the sentence.**

Ram couldn't keep track of everything Ashok was saying. He talks **a mile a minute!**

- A) In a complicated way
- B) All unrealistic things
- C) Too fast
- D) Boasts too much

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**Q.16) Identify the correct meaning of the phrase**

**On the ball**

- A) A useless effort
- B) To have lots of things to do
- C) To do a good job
- D) To have so many miles to cover

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**Q.17) Identify the correct meaning of the phrase**

**Wrap your head around something**

- A) Make everything complex
- B) To assign your tasks according to the time available
- C) Understand something complicated
- D) Make everything complex

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**Q.18) Choose the correct answer of the phrase**

**Get your act together**

- A) To be multitasking
  - B) Work in a better way
  - C) Do something impossible
  - D) To have lots of things to do
- 
- 

**Q.19)** Choose the right meaning of the phrase

**Comparing apples to oranges**

- A) To be a fruit lover
  - B) To complete two tasks at a time
  - C) To compare things that can't be compared
  - D) None of these
- 
- 

**Q.20)** A sentence/a part of the sentence is underlined. Five alternatives are given to the underlined part which may improve the meaning of the sentence. Choose the correct alternative and click the button corresponding to it. In case no improvement is needed, click the option corresponding to "No improvement".

Unless the administration will not take action, the exam will not resume.

- A) Wouldnottakeaction
  - B) takes action
  - C) shallnottakeaction
  - D) do not take action
- 
-

Q.21) A sentence/a part of the sentence is underlined. Five alternatives are given to the underlined part, which may improve the meaning of the sentence. Choose the correct alternative and click the button corresponding to it. In case no improvement is needed, click the option corresponding to "No improvement".

When I was going to the bar counter, I suddenly came across my father.

A) he suddenly came across

B) I came across

C) I came across suddenly

D) I suddenly come across

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Q.22) A sentence/a part of the sentence is underlined. Five alternatives are given to the underlined part, which may improve the meaning of the sentence. Choose the correct alternative and click the button corresponding to it. In case no improvement is needed, click the option corresponding to "No improvement".

Unless the administration will not take action, the exam will not resume.

A) Wouldnottakeaction

B) takes action

C) shallnottakeaction

D) do not take action

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Q.23) A sentence/a part of the sentence is underlined. Five alternatives are given to the underlined part, which may improve the meaning of the sentence. Choose the correct

alternative and click the button corresponding to it. In case no improvement is needed, click the option corresponding to "No improvement".

When I was going to the bar counter, I suddenly came across my father.

- A) he suddenly came across
- B) Icameacross
- C) I came across suddenly
- D) Isuddenlycomeacross

Q.24) Read each sentence to find out whether there is any grammatical mistake/error in it. The error if any will be in one part of the sentence. Mark the letter of that part with error as your answer. If there is 'No error', mark (e). The sale of wheeled (a)/ suitcases should be restricted (b)/ to people who have attended (c)/ an approved safety course. (d)/ No error (e)

- A)
- B)
- C)
- D)

Q.25) Directions: Read the passage below and answer the question.

As the digital age continues to shape our lives, the way we consume and interact with information has undergone a profound transformation. Traditional forms of media, such as newspapers and television, are facing significant challenges as online platforms and social media gain dominance. The ease of access to a vast array of information has empowered individuals to become content creators and influencers. However, this democratisation of information comes with its own set of challenges, including the spread of misinformation and the erosion of privacy.

Question:

While the digital age has empowered individuals to create and share content, it has also \_\_\_\_\_.

- A) made traditional media obsolete, leading to their decline.
- B) facilitated greater collaboration among content creators.
- C) raised concerns about the quality and accuracy of information.
- D) provided a platform for diverse voices to be heard.

Q.26) Directions: Read the passage below and answer the question.

In recent years, there has been a growing awareness of the importance of protecting the environment. Governments, organisations, and individuals around the world have taken steps to reduce their carbon footprint and conserve natural resources. Renewable energy sources, such as solar and wind power, have gained prominence as clean alternatives to fossil fuels. Recycling programs have been implemented on a larger scale, and there is a shift toward sustainable practices in various industries.

Question:

The efforts to protect the environment are commendable, but \_\_\_\_\_.

A) they may not be sufficient to address the urgent global environmental challenges we face today.

B) They have largely been driven by economic incentives rather than a genuine concern for the planet.

C) they have faced significant resistance from industries unwilling to adapt to eco-friendly practices.

D) they have been primarily limited to developed countries, leaving many regions without access to eco-friendly technologies.

Q.27) Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Question : Gutkha and other chewable tobacco items are equally, if not more, harmful compared to cigarettes. Surveys show that these products are sometimes mixed with carcinogenic compounds called nitrosamines. This is why India banned their sale under the 2011 Food Safety and Standards Regulations. Why do they continue to be consumed, then? Experts blame their availability on loopholes in the law. The food safety rules target pre-mixed tobacco products, such as gutkha, which contains lime, sugar and other spices.

(\_\_\_\_\_)

A) This forces the government to recheck the existing law in order to reduce the consumption of these fatal fantasies.

B) Apart from this, the government should conduct regular raids and surveys in order to keep a check on the scales of this harmful product.

C) This leaves unflavoured items, such as khaini or surthi, out of regulatory purview.

D) The 2011 Food and Safety Act has not made its way into the people properly and a channelised re-formation is required to set things right, under the aegis of a specially constituted central body.

Q.28) Directions for the Question: The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Question : He had come to Delhi two years ago and was preparing for the UPSC preliminary exams. Before shifting his residence to Old Rajendra Nagar for coaching, he had stayed at several other places in the Capital. The friends informed that Chandran had appeared for the exam thrice but remained unsuccessful. This time, he had decided it to be his last attempt in order to fulfil his parent's dreams. Chandran had reached the centre on time. However, it was the wrong centre and had to rush to the right one, his friends told the police. The suicide came to light when one of the deceased's friend, also preparing for the exam, called him several times to discuss the question paper. When he did not answer despite repeated calls, she went to his home and found the room locked from inside. (\_\_\_\_\_)

- A) The police were informed and then the body was recovered.
- B) A team of doctors rushed in along with the fire force to see if luck had favoured the boy.
- C) The media was mourning and criticising the boy at the same as he showed his incapability of serving the nation by committing suicide.
- D) The neighbours were informed.

Q.29) "The pursuit of \_\_\_\_ is not just about understanding the natural world but also involves applying that knowledge in practical ways. Through \_\_\_\_\_, we can develop new technologies and solutions that benefit humanity. Moreover, engaging in this field encourages the \_\_\_\_\_ of critical thinking and problem-solving skills, enriching our overall \_\_\_\_\_."

- A) (a) philosophy; speculation; cultivation; intellect
- B) (b) science; experimentation; development; knowledge
- C) (c) art; interpretation; expression; creativity

D) (d) history; analysis; appreciation; awareness

Q.30) "The art of \_\_\_\_ is crucial for personal and professional development. By mastering this skill, individuals can enhance their ability to communicate effectively, articulate their thoughts and ideas more clearly, and engage in more meaningful \_\_\_\_\_. It opens up avenues for better \_\_\_\_\_ in various aspects of life and contributes significantly to one's overall \_\_\_\_\_."

A) (a) communication; interactions; participation; success

B) (b) cooking; meals; consumption; health

C) (c) jogging; exercises; performance; fitness

D) (d) gardening; plants; growth; environment

Q.31) "In the realm of \_\_\_\_\_, creativity and imagination hold the power to transcend ordinary experiences, turning mundane into extraordinary. It encourages individuals to explore the depths of their own \_\_\_\_\_, offering a unique way to express emotions and thoughts. This pursuit not only enriches the personal \_\_\_\_\_ but also contributes to a diverse and vibrant cultural \_\_\_\_\_."

A) (a) art; psyche; life; tapestry

B) (b) mathematics; calculations; efficiency; framework

C) (c) sports; physicality; health; competition

D) (d) economics; finances; wealth; market

Q.32) "The study of \_\_\_\_\_ extends beyond mere dates and events. It encompasses understanding the complexities of human behaviour, societal evolution, and the interconnectedness of past and present. By \_\_\_\_\_ historical contexts, we can better comprehend current global dynamics and develop a more nuanced \_\_\_\_\_ of humanity's journey. This knowledge empowers us to contribute to a more informed and empathetic global \_\_\_\_\_."

- A) (a) linguistics; decoding; mastery; conversation
- B) (b) history; analyzing; appreciation; discourse
- C) (c) biology; observing; awareness; ecosystem
- D) (d) computer science; programming; understanding; network

Q.33) "The discipline of \_\_\_\_ challenges us to question and understand the foundations of human thought and knowledge. By critically \_\_\_\_\_ our own beliefs and assumptions, we can uncover new ways of seeing the world. This process not only enriches our personal \_\_\_\_\_ but also fosters a more open and questioning intellectual \_\_\_\_\_."

- A) (a) philosophy; examining; growth; environment
- B) (b) physics; testing; curiosity; laboratory
- C) (c) marketing; strategizing; brand; marketplace
- D) (d) anthropology; observing; identity; culture

Q.34) "The essence of \_\_\_\_ lies in its ability to break down barriers and connect people across cultural divides. It serves as a universal language, capable of expressing the inexpressible and evoking deep emotional responses without a single word. Through \_\_\_\_\_, individuals can experience the shared humanity that transcends geographical and linguistic boundaries, enriching our collective \_\_\_\_\_ and contributing to a more unified global \_\_\_\_\_."

- A) (a) gastronomy; cooking; taste; tradition
- B) (b) mathematics; calculation; logic; intelligence

C) (c) music; performance; empathy; community

D) (d) sports; competition; teamwork; spirit

Q.35) Choose the option which has the incorrect or inappropriate usage of the word "candid":

A) (a) His candid remarks during the meeting surprised everyone.

B) (b) The photographer captured a candid moment of the bride and groom.

C) (c) The politician's speech was filled with candid promises.

D) (d) She gave a candid response to the interviewer's question about her strengths and weaknesses.

Q.36) Choose the option which has the incorrect or inappropriate usage of the word "elicit":

A) (a) The detective hoped to elicit information from the suspect during the interrogation.

B) (b) The artist's painting elicited a range of emotions from viewers.

C) (c) The teacher's question failed to elicit a response from the students.

D) (d) Her elicit behavior at the party made everyone uncomfortable.

Q.37) Choose the option which has the incorrect or inappropriate usage of the word "exacerbate":

A) a) His aggressive behavior only served to exacerbate the situation.

B) (b) The lack of rain will exacerbate the drought conditions.

C) (c) Adding fuel to the fire will only exacerbate the tension between the two groups.

D) (d) She tried to exacerbate her friend's fear of spiders by showing her pictures of tarantulas.

Q.38) Choose the option which has the incorrect or inappropriate usage of the word "ubiquitous":

A) (a) Mobile phones have become ubiquitous in today's society.

B) (b) The internet has made information ubiquitous and easily accessible.

C) (c) He was surprised by the ubiquitous of palm trees in the desert.

D) (d) Pollution has become a ubiquitous problem in urban areas.

Q.39) Choose the option which has the incorrect or inappropriate usage of the word "inundate":

A) (a) The city streets were inundated with floodwaters after the heavy rain.

B) (b) The company decided to inundate the market with their new product.

C) (c) Her inbox was inundated with emails from clients.

D) (d) They planned to inundate the garden with pesticides to control the pests.

Q.40) Choose the option which has the incorrect or inappropriate usage of the word "prevalent":

A) (a) Malnutrition is prevalent in many developing countries.

B) (b) The flu virus was prevalent in the community during the winter months.

C) (c) Prevalent studies have shown the benefits of regular exercise.

D) (d) Stress is prevalent among college students during exam season.

**Q.41)** Arrange the following jumbled sentences to form a coherent paragraph: A) However, as time went on, their friendship began to show cracks. B) They had been inseparable since childhood, sharing secrets and dreams. C) What had once been a bond forged in the fires of shared experiences now felt strained. D) Petty disagreements turned into bitter arguments, and trust waned. E) It was a painful realisation that sometimes even the closest of friends grow apart. **A)** B, A, D, C, E **B)** A, B, D, C, E **C)** C, A, B, D, E **D)** B, C, A, D, E

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**Q.42)** Arrange the following jumbled sentences to form a coherent paragraph: A) The festival brought together people from diverse backgrounds, all celebrating under the same sky.

B) It was a magical night, filled with music, dance, and laughter. C) The main attraction was a grand fireworks display that lit up the entire town. D) Families sat on blankets, children played in the soft grass, and couples danced under the stars.

E) Everyone marvelled at the beauty of the illuminated night and the sense of unity it brought.

**A)** D, B, A, C, E **B)** A, B, C, D, E

C) B, C, A, D, E

D) C, D, B, E, A

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**Q.43)** Arrange the following jumbled sentences to form a coherent paragraph: A) In recent years, space exploration has become increasingly collaborative. B) International space agencies and private companies work together on ambitious projects. C) This collaboration has resulted in groundbreaking discoveries and advancements in space technology.

D) Gone are the days of space race competition; now it's all about cooperation.

E) Together, they push the boundaries of what's possible beyond Earth's atmosphere. **A)** D, B, A, C,

**E B)** A, B, C, D, **E C)** B, D, A, E, **C D)** C, A, D, E, B

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**Q.44) DIRECTIONS for question:** Four sentences related to a topic are given below. Three of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.

1. It seemed to me that those who fought for our freedom were the truly worthy ancestors, the kind who deserved the filial piety we were coaxed into squandering so thoughtlessly

2. As a child, when I heard the word freedom, it was not a lone word

3. We had, in their names and ours, to nurse this hard-won thing, our freedom, nourish it and make it grow

4. And since these worthy ancestors had already fought the big battle and won it at great cost, we had to pay our legacy duties every day by living up to their dreams and hopes (write the answer key)

**A)2 B)1**

C) 3

D) 4

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**Q.45) Directions for question:** Four sentences related to a topic are given below. Three of them can be put together to form a meaningful and coherent short paragraph. Identify the odd one out. Choose its number as your answer and key it in.

1. Here are a few tips, based on experience and a bit of game theory, to get you the best price on everything from taxis to tea towels.
2. Many years ago I found myself stuck at a remote border crossing between Bulgaria and Serbia
3. I offered to pay \$20 for the two-hour ride back to Sofia – a fair price at the time; they countered at \$100 and held firm, so I bluffed, walking away down the dark road.
4. As a correspondent who travels a lot, negotiating is an essential skill (write the answer key)

A)1 B)2 C)3 D)4

## Answer Key

Quantitative Aptitude Short Answer (SA) type		Quantitative Ability MCQ type				Verbal Ability & Reading Comprehension					
1	5	1	B	16	A	1	D	16	C	31	A
2	495	2	B	17	A	2	A	17	C	32	B
3	90	3	A	18	C	3	A	18	B	33	A
4	120	4	C	19	C	4	A	19	C	34	C
5	3	5	A	20	D	5	B	20	D	35	C
6	3	6	D	21	A	6	D	21	B	36	D
7	3	7	A	22	B	7	B	22	B	37	D
8	11	8	B	23	A	8	D	23	B	38	C
9	5	9	C	24	B	9	A	24	D	39	D
10	2	10	D	25	D	10	C	25	C	40	C
11	8	11	B	26	D	11	C	26	A	41	A
12	27	12	C	27	D	12	D	27	C	42	B
13	108	13	D	28	C	13	A	28	D	43	B
14	5	14	B	29	B	14	D	29	B	44	A

15	6000	15	C	30	A	15	C	30	A	45	A
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## Solution

### Quantitative Aptitude Short Answer (SA) type

Q.1)

$$\begin{aligned}
 &\because -\sqrt{2} \leq \sin x - \cos x \leq \sqrt{2} \\
 &\Rightarrow -2 \leq \sqrt{2}(\sin x - \cos x) \leq 2 \\
 &\Rightarrow m - 4 \leq \sqrt{2}(\sin x - \cos x) + m - 2 \leq m \\
 &\Rightarrow \log_{\sqrt{m}}^{(m-4)} \leq \log_{\sqrt{m}}^{\{\sqrt{2}(\sin x - \cos x) + m - 2\}} \leq \log_{\sqrt{m}}^m \\
 &\quad \downarrow \\
 &\quad 0 \\
 &\Rightarrow \log_{\sqrt{m}}^{(m-4)} = 0 \\
 &\Rightarrow m = 5
 \end{aligned}$$


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Q.2)

$$\begin{vmatrix} A + 6d & 7 & 1 \\ 21(A + 1 + 8d) & 17 & 1 \\ A + 2 + 16d & 17 & 1 \end{vmatrix} + 70 = 0$$

$$A = -7, d = 6$$

$$\therefore c - a - b = 20$$

$$\therefore {}^5P_3 = 495$$


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**Q.3)**

Given: The two numbers are in the ratio 6 : 5.

Their HCF is 3.

Let the numbers be 6x and 5x

$$\text{HCF}(6x, 5x) = x$$

$$\text{So, } x = 3$$

The numbers are 18 and 15.

$$\text{LCM}(18, 15) = 90$$

Hence, the correct answer is 90.

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**Q.4)**

$$\begin{bmatrix} \_ & \_ & \_ & \boxed{1} & \_ \\ \_ & \_ & \boxed{1} & \_ & \_ \\ \_ & \_ & \_ & \_ & \_ \\ \_ & \_ & \_ & \_ & \_ \\ \_ & \_ & \_ & \_ & \_ \end{bmatrix} \rightarrow {}^5C_1 \times {}^4C_1 \times {}^3C_1 \times {}^2C_1 \times {}^1C_1$$

$${}^5C_1 \times {}^4C_1 \times {}^3C_1 \times {}^2C_1 \times {}^1C_1$$

$$= 120$$


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**Q.5)**

$$a_3 \cdot a_5 = \frac{1}{9}$$

$$\Rightarrow ar^2 \cdot ar^4 = \frac{1}{9}$$

$$\Rightarrow (ar^3)^2 = \frac{1}{9}$$

$$\Rightarrow ar^3 = \frac{1}{3} \dots(i)$$

$$a_6 + a_8 = 2$$

$$\Rightarrow ar^5 + ar^7 = 2$$

$$\Rightarrow ar^3(r^2 + r^4) = 2$$

$$\Rightarrow \frac{1}{3}r^2(1 + r^2) = 2$$

$$\Rightarrow r^2(1 + r^2) = 2 \times 3$$

$$\Rightarrow r^2 = 2 \Rightarrow r = \sqrt{2}$$

$$a = \frac{1}{3} \times \frac{1}{r^3}$$

$$= \frac{1}{3} \times \frac{1}{2\sqrt{2}} = \frac{1}{6\sqrt{2}}$$

$$6(a_2 + a_4)(a_4 + a_6)$$

$$\Rightarrow 6(ar + ar^3)(ar^3 + ar^5)$$

$$\Rightarrow 6\left(\frac{ar^3}{r^2} + \frac{1}{3}\right)\left(\frac{1}{3} + \frac{1}{3}r^2\right) = 3$$

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**Q.6)**

$$96 \cos \frac{\pi}{33} \cos \frac{2\pi}{33} \cos \frac{2^2\pi}{33} \cos \frac{2^3\pi}{33} \cos \frac{2^4\pi}{33}$$

$$\therefore \cos A \cos 2A \cos 2^2 A \dots C \cos 2^{n-1} A = \frac{\sin(2^n A)}{2^n \sin A}$$

$$\begin{aligned}
 \text{Here } A &= \frac{\pi}{33}, n = 5 \\
 &= \frac{96 \sin \left( 2^5 \frac{\pi}{33} \right)}{2^5 \sin \left( \frac{\pi}{33} \right)} \\
 &= \frac{96 \sin \left( \frac{32\pi}{33} \right)}{32 \sin \left( \frac{\pi}{33} \right)} \\
 &= \frac{3 \sin \left( \pi - \frac{\pi}{33} \right)}{\sin \left( \frac{\pi}{33} \right)} = 3
 \end{aligned}$$


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**Q.7)**

Given equation,  $x^2 + y^2 + 2y + 4x + 5 = 0$

Let us try to make it a perfect square

$$\begin{aligned}
 x^2 + 4x + y^2 + 2y + 5 &= 0 \\
 x^2 + 4x + 4 - 4 + y^2 + 2y + 1 - 1 + 5 &= 0
 \end{aligned}$$

$$\begin{aligned}
 (x + 2)^2 + (y + 1)^2 - 5 + 5 &= 0 \\
 (x + 2)^2 + (y + 1)^2 &= 0
 \end{aligned}$$

$\Rightarrow (x + 2)^2 = 0$  and  $(y + 1)^2 = 0$  [If the sum of two squares is zero then each term individually will also be zero]

$$\Rightarrow x + 2 = 0 \text{ and } y + 1 = 0$$

$$\Rightarrow x = -2 \text{ and } y = -1$$

$$\therefore \frac{x + y}{x - y} = \frac{-2 - 1}{-2 + 1} = \frac{-3}{-1} = 3$$

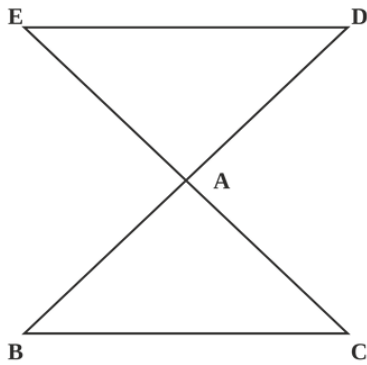
Hence, the correct answer is 3

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**Q.8)**



Given,  $AB = AD = 7$  cm and  $AC = AE$  and  $BC = 11$  cm  
 $\angle BAC = \angle DAE$  (vertically opposite angles)

$$\frac{AB}{BC} = \frac{AD}{DE}$$

In the given figure,  $\triangle ABC \cong \triangle ADE$  by SAS criteria.  
 $\Rightarrow ED = BC = 11$  cm  
Hence, the correct answer is 11 cm.

**Q.9)** Given:

The average of two numbers = 8  
The average of three numbers = 3  
According to the question,  
Sum of two numbers =  $2 \times 8 = 16$   
Sum of three numbers =  $3 \times 3 = 9$   
Sum of five numbers =  $16 + 9 = 25$

$$\text{Average value} = \frac{\text{Sum of values}}{\text{Number of values}}$$

$$\therefore \text{Average of five numbers} = \frac{25}{5}$$

Hence, the correct answer is 5.

**Q.10)** As we have learned

Expression of Binomial Theorem -

$$(x + a)^n = {}^n C_0 x^n a^0 + {}^n C_1 x^{n-1} a^1 + {}^n C_2 x^{n-2} a^2 + \dots + {}^n C_n x^0 a^n$$

Now,

$$\begin{aligned} & (8)^{2n} - (62)^{2n+1} \\ &= (9 - 1)^{2n} - (63 - 1)^{2n+1} \\ &= [{}^{2n}C_0(9)^{2n} - {}^{2n}C_1(9)^{2n-1} + \dots - {}^{2n}C_{2n-1}9 + {}^{2n}C_{2n}] - [{}^{2n+1}C_0(63)^{2n+1} \\ &\quad - {}^{2n+1}C_1(63)^{2n} + \dots + {}^{2n+1}C_{2n}63 - {}^{2n+1}C_{2n+1}] \\ &= 9k + {}^{2n}C_{2n} + {}^{2n+1}C_{2n+1} \end{aligned}$$

On dividing by 9

$$\text{Remainder} = {}^{2n}C_{2n} + {}^{2n+1}C_{2n+1} = 1 + 1 = 2$$

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**Q.11)** As we learned

The inverse of a matrix -

A non-singular square matrix of order  $n$  is invertible if there exists a square matrix B of the same order such that  $AB = I = BA$

-

$$(A - 3I)(A - 5I) = 0$$

$$\Rightarrow A^2 - 8A + 15I = 0 \dots \dots (i)$$

$$\text{Also given that } \alpha A + \beta A^{-1} = 4I$$

Multiply both sides by A

$$\Rightarrow \alpha A^2 - 4A + \beta I = 0 \dots \dots (ii)$$

Compare (i) and (ii)

$$A^2 - 8A + 15I = 0$$

$$\alpha A^2 - 4A + \beta I = 0$$

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$$\text{Thus } \frac{1}{\alpha} = \frac{8}{4} = \frac{15}{\beta}$$

$$\text{Thus } \alpha = \frac{1}{2} \text{ and } \beta = \frac{15}{2}$$

$$\Rightarrow \alpha + \beta = 8$$

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**Q.12)**

Original quotient = 24

Original remainder = 0

Wrong dividend = 90% of original dividend

Wrong divisor = 80% of original divisor

We know that, Dividend = Divisor  $\times$  Quotient + Remainder

Here, Dividend = Divisor  $\times$  Quotient

So, old and new dividends, divisors and quotients are proportional

$$\Rightarrow \frac{\text{Wrong Dividend}}{\text{Original Dividend}} = \frac{\text{Wrong Divisor}}{\text{Original Divisor}} \times \frac{\text{Wrong Quotient}}{\text{Original Quotient}}$$

$$\Rightarrow \frac{90}{100} = \frac{80}{100} \times \frac{\text{Wrong Quotient}}{24}$$

$\Rightarrow$  Wrong quotient = 27

Hence, the correct answer is 27.

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**Q.13)** Diameter of sphere = 18 cm

Radius of sphere, R = 9 cm

Diameter of wire = 6 mm

The radius of wire, r = 3 mm = 0.3 cm

Let l be the length of the wire.

Volume of sphere = volume of wire

$$\frac{4}{3}\pi R^3 = \pi r^2 l$$

$$l = 10800 \text{ cm} = 108 \text{ m}$$

Hence, the answer is 108 m.

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**Q.14)** Divisor = 56, Remainder = 29

Let D = Dividend, R = Remainder, Q = Quotient

$$(56 \times Q) + 29 = D \text{ --- (1)}$$

$$R = \frac{D}{8} \text{ --- (2)}$$

Solving equation (1) and equation (2), we get

$$R = \frac{(56 \times Q) + 29}{8}$$

$$R = \frac{(56 \times Q)}{8} + \frac{29}{8}$$

$$R = 7Q + \frac{24 + 5}{8}$$

$$R = (7Q + 3) + \frac{5}{8}$$

(Dividing by 8 gives 5 as a remainder)

Thus, the remainder is 5.

Hence, the correct answer is 5.

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**Q.15)** Let the total voters be x

Votes that got disqualified = 100

Percentage of votes for winner = 45%

The margin between the winner and loser = 400 votes

Total votes cast = Total voters – voters who did not cast votes – Number of votes disqualified

$$= 100\% \text{ of } x - 15\% \text{ of } x - 100$$

$$= 85\% \text{ of } x - 100$$

Now, votes won by winner = 45% of x

So, votes won by loser = 45% of x – 400

According to the question,

Total votes counted = Number of votes for winner + Number of votes for loser

$$\text{or, } 85\% \text{ of } x - 100 = 45\% \text{ of } x + 45\% \text{ of } x - 400$$

$$\text{or, } 300 = 90\% \text{ of } x - 85\% \text{ of } x$$

$$\text{or, } 300 = 5\% \text{ of } x$$

$$\text{or, } 300 = \frac{5}{100}x$$

$$\text{or, } x = 6000$$

Hence, The total number of voters is 6000.

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## Quantitative Ability MCQ type

**Q.1)**

$$f : \{1, 2, 3, 4\} \rightarrow \{a \in \mathbb{Z} : |a| \leq 8\}$$

$$f(n) + \frac{1}{n}f(n+1) = 1 \forall n \in \{1, 2, 3\}$$

$$f(n+1) = n(1 - f(n))$$

Put  $n = 1$ ,  $f(2) = 1 - f(1)$

Put  $n = 2$ ,  $f(3) = 2(1 - f(2)) = 2f(1)$

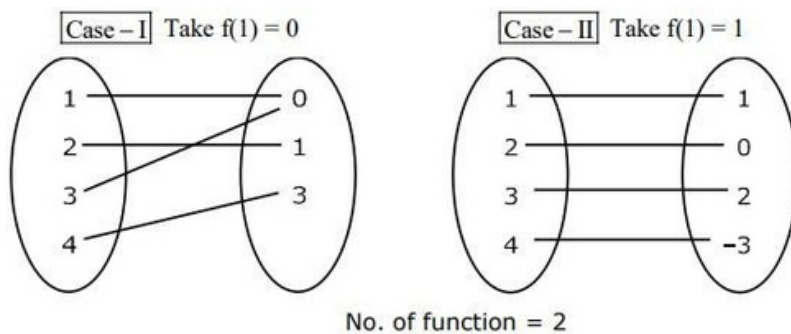
Put  $n = 3$ ,  $f(4) = 3(1 - f(3)) = 3(1 - 2f(1))$

$$f(4) = 3 - 6f(1)$$

Now :  $f(2) = 1 - f(1)$

$$f(3) = 2f(1)$$

$$f(4) = 3 - 6f(1)$$



**Q.2)** As we learned in

By using the concept of

Cramer's rule for solving system of linear equations -

When  $\Delta = 0$  and  $\Delta_1 = \Delta_2 = \Delta_3 = 0$ ,

then the system of equations has infinite solutions.

- wherein

$$a_1x + b_1y + c_1z = d_1$$

$$a_2x + b_2y + c_2z = d_2$$

$$a_3x + b_3y + c_3z = d_3$$

and

$$\Delta = \begin{vmatrix} a_1 & b_1 & c_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix}$$

$\Delta_1, \Delta_2, \Delta_3$  are obtained by replacing column 1,2,3 of  $\Delta$  by  $(d_1, d_2, d_3)$  column

$$\begin{vmatrix} 2 & 4 & -\lambda \\ 4 & \lambda & 2 \\ \lambda & 2 & 2 \end{vmatrix} = 0$$

$$\Rightarrow 2 \begin{vmatrix} \lambda & 2 \\ 2 & 2 \end{vmatrix} - 4 \begin{vmatrix} 4 & 2 \\ \lambda & 2 \end{vmatrix} - \lambda \begin{vmatrix} 4 & \lambda \\ \lambda & 2 \end{vmatrix} = 0$$

$$\Rightarrow 2(2\lambda - 4) - 4(8 - 2\lambda) - \lambda(8 - \lambda^2) = 0$$

$$\Rightarrow 4\lambda - 8 - 32 + 8\lambda - 8\lambda + \lambda^3 = 0$$

$$\Rightarrow \lambda^3 + 4\lambda - 40 = 0$$

It will give only one real value of  $\lambda$

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**Q.3)** Let the price of each pencil be Rs.  $x$  and price of each sharpens be Rs.  $y$

$$\text{Aron } y - x = 2 \Rightarrow \therefore x = y - 2$$

$$a(y - 2) + b(y) = 2a(y - 2) + (b - 10)y$$

$$10y = a(y - 2) \rightarrow (1)$$

$$\text{Required value} = 3a$$

$$\text{From (1) } a = \frac{10y}{y-2} a \in \mathbb{I}^+$$

Its possible only when  $y = 22$

$$\therefore a = 11$$

Required answer = 33

**Q.4)** Note that  $7^r (r \in \mathbb{N})$  ends in 7, 9, 3 or 1 (corresponding to  $r = 1, 2, 3$  and 4 respectively.)

Thus,  $7^m + 7^n$  cannot end in 5 for any values of  $m, n \in \mathbb{N}$ .

In other words, for  $7^m + 7^n$  to be divisible by 5, it should end in 0.

For  $7^m + 7^n$  to end in 0, the forms of  $m$  and  $n$  should be as follows:

	$m$	$n$
1	$4r$	$4s + 2$
2	$4r + 1$	$4s + 3$
3	$4r + 2$	$4s$
4	$4r + 3$	$4s + 1$

Thus, for a given value of  $m$  there are just 25 values of  $n$  for which  $7^m + 7^n$  ends in 0. [For instance, if  $m = 4r$ , then  $n = 2, 6, 10, \dots, 98$

$\therefore$  there are  $100 \times 25 = 2500$  ordered pairs  $(m, n)$  for which  $7^m + 7^n$  is divisible by 5.

**Q.5)**

$$a_1 = 8$$

$d =$  common difference

$$\frac{4}{2}[16 + 3d] = 50$$

$$\Rightarrow d = 3$$

$$\frac{4}{2} [2a_n + 3(-d)] = 170$$

$$\Rightarrow 2(a_1 + (n-1)d) - 3d = 85$$

$$\Rightarrow 16 + 6(n-1) - 9 = 85$$

$$n - 1 = 13$$

$$n = 14$$

Product of middle two terms =  $T_7 \times T_8$

$$= (a_1 + 6d)(a_1 + 7d)$$

$$= (8 + 18)(8 + 21)$$

$$= (26)(29) = 754$$


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**Q.6)**

$$\tan 15^\circ + \frac{1}{\tan 75^\circ} + \frac{1}{\tan 105^\circ} + \tan 195^\circ = 2a$$

$$\Rightarrow \tan 15^\circ + \frac{1}{\cot 15^\circ} - \frac{1}{\cot 15^\circ} + \tan 15^\circ = 2a$$

$$\Rightarrow \tan 15^\circ + \tan 15^\circ - \tan 15^\circ + \tan 15^\circ = 2a$$

$$\Rightarrow 2 \tan 15^\circ = 2a$$

$$\Rightarrow a = \tan 15^\circ$$

$$a + \frac{1}{a} = \tan 15^\circ + \frac{1}{\tan 15^\circ}$$

$$= \tan 15^\circ + \cot 15^\circ$$

$$= 2 - \sqrt{3} + 2 + \sqrt{3}$$

$$\Rightarrow a + \frac{1}{a} = 4$$


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**Q.7)**

$$x^4 + \frac{1}{x^4} = 194$$

Adding 2 on both sides,

$$\Rightarrow x^4 + \frac{1}{x^4} + 2 = 194 + 2$$

$$\Rightarrow (x^2 + \frac{1}{x^2})^2 = 196$$

Taking square root on both sides,

$$\Rightarrow x^2 + \frac{1}{x^2} = 14$$

Adding 2 on both sides,

$$\Rightarrow x^2 + \frac{1}{x^2} + 2 = 14 + 2$$

$$\Rightarrow (x + \frac{1}{x})^2 = 16$$

Taking square root on both sides,

$$\Rightarrow x + \frac{1}{x} = 4$$

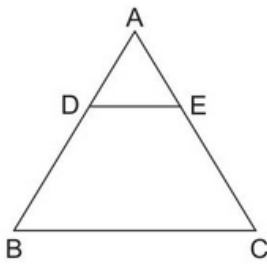
$$\Rightarrow (x + \frac{1}{x})^3 = 4^3$$

$$\Rightarrow x^3 + \frac{1}{x^3} + 3(x + \frac{1}{x}) = 64$$

$$\Rightarrow x^3 + \frac{1}{x^3} + 3 \times 4 = 64$$

$$\Rightarrow x^3 + \frac{1}{x^3} = 64 - 12 = 52$$

Hence, the correct answer is 52



Q.8)

Let  $AE = x$  cm.

Then,  $EC = (AC - AE) = (4.8 - x)$  cm

Now, in  $\triangle ABC$ ,  $DE \parallel BC$ .

$$\therefore \frac{AD}{DB} = \frac{AE}{EC} \Rightarrow \frac{3}{5} = \frac{x}{(4.8-x)}$$

$$\Rightarrow 3(4.8 - x) = 5x \Rightarrow 8x = 14.4$$

$$\Rightarrow x = 1.8$$

Hence,  $AE = 1.8$  cm.



**Q.9)**

$$\text{For } x = 2, \Rightarrow f(2) + f(-1) = 3 \text{ _____(I)}$$

$$\text{For } x = \frac{1}{2} \Rightarrow f\left(\frac{1}{2}\right) + f(-1) = \frac{3}{2} \text{ _____(II)}$$

$$\text{For } x = -1 \Rightarrow f(-1) + f\left(\frac{1}{2}\right) = 0 \text{ _____(III)}$$

$$(2) - (3) \Rightarrow f(2) - f(-1) = \frac{3}{2} \text{ _____(IV)}$$

$$(1) + (4) \Rightarrow 2f(2) = \frac{9}{2} \Rightarrow f(2) = \frac{9}{4}$$


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**Q.10)** As we learnt in

Inverse of a matrix -

$$A^{-1} = \frac{1}{|A|} \cdot \text{adj}A$$

-

$$\text{Option 1: } A^{-1} = \frac{\text{adj}(A)}{|A|} \text{ (By formula)}$$

$$\text{Option 2: } \text{adj}(\text{adj}(A)) = |A|^{n-2}A$$

Putn=3

$$\therefore \text{adj}(\text{adj}(A)) = |A|^{3-2}A = |A|A$$

Option 3: and 4

$$\begin{aligned} \therefore A(\text{adj}A) &= |A|I_n \\ (\text{adj}A)^{-1} &= \frac{A}{|A|} \end{aligned}$$

$$\text{adj}(\text{adj}(A)) = |A|^2 (\text{adj}(A))^{-1} = |A|^2 \frac{A}{|A|} = |A| \cdot A$$

so option 4 is not always true

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**Q.11)**

$$x_0 = \max(x_1, x_2, \dots, x_{12}) x_0$$

will be minimum if  $x_1, x_2, \dots, x_{12}$  are close to each other

$$100/12 = 8.33$$

$\therefore \max(x_1, x_2, \dots, x_{12})$  will be minimum if  $(x_1, x_2, \dots, x_{12}) = (9, 9, 9, 9, 8, 8, 8, 8, 8, 8, 8, 8, ,$

Option B is correct.

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**Q.12)** The non-zero perfect square digits are 1, 4 and 9.

1 can occur at units place in  $3 \times 3 = 9$  ways.

$\therefore$  Sum due to 1 at units place is  $1 \times 9$ . Similarly, due to 1 at tens place is  $1 \times 1 \times 9$ .

Similarly, sum at hundreds place is  $1 \times 10 \times 9$  and sum due to 1 at the digits 4 and 9 is

$1 \times 100 \times 9$ . We can deal with Thus, sum of the desired number is

$$(1 + 4 + 9)(1 + 10 + 100)(9) = 13986$$

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**Q.13)**

$$a_7 = 3a_1 a_4 \text{ minimum}$$

$$a + 6d = 3$$

$$a(a + 3d) \rightarrow \text{minimum}$$

$$S_n = 0 \Rightarrow \frac{n}{2} [nna_1 + (n-1)d] = 0$$

$$2a_1 + (n-1)d = 0$$

Let  $a(a + 3d)$  is minimum

$$f(d) = (3 - 6d)(3 - 6d + 3d)$$

$$f(d) = (3 - 6d)(3 - 3d)$$

$$= 18d^2 - 27d + 9 \text{ is minimum at } d = \frac{27}{2 \times 18} = \frac{9 \times 3}{2 \times 9 \times 2} = \frac{3}{4}$$

$$\text{So, } d = \frac{3}{4}$$

$$a_1 + 6d = 3$$

$$a_1 = 3 - 6 \frac{3}{4} = 3 - \frac{9}{2} = -3$$

Putting  $a_1 = \frac{-3}{2}$  &  $d = \frac{3}{4}$  in (1))

$$2 \left( \frac{-3}{2} \right) + (n-1) \left( \frac{3}{4} \right) = 0$$

$$\frac{3}{4}(n-1) = 3$$

$$n-1 = 4$$

$$n = 5$$

$$n! - 4a_{n(n+2)}$$

$$n = 5 \text{ so } n! = 5! = 120$$

$$\& a_{5(7)} = a_{35} = \frac{-3}{2} + (34) \left( \frac{3}{4} \right)$$

$$= \frac{-3}{2} + \frac{51}{2}$$

$$= \frac{48}{2} = 24$$

$$5! - 4(24) = 24$$

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**Q.14)**

$$f(\theta) = 3 \left( \sin^4 \left( \frac{3\pi}{2} - \theta \right) + \sin^4(3\pi + \theta) \right) - 2(1 - \sin^2 2\theta)$$

$$= 3(\cos^4 \theta + \sin^4 \theta) - 2 \cos^2 2\theta$$

$$= 3 \left( 1 - \frac{\sin^2 2\theta}{2} \right) - 2 \cos^2 2\theta$$

$$= 3 \left( \frac{2 - \sin^2 2\theta}{2} \right) - 2 \cos^2 2\theta$$

$$= 3 \left( \frac{1 + \cos^2 2\theta}{2} \right) - 2 \cos^2 2\theta$$

$$f(\theta) = \frac{3 - \cos^2 2\theta}{2}$$

$$f'(\theta) = \frac{2}{2} \cos 2\theta \sin 2\theta \times 2$$

$$f'(\theta) = \sin 4\theta = \frac{-\sqrt{3}}{2}$$

$$\theta \in [0, \pi]$$

$$4\theta \in [0, 4\pi]$$

$$\sin 4\theta = \frac{-\sqrt{3}}{2}$$

$$4\theta = \frac{4\pi}{3}, \frac{5\pi}{3}, \frac{10\pi}{3}, \frac{11\pi}{3}$$

$$\theta = \frac{\pi}{3}, \frac{5\pi}{12}, \frac{5\pi}{6}, \frac{11\pi}{12}$$

$$4\beta = \sum_{\theta \in s} \theta = \frac{\pi}{3} + \frac{5\pi}{12} + \frac{5\pi}{6} + \frac{11\pi}{12} = \frac{4\pi + 5\pi + 10\pi + 11\pi}{12} = \frac{30\pi}{12} = \frac{5\pi}{2}$$

$$\beta = \frac{5\pi}{8}$$

$$f(\beta) = f\left(\frac{5\pi}{8}\right) = \frac{3 - \cos^2\left(\frac{5\pi}{4}\right)}{2} = \frac{3 - \frac{1}{2}}{2} = \frac{5}{4}$$

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**Q.15)**

$$\begin{aligned} & (5x + 8y)(25x^2 + 64y^2 - 40xy) \\ &= (5x + 8y)[(5x)^2 + (8y)^2 - 5x \times 8y] \\ &= (5x)^3 + (8y)^3 \\ &= 125x^3 + 512y^3 \end{aligned}$$

Hence, the correct answer is  $125x^3 + 512y^3$

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**Q.16)**

Arc length = 23.1 cm

$$\Rightarrow \frac{\theta}{360^\circ} \times 2\pi r = 23.1$$

$$\Rightarrow \frac{18^\circ}{360^\circ} \times r = 3.675$$

$$\Rightarrow r = 73.5 \text{ cm}$$

$$\text{Area of circle} = \pi r^2 = \frac{22}{7} \times 73.5 \times 73.5 = 16978.50 \text{ cm}^2.$$

Hence the correct answer is  $16978.50 \text{ cm}^2$ .

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**Q.17)** We have  $9! = 2^7 \times 3^4 \times 5 \times 7$

Odd factors of the form  $3m + 2$  are neither multiples of 2 nor multiples of 3. So the factors may be 1, 5, 7, 35 of which just 5 and 35 are of the form  $3m + 2$ . Their sum is 40.

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**Q.18)**

Given:

$$x + \frac{1}{x} = \sqrt{13}$$

Squaring both sides,

$$\left(x + \frac{1}{x}\right)^2 = 13$$

$$x^2 + \frac{1}{x^2} = 13 - 2$$

$$x^2 + \frac{1}{x^2} = 11$$

Also,

$$x^2 + \frac{1}{x^2} - 2 = 11 - 2$$

$$\left(x - \frac{1}{x}\right)^2 = 3^2$$

$$x - \frac{1}{x} = 3$$

Cubing both sides

$$x^3 - \frac{1}{x^3} = 3^3 + 3 \times 3 = 36$$

Now,

$$\left(x^3 - \frac{1}{x^3}\right)\left(x^2 + \frac{1}{x^2}\right) = 36 \times 11$$

$$x^5 - \frac{1}{x^5} + x - \frac{1}{x} = 396$$

$$x^5 - \frac{1}{x^5} + 3 = 396$$

$$\Rightarrow x^5 - \frac{1}{x^5} = 393$$

Hence, the correct answer is 393.

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**Q.19)** Let "N" be the number of ripe oranges. The probability of selecting a ripe orange is 0.75, which means:

$$N \text{ (number of ripe oranges)} / 500 \text{ (total number of oranges)} = 0.75$$

$$N = 0.75 \times 500$$

$$N = 375$$

So, the number of ripe oranges in the basket is 375.

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**Q.20)** Given that

$a_1, a_2, a_3, \dots, a_n, \dots$  are in AP

Also given that

$$a_3 + a_7 + a_{11} + a_{15} = 72$$

$$a_3 + a_{15} = a_7 + a_{11} = a_1 + a_{17} = 36$$

Sum of first 17 term

$$\begin{aligned} S_{17} &= \frac{17}{2} (a_1 + a_{17}) \\ &= \frac{17}{2} \times 36 \\ &= 306 \end{aligned}$$

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**Q.21)** As we learnt in

SUBSETS -

A set A is said to be a subset of a set B if every element of A is also an element of B.

- wherein

It is represented by  $\subset$ . eg.  $A \subset B$  if  $A = \{2, 4\}$  and  $B = \{1, 2, 3, 4, 5\}$

Let A having elements {a, b, c, d} and B having {e, f}

Then  $A \times B$  having 8 elements and no. of subsets =  $2^8 = 256$

No. of subsets =  $\phi, (ae), \dots, (df)$  and  $(ae, be), \dots = 256$

Now 8 subsets having only one element

$\{ae\}, \{af\}, \{be\}, \dots, \{df\}$

Similarly

No of sets having two elements

$\{ae, af\}, \{ae, be\}, \dots, \{ae, df\} = 7$  elements

$\{af, be\}, \{af, bf\}, \dots = 6$  elements

..

$7 + 6 + 5 + 4 + 3 + 2 + 1 = 28$  (having two elements)

and a subset having single element  $\phi$

$\therefore 28 + 8 + 1 = 37$

$\therefore$  At least three elements =  $256 - 37 = 219$

Correct option is 1.

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**Q.22)** if time is constant then the ratio of principal and amount is always constant in compound interest .

in 4 years sum become doubled P become 2P

p \_\_\_\_\_ 4 years \_\_\_\_\_ 2p \_\_\_\_\_ 4 years \_\_\_\_\_ 8p \_\_\_\_\_ 4 years \_\_\_\_\_ 16 p

$4+4+4+4= 16$  years

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**Q.23)** Let the speeds of trains A and B be  $5x$  and  $3x$ , respectively, and their lengths be  $p$  and  $q$ , respectively.

Given that,

The length of Train B,  $q$ , is covered in 46 seconds, and the length of Train A,  $p$ , is covered in 69 seconds.

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Then,  $\frac{p}{Q} = \frac{(5x + 3x) \times 69}{(5x + 3x) \times 46} = \frac{69}{46} = \frac{3}{2}$  Hence, option A is the correct answer.

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**Q.24)**

A, B and C can do a piece of work in 11 days, 20 days and 55 days respectively.

Total work = LCM(11, 20 and 55) = 220

Efficiency of A =  $\frac{220}{11} = 20$

Efficiency of B =  $\frac{220}{20} = 11$

Efficiency of C =  $\frac{220}{55} = 4$

1st day work =  $(20 + 11) = 31$

2nd day work =  $(11 + 4) = 15$

2 days work =  $31 + 15 = 46$

Total pairs of days required to work

$\Rightarrow \frac{220}{46}$

$\Rightarrow 4 + \frac{36}{46}$

So,  $4 \times 2 = 8$  days and remaining work = 36

On next day 31 of 36 will be done and rest 5 will be done on 10th day

$\frac{5}{15} = \frac{1}{3}$

So total days =  $9 + \frac{1}{3}$

$\therefore$  Total days required =  $9\frac{1}{3}$  days.

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**Q.25)**

Let the non-zero integer be  $x$ .

Given: The sum of a non-zero number and twice its reciprocal is  $\frac{33}{4}$ .

$$\Rightarrow x + \frac{2}{x} = \frac{33}{4}$$

$$\Rightarrow 4x^2 - 33x + 8 = 0$$

$$\Rightarrow 4x^2 - 32x - x + 8 = 0$$

$$\Rightarrow 4x(x - 8) - (x - 8) = 0$$

$$\Rightarrow (4x - 1)(x - 8) = 0$$

$$\Rightarrow (4x - 1) = 0 \text{ or } (x - 8) = 0$$

$$\therefore x = 8, \frac{1}{4}$$

Hence, the correct answer is 8.

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**Q.26)** (d) Bhabha and Cathy work together for 2 days.

**Q.27)** (d) The consecutive days Ethan works on Friday & Saturday.

**Q.28)** (c) Dilip and Ethan do not work together at all.

**Q.29)** (b) Bhabha, Cathy and Ethan work on Sunday.

**Q.30)** (a) One of the days Alex work is Saturday.

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## Verbal Ability & Reading Comprehension

**Q.1)** The **fourth option** is correct.

According to the third line of the passage, more than half of the 95 countries have sent nearly **6,500** rescuers.

Therefore, the correct answer is: "**6500 rescuers.**"

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**Q.2)** The **first option** is correct.

- **Clamoured** means to shout loudly, which makes **screamed** the appropriate choice.
- **Scramble** means to run in a manner of panic and urgency, making **jostled**, which means to push someone roughly in order to get past them, the appropriate choice.
- **Hampered** means to slow the progress, making **checked**, which means to stop or slow the progress, the appropriate choice.

Therefore, the correct answer is: "**a-2, b-3, c-1.**"

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**Q.3)** The **first option** is correct.

The passage highlights the **foreign aid given to Turkey and Syria** due to the catastrophic earthquakes, which makes the second option an incorrect choice. The passage also mentions the sufferings of **people who lost their homes and were huddled around campfires hungry and waiting for food** in the earthquake-hit areas, which is mentioned in the first passage, making the third option incorrect. The passage also describes in **detail the rescue work that has been going on**, which makes the fourth option incorrect.

Thus, the correct answer is,

**Syria's rebel-held areas and the civil war going on there.** It is not mentioned anywhere in the passage.

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**Q.4)** The **first option** is correct.

According to the last lines of the passage, Syria is a country that is war-torn, and the aid being given is stopped or being slowed due to the isolation of regions along the border, which are held by rebels and are surrounded by Russia-backed government forces.

Therefore, the correct answer is, **Because Syria is a war-torn country and there are areas under rebels.**

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**Q.5)** The passage primarily focuses on the work of sociologists affiliated with the Chicago school, examining the link between social disorganization and escalating crime rates. It delves into the history of American urban areas during the 1920s and 1930s, highlighting the influx of

immigrants as a major contributing factor to rising crime. The passage specifically states that factors such as the inability to effectively integrate these immigrants, along with other elements of social disorganization like overcrowding, poverty, and illness, led to elevated crime rates. These negative outcomes were particularly acute in segregated neighbourhoods where immigrants were often confined.

In the context of the multiple-choice options provided, Options A and C can be swiftly dismissed. Neither of these options directly addresses the core topics discussed in the passage—namely, social disorganization or crime rates. They are, therefore, not suitable summaries or reflections of the passage's main focus.

Between Options B and D, B emerges as the more appropriate choice. While Option D mentions "population growth," the passage emphasizes that it was not mere growth in numbers but rather the specific dynamics of immigration that led to social disorganization and, in turn, higher crime rates. Option D also introduces the term "heavy industry," which is not a keyword or a focus in the passage, making it less relevant as a summary. Option B, on the other hand, succinctly encapsulates the key elements discussed: migration, social disorganization, and rising crime rates in urban centres.

Therefore, Option B serves as the most accurate summary of the passage's primary themes and arguments, making it the correct choice for this exercise. It captures the essence of the Chicago school's focus on the relationship between migration-induced social disorganization and the escalation of crime rates in American cities during the 1920s and 1930s.

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**Q.6)** The passage serves as a case study, focusing on the relationship between rapid or dramatic social changes and the escalation of crime rates in Chicago. Specifically, it delves into the concept of social disorganization and its impact on increasing crime in that city.

Starting with Option A, it can be easily dismissed because the passage does not engage in a comparative analysis between crime rates in Chicago and those in other states. Therefore, this option fails to capture the central theme or main conclusion of the passage.

Moving to Option B, it is important to note that while the passage does discuss social disorganization, it does not narrow its focus solely to racial issues. Thus, Option B inaccurately distils the main points of the text and is therefore not a suitable choice.

Option C can be ruled out for similarly significant reasons. It misrepresents the central argument of the passage, thereby distorting its main idea. It is, thus, an inaccurate reflection of what the passage aims to convey.

Option D, on the other hand, accurately encapsulates the primary focus of the passage, which is the connection between social disorganization and growing crime rates in Chicago. It directly aligns with the key points and the overarching conclusion presented in the text.

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In summary, Option D emerges as the most accurate choice, effectively summarizing the core message of the passage. It aligns well with the case study's exploration of how social disorganization has led to an increase in crime rates in Chicago. Therefore, Option D is the correct answer for this exercise.

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**Q.7)** The objective is to identify the option that is not supported or inferred by the text, either because it falls outside the scope of the passage or directly contradicts its main argument.

Option A is supported by specific lines in the passage that describe how migrants were not successfully integrated into cities. This lack of integration, combined with other elements of social disorganization such as crowding, poverty, and illness, led to an increase in crime rates. Therefore, Option A closely aligns with the passage's content and can be readily inferred.

Option B finds its backing in the introductory section of the passage, where sociologists from the Chicago School are cited as focusing on the relationship between rapid social changes and increases in crime. Hence, this option is clearly supported by the passage and can be inferred.

Option C is corroborated by portions of the text that describe how failure to integrate migrants, coupled with other elements like crowding, poverty, and illness, led to higher crime rates, especially in segregated areas where migrants were concentrated. So, this option is also well-supported by the text.

However, Option D does not find any support in the passage. The text does not discuss the organizational level of migrant groups as a factor affecting their rate of social integration. The passage focuses on broader aspects of social disorganization, not on the level of organization among migrants. Therefore, this particular statement cannot be inferred from the available information.

In summary, while Options A, B, and C can be reliably deduced from the passage, Option D stands out as the one that is not supported by the text, making it the correct answer for this exercise.

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**Q.8)** The task is to identify the option that would most align with the theory of mass migration from rural to urban areas during the twenty-first century. Each option is evaluated based on whether it supports or contradicts this central theory.

Option A posits that the workforce is predominantly located in rural areas throughout the twenty-first century. This assertion is fundamentally at odds with the idea of a large-scale shift of population from rural to urban areas. If the majority of the workforce remains rural, then the

theory of extensive migration to urban regions is undermined. Therefore, Option A cannot be the correct choice.

Option B refers to a population census from 1952, stating that if this data is accurate, it would nullify the theory of mass migration from rural to urban areas in the twenty-first century. If historical data already shows a significant urban population, then the theory of a major twenty-first-century shift becomes implausible. Thus, Option B is also inconsistent with the central theory and is not the correct option.

Option C suggests that if mid-twentieth-century per capita income estimations were largely dependent on data from rural areas, it would imply that the majority of the population resided in rural areas during that period. This would contradict the notion that a majority have since migrated to urban areas in the twenty-first century. Consequently, Option C cannot be the correct choice.

Option D, on the other hand, states that if this option is true, it would actually reinforce the theory of significant migration from rural to urban areas. Since this is the only option that strengthens rather than contradicts the central theory, it is the correct choice.

In summary, Options A, B, and C offer scenarios that would counter the theory of mass migration from rural to urban areas, while Option D supports this theory. Therefore, the correct choice is Option D.

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**Q.9)** In dissecting the options presented, Option A stands out as the most congruent with the author's stance. The passage illustrates that the author is critical of the notion of casting Indian culture as monolithic, drawing from select texts that are given undue importance. Furthermore, the author critiques the binary division where Indian values are characterized as 'spiritual,' and European values as 'materialistic,' without any meaningful analysis to align these assigned values with the complexities of Indian society. The author seems to suggest that this sort of oppositional framework for understanding cultural differences is both misleading and unhelpful, thereby implicitly rejecting any such attempts to arrive at an accurate understanding of a nation's history and culture through such simplistic dichotomies.

Option B, on the other hand, can be set aside as it states that the author would be in favour of the Englishmen's framework for understanding Indian culture. However, the passage makes it clear that the author disapproves of such a biased approach, rendering this option incorrect.

Option C suggests that a more balanced view can be attained by extensive, unbiased reading of a country's literature. While this may be a reasonable assertion, it doesn't align with the author's primary argument against formulating cultural understanding through a narrow, prioritized set of texts and values. Therefore, it does not serve as the correct option in this context.

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Option D can also be dismissed for similar reasons as Option B. It suggests an endorsement of the same framework criticized by the author, and therefore cannot be the correct option.

Consequently, Option A remains the best choice, encapsulating the author's criticisms and aligning most closely with the position laid out in the passage.

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**Q.10)** In evaluating the options for their alignment with the author's perspective, it's crucial to grasp the nuance of the author's arguments about how Indian culture has been understood historically.

Option A posits that the author would endorse the argument presented within, which focuses on critiquing the uniform view espoused by Englishmen regarding Indian culture. However, since the author himself is critical of this same viewpoint, Option A cannot be the correct one. The author is less likely to support an argument that he has already discredited.

Option B is also inaccurate. While it might draw upon elements mentioned in the second paragraph, it doesn't capture the essence of the author's argument. Hence, it can't be the correct option.

Option C appears to be more in line with the author's stance. The cited excerpt suggests that the Indian intelligentsia felt somewhat inferior in terms of technical knowledge when compared to the West. This sense of inferiority was perceived as a consolation to cope with Western colonization. However, it's important to note that this excerpt doesn't claim that Indian technical understanding matches that of the West. Given that the author seems to challenge simplifications and misunderstandings about Indian culture, he would likely not endorse a statement implying that Indian technical knowledge is on par with that of the West. Therefore, Option C emerges as the correct choice.

Option D is ruled out based on an excerpt that shows that the author disapproves of the 'Orientalist' tendency to downplay or ignore the tangible or materialistic aspects of Indian life. The author's disapproval indicates that he would more likely agree that Indian culture is not strictly confined to metaphysical or spiritual dimensions but also recognizes material aspects. Therefore, Option D is not the correct choice either.

So, upon close scrutiny, Option C stands out as the correct choice, consistent with the author's criticisms of stereotypical or reductionist views about Indian culture and technical capability.

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**Q.11)** The passage extensively discusses the perspectives held by Orientalist scholars and the Indian intelligentsia regarding Indian culture and history. With various options presented for evaluation, let's delve into how each aligns or misaligns with the author's viewpoint.

Starting with Option A, the choice presupposes that the author would endorse its content, essentially critiquing the narrow, homogenized interpretation of Indian culture perpetuated by English scholars. However, the author has already taken a critical stance on this view in the passage, specifically mentioning that Orientalist understanding was "selective, uniform, generalized, and biased." Thus, Option A doesn't offer an interpretation diverging from the author's critique and hence can't be the correct choice.

Moving to Option B, this choice can be inferred from the segment of the passage that talks about the binary understanding of Indian and European values. The Orientalists and a section of Indian opinion maintain this dichotomy, labelling Indian values as "spiritual" and European ones as "materialistic," with hardly any effort to reconcile these with the complexities of Indian society. Therefore, Option B doesn't stand as the correct option since it is already inferred from the text.

Coming to Option C, this choice deals with the Indian intelligentsia's perception of their own technical inferiority to the West. The passage refers to this belief as "a consolation" and "a salve" for their colonial experience. However, it's crucial to note that this sentiment is articulated regarding the Indian intelligentsia, not about the colonizers or the Orientalists. The option could be misunderstood to refer to the latter, which would be an incorrect interpretation of the author's argument. Given that Option C isn't a correct inference from the passage, it stands out as the correct choice among the options presented.

Lastly, Option D isn't the correct choice because it brings up the author's disapproval of the Orientalist perception, which underplays India's material or tangible aspects, and is therefore already captured within the scope of the author's critique.

To sum up, Option C proves to be the correct choice. It neither aligns with nor can be directly inferred from the author's argument, setting it apart as the option that most likely reflects a perspective not supported by the author.

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**Q.12)** The passage in question explores how Orientalist scholars shaped a one-dimensional, generalized view of Indian culture. They relied primarily on selective Sanskrit literature, leading to an interpretation that emphasized non-historical, uniform aspects of Indian culture. The scholars presented India as having an "unchanging continuity" over millennia, which the author criticizes as being overly simplified and biased.

In light of this, our task is to identify an option that mirrors this selective and generalized methodology employed by Orientalists in interpreting Indian culture. Among the choices presented, Option D stands out as the correct one. This option suggests forming an understanding of a nation's culture through the narrow lens of selected American movies. Such an approach clearly parallels the Orientalists' limited and biased method, as both rely on a restricted source of cultural or historical material to generate sweeping conclusions about a complex society.

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Much like the Orientalists who skewed the rich tapestry of Indian history and culture into a uniform narrative based on a limited selection of Sanskrit texts, the perspective offered in Option D would similarly distort the understanding of a nation through a very narrow cultural lens—that of selected American movies. Therefore, given its resemblance to the Orientalists' flawed methodology, Option D is identified as the correct choice.

To summarize, Option D is the correct choice as it echoes the same limited, selective approach to understanding a culture that the author criticizes in the case of the Orientalists' study of India. It suggests that, just like the Orientalists, one could wrongly interpret a culture by relying on a very narrow selection of cultural outputs—in this case, American movies.

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**Q.13) The correct option is 1**

**To take on more than one can handle.**

**Explanation**

- The correct interpretation of the offered idiom "having bitten off more than I can chew" is "to take on more than one can handle."
  - Bite off more than you can chew: attempt something too difficult for you.
- 
- 

**Q.14) The right response is therefore option 4.**

**The term "road hog" refers to a reckless driver.**

**A driver who makes it difficult for other drivers to pass by being careless or reckless behind the wheel.**

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**Q.15) The right response is Option 3**

The correct meaning of the idiom is to do something very quickly or very fast.

For Example:

He was so nervous that he started walking a mile a minute, and no one was able to follow him.

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**Q.16)** Option 3 is the correct answer.

On the ball is a phrase that means to be quick and to understand things easily in order to perform and react to things. It also refers to alertness or intelligence  
For example:

Teachers praised him for being on the ball in the final assessment.

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**Q.17)** Option 3 is the correct answer.

Wrap your head around something is a phrase that is used to refer to the feeling one has in order to understand something difficult and complicated.  
For Example:

Naina can't wrap her head around the fact that her dog is missing.

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**Q.18)** Option 2 is the correct answer.

Get your act together is a phrase that means to organize oneself and do and act in an effective way.  
It also refers to doing and properly completing work.

For Example:

She is so unorganized at her workplace that before it's too late, she needs to get her act together.

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**Q.19)** Option 3 is the correct answer

Comparing apples to oranges is a phrase that is often said when two completely different things are being compared.  
For Example:

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To compare sedan cars with compact cars is like comparing apples with oranges.

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**Q.20) Option 2, i.e. takes action, is the correct answer.**

**Explanation -**

- We can observe that the word 'unless' is used in the given sentence.
  - The words 'unless/until' should not be followed by 'not'.
  - -'Will/shall/would' does not follow 'unless/until!'.
  - -Hence, "Unless the administration takes action, the exam will not resume" is the correct answer.
- 
- 

**Q.21) The correct answer is option 2, i.e.; I came across**

**Explanation -**

- We can see in the sentence that suddenly is utilised with 'came across'.
  - The phrase 'come across' indicates 'to meet unexpectedly or by chance.'
  - Therefore, the words 'suddenly' or 'by chance' cannot be used with 'came across'.
  - As a result, the right answer is "When I was going to the bar counter, I came across my father."-
  - 'Across' is the preposition used in the given sentence.
  - -A preposition is a word that connects nouns, pronouns, or phrases within a sentence. They serve to connect the people, objects, time, and places in a statement.
  - -Prepositions are often brief words that are used directly in front of nouns.
  - We see prepositions in front of gerunds and verbs in some circumstances..
- 
- 

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- 
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  - As a result, the right answer is "When I was going to the bar counter, I came across my father."
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  - -Prepositions are often brief words that are used directly in front of nouns.
  - We see prepositions in front of gerund verbs in some circumstances..
- 
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**Q.24) error**

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**Q.25)** The paragraph discusses how the digital age has empowered individuals to become content creators and influencers. To complete the paragraph logically, we need a sentence that addresses the challenges or downsides of this empowerment. Option C is the most suitable choice as it highlights the concern about the quality and accuracy of information in the digital age, which is a common challenge associated with user-generated content and the spread of misinformation.

Option A is not the best choice because it focuses on the decline of traditional media, which is not directly related to the challenges associated with the empowerment of individuals to create and share content.

Option B introduces the idea of greater collaboration among content creators, which is not directly relevant to the paragraph's theme of challenges and concerns.

Option D introduces a positive aspect of the digital age, which is not aligned with the paragraph's focus on challenges and concerns.

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**Q.26)** The paragraph discusses the growing awareness of environmental protection efforts, including the adoption of renewable energy sources and recycling programs. However, it does not provide a conclusive statement regarding the effectiveness or sufficiency of these efforts. To

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complete the paragraph logically, we need a sentence that addresses the potential limitations or challenges of these environmental protection measures.

Option A is the most suitable choice as it highlights the concern that despite commendable efforts, these actions may not be enough to tackle urgent global environmental challenges. It adds a sense of realism and complexity to the paragraph's discussion of environmental protection.

Option B introduces the idea of economic incentives, which is not directly related to the current context of the paragraph.

Option C introduces resistance from industries, but it lacks the broader context needed to complete the paragraph effectively.

Option D introduces a new idea about limited access to eco-friendly technologies, which is not directly related to the main theme of the paragraph.

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**Q.27)** We are talking about the limitation of the 2011 Food and Safety Act. We notice that the advantage of the act is given in the last line of the passage and hence we can understand that the next sentence should be a direct reflection of its disadvantage (limitation).

Option A follows Option C as it is a conclusion. Hence this cannot be our answer.

Option B is a whole new concept which is entirely not associated with the paragraph. This could be the beginning of the next paragraph or the next concept in the same paragraph.

Option C directly exposes the limitation that the unflavoured items are not banned under the 2011 Food and Safety Act. Hence this is our answer.

Option D is also a conclusive statement. We need to explain why the act has failed before drawing a judgment. Hence this can only be at the end after option C.

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**Q.28)** The girl noticed that the room was locked from the inside. The immediate human tendency would be to alert the neighbours. Option A would follow only after the initial attempts (e.g.: calling the ambulance) would have been made. At that point, she was unsure if the boy had passed away. Option B could have followed option D. The neighbours might have come to know after the girl informed them. They might have attempted to break open the door (usually). The doctor might come soon after this. Hence D has got a better priority than B. Option C is something that could come later down the passage. We are actually describing the scene and we cannot bring in any second thoughts at this point. Hence option C can be avoided. Option D is the right answer because the girl alone won't be able to do something as she has

already noticed that the door is locked from the inside. Hence she would have asked the neighbours for help.

The question below has a paragraph given with one sentence missing at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

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**Q.29)** Option (b) fits best because it logically completes the statement by describing the nature and benefits of engaging in science: experimentation leads to technological advancements, the development of critical thinking, and an enrichment of our knowledge base.

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**Q.30)** Option (a) is correct because it highlights the importance of communication skills in enhancing interactions, participation in life's various aspects, and overall success.

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**Q.31)** Option (a) best completes the statement, focusing on art's role in fostering creativity, personal expression, emotional richness, and cultural diversity.

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**Q.32)** Option (b) accurately describes the broad scope of history study, emphasizing analysis, appreciation of humanity's journey, and contributing to global discourse.

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**Q.33)** Option (a) best fits by describing philosophy's role in questioning and understanding human thought, personal growth, and fostering an intellectually open environment.

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**Q.34)** Option (c) comprehensively fills in the blanks by highlighting music's role as a universal language that connects people emotionally, fosters empathy, and contributes to a unified global community.

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**Q.35)**

The word "candid" means truthful and straightforward, but using it to describe promises is inappropriate. The correct option is (c).

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**Q.36)**

The word "elicit" means to draw out or evoke, typically a response or information. Using it to describe behaviour is incorrect. The correct option is (d).

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**Q.37)**

The word "exacerbate" means to make a problem, bad situation, or negative feeling worse. Using it to describe the action of inducing fear is inappropriate. The correct option is (d).

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**Q.38)**

The word "ubiquitous" means present, appearing, or found everywhere. Using it to describe the surprise of palm trees in the desert is incorrect. The correct option is (c).

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**Q.39)** The word "inundate" means to overwhelm with a flood or great quantity of something. Using it to describe the intentional spreading of pesticides is inappropriate. The correct option is (d).

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**Q.40)**

The word "prevalent" means widespread in a particular area at a particular time. Using it to describe studies is inappropriate. The correct option is (c).

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**Q.41)**

The correct order of the sentences to form a coherent paragraph is as follows:

- B) They had been inseparable since childhood, sharing secrets and dreams.
- A) However, as time went on, their friendship began to show cracks.
- D) Petty disagreements turned into bitter arguments, and trust waned.
- C) What had once been a bond forged in the fires of shared experiences now felt strained.
- E) It was a painful realization that sometimes even the closest of friends grow apart.

The paragraph begins with the description of the close friendship between the two individuals (sentence B), followed by the indication that the friendship started to deteriorate over time (sentence A). The progression of their friendship worsening is described next (sentence D), followed by the realization of the strain (sentence C). The paragraph concludes with the acknowledgement that friends can grow apart (sentence E).

Therefore, option 1 is the correct arrangement of the sentences to form a coherent paragraph.

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**Q.42)** The correct order of the sentences to form a coherent paragraph is as follows:

- A) The festival brought together people from diverse backgrounds, all celebrating under the same sky.
- B) It was a magical night, filled with music, dance, and laughter.
- C) The main attraction was a grand fireworks display that lit up the entire town.
- D) Families sat on blankets, children played in the soft grass, and couples danced under the stars.
- E) Everyone marvelled at the beauty of the illuminated night and the sense of unity it brought.

The paragraph begins with the introduction of the festival and the sense of unity it fosters (sentence A), followed by a description of the festive atmosphere (sentence B). The main attraction, the fireworks display, is then mentioned (sentence C), followed by scenes of families

and couples enjoying the night (sentence D). The paragraph concludes with an overall sense of wonder and unity (sentence E).

Therefore, option B is the correct arrangement of the sentences to form a coherent paragraph.

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**Q.43)** The correct order of the sentences to form a coherent paragraph is as follows:

- A) In recent years, space exploration has become increasingly collaborative.
- B) International space agencies and private companies work together on ambitious projects.
- C) This collaboration has resulted in groundbreaking discoveries and advancements in space technology.
- D) Gone are the days of space race competition; now it's all about cooperation.
- E) Together, they push the boundaries of what's possible beyond Earth's atmosphere.

The paragraph begins with the statement that space exploration has become more collaborative (sentence A), followed by the mention of international space agencies and private companies working together (sentence B). The positive outcomes of this collaboration are highlighted next (sentence C), and it is emphasized that competition has given way to cooperation (sentence D). The paragraph concludes with the idea that they are pushing the boundaries of space exploration (sentence E).

Therefore, option B is the correct arrangement of the sentences to form a coherent paragraph.

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**Q.44) Correct Answer:- 2**

**Explanation:-** The correct sequence of sentences in this case is: 1-4-3.

'these worthy ancestors' in 4 refers to "those who fought for our freedom were the truly worthy ancestors" in 1

The sentence that does not fit in the given case is 2.

'this hard-won thing' in 3 is linked with 'the big battle and won it at great cost' in 4

It talks about **the word 'freedom'** whereas the other three sentences talk about how our ancestors fought for it and earned it. Hence, statement 2 is the odd one out.

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**Q.45) Correct Answer:- 1**

**Explanation:-** 234, the triplet is based on the author's personal experience in Bulgaria. It

seems that the author is driving towards the main point of negotiating linking it to his predicament.

Option 1 is vague in its implication. None of the sentences can follow 1 as the ideal start of sentence following stt 1 would be "Tip 1- ....."

Stt 2 following stt 1 is possible only if 2 indicates the beginning of another para. But then it goes against the directions "Three of them can be put together to form a meaningful and coherent short paragraph."

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## Mock TEST 2

### Question Paper

#### Quantitative Aptitude Short Answer (SA) type

**Q.1)** Let  $f(x) = 2^{10} \cdot x + 1$  and  $g(x) = 310 \cdot x - 1$ . If  $(f \circ g)(x) = x$ , then  $x$  is equal to  $\frac{1 - 2^{-10}}{k^{10} - 2^{-10}}$ . What is the value of  $k$ ?

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**Q.2)** The number of real values of  $\lambda$  for which the system of linear equations

$2x + 4y - \lambda z = 0$   $4x + \lambda y + 2z = 0$   $\lambda x + 2y + 2z = 0$  has infinitely many solutions, is:

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**Q.3)** Two numbers, both greater than 29, have GCD = 29 and LCM = 4147. The sum of the numbers is

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**Q.4)** Let  $T_n$  be the number of all possible triangles formed by joining vertices of an  $n$ -sided regular polygon. If  $T_{n+1} - T_n = 10$  then the value of  $n$  is

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**Q.5)** If the arithmetic mean of two numbers  $a$  and  $b$ ,  $a > b > 0$ , is five times their geometric

mean, then  $\frac{a+b}{a-b}$  is equal to  $\frac{k\sqrt{6}}{12}$ . What is the value of  $k$ ?

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**Q.6)** An airplane flying at a constant speed, parallel to the horizontal ground,  $\sqrt{3}$  km above it, is observed at an elevation of  $60^\circ$  from a point on the ground. If, after five seconds, its elevation from the same point, is  $30^\circ$ , then the speed (in m/s) of the airplane, is:

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**Q.7)** A two-digit number exceeds the difference of the squares of its digits by 33 and exceeds the sum of the squares of the digits by 15. Find the number.

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**Q.8)** If a point P has coordinates (0, -2) and Q is any point on the circle,  $x^2 + y^2 - 4x - 2y + 4 = 0$ , then the maximum value of PQ is  $\sqrt{n} + 1$ . What is the value of n?

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**Q.9)** The area (in sq. units) of the region common between the curves,  $x^2 + y^2 = 4$  and  $y^2 = 3x$ , is  $\frac{1}{\sqrt{3}} + \frac{k\pi}{3}$  the value of k is?

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**Q.10)** The locus of the point of intersection of the straight lines,  $tx - 2y - 3t = 0$  and  $x - 2ty + 3 = 0$  ( $t \in \mathbb{R}$ ), is a hyperbola with the length of the conjugate axis is?

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**Q.11)** A 30-liters solution of sugar had 45% sugar in it. It was mixed with a 25-liters solution of sugar having  $x\%$  sugar, where  $40 \leq x \leq 50$ . The sugar concentration in the resulting mixture is  $y\%$ . 47 &  $k/11$  is not a possible value of  $y$ . then possible value of k.

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**Q.12)** One part of a hostel's monthly expenses is fixed, and the other part is proportional to the number of its borders. The hostel collects INR 1600 per month from each border. When the

number of boarders is 50, the profit of the hostel is INR 200 per boarder, and when the number of boarders is 75, the profit of the hostel is INR 250 per boarder. When the number of boarders is 80, the total profit of the hostel, in INR, will be

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**Q.13)** If the equations  $x^2 + 2x + 3 = 0$  and  $ax^2 + bx + c = 0, a, b, c \in R$ , have a common root, then a : b : c is:

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**Q.14)** If a variable line drawn through the intersection of the lines  $\frac{x}{3} + \frac{y}{4} = 1$  and  $\frac{x}{4} + \frac{y}{3} = 1$ , meets the coordinate axes at A and B, (A  $\neq$  B), then the locus of the midpoint of AB is:  $Kxy=6(x+y)$  value of K is?

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**Q.15)** Manu earns 4000 per month and wants to save an average of 550 per month in a year. In the first nine months, his monthly expense was 3500, and he foresees that in the tenth month onward, his monthly expense will increase to 3700. In order to meet his yearly savings target, his monthly earnings, in rupees, from the tenth month onward should be

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### Quantitative Ability MCQ type

**Q.1)** The function  $f : R \rightarrow \left[-\frac{1}{2}, \frac{1}{2}\right]$  defined as  $f(x) = \frac{x}{1+x^2}$ , is

- A) injective but not surjective
- B) surjective but not injective
- C) neither injective nor surjective
- D) injective

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**Q.2)** Let A be any 3×3 invertible matrix. Then which one of the following is not always true ?

A)  $\text{adj}(A) = |A| \cdot A^{-1}$

B)  $\text{adj}(\text{adj}(A)) = |A| \cdot A$

C)  $\text{adj}(\text{adj}(A)) = |A|^2 \cdot (\text{adj}(A))^{-1}$

D)  $\text{adj}(\text{adj}(A)) = |A| \cdot (\text{adj}(A))^{-1}$

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**Q.3)** What is the unit digit in the product (684 x 759 x 413 x 676)?

A) these

B)

C)

D)

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**Q.4)** The number of ways in which the examiner can assign 30 marks to 8 questions, giving not less than 2 marks to any questions, is :

A)  ${}^{30}C_7$

B)  ${}^{21}C_8$

C)  ${}^{21}C_7$

D)  ${}^{30}C_8$

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**Q.5)** If the sum of the first n terms of the series

$\sqrt{3} + \sqrt{75} + \sqrt{243} + \sqrt{507} + \dots$  is  $435\sqrt{3}$ , then n equals :

A) 18

B) 15

C) 13

D) 29

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**Q.6)** The expression  $\frac{\tan A}{1 - \cot A} + \frac{\cot A}{1 - \tan A}$  can be written as:

A)  $\sec A + \operatorname{cosec} A$

B)  $\sin A \cos A + 1$

C)  $\sec A \operatorname{cosec} A + 1$

D)  $\tan A + \cot A$

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**Q.7)** Polynomials of degrees 1,2 and 3 are called ..... , ..... and ..... polynomials respectively.

A) quadratic, cubic, linear B) cubic, quadratic, linear C) cubic,

linear , quadratic D) Linear , quadratic, cubic

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**Q.8)** If two parallel chords of a circle, having a diameter 4 units, lie on the opposite sides of the

centre and subtend angles  $\cos^{-1}\left(\frac{1}{7}\right)$  and  $\sec^{-1}(7)$  at the center respectively, then the distance between these chords, is :

A)  $\frac{4}{\sqrt{7}}$

B)  $\frac{8}{\sqrt{7}}$

C)  $\frac{8}{7}$

D)  $\frac{16}{7}$

Q.9) For,  $x \in \mathbb{R}, x \neq 0, x \neq 1$  let  $f_0(x) = \frac{1}{1-x}$  and

$f_{n+1}(x) = f_0(f_n(x)), n = 0, 1, 2, 3, \dots$  then the value of  $f_{100}(3) + f_1\left(\frac{2}{3}\right) + f_2\left(\frac{3}{2}\right)$  is approximately equals to:

A) 2.67 B) 1.67 C) 1.33

D) 0.33

Q.10) >If 
$$S = \left\{ x \in [0, 2\pi] : \begin{vmatrix} 0 & \cos x & -\sin x \\ \sin x & 0 & \cos x \\ \cos x & \sin x & 0 \end{vmatrix} = 0 \right\},$$

then  $\sum_{x \in S} \tan\left(\frac{\pi}{3} + x\right)$  is equal to :

A)  $4 + 2\sqrt{3}$

B)  $-2 + \sqrt{3}$

C)  $-2 - \sqrt{3}$

D)  $-4 - 2\sqrt{3}$

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**Q.11)** In a 7-digit number  $89476*2$ , what is the smallest possible value of \* such that the number is divisible by 8?

A)2 B)1 C)4 D)3

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**Q.12)** On the sides AB, BC, CA, of  $\triangle ABC$  3,4,5 distinct points (excluding vertices A, B, C) are respectively chosen. the number of triangles that can be constructed using these chosen points as vertices are:

A) 210 B) 205 C) 215 D) 220

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**Q.13)** The number of ways in which 5 boys and 3 girls can be seated on a round table if a particular boy B1 and a particular girl G1 never sit adjacent to each other, is :

A)  $5 \times 6!$

B)  $6 \times 6!$

C)  $7!$

D)  $5 \times 7!$

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**Q.14)** ABCD is a trapezium such that AB and CD are parallel and  $BC \perp CD$ .

If  $\angle ADB = \theta$ ,  $BC = p$  and  $CD = q$ , then AB is equal to:

A)  $\frac{(p^2 + q^2) \sin \theta}{(p \cos \theta + q \sin \theta)^2}$

B)  $\frac{(p^2 + q^2) \sin \theta}{p \cos \theta + q \sin \theta}$

C)  $\frac{p^2 + q^2 \cos \theta}{p \cos \theta + q \sin \theta}$

D)  $\frac{p^2 + q^2}{p^2 \cos \theta + q^2 \sin \theta}$

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**15)** Solution of  $||x-1|+2| \leq 4$  is

A)  $[-1, 3]$

B)  $[1, 3]$

C)  $[4, 5]$

D) None of these

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**Q.16)** If the common tangents to the parabola,  $x^2=4y$  and the circle,  $x^2+y^2=4$  intersect at the point P, then the distance of P from the origin, is :

A)  $\sqrt{2} + 1$

B)  $2\sqrt{3 + 2\sqrt{2}}$

c)  $2(\sqrt{2} + 1)$

D)  $3 + 2\sqrt{2}$

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Q.17) The term independent of  $x$  in the expansion of  $\left(\frac{x+1}{x^{2/3}-x^{1/3}+1} - \frac{x-1}{x-x^{1/2}}\right)^{10}$  is:

- A) 310 B) 4 C) 120 D) 210
- 
- 

Q.18) The values of ' $a$ ' for which one root of the equation  $x^2 - (a+1)x + a^2 + a - 8 = 0$  exceeds 2 and the other is lesser than 2, are given by:

- A)  $3 < a < 10$   
B)  $a \geq 10$   
C)  $-2 < a < 3$   
D)  $a \leq -2$
- 
- 

Q.19) For two  $3 \times 3$  matrices A and B, let  $A + B = 2B'$  and  $3A + 2B = I_3$ , where  $B'$  is the transpose of B and  $I_3$  is  $3 \times 3$  identity matrix. Then :

- A)  $5A + 10B = 2I_3$  B)  $10A + 5B = 3I_3$  C)  $B+2A=I_3$

D)  $3A + 6B = 213$

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Q.20) The length of the side of a cube is 1.4 cm. What is the volume of the largest sphere that can be taken out of the cube?

- A) 1.44 cm<sup>3</sup> B) 3.26 cm<sup>3</sup> C) 2.66 cm<sup>3</sup> D) 5.64 cm<sup>3</sup>

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Q.21) Find the last digit of

- $15+25+35+\dots+995$  A)1 B)0 C)3 D)5

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Q.22) The price of sugarcane has gone up by 25%, labor cost has also increased from 15% of the cost of sugarcane to 20% of the cost of sugarcane. By how much percentage should there be a reduction in the usage of sugarcane so as to keep expenditures the same?

- A) 23.33%  
B) 26.66%  
C) 28%  
D) 25%

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Q.23) 5- digit numbers are to be formed using 2,3,5,7,9 without repeating the digits. If p be the number of such numbers that exceed 20000 and q be the number of those that lie between 30000 and 90000 then p:q is :

A) ~~B)~~ C) D)

~~6 : 3~~  
3 : 2

4 : 3

5 : 3

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Q.24) The quadratic polynomial whose zeros are 1 and -3 is

A)  $x^2 + 2x - 3$

B)  $x^2 - 3x + 2$

C)  $x^2 + x + 3$

D)  $x^2 + 3x - 2$

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Q.25) Three people P, Q and R independently try to hit a target. If the probabilities of their

hitting the target are  $\frac{3}{4}$ ,  $\frac{1}{2}$  and  $\frac{5}{8}$  respectively, then the probability that the target is hit by P or Q but not by R is:

A)  $\frac{21}{64}$

B)  $\frac{9}{64}$

C)  $\frac{15}{64}$

D)  $\frac{39}{64}$

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**Directions (Q.26-Q.30):**

In a football tournament six teams A, B, C, D, E and F participated. Every pair of teams had exactly one match among them. For any team, a win fetches 2 points, a draw fetches 1 point, and a loss fetches no points. Both the teams  $\text{E}$  and  $\text{F}$  ended with less than 5 points. At the end of the tournament points table is as follows (some of the entries are not shown):

Teams	Played	Wins	Losses	Draws	Points
A	5		0		8
B	5		2		6
C	5		2		5
D	5		1		5
E	5		1		
F	5				

It is known that: (1) Team B defeated Team C, and (2) Team C defeated Team D.

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26.

Total number of matches ending in draw is

- a)12
  - b)4
  - c)5
  - d)6
- 
- 

27. Which team had highest number of draws? a) Team A b) Team C c) Team D d) Team E

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28.

Total points Team F got was

- a)0
- b)1
- c)2
- d)3

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29. Which team was not defeated by Team A? a) Team B b) Team C c) Team D d) Team F

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30. Team E was defeated by a) Teams A and B only  
b) Only Team A c) Only Team B d) Teams A, B and D only

## Verbal Ability & Reading Comprehension

**Q.1)** The passage below is accompanied by a set of questions. Choose the best answer to each question.

We cannot travel outside our neighborhood without passports. We must wear the same plain clothes. We must exchange our houses every ten years. We cannot avoid labour. We all go to bed at the same time . . . We have religious freedom, but we cannot deny that the soul dies with the body, since 'but for the fear of punishment, they would have nothing but contempt for the laws and customs of society'. . . . In More's time, for much of the population, given the plenty and security on offer, such restraints would not have seemed overly unreasonable. For modern readers, however, Utopia appears to rely upon relentless transparency, the repression of variety, and the curtailment of privacy. Utopia provides security: but at what price? In both its external and internal relations, indeed, it seems perilously dystopian.

Such a conclusion might be fortified by examining selectively the tradition which follows More on these points. This often portrays societies where . . . 'it would be almost impossible for man to

be depraved, or wicked'. . . . This is achieved both through institutions and mores, which underpin the common life. . . . The passions are regulated and inequalities of wealth and distinction are minimized. Needs, vanity, and emulation are restrained, often by prizing equality and holding riches in contempt. The desire for public power is curbed. Marriage and sexual intercourse are often controlled: in Tommaso Campanella's *The City of the Sun* (1623), the first great literary utopia after More's, relations are forbidden to men before the age of twenty-one and women before nineteen. Communal child-rearing is normal; for Campanella this commences at age two. Greater simplicity of life, 'living according to nature', is often a result: the desire for simplicity and purity are closely related. People become more alike in appearance, opinion, and outlook than they often have been. Unity, order, and homogeneity thus prevail at the cost of individuality and diversity. This model, as J. C. Davis demonstrates, dominated early modern utopianism. . . . And utopian homogeneity remains a familiar theme well into the twentieth century.

Given these considerations, it is not unreasonable to take as our starting point here the hypothesis that utopia and dystopia evidently share more in common than is often supposed. Indeed, they might be twins, the progeny of the same parents. Insofar as this proves to be the case, my linkage of both here will be uncomfortably close for some readers. Yet we should not mistake this argument for the assertion that all utopias are, or tend to produce, dystopias. Those who defend this proposition will find that their association here is not nearly close enough. For we have only to acknowledge the existence of thousands of successful intentional communities in which a cooperative ethos predominates and where harmony without coercion is the rule to set aside such an assertion. Here the individual's submersion in the group is consensual (though this concept is not unproblematic). It results not in enslavement but voluntary submission to group norms. Harmony is achieved without . . . harming others.

All of the following arguments are made in the passage EXCEPT that:

- A)** in More's time, there was plenty and security, so people did not need restraints that could appear unreasonable.
- B)** the tradition of utopian literature has often shown societies in which it would be nearly impossible for anyone to be sinful or criminal.
- C)** in early modern utopianism, the stability of utopian societies was seen to be achieved only with individuals surrendering their sense of self.
- D)** there have been thousands of communities where homogeneity and stability have been achieved through choice, rather than by force.

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**Q.2)** The passage below is accompanied by a set of questions. Choose the best answer to each question.

We cannot travel outside our neighbourhood without passports. We must wear the same plain clothes. We must exchange our houses every ten years. We cannot avoid labour. We all go to bed at the same time . . . We have religious freedom, but we cannot deny that the soul dies with the body, since 'but for the fear of punishment, they would have nothing but contempt for the laws and customs of society'. . . . In More's time, for much of the population, given the plenty and security on offer, such restraints would not have seemed overly unreasonable. For modern readers, however, Utopia appears to rely upon relentless transparency, the repression of variety, and the curtailment of privacy. Utopia provides security: but at what price? In both its external and internal relations, indeed, it seems perilously dystopian.

Such a conclusion might be fortified by examining selectively the tradition which follows More on these points. This often portrays societies where . . . 'it would be almost impossible for man to be depraved, or wicked'. . . . This is achieved both through institutions and mores, which underpin the common life. . . . The passions are regulated and inequalities of wealth and distinction are minimized. Needs, vanity, and emulation are restrained, often by prizing equality and holding riches in contempt. The desire for public power is curbed. Marriage and sexual intercourse are often controlled: in Tommaso Campanella's *The City of the Sun* (1623), the first great literary utopia after More's, relations are forbidden to men before the age of twenty-one and women before nineteen. Communal child-rearing is normal; for Campanella this commences at age two. Greater simplicity of life, 'living according to nature', is often a result: the desire for simplicity and purity are closely related. People become more alike in appearance, opinion, and outlook than they often have been. Unity, order, and homogeneity thus prevail at the cost of individuality and diversity. This model, as J. C. Davis demonstrates, dominated early modern utopianism. . . . And utopian homogeneity remains a familiar theme well into the twentieth century.

Given these considerations, it is not unreasonable to take as our starting point here the hypothesis that utopia and dystopia evidently share more in common than is often supposed. Indeed, they might be twins, the progeny of the same parents. Insofar as this proves to be the case, my linkage of both here will be uncomfortably close for some readers. Yet we should not mistake this argument for the assertion that all utopias are, or tend to produce, dystopias. Those who defend this proposition will find that their association here is not nearly close enough. For we have only to acknowledge the existence of thousands of successful intentional communities in which a cooperative ethos predominates and where harmony without coercion is the rule to set aside such an assertion. Here the individual's submersion in the group is consensual (though this concept is not unproblematic). It results not in enslavement but voluntary submission to group norms. Harmony is achieved without . . . harming others.

Following from the passage, which one of the following may be seen as a characteristic of a utopian society?

- A) A society without any laws to restrain one's individuality.
- B) Institutional surveillance of every individual to ensure his/her security and welfare.

C) The regulation of homogeneity through promoting competitive heterogeneity.

D) A society where public power is earned through merit rather than through privilege.

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**Q.3)** The passage below is accompanied by a set of questions. Choose the best answer to each question.

We cannot travel outside our neighbourhood without passports. We must wear the same plain clothes. We must exchange our houses every ten years. We cannot avoid labour. We all go to bed at the same time . . . We have religious freedom, but we cannot deny that the soul dies with the body, since 'but for the fear of punishment, they would have nothing but contempt for the laws and customs of society'. . . . In More's time, for much of the population, given the plenty and security on offer, such restraints would not have seemed overly unreasonable. For modern readers, however, Utopia appears to rely upon relentless transparency, the repression of variety, and the curtailment of privacy. Utopia provides security: but at what price? In both its external and internal relations, indeed, it seems perilously dystopian.

Such a conclusion might be fortified by examining selectively the tradition which follows More on these points. This often portrays societies where . . . 'it would be almost impossible for man to be depraved, or wicked'. . . . This is achieved both through institutions and mores, which underpin the common life. . . . The passions are regulated and inequalities of wealth and distinction are minimized. Needs, vanity, and emulation are restrained, often by prizing equality and holding riches in contempt. The desire for public power is curbed. Marriage and sexual intercourse are often controlled: in Tommaso Campanella's *The City of the Sun* (1623), the first great literary utopia after More's, relations are forbidden to men before the age of twenty-one and women before nineteen. Communal child-rearing is normal; for Campanella this commences at age two. Greater simplicity of life, 'living according to nature', is often a result: the desire for simplicity and purity are closely related. People become more alike in appearance, opinion, and outlook than they often have been. Unity, order, and homogeneity thus prevail at the cost of individuality and diversity. This model, as J. C. Davis demonstrates, dominated early modern utopianism. . . . And utopian homogeneity remains a familiar theme well into the twentieth century.

Given these considerations, it is not unreasonable to take as our starting point here the hypothesis that utopia and dystopia evidently share more in common than is often supposed. Indeed, they might be twins, the progeny of the same parents. Insofar as this proves to be the case, my linkage of both here will be uncomfortably close for some readers. Yet we should not mistake this argument for the assertion that all utopias are, or tend to produce, dystopias. Those who defend this proposition will find that their association here is not nearly close enough. For we have only to acknowledge the existence of thousands of successful intentional communities in which a cooperative ethos predominates and where harmony without coercion is the rule to

set aside such an assertion. Here the individual's submersion in the group is consensual (though this concept is not unproblematic). It results not in enslavement but voluntary submission to group norms. Harmony is achieved without . . . harming others.

All of the following statements can be inferred from the passage EXCEPT that

- A)** many conceptions of utopian societies emphasise the importance of social uniformity and cultural homogeneity.
- B)** utopian and dystopian societies are twins, the progeny of the same parents.
- C)** utopian societies exist in a long tradition of literature dealing with imaginary people practicing imaginary customs, in imaginary worlds.
- D)** it is possible to see utopias as dystopias, with a change in perspective, because one person's utopia could be seen as another's dystopia.

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**Q.4)** The passage below is accompanied by a set of questions. Choose the best answer to each question.

We cannot travel outside our neighbourhood without passports. We must wear the same plain clothes. We must exchange our houses every ten years. We cannot avoid labour. We all go to bed at the same time . . . We have religious freedom, but we cannot deny that the soul dies with the body, since 'but for the fear of punishment, they would have nothing but contempt for the laws and customs of society'. . . . In More's time, for much of the population, given the plenty and security on offer, such restraints would not have seemed overly unreasonable. For modern readers, however, Utopia appears to rely upon relentless transparency, the repression of variety, and the curtailment of privacy. Utopia provides security: but at what price? In both its external and internal relations, indeed, it seems perilously dystopian.

Such a conclusion might be fortified by examining selectively the tradition which follows More on these points. This often portrays societies where . . . 'it would be almost impossible for man to be depraved, or wicked'. . . . This is achieved both through institutions and mores, which underpin the common life. . . . The passions are regulated and inequalities of wealth and distinction are minimized. Needs, vanity, and emulation are restrained, often by prizing equality and holding riches in contempt. The desire for public power is curbed. Marriage and sexual intercourse are often controlled: in Tommaso Campanella's *The City of the Sun* (1623), the first great literary utopia after More's, relations are forbidden to men before the age of twenty-one and women before nineteen. Communal child-rearing is normal; for Campanella this commences at age two. Greater simplicity of life, 'living according to nature', is often a result: the desire for simplicity and purity are closely related. People become more alike in appearance, opinion, and outlook than they often have been. Unity, order, and homogeneity thus prevail at the cost of individuality and diversity. This model, as J. C. Davis demonstrates, dominated early

modern utopianism. . . . And utopian homogeneity remains a familiar theme well into the twentieth century.

Given these considerations, it is not unreasonable to take as our starting point here the hypothesis that utopia and dystopia evidently share more in common than is often supposed. Indeed, they might be twins, the progeny of the same parents. Insofar as this proves to be the case, my linkage of both here will be uncomfortably close for some readers. Yet we should not mistake this argument for the assertion that all utopias are, or tend to produce, dystopias. Those who defend this proposition will find that their association here is not nearly close enough. For we have only to acknowledge the existence of thousands of successful intentional communities in which a cooperative ethos predominates and where harmony without coercion is the rule to set aside such an assertion. Here the individual's submersion in the group is consensual (though this concept is not unproblematic). It results not in enslavement but voluntary submission to group norms. Harmony is achieved without . . . harming others.

Which sequence of words below, best captures the narrative of the passage?

- A) Utopia - Security - Dystopia - Coercion.
  - B) Relentless transparency - Homogeneity - Utopia - Dystopia.
  - C) Curtailment of privacy - Dystopia - Utopia - Intentional community.
  - D) Utopia - Security - Homogeneity - Intentional community.
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**Q.5) Direction:**

The passage below is accompanied by a question. Choose the best answer to each question.

Cuttlefish are full of personality, as behavioral ecologist Alexandra Schnell found out while researching the cephalopod's potential to display self-control. . . . "Self-control is thought to be the cornerstone of

intelligence, as it is an important prerequisite for complex decision-making and planning for the future," says Schnell . . .

[Schnell's] study used a modified version of the "marshmallow test" . . . During the original marshmallow

test, psychologist Walter Mischel presented children between age four and six with one marshmallow. He told them that if they waited 15 minutes and didn't eat it, he would give them a second marshmallow. A longterm follow-up study showed that the children who waited for the second marshmallow had more success later in life. . . . The cuttlefish version of the experiment

looked a lot different. The researchers worked with six cuttlefish under nine months old and presented them with seafood instead of sweets. (Preliminary experiments showed that cuttlefishes' favorite food is live grass shrimp, while raw prawns are so-so and Asian shore crab is nearly unacceptable.) Since the researchers couldn't explain to the cuttlefish that they would need to wait for their shrimp, they trained them to recognize certain shapes that indicated when a food item would become available. The symbols were pasted on transparent drawers so that the cuttlefish could see the food that was stored inside. One drawer, labeled with a circle to mean "immediate," held raw king prawn. Another drawer, labeled with a triangle to mean "delayed," held live grass shrimp. During a control experiment, square labels meant "never."

"If their self-control is flexible and I hadn't just trained them to wait in any context, you would expect the cuttlefish to take the immediate reward [in the control], even if it's their second preference," says Schnell . . . and that's what they did. That showed the researchers that cuttlefish wouldn't reject the prawns if it was the only food available. In the experimental trials, the cuttlefish didn't jump on the prawns if the live grass shrimp were labeled with a triangle—many waited for the shrimp drawer to open up. Each time the cuttlefish showed it could wait, the researchers tacked another ten seconds on to the next round of waiting before releasing the shrimp. The longest that a cuttlefish waited was 130 seconds.

Schnell [says] that the cuttlefish usually sat at the bottom of the tank and looked at the two food items while they waited, but sometimes, they would turn away from the king prawn "as if to distract themselves from the temptation of the immediate reward." In past studies, humans, chimpanzees, parrots and dogs also tried to distract themselves while waiting for a reward. Not every species can use self-control, but most of the animals that can share another trait in common: long, social lives. Cuttlefish, on the other hand, are solitary creatures that don't form relationships even with mates or young. . . . "We don't know if living in a social group is important for complex cognition unless we also show those abilities are lacking in less social species," says . . . comparative psychologist Jennifer Vonk.

**Question:**

All of the following constitute a point of difference between the "original" and "modified" versions of the marshmallow test EXCEPT that:

- A)** the former had human subjects, while the latter had cuttlefish.
- B)** the former correlated self-control and future success, while the latter correlated selfcontrol and survival advantages.
- C)** the former used verbal communication with its subjects, while the latter had to develop a symbolic means of communication.
- D)** the former was performed over a longer time span than the latter.

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**Q.6) Direction:**

The passage below is accompanied by a question. Choose the best answer to each question.

Cuttlefish are full of personality, as behavioral ecologist Alexandra Schnell found out while researching the cephalopod's potential to display self-control. . . . “Self-control is thought to be the cornerstone of

intelligence, as it is an important prerequisite for complex decision-making and planning for the future,” says Schnell . . .

[Schnell's] study used a modified version of the “marshmallow test” . . . During the original marshmallow

test, psychologist Walter Mischel presented children between age four and six with one marshmallow. He told them that if they waited 15 minutes and didn't eat it, he would give them a second marshmallow. A longterm follow-up study showed that the children who waited for the second marshmallow had more success later in life. . . . The cuttlefish version of the experiment looked a lot different. The researchers worked with six cuttlefish under nine months old and presented them with seafood instead of sweets. (Preliminary experiments showed that cuttlefishes' favorite food is live grass shrimp, while raw prawns are so-so and Asian shore crab is nearly unacceptable.) Since the researchers couldn't explain to the cuttlefish that they would need to wait for their shrimp, they trained them to recognize certain shapes that indicated when a food item would become available. The symbols were pasted on transparent drawers so that the cuttlefish could see the food that was stored inside. One drawer, labeled with a circle to mean “immediate,” held raw king prawn. Another drawer, labeled with a triangle to mean “delayed,” held live grass shrimp. During a control experiment, square labels meant “never.”

“If their self-control is flexible and I hadn't just trained them to wait in any context, you would expect the cuttlefish to take the immediate reward [in the control], even if it's their second preference,” says Schnell . . . and that's what they did. That showed the researchers that cuttlefish wouldn't reject the prawns if it was the only food available. In the experimental trials, the cuttlefish didn't jump on the prawns if the live grass shrimp were labeled with a triangle—many waited for the shrimp drawer to open up. Each time the cuttlefish showed it could wait, the researchers tacked another ten seconds on to the next round of waiting before releasing the shrimp. The longest that a cuttlefish waited was 130 seconds.

Schnell [says] that the cuttlefish usually sat at the bottom of the tank and looked at the two food items while they waited, but sometimes, they would turn away from the king prawn “as if to distract themselves from the temptation of the immediate reward.” In past studies, humans, chimpanzees, parrots and dogs also tried to distract themselves while waiting for a reward.

Not every species can use self-control, but most of the animals that can share another trait in common: long, social lives. Cuttlefish, on the other hand, are solitary creatures that don't form relationships even with mates or young. . . . "We don't know if living in a social group is important for complex cognition unless we also show those abilities are lacking in less social species," says . . . comparative psychologist Jennifer Vonk.

**Question:**

Which one of the following, if true, would best complement the passage's findings?

- A) Cuttlefish are equally fond of live grass shrimp and raw prawns.
- B) Cuttlefish live in big groups that exhibit sociability.
- C) Cuttlefish wait longer than 100 seconds for the shrimp drawer to open up.
- D) Cuttlefish cannot distinguish between geometrical shapes.

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**Q.7) Direction:**

The passage below is accompanied by a question. Choose the best answer to each question.

Cuttlefish are full of personality, as behavioral ecologist Alexandra Schnell found out while researching the cephalopod's potential to display self-control. . . . "Self-control is thought to be the cornerstone of

intelligence, as it is an important prerequisite for complex decision-making and planning for the future," says Schnell . . .

[Schnell's] study used a modified version of the "marshmallow test" . . . During the original marshmallow

test, psychologist Walter Mischel presented children between age four and six with one marshmallow. He told them that if they waited 15 minutes and didn't eat it, he would give them a second marshmallow. A longterm follow-up study showed that the children who waited for the second marshmallow had more success later in life. . . . The cuttlefish version of the experiment looked a lot different. The researchers worked with six cuttlefish under nine months old and presented them with seafood instead of sweets. (Preliminary experiments showed that cuttlefishes' favorite food is live grass shrimp, while raw prawns are so-so and Asian shore crab is nearly unacceptable.) Since the researchers couldn't explain to the cuttlefish that they would need to wait for their shrimp, they trained them to recognize certain shapes that indicated when a food item would become available. The symbols were pasted on transparent drawers so that the cuttlefish could see the food that was stored inside. One drawer, labeled with a circle to

mean “immediate,” held raw king prawn. Another drawer, labeled with a triangle to mean “delayed,” held live grass shrimp. During a control experiment, square labels meant “never.”

“If their self-control is flexible and I hadn’t just trained them to wait in any context, you would expect the cuttlefish to take the immediate reward [in the control], even if it’s their second preference,” says Schnell . . . and that’s what they did. That showed the researchers that cuttlefish wouldn’t reject the prawns if it was the only food available. In the experimental trials, the cuttlefish didn’t jump on the prawns if the live grass shrimp were labeled with a triangle—many waited for the shrimp drawer to open up. Each time the cuttlefish showed it could wait, the researchers tacked another ten seconds on to the next round of waiting before releasing the shrimp. The longest that a cuttlefish waited was 130 seconds.

Schnell [says] that the cuttlefish usually sat at the bottom of the tank and looked at the two food items while they waited, but sometimes, they would turn away from the king prawn “as if to distract themselves from the temptation of the immediate reward.” In past studies, humans, chimpanzees, parrots and dogs also tried to distract themselves while waiting for a reward. Not every species can use self-control, but most of the animals that can share another trait in common: long, social lives. Cuttlefish, on the other hand, are solitary creatures that don’t form relationships even with mates or young. . . . “We don’t know if living in a social group is important for complex cognition unless we also show those abilities are lacking in less social species,” says . . . comparative psychologist Jennifer Vonk.

**Question:**

Which one of the following cannot be inferred from Alexandra Schnell’s experiment?

- A) Like human children, cuttlefish are capable of self-control.
- B) Intelligence in a species is impossible without sociability.
- C) Cuttlefish exercise choice when it comes to food.
- D) Cuttlefish exert self-control with the help of diversions.

**Q.8) Direction:**

The passage below is accompanied by a question. Choose the best answer to each question.

Cuttlefish are full of personality, as behavioral ecologist Alexandra Schnell found out while researching the cephalopod’s potential to display self-control. . . . “Self-control is thought to be the cornerstone of

intelligence, as it is an important prerequisite for complex decision-making and planning for the future,” says Schnell . . .

[Schnell's] study used a modified version of the “marshmallow test” . . . During the original marshmallow

test, psychologist Walter Mischel presented children between age four and six with one marshmallow. He told them that if they waited 15 minutes and didn't eat it, he would give them a second marshmallow. A longterm follow-up study showed that the children who waited for the second marshmallow had more success later in life. . . . The cuttlefish version of the experiment looked a lot different. The researchers worked with six cuttlefish under nine months old and presented them with seafood instead of sweets. (Preliminary experiments showed that cuttlefishes' favorite food is live grass shrimp, while raw prawns are so-so and Asian shore crab is nearly unacceptable.) Since the researchers couldn't explain to the cuttlefish that they would need to wait for their shrimp, they trained them to recognize certain shapes that indicated when a food item would become available. The symbols were pasted on transparent drawers so that the cuttlefish could see the food that was stored inside. One drawer, labeled with a circle to mean “immediate,” held raw king prawn. Another drawer, labeled with a triangle to mean “delayed,” held live grass shrimp. During a control experiment, square labels meant “never.”

“If their self-control is flexible and I hadn't just trained them to wait in any context, you would expect the cuttlefish to take the immediate reward [in the control], even if it's their second preference,” says Schnell . . . and that's what they did. That showed the researchers that cuttlefish wouldn't reject the prawns if it was the only food available. In the experimental trials, the cuttlefish didn't jump on the prawns if the live grass shrimp were labeled with a triangle—many waited for the shrimp drawer to open up. Each time the cuttlefish showed it could wait, the researchers tacked another ten seconds on to the next round of waiting before releasing the shrimp. The longest that a cuttlefish waited was 130 seconds.

Schnell [says] that the cuttlefish usually sat at the bottom of the tank and looked at the two food items while they waited, but sometimes, they would turn away from the king prawn “as if to distract themselves from the temptation of the immediate reward.” In past studies, humans, chimpanzees, parrots and dogs also tried to distract themselves while waiting for a reward. Not every species can use self-control, but most of the animals that can share another trait in common: long, social lives. Cuttlefish, on the other hand, are solitary creatures that don't form relationships even with mates or young. . . . “We don't know if living in a social group is important for complex cognition unless we also show those abilities are lacking in less social species,” says . . . comparative psychologist Jennifer Vonk.

**Question:**

In which one of the following scenarios would the cuttlefish's behaviour demonstrate self-control?

- A) Asian shore crabs and raw prawns are simultaneously released while a live grass shrimp drawer labelled with a triangle is placed in front of the cuttlefish, to be opened after one minute.
- B) raw prawns are released while a live grass shrimp drawer labelled with a square is placed in front of the cuttlefish.
- C) raw prawns are released while an Asian shore crab drawer labelled with a triangle is placed in front of the cuttlefish, to be opened after one minute.
- D) live grass shrimp are released while two raw prawn drawers labelled with a circle and a triangle respectively are placed in front of the cuttlefish; the triangle-labelled drawer is opened after 50 seconds.
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**Q.9) Instructions:**

The passage below is accompanied by a set of questions. Choose the best answer to each question. Comprehension:

Critical theory of technology is a political theory of modernity with a normative dimension. It belongs to a tradition extending from Marx to Foucault and Habermas according to which advances in the formal claims of human rights take center stage while in the background centralization of ever more powerful public institutions and private organizations imposes an authoritarian social order.

Marx attributed this trajectory to the capitalist rationalization of production. Today it marks many institutions besides the factory and every modern political system, including so-called socialist systems. This trajectory arose from the problems of command over a disempowered and deskilled labor force; but everywhere [that] masses are organized - whether it be Foucault's prisons or Habermas's public sphere - the same pattern prevails. Technological design and development is shaped by this pattern as the material base of a distinctive social order. Marcuse would later point to a "project" as the basis of what he called rather confusingly "technological rationality." Releasing technology from this project is a democratic political task.

In accordance with this general line of thought, critical theory of technology regards technologies as an environment rather than as a collection of tools. We live today with and even within technologies that determine our way of life. Along with the constant pressures to build centers of power, many other social values and meanings are inscribed in technological design. A hermeneutics of technology must make explicit the meanings implicit in the devices we use and the rituals they script. Social histories of technologies such as the bicycle, artificial lighting or firearms have made important contributions to this type of analysis. Critical theory of technology attempts to build a methodological approach on the lessons of these histories. As an environment, technologies shape their inhabitants. In this respect, they are comparable to laws and customs. Each of these institutions can be said to represent those who live under their sway through privileging certain dimensions of their human nature. Laws of property represent

the interest in ownership and control.

Customs such as parental authority represent the interest of childhood in safety and growth.

Similarly, the automobile represents its users in so far as they are interested in mobility.

Interests such as these constitute the version of human nature sanctioned by society.

This notion of representation does not imply an eternal human nature. The concept of nature as non-identity in the Frankfurt School suggests an alternative. On these terms, nature is what lies at the limit of history, at the point at which society loses the capacity to imprint its meanings on things and control them effectively.

The reference here is, of course, not to the nature of natural science, but to the lived nature in which we find ourselves and which we are. This nature reveals itself as that which cannot be totally encompassed by the machinery of society. For the Frankfurt School, human nature, in all its transcending force, emerges out of a historical context as that context is [depicted] in illicit joys, struggles and pathologies. We can perhaps admit a less romantic . . . conception in which those dimensions of human nature recognized by society are also granted theoretical legitimacy.

**Question:-**

Which one of the following statements best reflects the main argument of the fourth paragraph of the passage?

- A) Technology, laws, and customs are comparable, but dissimilar phenomena.
- B) Technological environments privilege certain dimensions of human nature as effectively as laws and customs.
- C) Automobiles represent the interest in mobility present in human nature.
- D) Technology, laws, and customs are not unlike each other if considered as institutions.

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**Q.10) Instructions**

The passage below is accompanied by a set of questions. Choose the best answer to each question. Comprehension:

Critical theory of technology is a political theory of modernity with a normative dimension. It belongs to a tradition extending from Marx to Foucault and Habermas according to which advances in the formal claims of human rights take center stage while in the background centralization of ever more powerful public institutions and private organizations imposes an authoritarian social order.

Marx attributed this trajectory to the capitalist rationalization of production. Today it marks many institutions besides the factory and every modern political system, including so-called socialist systems. This trajectory arose from the problems of command over a disempowered and deskilled labor force; but everywhere [that] masses are organized - whether it be Foucault's prisons or Habermas's public sphere - the same pattern prevails. Technological design and

development is shaped by this pattern as the material base of a distinctive social order. Marcuse would later point to a “project” as the basis of what he called rather confusingly “technological rationality.” Releasing technology from this project is a democratic political task.

In accordance with this general line of thought, critical theory of technology regards technologies as an environment rather than as a collection of tools. We live today with and even within technologies that determine our way of life. Along with the constant pressures to build centers of power, many other social values and meanings are inscribed in technological design.

A hermeneutics of technology must make explicit the meanings implicit in the devices we use and the rituals they script. Social histories of technologies such as the bicycle, artificial lighting or firearms have made important contributions to this type of analysis. Critical theory of technology attempts to build a methodological approach on the lessons of these histories.

As an environment, technologies shape their inhabitants. In this respect, they are comparable to laws and customs. Each of these institutions can be said to represent those who live under their sway through privileging certain dimensions of their human nature. Laws of property represent the interest in ownership and control.

Customs such as parental authority represent the interest of childhood in safety and growth.

Similarly, the automobile represents its users in so far as they are interested in mobility. Interests such as these constitute the version of human nature sanctioned by society.

This notion of representation does not imply an eternal human nature. The concept of nature as non-identity in the Frankfurt School suggests an alternative. On these terms, nature is what lies at the limit of history, at the point at which society loses the capacity to imprint its meanings on things and control them effectively.

The reference here is, of course, not to the nature of natural science, but to the lived nature in which we find ourselves and which we are. This nature reveals itself as that which cannot be totally encompassed by the machinery of society. For the Frankfurt School, human nature, in all its transcending force, emerges out of a historical context as that context is [depicted] in illicit joys, struggles and pathologies. We can perhaps admit a less romantic . . . conception in which those dimensions of human nature recognized by society are also granted theoretical legitimacy.

**Question:-**

Which one of the following statements could be inferred as supporting the arguments of the passage?

- A)** It is not human nature, but human culture that is represented by institutions such as law and custom.
- B)** Technologies form the environmental context and shape the contours of human society.
- C)** Nature decides the point at which society loses its capacity to control history.
- D)** The romantic conception of nature referred to by the passage is the one that requires theoretical legitimacy.

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### Q.11) Instructions

The passage below is accompanied by a set of questions. Choose the best answer to each question. Comprehension:

Critical theory of technology is a political theory of modernity with a normative dimension. It belongs to a tradition extending from Marx to Foucault and Habermas according to which advances in the formal claims of human rights take center stage while in the background centralization of ever more powerful public institutions and private organizations imposes an authoritarian social order.

Marx attributed this trajectory to the capitalist rationalization of production. Today it marks many institutions besides the factory and every modern political system, including so-called socialist systems. This trajectory arose from the problems of command over a disempowered and deskilled labor force; but everywhere [that] masses are organized - whether it be Foucault's prisons or Habermas's public sphere - the same pattern prevails. Technological design and development is shaped by this pattern as the material base of a distinctive social order. Marcuse would later point to a "project" as the basis of what he called rather confusingly "technological rationality." Releasing technology from this project is a democratic political task.

In accordance with this general line of thought, critical theory of technology regards technologies as an environment rather than as a collection of tools. We live today with and even within technologies that determine our way of life. Along with the constant pressures to build centers of power, many other social values and meanings are inscribed in technological design. A hermeneutics of technology must make explicit the meanings implicit in the devices we use and the rituals they script. Social histories of technologies such as the bicycle, artificial lighting or firearms have made important contributions to this type of analysis. Critical theory of technology attempts to build a methodological approach on the lessons of these histories.

As an environment, technologies shape their inhabitants. In this respect, they are comparable to laws and customs. Each of these institutions can be said to represent those who live under their sway through privileging certain dimensions of their human nature. Laws of property represent the interest in ownership and control.

Customs such as parental authority represent the interest of childhood in safety and growth. Similarly, the automobile represents its users in so far as they are interested in mobility. Interests such as these constitute the version of human nature sanctioned by society.

This notion of representation does not imply an eternal human nature. The concept of nature as non-identity in the Frankfurt School suggests an alternative. On these terms, nature is what lies at the limit of history, at the point at which society loses the capacity to imprint its meanings on things and control them effectively.

The reference here is, of course, not to the nature of natural science, but to the lived nature in which we find ourselves and which we are. This nature reveals itself as that which cannot be totally encompassed by the machinery of society. For the Frankfurt School, human nature, in all its transcending force, emerges out of a historical context as that context is [depicted] in illicit joys, struggles and pathologies. We can perhaps admit a less romantic . . . conception in which those dimensions of human nature recognized by society are also granted theoretical legitimacy.

**Question:-**

Which one of the following statements contradicts the arguments of the passage?

- A) The problems of command over a disempowered and deskilled labour force gave rise to similar patterns of the capitalist rationalisation of production wherever masses were organised.
  - B) Marx’s understanding of the capitalist rationalisation of production and Marcuse’s understanding of a “project” of “technological rationality” share theoretical inclinations.
  - C) Masses are organised in patterns set by Foucault’s prisons and Habermas’ public sphere.
  - D) Paradoxically, the capitalist rationalisation of production is a mark of so-called socialist systems as well.
- 
- 

**Q.12) Instructions**

The passage below is accompanied by a set of questions. Choose the best answer to each question. Comprehension:

Critical theory of technology is a political theory of modernity with a normative dimension. It belongs to a tradition extending from Marx to Foucault and Habermas according to which advances in the formal claims of human rights take center stage while in the background centralization of ever more powerful public institutions and private organizations imposes an authoritarian social order.

Marx attributed this trajectory to the capitalist rationalization of production. Today it marks many institutions besides the factory and every modern political system, including so-called socialist systems. This trajectory arose from the problems of command over a disempowered and deskilled labor force; but everywhere [that] masses are organized - whether it be Foucault’s prisons or Habermas’s public sphere - the same pattern prevails. Technological design and development is shaped by this pattern as the material base of a distinctive social order. Marcuse would later point to a “project” as the basis of what he called rather confusingly “technological rationality.” Releasing technology from this project is a democratic political task.

In accordance with this general line of thought, critical theory of technology regards technologies as an environment rather than as a collection of tools. We live today with and even within technologies that determine our way of life. Along with the constant pressures to build centers of power, many other social values and meanings are inscribed in technological design. A hermeneutics of technology must make explicit the meanings implicit in the devices we use and the rituals they script. Social histories of technologies such as the bicycle, artificial lighting or firearms have made important contributions to this type of analysis. Critical theory of technology attempts to build a methodological approach on the lessons of these histories. As an environment, technologies shape their inhabitants. In this respect, they are comparable to laws and customs. Each of these institutions can be said to represent those who live under their sway through privileging certain dimensions of their human nature. Laws of property represent

the interest in ownership and control.

Customs such as parental authority represent the interest of childhood in safety and growth. Similarly, the automobile represents its users in so far as they are interested in mobility. Interests such as these constitute the version of human nature sanctioned by society.

This notion of representation does not imply an eternal human nature. The concept of nature as non-identity in the Frankfurt School suggests an alternative. On these terms, nature is what lies at the limit of history, at the point at which society loses the capacity to imprint its meanings on things and control them effectively.

The reference here is, of course, not to the nature of natural science, but to the lived nature in which we find ourselves and which we are. This nature reveals itself as that which cannot be totally encompassed by the machinery of society. For the Frankfurt School, human nature, in all its transcending force, emerges out of a historical context as that context is [depicted] in illicit joys, struggles and pathologies. We can perhaps admit a less romantic . . . conception in which those dimensions of human nature recognized by society are also granted theoretical legitimacy.

**Question:-**

All of the following claims can be inferred from the passage, EXCEPT:

- A)** the significance of parental authority to children's safety does not therefore imply that parental authority is a permanent aspect of human nature.
- B)** the critical theory of technology argues that, as issues of human rights become more prominent, we lose sight of the ways in which the social order becomes more authoritarian.
- C)** analyses of technologies must engage with their social histories to be able to reveal their implicit and explicit meanings for us.
- D)** technologies seek to privilege certain dimensions of human nature at a high cost to lived nature.

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**Q.13)** Choose the correct meaning of the idiom

**A damp squib**

- A)** A pretence
- B)** Complete failure
- C)** Count on
- D)** Considerate

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**Q.14)** Identify the correct meaning of the phrase

**Call a spade a spade**

- A) To avoid talking
  - B) To Depend on
  - C) Straight talks
  - D) None of these
- 
- 

**Q.15)** Write the meaning of the phrase

**Bolt from the blue**

- A) Expected
  - B) Known
  - C) Unexpected
  - D) None of these
- 
- 

**Q.16)** In each of the question given below a/an idiom/phrase is given in bold which is then followed by five options which then try to decipher its meaning. Choose the option which gives the correct meaning of the phrases. There is politics – everyone knows triple talaq and halala are oppressive to women but who will bell the cat?

- A) Inadifficultsituation
  - B) extremelyexcited
  - C) takingfirststepatpersonalrisk
  - D) **Onewhoisridiculed**
  - E) Noneoftheabove
- 
-

**Q.17) In** each of the question given below a/an idiom/phrase is given in bold which is then followed by five options which then try to decipher its meaning. Choose the option which gives the correct meaning of the phrases. Simon always makes a complete ass of himself when he's had too much to drink.

- A)** Cause someone or oneself to look foolish or stupid
  - B)** To make someone feel very frightened
  - C)** For indefinite number
  - D)** To sabotage a plan
  - (E)** None of the above
- 
- 

**Q.18) In** each of the question given below a/an idiom/phrase is given in bold which is then followed by five options which then try to decipher its meaning. Choose the option which gives the correct meaning of the phrases. The resignation of the chairman came like a bolt from the blue.

- A)** Something unexpected
  - B)** According to practical experience
  - C)** Resembling in one's parents in habits
  - D)** To buy something than is worthless
  - (E)** None of the above
- 
- 

**Q.19) In** each of the question given below a/an idiom/phrase is given in bold which is then followed by five options which then try to decipher its meaning. Choose the option which gives the correct meaning of the phrases. He was a voice crying in the wilderness as he tried to expose the vast corruption within the organization

- A)** To show impudent contempt
- B)** Shameless liars
- C)** To do something thoroughly

- D) Unpopular opinion
- None of the above
- (E)

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**Q.20) Read** each sentence to find out whether there is any grammatical mistake/error in it. The error if any will be in one part of the sentence. Mark the letter of that part with error as your answer. If there is 'No error', mark (e). In terms of hours (a)/ spent playing, it is one of (b)/ the biggest entertainment forms (c)/ the world has know. (d)/No error (e)

- A)A
- B)B
- C)C
- D)D
- E)E

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**Q.21) Read** each sentence to find out whether there is any grammatical mistake/error in it. The error if any will be in one part of the sentence. Mark the letter of that part with error as your answer. If there is 'No error', mark (e). Later he sat in his (a)/ flat which ten years of (b)/ occupancy hadn't personalizing (c)/ beyond the laundry. (d)/ No Error (e)

- A)A
- B)B
- C)C
- D)D
- E)E

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**Q.22) Read** each sentence to find out whether there is any grammatical mistake/error in it. The error if any will be in one part of the sentence. Mark the letter of that part with error as your answer. If there is 'No error', mark (e). Northampton showed little respect to (a)/ King by burying

news of his departure at the (b)/ bottom of a press release with the (c)/ team announcement among today 's game. (d)/ No Error (e)

A)A

B)B

C)C

D)D

E)E

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**Q.23) Read** each sentence to find out whether there is any grammatical mistake/error in it. The error if any will be in one part of the sentence. Mark the letter of that part with error as your answer. If there is 'No error', mark (e).It is left to cure (a)/ for a set number of days, (b)/ after who they pull (c)/ the shutters off and seal it. (d)/ No Error (e)

A)A

B)B

C)C

D)D

E)E

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**Q.24) In** each of the questions given below four words are given in bold. These four words may or may not be in their correct position. The sentence is then followed by options with the correct combination of words that should replace each other in order to make the sentence grammatically and contextually correct. Find the correct combination of the words that replace each other. If the sentence is correct as it then select option (e) as your choice.Worthy (A) things often lack (B) panache, but a green roof can turn the instantly (C) into something dreary (D) appealing.

A) only A-B

B) only C-D

C) both A-B and B-D

D) Both A-C and B-D

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**Q.25) Directions for the Question:** The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

**Question :** Chatty seatmates. Grimy hotel rooms. Unnecessary fees. Sound familiar? You're not alone. Last month, Expedia.com released its 2018 Airplane and Hotel Etiquette Study, and the findings are chock-full of all-too-relatable grievances like these. The annual survey includes insights from more than 18,000 people, covering everything from in-flight hanky panky to smelly bare feet. These travellers know what can go wrong because they've lived it...likely more than a couple of times. (\_\_\_\_\_)

**A)** Well even though the figures do not matter, we need to look into the problem that we can face while we plan to get away from our apartments.

**B)** Thus the vacations are no longer fun because of the unwelcome-incumbencies attributed to travelling these days.

**C)** According to Expedia's findings, the average respondent took five flights and spent an average of 14 nights in a hotel last year.

**D)** The determination of the actual condition varies from one person to another person as different passengers will have different lifestyles.

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**Q.26) Directions for the Question:** The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

**Question :** On June 6, 2017, some farmers were killed in police firing in Mandsaur, Madhya Pradesh, during an agitation for better crop prices. There have been agitations across the country since then, including in Tamil Nadu, Punjab, Haryana, Maharashtra (where thousands of farmers walked nearly 200 km to the State capital in March). The current stir also derives from lack of tangible action on assurances made earlier and imperceptible movement on the Centre's grand promises such as doubling farm incomes and raising MSPs. That the general elections are just a year away adds a political subtext to the protest. Rural distress has dented the BJP's electoral performance in recent months. Too much of the structural reform agenda to free agricultural markets from the grip of government rules and intermediaries remains pending. There has been dithering even on simple things like strengthening the food processing sector. (\_\_\_\_\_)

**A)** Thus we are closer to drawing a conclusion that the government's methods are always aimed at favouring the rich upper category by building airports everywhere and by introducing digital payment schemes by discarding the minimal survival requirements of the lower category of people (based on income) who are mostly farmers. (Note that this occupation is the largest one in the country)

**B)** Take one instance -100% FDI was allowed in the food retail business in 2016, but little money has come in as retailers want permission to stock a few non-food items like soaps and shampoos for customers, which was earlier promised.

**C)** The neglected farmers are finding it very difficult to survive in a country like this which once boasted of its agro-exports.

**D)** A sudden and stagnant plan must be brought in by the government to administer the existing problem of the nation in order to set their lives in the correct order.

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**Q.27)** The question below has a paragraph given with one sentence missing at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

The responsibility of the civil services is to run the administration of India. The country is managed through a number of Central Government agencies in accordance with the policy directions given by the ministries. The members of the civil services are represented as administrators in the central government and state government; emissaries in the foreign missions/embassies; as tax collectors and revenue commissioners; as civil service commissioned police officers; as permanent representative(s) and employees in the United Nations and its agencies and as Chairman, Managing Director, full-time functional Director/Member of the Board of Management of various Public Sector Undertakings/Enterprises, Corporations, Banks and financial institutions. (\_\_\_\_\_)

**A)** These responsibilities are endless and they need to work efficiently to fulfil their asserted goals.

**B)** Civil servants are thus the backbone of administration in the country, tenacious and focused to build the nation a better place to live.

**C)** Civil servants are employed to various agencies of India and can also be appointed as advisers or special duty officers or private secretaries to ministers of the Union and the State Government.

**D)** Civil servants will work through their career by receiving promotions and thus they have the potential to go up to the rank of the chief secretary of the state.

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**Q.28) Directions for the Question:** The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

**Question:** Jaipur Municipal Corporation CEO Ravi Jain told ET. “We have 800 garbage collecting vehicles which move around the colonies daily. They are connected with a GPS-enabled vehicle tracking system. These vehicles dump the garbage at five transfer stations, from where garbage is taken to two landfill sites.” The city treats its waste and converts it to compost, and the remaining to refuse derived fuel (RDF). It is now planning a waste-to-energy plant at Langdiya which would treat 600 metric tonnes of garbage to energy. The statistics may appear to be picture perfect but the situation on the ground turned out to be somewhat different.

**A)** In Jawahar Nagar, an otherwise posh area, residents of slum areas, referred to as kutchi bastis in municipal parlance, complained that toilets were unusable and said they continued to use the forest area behind the basti to relieve themselves.

**B)** The municipality has been successful enough to bring world class sanitation facilities in the outskirts of the city and hygienic city faces were opened up.

**C)** Better methods were advised but the current situation has only slightly improved.

**D)** The government should come up with better plans that cannot fail easily.

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**Q.29)** The essence of \_\_\_\_\_ is that it enables us to visualize beyond our immediate surroundings and consider possibilities that extend beyond the tangible world. Engaging with \_\_\_\_\_ allows individuals to unleash their creativity and \_\_\_\_\_ in envisioning scenarios that have not yet been realized. This process enriches our \_\_\_\_\_ with innovative solutions and perspectives.

(a) mathematics; numbers; calculating; knowledge

(b) science; experiments; testing; understanding

(c) technology; gadgets; tinkering; arsenal

(d) art; aesthetics; dreaming; repertoire

**Q.30)** Understanding \_\_\_\_\_ is crucial for navigating the complexities of modern societies. It equips us with the ability to critically analyze \_\_\_\_\_, thus enabling us to engage in informed \_\_\_\_\_ about important issues. Ultimately, this leads to a more nuanced \_\_\_\_\_ of the dynamics that shape human interactions and societal structures.

- (a) economics; markets; discussions; view
- (b) biology; organisms; research; insight
- (c) geography; landscapes; explorations; appreciation
- (d) politics; rhetoric; debates; grasp

**Q.31)** The study of \_\_\_\_\_ offers insights into the development and evolution of human societies over time. By examining \_\_\_\_\_, scholars can trace the origins of contemporary customs and \_\_\_\_\_, fostering a greater \_\_\_\_\_ of how past events influence present circumstances.

- (a) anthropology; cultures; traditions; comprehension
- (b) linguistics; languages; communication; knowledge
- (c) paleontology; fossils; theories; understanding
- (d) astronomy; celestial bodies; hypotheses; awareness

**Q.32)** The power of \_\_\_\_\_ lies in its ability to encode and transmit knowledge across generations. By mastering \_\_\_\_\_, individuals can access a vast array of \_\_\_\_\_, thereby expanding their \_\_\_\_\_ and potential for innovation.

- (a) literature; storytelling; narratives; horizon
- (b) mathematics; equations; solutions; capacity
- (c) music; melodies; compositions; spectrum
- (d) writing; symbols; information; intellect

**Q.33)** In the realm of \_\_\_\_\_, precision and clarity are paramount. This field demands a meticulous approach to \_\_\_\_\_, ensuring that ideas are conveyed without ambiguity. Mastery in this area enhances our ability to \_\_\_\_\_ effectively, thus improving our overall \_\_\_\_\_ in various forms of communication.

- (a) logic; reasoning; argue; proficiency
- (b) design; aesthetics; create; skill
- (c) programming; code; communicate; competency
- (d) poetry; metaphors; interpret; sensitivity

**Q.34)** The challenge of \_\_\_\_\_ is that it constantly evolves, reflecting the ever-changing landscape of human thought and society. Keeping abreast of \_\_\_\_\_ allows us to stay relevant and \_\_\_\_\_ in our approaches to solving contemporary issues, thereby enriching our \_\_\_\_\_ with adaptable and forward-thinking strategies.

- (a) technology; innovations; proactive; toolkit
- (b) language; vocabularies; articulate; expression
- (c) fashion; trends; creative; wardrobe
- (d) education; methodologies; innovative; methodology

**Q.35)** Choose the option which has the incorrect or inappropriate usage of the word "plethora":

- (a) There is a plethora of options available at the buffet.
- (b) The bookstore offers a plethora of books on various topics.
- (c) She was overwhelmed by the plethora of compliments she received.
- (d) The teacher provided a plethora of resources for the students to study from.

**Q.36)** Choose the option which has the incorrect or inappropriate usage of the word "arduous":

- (a) Climbing Mount Everest is an arduous task.
- (b) The arduous journey through the desert tested their endurance.
- (c) Writing a short story can be an arduous process for some writers.
- (d) He found it arduous to make friends in his new school.

**Q.37)** Choose the option which has the incorrect or inappropriate usage of the word "copious":

- (a) She took copious notes during the lecture to ensure she didn't miss any important information.
- (b) The chef used copious amounts of garlic in the pasta sauce.
- (c) The writer was known for his copious imagination and prolific output.
- (d) The copious student received top grades in all his classes.

**Q.38)** Choose the option which has the incorrect or inappropriate usage of the word "egalitarian":

- (a) The organization promotes egalitarian principles by ensuring equal opportunities for all employees.
- (b) Their family has an egalitarian approach to decision-making, where everyone's opinions are valued equally.
- (c) The government's policies aim to create a more egalitarian society by reducing income inequality.
- (d) The company's hierarchical structure contradicts its claim to be egalitarian.

**Q.39)** In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from error, select 'No Error'

**I inhale the cold air, (A) / shaking my head and shoving (B) / my hands to the pockets of my black gabardine. (C) / No error (D)**

- (a)
- (b)
- (c)
- (d)

**Q.40)** In each question below, the word at the top of the question is used in four different ways. Choose the option in which the usage of the word is INCORRECT or INAPPROPRIATE.

**MARK** A- The teacher used to mark the exam papers very leniently. B- Our professor always motivated us to make a mark in life. C- Shikha was pleased with the extreme mark of attention. D- She never mark me in the discussion. E - I saw the mark myself.

**Q.41)** Arrange the following jumbled sentences to form a coherent paragraph: A) However, their dreams of freedom persisted. B) Through the darkest times, they held onto hope. C) These brave individuals risked everything for the chance to live in a land where they could be free. D) They faced countless challenges and obstacles on their journey to escape oppression. E) In the end, their unwavering determination and resilience triumphed. **A)** B, A, C, D, E **B)** C, D, B, A, E **C)** D, B, A, C, E **D)** A, C, D, B, E

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**Q.42)** Arrange the following jumbled sentences to form a coherent paragraph: A) In the heart of the city, a bustling market offered a vibrant array of goods and fresh produce. B) The aroma of street food wafted through the air, tempting passersby with its enticing flavours. C) Crowds of people bustled about, each on their own mission to find treasures and bargains. D) Artisans displayed their craftsmanship, showcasing handmade jewellery and textiles. E) It was a sensory feast, where the sights, sounds, and scents of the city converged. **A)** C, D, A, B, E **B)** A, B, C, D, E

C) E, A, C, D, B

D) B, C, D, A, E

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**Q.43)** Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph. A. It superseded India's previous educational strategy, which was created in 1986. B. The Indian union cabinet approved the country's national education strategy on 29 July 2020. C. And it provides a framework for education from the primary grades up to higher education, as well as for vocational training in both urban and rural settings. D. This policy significantly improves India's educational system. Restructuring India's educational system is the primary goal of the National Education Policy 2022.

A) DBCA B) ABDC C) BCDA D) BADC

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**Q.44) DIRECTIONS for the question:** The four sentences (labelled 1,2,3 and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentence and key in this sequence of four numbers as your answer.

1. In every little cubic centimeter of space, whether or not there's stuff, whether or not there's particles, matter, radiation or whatever, there's still energy, even in the space itself.
2. Because dark energy, unlike matter or radiation, does not dilute away as the universe expands.
3. The amount of energy in each cubic centimeter remains the same, even as the universe gets bigger and bigger.
4. And this energy, according to Einstein, exerts a push on the universe - it is a perpetual impulse that pushes galaxies apart from each other.

A) 1423

B) 2413

C) 3241

D) 4231

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**Q.45) DIRECTIONS for the question:** The four sentences (labelled 1,2,3 and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentence and key in this sequence of four numbers as your answer.

1. Percival had in mind nothing so far-fetched as a ban on child labor, only a requirement that young children be given dinner breaks and be protected from working more than 12 hours per day.

2. Dr. Thomas Percival, a physician and social reformer in the late 1700s, proposed a radical reform for the Manchester, England, cotton mills.

3. Predictably, business interests charged that Percival and his allies were uninformed about the nature of their business, and thus began nearly a century of struggle in Britain, where successive waves of Factory Acts gradually shortened children's working hours and raised minimum ages for work in the factories.

4. Percival's proposal was radical first of all because it suggested that any sort of interference in the management of the cotton factories might be allowable, and second because it suggested that legislation might limit the hours that children were employed in the mills.

A) 2413 B) 4321 C) 3241 D) 2341

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## Answer Key

Quantitative Aptitude Short Answer (SA) type	Quantitative Ability MCQ type	Verbal Ability & Reading Comprehension
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1	3	1	B	16	B	1	A	16	c	31	a
2	1	2	D	17	D	2	B	17	a	32	d
3	696	3	B	18	C	3	B	18	a	33	c
4	5	4	C	19	B	4	D	19	d	34	a
5	5	5	B	20	D	5	b	20	d	35	d
6	400	6	C	21	B	6	b	21	c	36	d
7	73	7	D	22	A	7	b	22	d	37	d
8	13	8	B	23	D	8	a	23	c	38	d
9	4	9	B	24	A	9	d	24	b	39	c
10	3	10	D	25	A	10	b	25	c	40	d
11	4	11	D	26	D	11	c	26	b	41	c
12	20500	12	B	27	D	12	d	27	c	42	b
13	1:2:3	13	A	28	C	13	b	28	a	43	d
14	7	14	B	29	C	14	c	29	d	44	a
15	4400	15	A	30	C	15	c	30	d	45	a

## Solution

### Quantitative Aptitude Short Answer (SA) type

Q.1) Using

$$f(x) = 2^{10}x + 1$$

$$g(x) = 3^{10}x - 1$$

Then,  $f \circ g(x) = f(g(x))$

$$\Rightarrow f(3^{10}x - 1) = 2^{10}(3^{10}x - 1) + 1 = x$$

$$\Rightarrow 2^{10} \cdot 3^{10} x - 2^{10} + 1 = x$$

$$\therefore 2^{10} \cdot 3^{10} x - x = 2^{10} - 1$$

$$\therefore x (2^{10} \cdot 3^{10} - 1) = 2^{10} - 1$$

$$\therefore x = \frac{2^{10} - 1}{2^{10} \cdot 3^{10} - 1}$$

$$\therefore x = \frac{1 - 2^{-10}}{3^{10} - 2^{-10}}$$

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**Q.2)** As we learnt in

By using the concept of

Cramer's rule for solving system of linear equations -

When  $\Delta = 0$  and  $\Delta_1 = \Delta_2 = \Delta_3 = 0$ ,

then the system of equations has infinite solutions.

- wherein

$$a_1 x + b_1 y + c_1 z = d_1$$

$$a_2 x + b_2 y + c_2 z = d_2$$

$$a_3 x + b_3 y + c_3 z = d_3$$

and

$$\Delta = \begin{vmatrix} a_1 & b_1 & c_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix}$$

$\Delta_1, \Delta_2, \Delta_3$  are obtained by replacing column 1,2,3 of  $\Delta$  by  $(d_1, d_2, d_3)$  column

$$\begin{vmatrix} 2 & 4 & -\lambda \\ 4 & \lambda & 2 \\ \lambda & 2 & 2 \end{vmatrix} = 0$$

$$\Rightarrow 2 \begin{vmatrix} \lambda & 2 \\ 2 & 2 \end{vmatrix} - 4 \begin{vmatrix} 4 & 2 \\ \lambda & 2 \end{vmatrix} - \lambda \begin{vmatrix} 4 & \lambda \\ \lambda & 2 \end{vmatrix} = 0$$

$$\Rightarrow 2(2\lambda - 4) - 4(8 - 2\lambda) - \lambda(8 - \lambda^2) = 0$$

$$\Rightarrow 4\lambda - 8 - 32 + 8\lambda - 8\lambda + \lambda^3 = 0$$

$$\Rightarrow \lambda^3 + 4\lambda - 40 = 0$$

It will give only one real value of  $\lambda$

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**Q.3)** Product of numbers =  $29 * 4147$

Let the numbers be  $29a$  and  $29b$ .

Then,  $29a * 29b = (29 * 4147)$

$ab = 143$ .

Now, co-primes with product 143 are (1, 143) and (11, 13).

So, the numbers are  $(29 * 1, 29 * 143)$  and  $(29 * 11, 29 * 13)$ .

Since both numbers are greater than 29, the suitable pair is  $(29 * 11, 29 * 13)$  i.e., (319, 377).

Required sum =  $(319 + 377) = 696$

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**Q.4)** As we have learnt,

If there are  $n$  points in the plane and out of which no three are collinear then, the total no. of triangles that can be formed using these  $n$  points =  $nC_3$

Now,

$T_n = {}^n C_3 =$  no. of the selection of 3 vertices out of n vertices

$$T_{n+1} - T_n = 10$$

$$\Rightarrow {}^{n+1} C_3 - {}^n C_3 = 10$$

$$\Rightarrow \frac{(n+1)(n)(n-1)}{6} - \frac{n(n-1)(n-2)}{6} = 10$$

$$\Rightarrow n(n-1)\{n+1-n+2\} = 60$$

$$\Rightarrow n^2 - n = 20$$

$$\Rightarrow n^2 - n - 20 = 0$$

$$\therefore n = 5 \text{ or } n = -4$$

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**Q.5)** As learned in

Arithmetic mean of two numbers (AM) -

$$A = \frac{a+b}{2}$$

and

Geometric mean of two numbers (GM) -

$$GM = \sqrt{ab}$$

In this Question,

$$\text{If } \frac{a+b}{2} = 5\sqrt{ab}$$

$$a+b = 10\sqrt{ab}$$

We know,

$$(a-b)^2 = (a+b)^2 - 4ab$$

$$= (10\sqrt{ab})^2 - 4ab = 100ab - 4ab = 96ab$$

$$a - b = 4\sqrt{6}\sqrt{ab}$$

Therefore:

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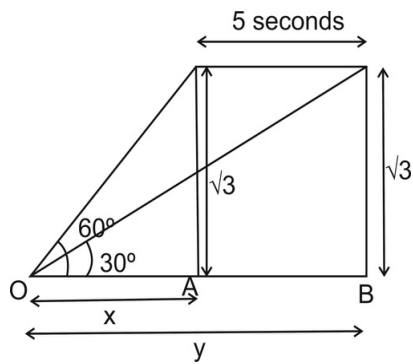
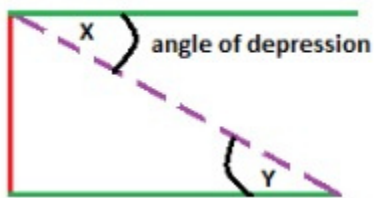
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### Q.6)

Angle of Elevation -

If an object is above the horizontal line from the eye, we have to raise our head to view the object.

- wherein



$$\tan 60^\circ = \frac{\sqrt{3}}{x} = \sqrt{3}$$

$$\Rightarrow x = 1$$

$$\tan 30^\circ = \frac{\sqrt{3}}{y} = \frac{1}{\sqrt{3}}$$

$$\Rightarrow y = 3$$

$AB = 2 \text{ kms}$  also  $Time = 5 \text{ seconds}$

$$speed = \frac{distance}{time} = \frac{2 \times 1000}{5} = 400 \text{ m/s}$$

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**Q.7)** The 73 satisfies the above conditions

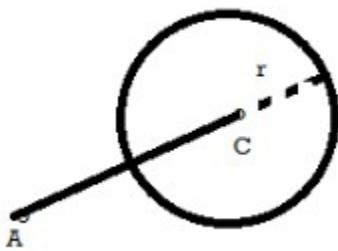
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**Q.8)** As we learnt in

The greatest distance of a point A from a circle

$AC + r$  (for both cases P lying inside and outside the circle)



Now,

Q is point on the circle  $x^2 + y^2 - 4x - 2y + 4 = 0$ ,

$$r = \sqrt{4 + 1 - 4} = 1$$

Centre C (2, 1)

PQ = Maximum distance = PC + r

$$= \sqrt{(2 - 0)^2 + (1 - (-2))^2} + 1$$
$$= \sqrt{13} + 1$$

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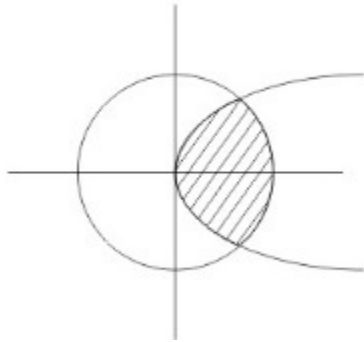
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**Q.9)** Finding point of intersection first

$$x^2+3x-4=0$$

$$x^2+4x-x-4=0$$

$$x=1$$



and  $y = \pm\sqrt{3}$

Using symmetry,

$$Area = 2 \left( \int_0^1 (\sqrt{3}\sqrt{x}) dx + \int_1^2 (\sqrt{4-x^2}) dx \right)$$

$$= 2 \left( \left[ 2\sqrt{3} \times \frac{x^{3/2}}{3} \right]_0^1 + \left[ \frac{x}{2}\sqrt{4-x^2} + \frac{4}{2} \sin^{-1} \frac{x}{2} \right]_1^2 \right)$$

$$= 2 \left( \frac{2\sqrt{3}}{3} + 0 + 2 \sin^{-1} 1 - \frac{\sqrt{3}}{2} - 2 \sin^{-1} \frac{1}{2} \right)$$

$$= 2 \left( \frac{2}{\sqrt{3}} - \frac{\sqrt{3}}{2} + \pi - \frac{\pi}{3} \right)$$

$$= 2 \left( \frac{1}{2\sqrt{3}} + \frac{2\pi}{3} \right)$$

$$= \frac{1}{\sqrt{3}} + \frac{4\pi}{3}$$

**Q.10)** As we learned in

Locus -

The path followed by a point  $p(x,y)$  under given condition (s).

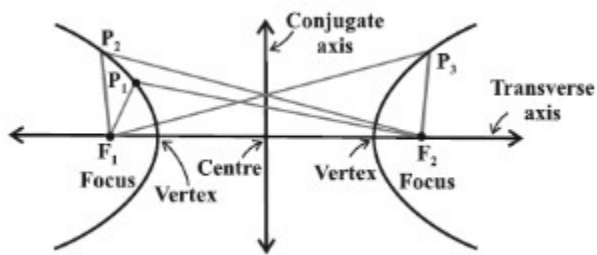
- wherein

It is satisfied by all the points  $(x,y)$  on the locus.

Conjugate axis -

The line through the centre and perpendicular to transverse axis.

- wherein



$$tx - 2y - 3t = 0$$

$$x - 2ty + 3 = 0 (t \in R)$$

On solving,  $t = \frac{(x+3)}{2y}$  from second equation

Now from first equation

$$x \frac{(x+3)}{2y} - 2y - 3 \frac{(x+3)}{2y} = 0$$

$$x^2 + 3x - 4y^2 - 3x - 9 = 0$$

$$x^2 - 4y^2 = 9$$

$$\frac{x^2}{9} - \frac{y^2}{(9/4)} = 1$$

Here  $a=3$ ,  $b=\frac{3}{2}$

Length of conjugate axis

$$= 2b = 3$$

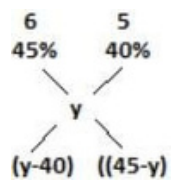

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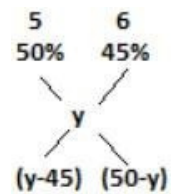
**Q.11)** Let us consider the two extremities of the range of  $x\%$  one by one.

$x = 40\%$  :



or,  $(y - 40)/(45 - y) = 6/5$  or,  $y = 42\frac{8}{11}$

$x = 50\%$



or,  $(y - 45)/(50 - y) = 5/6$  or,  $y = 47\frac{3}{11}$

So,  $42\frac{8}{11} \leq y \leq 47\frac{3}{11}$ .

Only  $47\frac{4}{11}$  lies outside the range.

Hence,  $47\frac{4}{11}$  is not a possible value of  $y$ .

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$$\text{Q.12) Profit per boarder} = \frac{\text{Total profit}}{\text{Number of boarders}}$$

Let the number of boarders be n.

$$= \frac{\text{profit}}{\text{boarder}} = 1600 - \frac{\text{Total cost}}{n}$$

Let the total cost be a + bn, where a = fixed, and b is the variable additional cost per boarder.

$$= \frac{\text{profit}}{\text{boarder}} = 1600 - \frac{a + bn}{n}$$

$$= \frac{\text{profit}}{\text{boarder}} = 1600 - \frac{a}{n - b}$$

$$= 1600 - \frac{a}{50 - b} = 200$$

$$= 1600 - \frac{a}{75 - b} = 250$$

Solving, we get a = 7500, and b = 1250

$$\text{Hence, total profit with 80 people} = 80 \left( 1600 - \frac{7500}{80 - 1250} \right)$$

$$= 80 \left( 350 - \frac{7500}{80} \right)$$

$$= 28000 - 7500$$

$$= \text{Rs. } 20500$$

$$\text{Q.13) For } x^2 + 2x + 3 = 0$$

$$\text{Discriminant} = 4 - 12 = -8 < 0$$

So it has 2 imaginary roots. Let these roots be p+iq and p-iq

Now case 1: If the first root is common between the equations, then p+iq is a root of second equation. Now as coefficients of second equation are real, so its other root must be p-iq. So, both roots are common in these 2 equations

Case 2: If the second root is common between the equations, then  $p-iq$  is a root of second equation. Now as coefficients of second equation are real, so its other root must be  $p + iq$ . So, both roots are common in these 2 equations in this case as well

So, in any case, both roots will be common in these 2 equations

So applying conditions for both roots common,

$$a/1 = b/2 = c/3$$

$$\therefore a : b : c = 1 : 2 : 3$$


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**Q.14)** As we have learned

Section formula -

$$x = \frac{mx_2 + nx_1}{m + n}$$

$$y = \frac{my_2 + ny_1}{m + n}$$

- wherein

If  $P(x,y)$  divides the line joining  $A(x_1,y_1)$  and  $B(x_2,y_2)$  in ration  $m : n$

Family of straight lines -

$$L_1 + \lambda L_2 = 0$$

- wherein

$L_1$  and  $L_2 = 0$  are the equations of the lines and  $\lambda$  is a constant.

Family of lines

$$(4x + 3y - 12) + \lambda(3x + 4y - 12) = 0$$

Now for  $x = 0$   $(3 + 4\lambda)y = 12(1 + \lambda)$

$$\Rightarrow y = \frac{12(1 + \lambda)}{3 + 4\lambda}$$

For  $y = 0$ ,  $(4 + 3\lambda)x = 12(1 + \lambda)$   

$$x = \frac{12(1 + \lambda)}{4 + 3\lambda}$$

$$h = \frac{6(1 + \lambda)}{4 + 3\lambda} \text{ and}$$

$$k = \frac{6(1 + \lambda)}{3 + 4\lambda}$$

This  $(h, k)$  satisfies

$$7xy = 6(x + y)$$


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**Q.15)** The amount that was supposed to save =  $550 \times 12 = \text{Rs.}6600$

The amount saved till 9<sup>th</sup> month =  $(4000 - 3500) \times 9 = \text{Rs.}4500$

Remaining amount =  $6600 - 4500 = \text{Rs.}2100$

The money must be saved per month from the 10<sup>th</sup> month =  $\frac{2100}{3} = \text{Rs.}700$

Thus, to meet the saving target, the monthly salary from the 10<sup>th</sup> month must be  
 =  $3700 + 700 = \text{Rs.}4400$

Hence, option B is the correct answer.

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## Quantitative Ability MCQ type

**Q.1)**  $f(x) = \frac{x}{1 + x^2}$

$$f : R \rightarrow \left[-\frac{1}{2}, \frac{1}{2}\right]$$

$$f'(x) = \frac{(1 + x^2) \times 1 - x \times 2x}{(1 + x^2)^2} = \frac{1 + x^2 - 2x^2}{(1 + x^2)^2} = \frac{1 - x^2}{(1 + x^2)^2}$$

$$\therefore \text{ So that } \frac{-(x^2 - 1)}{(x^2 + 1)^2}$$

So that it is not strictly increasing or decreasing function.

So that it is not one-one.

Correct option is 2

**Q.2)** As we learnt in

Inverse of a matrix -

$$A^{-1} = \frac{1}{|A|} \cdot \text{adj} A$$

Option 1:  $A^{-1} = \frac{\text{adj}(A)}{|A|}$  (By formula)

Option 2:  $\text{adj}(\text{adj}(A)) = |A|^{n-2} A$

Put n=3

$$\therefore \text{adj}(\text{adj}(A)) = |A|^{3-2} A = |A| A$$

Option 3: and 4

$$\begin{aligned} \therefore A(\text{adj} A) &= |A| I_n \\ (\text{adj} A)^{-1} &= \frac{A}{|A|} \end{aligned}$$

$$\text{adj}(\text{adj}(A)) = |A|^2 (\text{adj}(A))^{-1} = |A|^2 \frac{A}{|A|} = |A| \cdot A$$

so option 4 is not always true

**Q.3)** 684\*759\*413\*676

$$4 \cdot 9 \cdot 3 \cdot 6 = 648$$

Last digit = 8

Option B

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**Q.4)**  $\underline{2} \underline{2} \underline{2} \underline{2} \underline{2} \underline{2} \underline{2} \underline{2} \underline{2} \Rightarrow 30 - 16 = 14$  Marks

Hence,

$$n = 8$$

$$r = 14$$

$$\text{no of ways} = {}^{n+r-1}C_r = {}^{8+14-1}C_{14} = {}^{21}C_{14}$$

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**Q.5)** As we learnt in

Sum of  $n$  terms of an AP -

$$S_n = \frac{n}{2} [2a + (n-1)d]$$

or

$$S_n = \frac{n}{2} [a + l]$$

In this Question,

$$\sqrt{3} + \sqrt{75} + \sqrt{243} + \sqrt{507} \dots = 435\sqrt{3}$$

$$\Rightarrow \sqrt{3} + \sqrt{25 \times 3} + \sqrt{81 \times 3} + \sqrt{169 \times 3} + \dots = 435\sqrt{3}$$

$$\Rightarrow \sqrt{3} + 5\sqrt{3} + 9\sqrt{3} + 13\sqrt{3} + \dots = 435\sqrt{3}$$

$$\Rightarrow \sqrt{3} [1 + 5 + 9 + 13 + \dots] = 435\sqrt{3}$$

$$\Rightarrow \sqrt{3} \times \frac{n}{2} [2 \times 1 + (n-1) \times 4] = 435\sqrt{3}$$

$$\Rightarrow \sqrt{3} \times n [2n - 1] = 435\sqrt{3}$$

$$\Rightarrow 2n^2 - n - 435 = 0$$

$$\therefore n = \frac{1 + \sqrt{3481}}{4} = \frac{1 + 59}{4} = \frac{60}{4} = 15$$

(Negative value of n is rejected)

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$$\text{Q.6) } \frac{\tan A}{1 - \cot A} + \frac{\cot A}{1 - \tan A}$$

$$= \frac{\sin^2 A}{\cos A (\sin A - \cos A)} - \frac{\cos^2 A}{(\sin A - \cos A)} \times \frac{1}{\sin A}$$

$$= \frac{\sin^3 A - \cos^3 A}{(\sin A \cos A) (\sin A - \cos A)}$$

$$= \frac{\sin^2 A + \cos^2 A + \sin A \cos A}{\sin A \cos A}$$

$$= \frac{1 + \sin A \cos A}{\sin A \cos A} = \sec A \operatorname{cosec} A + 1$$

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Q.7)

Types of Polynomial -

**Types of Polynomial:**

1. **Constant polynomial:** A polynomial of degree zero is called a constant polynomial and it is of the form  $p(x)=k$ , where  $k$  is constant. Thus, 20, -8, -1, 1, 5, 7,  $\pi$  etc are all constant polynomial.

2. **Linear polynomial:** A polynomial of degree one is called linear polynomial and it is of the form  $p(x) = ax + b$ , where  $a, b$  are real numbers and  $a \neq 0$ . Thus,

$(3x - 5), (\sqrt{2}x + 3), \left(x - \frac{5}{8}\right)$ , etc., are all linear polynomials.

3. **Quadratic polynomial:** A polynomial of degree two is called quadratic polynomial and it is of the form  $p(x) = ax^2 + bx + c$ , where  $a, b, c$  are real numbers and  $a \neq 0$ . Thus,

$(3x^2 + 5x - 8), (2x^2 - 2\sqrt{2}x + 6), (y^2 - 3y + \sqrt{3})$ , etc., are all quadratic polynomials.

4. **Cubic polynomial:** A polynomial of degree three is called cubic polynomial and it is of the form  $p(x) = ax^3 + bx^2 + cx + d$  where  $a, b, c, d$  are real numbers and  $a \neq 0$ . Thus,

$(2x^3 - 3x^2 + 8x + 1), (\sqrt{2}y^3 - 2y^2 + y - 8), (z^3 + 2z^2 - \sqrt{3}z + 3)$ , etc., are all cubic polynomials.

5. **Bi-quadratic polynomial:** A polynomial of degree four is called Bi-quadratic polynomial and it is of the form  $p(x) = ax^4 + bx^3 + cx^2 + dx + e$ , where  $a, b, c, d, e$  are real numbers and  $a \neq 0$ . Thus,

$(2x^4 + 3x^3 - 5x^2 + 9x + 1), (4y^4 - 5y^3 + 6y^2 - 8y + 3)$ , etc., are biquadratic polynomials.

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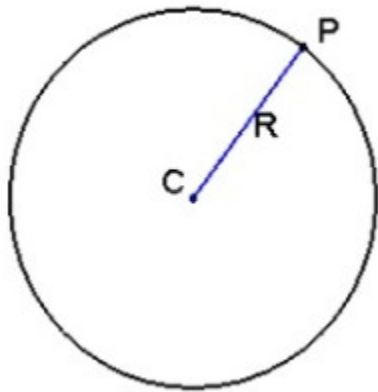
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**Q.8)** As we learnt in

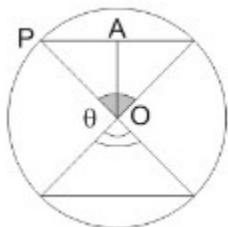
Circle -

A circle is the locus of a moving point such that its distance from a fixed point is constant.

- wherein



and using the concept of chords;



$$\cos \theta = \frac{1}{7}$$

$$2 \cos^2 \frac{\theta}{2} - 1 = \frac{1}{7}$$

$$2 \cos^2 \frac{\theta}{2} = \frac{8}{7}$$

$$\Rightarrow \cos \frac{\theta}{2} = \frac{2}{\sqrt{7}}$$

$$\Rightarrow \cos \frac{\theta}{2} = \frac{OA}{r} = \frac{OA}{2}$$

$$OA = \frac{4}{\sqrt{7}};$$

thus distance between them is  $2OA = \frac{8}{\sqrt{7}}$

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**Q.9)**  $f_0(x) = \frac{1}{1-x}$

$$f_{n+1}(x) = f_0(f_n(x))$$

Putn=0

$$\therefore f_1(x) = f_0(f_0(x)) = \frac{1}{1 - \frac{1}{1-x}} = \frac{1-x}{1-x-1} = \frac{1-x}{-x} = \left(\frac{x-1}{x}\right)$$

$$\therefore f_1(x) = \frac{x-1}{x} = 1 - \frac{1}{x}$$

Putn=1

$$\therefore f_2(x) = f_0(f_1(x)) = f_0\left(\frac{x-1}{x}\right) = \frac{1}{1 - \frac{x-1}{x}} = x$$

Putn=2

$$f_3(x) = \frac{1}{1-x} \quad (\text{same as } f_0(x))$$

So at n = 0, 3, 6, .....96,99;

$$f_n(x) = \left(\frac{1}{1-x}\right)$$

at n = 1, 4, 7, .....97,100,103;

$$f_n(x) = 1 - \frac{1}{x}$$

and n = 2, 5, 8, .....98,101,104 ;  $f_n(x) = x$

$$\therefore f_{100}(3) = 1 - \frac{1}{x} = 1 - \frac{1}{3} = \frac{2}{3}$$

$$\text{and } f_1(2/3) = 1 - \frac{1}{2/3} = 1 - \frac{3}{2} = -0.5$$

$$\text{and } f_2(3/2) = x = 3/2 = 1.5$$

$$f_{100}(3) + f_1\left(\frac{2}{3}\right) + f_2\left(\frac{3}{2}\right) = 2/3 + 1.5 - 0.5 = 5/3$$

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**Q.10)**

$$\begin{vmatrix} 0 & \cos x & -\sin x \\ \sin x & 0 & \cos x \\ \cos x & \sin x & 0 \end{vmatrix} = 0$$

$$\Rightarrow 0(0 - \sin x \cos x) - \cos x(0 - \cos^2 x) - \sin x(\sin^2 x) = 0$$

$$\Rightarrow \sin^3 x - \cos^3 x = 0$$

$$\Rightarrow (\sin x - \cos x)(1 + \sin x \cos x) = 0$$

$$\Rightarrow \therefore \sin x - \cos x = 0$$

$$\Rightarrow \therefore \sin x - \cos x = 0$$

$$\therefore \tan x = 1$$

$$\therefore x = \frac{\pi}{4} \text{ or } \frac{5\pi}{4}$$

$$\text{Now, } \tan\left(\frac{\pi}{4} + x\right) = \frac{1 + \tan x}{1 - \tan x}$$

$$\text{Now Put } x = \frac{\pi}{3}$$

$$= \frac{1 + \tan \frac{\pi}{3}}{1 - \tan \frac{\pi}{3}}$$

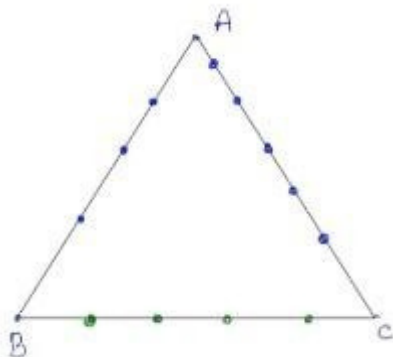
$$= \frac{1 + \sqrt{3}}{1 - \sqrt{3}}$$

$$= \frac{(1 + \sqrt{3})^2}{1 - \sqrt{3}} = \frac{1 + 3 + 2\sqrt{3}}{-2} = -2 - \sqrt{3}$$

similarly for  $\tan\left(\frac{5\pi}{4} + \frac{\pi}{3}\right) = -2 - \sqrt{3}$

$$\sum \tan\left(\frac{\pi}{3} + x\right) = 2 \times (-2 - \sqrt{3}) = -4 - 2\sqrt{3}$$

**Q.11)** For a number to be divisible by 8, the last 3 digits should be divisible by 8. In the given number 89476\*2, the last 3 digits are 6\*2. Since we have to find the smallest number with the given condition, we start substituting \* with 0 to 9 and check if it is divisible by 8. 602 is not divisible by 8. 612 is not divisible by 8. 622 is not divisible by 8. 632 is divisible by 8. Hence, the correct answer is 3.



**Q.12)**

Single triangle needs 3 vertices

**Case 1:**

One point in each side

$$= {}^3C_1 \times {}^4C_1 \times {}^5C_1 = 60$$

**Case 2:**

1 point from side AB & 2 points from BC

$$= {}^3C_1 \times {}^4C_2 = 12$$

**Case 3:**

1 point from side BC & 2 points from AC

$$= {}^4C_1 \times {}^5C_2 = 40$$

**Case 4:**

1 point from side AC & 2 points from BC

$$= {}^5C_1 \times {}^4C_2 = 30$$

**Case 5:**

1 point from side AB & 2 points from AC

$$= {}^3C_1 \times {}^5C_2 = 30$$

**Case 6:**

1 point from side AC & 2 points from AB

$$= {}^5C_1 \times {}^3C_2 = 15$$

**Total Triangle = 60+18+12+40+30+30+15=205**

**Second Approach**

Total vertices = 3+4+5=12

$${}^{12}C_3 - {}^3C_3 - {}^4C_3 - {}^5C_3 = 220 - 1 - 4 - 10 = 205$$

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**Q.13)** As we learnt in

Rule for Circular Permutations -

$(n - 1)!$  = Clockwise + Anticlockwise arrangement.

Ex. Seating arrangement of persons round a table.

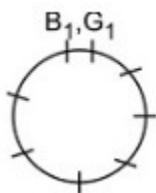
- wherein

DISTINCT arrangement.

Number of ways = Total - when B1 and G1 sit together

Total ways to seat 8 people on table =  $7!$

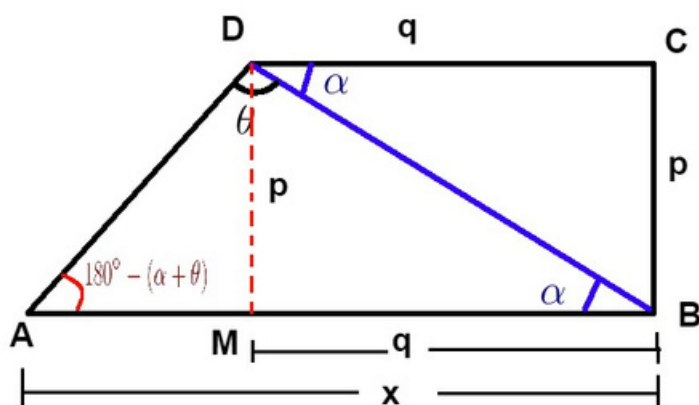
When B1 and G1 sit together =  $6! \times 2!$



Number of ways =  $7! - 2 \times 6! = 6!(7 - 2) = 5 \times 6!$

Correct option is 1.

Q.14)



In  $\triangle DBM$ ,

$$\cot \alpha = \frac{q}{p}$$

In  $\triangle DAM$ ,

$$\tan(\pi - \theta - \alpha) = \frac{p}{x - q}$$

$$\tan(\theta + \alpha) = \frac{p}{q - x}$$

$$x = q - p \cot(\theta + \alpha)$$

$$= q - p \left[ \frac{\cot \theta \cot \alpha - 1}{\cot \alpha + \cot \theta} \right]$$

$$= q - p \frac{(q \cos \theta - p \sin \theta)}{q \sin \theta + p \cos \theta}$$

Thus  $AB = \frac{(p^2 + q^2) \sin \theta}{p \cos \theta + q \sin \theta}$

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**Q.15)**  $|x - 1| + 2 \leq 4 \Rightarrow -4 \leq |x - 1| + 2 \leq 4$

$$\Rightarrow -6 \leq |x - 1| \leq 2$$

$$\Rightarrow -6 \leq |x - 1| \text{ and } |x - 1| \leq 2$$

As  $|x - 1| \geq -6$  is always true so, solution of  $|x - 1| \geq -6$  is  $\mathbb{R}$

Now

$$|x - 1| \leq 2$$

$$\Rightarrow -2 \leq x - 1 \leq 2$$

$$\Rightarrow -1 \leq x \leq 3.$$

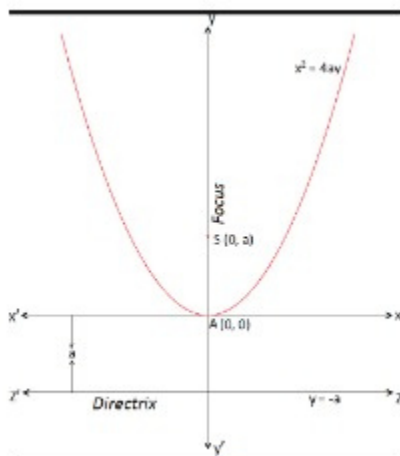
So, Solution is  $\mathbb{R} \cap [-1, 3] = [-1, 3]$

**Q.16)** As we learnt in

Standard equation of parabola -

$$x^2 = 4ay$$

- wherein

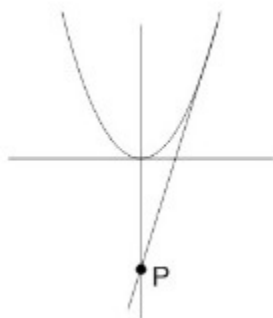


Condition of tangency -

$$c^2 = a^2 (1 + m^2)$$

- wherein

If  $y = mx + c$  is a tangent to the circle  $x^2 + y^2 = a^2$



Tangent to  $x^2 + y^2 = 4$  is

$$y = mx \pm 2\sqrt{1+m^2}$$

Also  $x^2 = 4y$

$$x^2 = 4mx + 8\sqrt{1+m^2}$$

If we put  $D=0$

$$m^4 - 4m^2 - 4 = 0$$

$$m^2 = 2 + 2\sqrt{2}$$

$$m^2 = 2(\sqrt{2} + 1)$$

Hence Equation of Tangent is

$$y = mx \pm 2\sqrt{1 + 2(\sqrt{2} + 1)}$$

$$y = mx \pm 2\sqrt{3 + 2\sqrt{2}}$$

As both the tangents intersect at y-axis

Distance from the origin is given by y coordinates or  $x=0$

$$y = 2\sqrt{3 + 2\sqrt{2}}$$

**Q.17)** As we have learned

General Term in the expansion of  $(x+a)^n$  -

$$T_{r+1} = {}^n C_r \cdot x^{n-r} \cdot a^r$$

Now, 
$$S = \left( \frac{(x^{1/3} + 1)(x^{2/3} - x^{1/3} + 1)}{(x^{2/3} - x^{1/3} + 1)} - \frac{(x^{1/2} - 1)(x^{1/2} + 1)}{x^{1/2}(x^{1/2} - 1)} \right)^{10}$$

$$= ((x^{1/3} + 1) - (1 + x^{-1/2}))^{10}$$

$$= (x^{1/3} - x^{-1/2})^{10}$$

$$T_{r+1} = {}^{10}C_r (x^{1/3})^{10-r} (-x^{-1/2})^r$$

$$= (-1)^r \cdot {}^{10}C_r \cdot x^{\frac{10-r}{3} - \frac{r}{2}}$$

For term independent of x,

$$\frac{10-r}{3} - \frac{r}{2} = 0 \Rightarrow 5r = 20$$
$$\Rightarrow r = 4$$

$$\text{So, } T_{r+1} = {}^{10}C_4 = 210$$

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**Q.18)**

$$x^2 - (a+1)x + a^2 + a - 8 = 0$$

Since roots are different, therefore  $D > 0$

$$\Rightarrow (a+1)^2 - 4(a^2 + a - 8) > 0$$

$$\Rightarrow (a-3)(3a+11) < 0$$

There are two cases that arise

**Case 1**  $a-3 > 0$  and  $3a+11 < 0$

$$\Rightarrow a > 3 \text{ and } a < -\frac{11}{3}$$

Hence, no solution in this case

**Case 2**  $a-3 < 0$  and  $3a+11 > 0$

$$\Rightarrow a < 3 \text{ and } a > -\frac{11}{3}$$

$$\therefore -\frac{11}{3} < a < 3 \Rightarrow -2 < a < 3$$

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**Q.19)** Given  $A + B = 2B'$  .....(1)

Taking transpose of both the sides

$$(A + B)' = (2B)'$$

$$A' + B' = 2(B)'$$

$$A' + B' = 2B \text{ .....(2)}$$

Also given,  $3A + 2B = I$  .....(3)

Taking transpose of both the sides

$$3A' + 2B' = I \text{ .....(4)}$$

(Note: Transpose of I is I itself)

Now from these 4 equations we need to get a relation in A and B by eliminating A' and B'

Let us first eliminate B'

From (4):  $3A' + A + B = I$  (Using (1)) .....(5)

And 2 x (2):

$$2A' + 2B' = 4B$$

$$2A' + A + B = 4B$$

$$2A' + A - 3B = 0 \text{ .....(6)}$$

From (5) and (6) we can eliminate A' as well

From (5):  $3A' = I - A - B$  .....(7)

From (6):  $2A' = 3B - A$  .....(8)

$$2 \times (7) - 3 \times (8): 0 = 2I + A - 11B \text{ .....(9)}$$

From (9) and (3):  $A = B = I/5$

For option (B) :  $10A + 5B = 2I + I = 3I$

Hence option (B) is correct

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**Q.20)** Length of side of cube = 1.4 cm  
 So, the Diameter of the largest sphere = 1.4 cm  
 The radius of the same,  $r = 0.7$  cm  
 Volume of sphere  
 $= \frac{4\pi r^3}{3}$   
 $= \frac{4\pi (0.7)^3}{3}$   
 $= 1.44 \text{ cm}^3$   
 Hence, the correct answer is 1.44 cm<sup>3</sup>.

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**Q.21)**  $15+25+\dots\dots\dots+995$   
 $1+2+3+\dots\dots\dots+99$   
 $99*50=0$   
 Option B

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**Q.22)** Let Price of sugar cane per unit is 100x and 100y units of sugarcane is consumed initially.

$$\text{Expenditure} = \text{Cost of sugarcane} + \text{Labour cost} = (100x)(100y) + 15\% \text{ of } (100x)(100y)$$

$$= 10000xy + 1500xy = 11500xy$$

After increase in the price of sugarcane and labour cost;

$$\text{Expenditure} = 125xz + 20\% \text{ of } 125xz = 150xz \text{ where } z \text{ is new consumption of sugarcane}$$

Since Expenditure remains same. So,

$$11500xy = 150xz$$

$$\text{So, } z = 1150y/15 = 230y/3$$

$$\text{Reduction in usage of sugarcane} = 100y - 230y/3 = 70y/3$$

$$\text{Percentage reduction in usage of sugarcane} = (70y/3) * 100/100y = 23.33\%$$


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**Q.23)** Number greater than 20000 or p

1st place can be placed with 5 possibilities and second with 4 possibilities and so on

$$\text{So } \underline{5} \times \underline{4} \times \underline{3} \times \underline{2} \times \underline{1} = 5! = P$$

And

Number greater than 30000 and less than 90000 or q

1st place can be placed with 3 possibilities(3,5,7) and second with 4 possibilities and so on

$$\text{So } \underline{3} \times \underline{4} \times \underline{3} \times \underline{2} \times \underline{1} = 5! = Q$$

$$\frac{P}{Q} = \frac{5!}{3 \times 4!} \Rightarrow \frac{5 \times 4!}{3 \times 4!} = \frac{5}{3}$$

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**Q.24)** Let  $\alpha = 1$  and  $\beta = -3$

$$\text{Sum of zeros} = (\alpha + \beta) = 1 + (-3) = -2$$

$$\text{Product of zeros} = \alpha\beta = 1 \times (-3) = -3$$

**So, the required polynomial is**

$$\begin{aligned} x^2 - (\alpha + \beta)x + \alpha\beta &= x^2 - (-2)x + (-3) \\ &= x^2 + 2x - 3 \end{aligned}$$

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**Q.25)** As we learnt in

Addition Theorem of Probability -

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

in general:

$$P(A_1 \cup A_2 \cup A_3 \cdots A_n) = \sum_{i=1}^n P(A_i) - \sum_{i < j} P(A_i \cap A_j) + \sum_{i < j < k} P(A_i \cap A_j \cap A_k) - \cdots - (-1)^{n-1} P(A_1 \cap A_2 \cap A_3 \cdots \cap A_n)$$

-

Independent events -

Two or more events are said to be independent if occurrence or non-occurrence of any of them does not affect the probability of occurrence of or non - occurrence of other events.

-

$$P(P) = \frac{3}{4}; P(Q) = \frac{1}{2}; P(R) = \frac{5}{8}$$

$$P(P \text{ or } Q) = P(P) + P(Q) - P(P \cap Q)$$

$$= \frac{3}{4} + \frac{1}{2} - \frac{3}{8}$$

$$= \frac{7}{8}$$

$$P(\bar{R}) = \frac{3}{8}$$

$$P(\text{PorQnotR}) = \frac{7}{8} \times \frac{3}{8} = \frac{21}{64}$$

26.

The question is " Total number of matches ending in draw is "

Hence, the answer is ' 6 '

Choice D is the correct answer.

27

The question is "Which team has the highest number of draws "

Hence, the answer is ' E '

Choice D is the correct answer.

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28.

The question is " Total points Team F scored was "  
Hence, the answer is ' 2 '

Choice C is the correct answer.

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29.

The question is " Which team was not defeated by team A "

Hence, the answer is 'D '

Choice C is the correct answer.

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30.

The question is " Team E was defeated by "

Hence, the answer is 'Only team B'

Choice C is the correct answer.

## Verbal Ability & Reading Comprehension

**Q.1) (A)** This might be a time-consuming question, as it asks us to pick the argument that is "NOT" made in the passage. We can immediately spot choice 4.. It states exact opposite of what the passage says. In the first para the author says "in More's time...given the plenty and security on offer, such restraints would not have seemed unreasonable" (it means that in More's time such restraints would have seemed reasonable), suggesting that restraints were there. 1 states the exact opposite. Thus 1 is the best choice. All the other three options are given in the passage.

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**Q.2) (B)**This is a very simple question. It can be easily answered. There is no mention of "competitive heterogeneity" in the passage. There is no mention of 3. 2 is true, as there is enough evidence for it in the first paragraph. Utopian society wants homogeneity and uniformity, which would imply restraints on one's individuality.

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**Q.3)** (b) The answer to this question can be found in the last paragraph. The author starts by saying that "utopia and dystopia evidently share more in common.... indeed, they might be twins...". He further adds "Yet we should not mistake this argument..." The author mentions "More", who was the first author of a book on Utopia, and further mentions Tommaso who also wrote a book on Utopia. We have enough evidence in the passage that shows that in literature we have enough material that have dealt with the idea of Utopia.

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**Q.4)** We know that the last paragraph discusses "international community". It can be seen at the end of last paragraph. The second last paragraph discusses "homogeneity", which can be seen at the end of second paragraph. Thus (D) is the best choice.

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**Q.5)** In evaluating the given options, it's beneficial to refer to the second paragraph of the original passage for key insights. The paragraph provides essential details about the original marshmallow experiment and its modified version involving cuttlefish.

Option A states that the original marshmallow experiment focused on studying children, while its modified version targeted cuttlefish. This is directly in line with the passage, which mentions that children between the ages of four and six were the subjects of the original experiment. Similarly, the modified version involved the study of cuttlefish, making Option A consistent with the text.

Option C suggests that the cuttlefish were trained to recognize specific shapes as indicators for the availability of food. This mirrors the passage's information about how researchers couldn't verbally communicate with the cuttlefish and instead used shape indicators to signal when food would be available.

Option D posits that the original experiment with children was followed up over a longer term compared to the cuttlefish version. This is a logical deduction based on the passage's mention of a long-term follow-up study for children, allowing us to safely assume that the cuttlefish experiment was of a shorter duration.

However, Option B suggests a correlation between self-control and survival advantages, an assertion not made in the passage. There is no evidence in the text to support the idea that self-control necessarily leads to survival benefits. Therefore, since Option B is not backed by the passage, it stands as the correct choice in this context.

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**Q.6)** When analyzing the options to assess how they would impact the findings of the experiments on cuttlefish and self-control, it's crucial to consider the methodology and conclusions of the original study.

Option A suggests that if cuttlefish were equally fond of live grass shrimp and raw prawn, it would significantly weaken the study's conclusions. The experimental setup relies on the assumption that cuttlefish have a distinct preference for one type of food over another. If this assumption were invalidated, the study's observations on self-restraint would be compromised. Therefore, Option A can be safely eliminated as it would undermine the study's integrity.

Option B posits that if cuttlefish were social creatures, this would bolster the findings of the study, specifically the comments made in the final paragraph. The author notes that species capable of self-control usually share another common trait: they lead long, social lives. If cuttlefish were found to be social, this would reinforce the study's primary claims about self-control. Thus, Option B strengthens the study's conclusions.

Option C suggests that cuttlefish can wait for a longer period than initially observed, which does not particularly affect the study's findings. The study has already noted that the longest a cuttlefish waited was 130 seconds. Knowing that cuttlefish can wait even longer is not directly relevant to the main argument. So, Option C neither strengthens nor weakens the study's conclusions.

Option D argues that if cuttlefish could not distinguish between geometrical shapes, this would critically weaken the study's findings. The methodology used in the study is based on the premise that cuttlefish can recognize specific shapes to know when food will become available. Invalidating this premise would call into question the entire study. Therefore, Option D can be ruled out as it would weaken the study's results.

In summary, Option B is the correct choice as it would strengthen the study's conclusions about the self-control exhibited by cuttlefish.

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**Q.7)** When considering the options based on their alignment with Schnell's study on cuttlefish and self-control, each choice warrants close scrutiny.

Option A is supported by the study's results, which found that cuttlefish could indeed wait for their preferred food, just as some children showed self-restraint in the original marshmallow experiment. Each time the cuttlefish demonstrated the ability to wait, the researchers increased the waiting time by ten seconds, reaching up to 130 seconds at most. This indicates that like some children, cuttlefish too exhibit self-restraint. Therefore, Option A is accurate.

Option B, on the other hand, is problematic. The author's remarks about self-control and social behavior don't suggest a causal relationship between intelligence and sociability. Instead, the author observes that self-control—an attribute often associated with higher intelligence—is

commonly found in animals with long, social lives. There is no indication that one causes the other. Thus, Option B distorts the passage's content and cannot be considered correct.

Option C is directly supported by a section of the study that identified a clear hierarchy of food preferences among cuttlefish: they favored live grass shrimp, were indifferent to raw prawns, and found Asian shore crabs nearly unacceptable. This aligns perfectly with the assertion in Option C, making it a valid choice.

Option D is corroborated by Schnell's observations that the cuttlefish would sometimes turn away from the less-preferred food, acting "as if to distract themselves from the temptation of the immediate reward." This behavior demonstrates an additional layer to their self-control, making Option D accurate as well.

In summary, while Options A, C, and D are supported by evidence from the passage, Option B cannot be accurately inferred. It misrepresents the relationship between intelligence and sociability as depicted in the study. Hence, Option B is the correct choice for what cannot be inferred from the passage.

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**Q.8)** The question under consideration hinges on our comprehension of the cuttlefish experiment described in the second paragraph. Three pivotal aspects of the experiment shape our analysis:

(a) The hierarchy of food preference in cuttlefish is as follows: 1st choice is live grass shrimp, 2nd choice is raw prawns, and 3rd choice is Asian shore crab.

(b) Cuttlefish were trained to recognize symbols that indicate the availability of food: A Circle symbolizes immediate availability; a Triangle represents delayed availability, and a Square indicates that the food will never become available.

(c) Key Observations: When confronted with a single food choice in the absence of their first preference, cuttlefish will opt for their second preference. When presented with multiple food choices, cuttlefish will wait if their first choice is tagged with either a Circle or a Triangle.

Now, let's scrutinize the given options through the lens of these key points: Option A: Given that raw prawns and Asian shore crabs are not cuttlefish's first choice and that live grass shrimp (their first choice) is available but tagged with a delay symbol (Triangle), if cuttlefish willingly ignore the less desirable options and wait for the live grass shrimp, it would robustly validate the study's conclusions about their capacity for self-control. Hence, Option A offers substantial support to the study's findings, making it a strong candidate for the correct choice.

Option B: In this scenario, cuttlefish would naturally select raw prawns. The cuttlefish have been conditioned to recognize that a Square symbol means the food will never be available, making this option irrelevant for gauging self-control. Therefore, Option B can be dismissed as a correct choice.

Option C: Given the preference hierarchy, cuttlefish would choose raw prawns over Asian shore crabs, irrespective of the symbols tagged to the food. This choice doesn't help us evaluate the self-control exhibited by the cuttlefish, and thus, Option C can be ruled out.

Option D: If faced with live grass shrimp and raw prawns, cuttlefish will opt for live grass shrimp, which is their first preference, irrespective of the symbols attached to the food. This choice would not provide insights into the self-control capacity of the cuttlefish, making Option D unsuitable.

Based on this thorough analysis, it is clear that Option A is the correct answer as it most closely aligns with and supports the study's conclusions on the self-control capabilities of cuttlefish.

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**Q.9)** Option D is the most accurate selection for capturing the essence of the fourth paragraph, which delves into the intricate relationship between technology and societal norms, values, and human nature. The paragraph establishes that technology, similar to laws and customs, acts as a societal institution that influences how individuals live and engage with their environment. In this regard, Option D succinctly summarizes the key point, positing that technology, laws, and customs are alike when viewed as institutions that shape human behavior and societal norms.

Option A, although recognizing the comparability between technology, laws, and customs, falls short of encapsulating the paragraph's core message. While the paragraph does imply that these three elements are comparable, it goes beyond mere comparison to highlight their institutional role in shaping society. Therefore, Option A doesn't wholly capture the nuanced point made in the paragraph.

Option B veers off course by misinterpreting the primary focus of the fourth paragraph. While the paragraph indeed explores how technology can shape sanctioned versions of human nature, it does not make a direct comparison between the efficacy of technology, laws, and customs in emphasizing particular aspects of human nature. The paragraph's main point isn't to rank these institutions but rather to showcase their similarities in shaping societal norms and human behavior.

Option C can be viewed as partially correct but is not entirely aligned with the paragraph's central theme. While the paragraph does suggest that technology embodies the interests of its users, it does not specifically argue that the automobile, for example, represents an innate human interest in mobility. The passage mentions the automobile merely as an illustrative example of a technology that reflects the interests of its users but stops short of tying it explicitly to the concept of mobility.

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In summary, Option D stands as the most fitting choice for summarizing the main point of the fourth paragraph. It accurately identifies the shared institutional role that technology, laws, and customs play in influencing how people live and what society deems as acceptable human behavior. Options A, B, and C, although touching upon elements present in the paragraph, do not fully encapsulate its primary message. Hence, Option D is the correct choice.

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**Q.10)** Option B is the most apt choice, precisely capturing the main thrust of the passage, which discusses the critical theory of technology's view of technologies as environments rather than mere collections of tools. The passage posits that technologies have a profound influence on their users, akin to the impact that laws and customs have on society. These technologies, laws, and customs serve as manifestations of particular interests and values that characterize the communities that adopt and live by them.

Option C and Option D are not viable choices as they introduce elements—specifically, the role of nature and the limits of societal control over history—that are not touched upon in the passage. The passage is concerned with how technologies, like laws and customs, shape society and represent certain dimensions of human nature. It does not venture into the territories that Options C and D suggest, such as nature's role in societal shaping or the limits of societal control over historical events.

Option A is also not aligned with the passage's core message. Although Option A addresses institutions, it errs in suggesting that these institutions—technologies, laws, and customs—represent dimensions of "human culture." The passage is explicit in stating that these institutions actually symbolize certain facets of "human nature," a distinction that makes Option A an inadequate choice.

In summary, Option B emerges as the most accurate selection given its coherence with the passage's focus on the critical theory of technology. This theory argues for viewing technologies as environments that, like laws and customs, reflect and shape the particular values and interests of the communities they serve. Options A, C, and D, on the other hand, either misinterpret or introduce concepts not present in the passage, making them unsuitable choices. Therefore, Option B is the correct choice.

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**Q.11)** Option C is the correct choice because it contradicts a specific aspect discussed in the passage. The passage elaborates on the theme of capitalist rationalization of production, characterizing it by the consolidation of authority within institutions and organizations as well as by the deskilling of the labor force. It makes it clear that these patterns emerge in various settings, including factories, prisons, and the public sphere. However, the passage does not

attribute these patterns to the models set forth by Foucault's concept of prisons or Habermas' idea of the public sphere.

Option A aligns well with the passage's argument, which identifies a recurring pattern of capitalist rationalization of production as a strategy for maintaining control over a labor force that has been disempowered and deskilled. This pattern is not confined to a single context but manifests itself in various scenarios, including factories and even socialist systems.

Option B is also consistent with the passage's insights, specifically its recognition of the contributions made by Marx and Marcuse to the critical theory of technology. According to the passage, both scholars help illuminate how technological systems are not only shaped by but also perpetuate existing social and political hierarchies.

Option D is in agreement with the passage's discussion that asserts the pattern of capitalist rationalization of production isn't limited to capitalist societies alone but also appears in socialist systems. The centralization of power and the deskilling of the labor force are phenomena that the passage identifies as transcending specific economic systems.

In summary, while Options A, B, and D are all in sync with the passage's key arguments, Option C stands out for contradicting the passage's statement about the universality of the patterns of capitalist rationalization across different contexts. The passage does not suggest that these patterns are dictated by Foucault's and Habermas' theories, making Option C the correct choice for its inconsistency with the passage's content.

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**Q.12)** Option D is the correct choice because it introduces an element—the negative consequences of technologies privileging certain dimensions of human nature—that is not covered in the passage. The passage discusses how technologies represent the interests of their users and shape societal values and behaviors, but it stops short of suggesting any detrimental effects stemming from this relationship.

Option A finds its roots in the passage's discussion of the laws of property and customs like parental authority. The passage posits that these societal norms and laws represent interests that constitute society's sanctioned version of human nature. Therefore, it is reasonable to infer that since human nature is not fixed and emerges from historical and societal context, the significance of parental authority in ensuring children's safety and growth doesn't mean that it is a permanent feature of human nature.

Option B aligns well with the passage's content, particularly with the section concerning the critical theory of technology. The passage describes this theory as a political theory of modernity with a normative aspect. It speaks to the duality of advancing human rights while an authoritarian social order is concurrently solidified in the background. This allows for the inference that as issues related to human rights become more pronounced, the social fabric turns increasingly authoritarian.

Option C is also supported by the passage, especially the part where it discusses the need for a 'hermeneutics of technology.' According to the passage, understanding the implicit and explicit meanings of technology requires diving into their social histories, as has been done with technologies like bicycles, artificial lighting, and firearms. Therefore, one can infer that engaging with these social histories is crucial for decoding the meanings and rituals scripted by these technologies.

In summary, Options A, B, and C can be logically inferred from the passage. However, Option D introduces a concept—the negative impacts of technologies—that is not present in the original text. This makes Option D the correct choice for being the statement that cannot be inferred from the passage.

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**Q.13)** Option 2 is the correct answer.

A damp squib is an idiom that refers to a situation or event that is less impressive and exciting than expected.

For Example:

The inauguration of the event was a damp squib.

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**Q.14)** Option 3 is the correct answer

Call a spade a spade is a phrase which means to speak the truth and plainly about things without being polite and pleasant or to be blunt

For example:

It's always not right to call a spade a spade.

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**Q.15)** Option 3 is the correct answer.

Bolt from the blue means a complete surprise or something that is totally unexpected.

eg: The result of the election came as a bolt from the blue.

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**Q.16) to bell the cat** means to attempt or agree to attempt an impossibly difficult task that if achieved, will benefit the entire community.

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**Q.17) Complete ass of himself** means to do something that makes someone or oneself seem stupid or ridiculous.

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**Q.18) A bold from the blue** means something important or unusual that happens suddenly or unexpectedly.

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**Q.19) Cry in the wilderness** means one who expresses an unpopular opinion or idea.

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**Q.20) Use 'known'** in place of 'know'. Known is the past participle of know. You use known to describe someone or something that is clearly recognized by or familiar to all people or to a particular group of people.

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**Q.21) Use 'personalized'** in place of 'personalizing' .

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**Q.22) Use 'for'** in place of 'among'. Among is used when the items are part of a group, or are not specifically named

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**Q.23) Use 'which'** in place of 'who'. Who and sometimes that refer to people. That and which refer to groups or things.

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**Q.24)** The correct sentence is “Worthy things often lack panache, but a green roof can turn the dreary into something instantly appealing.” Hence, the option (b) is the correct answer.

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**Q.25)** We notice that the last line of the paragraph ends with the fact that they have been subjected to wrong conditions-- “more than a couple of times” .Now since we are left with the option of a number more than two, we would obviously be scanning for one such figure in order get us a clear information about the survey.

Option A is suggesting that we need to look into the problem even though the figures do not matter. This can be the line following the sentence after the figures are mentioned. Hence we can avoid this option.

Option B speaks about the vacation being spoiled. This should come actually after wetting out all the problems. Hence this cannot be a suitable option.

Option C gives us more numbers (data) on the survey. This is the perfect sentence that can follow the passage.

Option D is a conditional statement which can only come after the statements about the survey have been mentioned. Hence we cannot choose this as our answer.

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**Q.26)** When we closely observe the last line of the passage we are successful in noticing that there has been a dithering. So our next line should be something explaining the dithering to the reader.

Option A is pretty judgemental about the government. It is too early to come down to a judgement as we are not done with the entire scenario.

Option B is a case of dithering as the 100% FDI only in food products cannot be properly established unless there is a provision of similar nature on other products.

Hence this is our answer as it establishes continuity and provides an example for the concept in the last statement. This explains why the food processing sector has taken a back seat.

Option C is a judgement again. At this point of the passage we are required to provide a suitable example on why the food processing sector cannot perform well.

Option D speaks about a solution. We know that at the point of the passage we are discussing problems and we are not yet done with that. Hence we should not jump into the solution too early.

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**Q.27)** We might have noticed that the passage ends with one nature of the job of civil servants/posts they will be appointed to. It is most appropriate to go for the option continuing the content of various posts that a civil servant should work upon.

Option A speaks about the responsibilities. But this is something that should come after all the

responsibilities of a civil servant are mentioned. Hence we look for better options.

Option B is like a conclusion which can come only at the end of the passage. We notice that the sequence we require is largely dependent on the nature of posts given to a civil servant. Hence we can scan for a better option

Option C is the correct one as it continues the positions that are supposed to be held by the civil servants. Hence this could be our answer.

Option D is a statement which can come later down the passage as it deals with the promotions and the career paths of a civil servant. This does not get a higher priority over statement C.

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**Q.28)** The passage ends in a negation of thoughts. What is the actual situation? The answer is nothing but option A.

Option B is stating something positive. We see that the last line of the paragraph has been demanding a negative turn of events.

Option C and option D are general statements which do not fit in as we need an incident with negative content.

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**Q.29)**

Correct Answer: (d) art; aesthetics; dreaming; repertoire

Explanation: Art encourages us to dream and imagine, expanding our repertoire of thoughts and ideas. The other options, while important for logical reasoning and technological advancement, do not directly relate to envisioning beyond the tangible world as art does.

**Q.30)**

Correct Answer: (d) politics; rhetoric; debates; grasp

Explanation: Politics involves understanding rhetoric and engaging in debates, providing a deeper grasp of societal dynamics. The other options focus on different aspects of knowledge and exploration but do not directly address the critical analysis of societal issues.

**Q.31)**

Correct Answer: (a) anthropology; cultures; traditions; comprehension

Explanation: Anthropology's focus on cultures and traditions helps in understanding the evolution of human societies. It provides a comprehensive view of the connection between past and present.

**Q.32)**

Correct Answer: (d) writing; symbols; information; intellect

Explanation: Writing, through the use of symbols, enables the transmission of information and knowledge, expanding our intellect and understanding.

**Q.33)**

Correct Answer: (c) programming; code; communicate; competency

Explanation: Programming requires precise code to communicate instructions to computers, enhancing competency in technical and logical communication.

**Q.34)**

Correct Answer: (a) technology; innovations; proactive; toolkit

Explanation: Technology's rapid evolution demands that we stay proactive with innovations, enriching our toolkit for addressing modern challenges.

**Q.35)** (d) The word "plethora" means an excessive amount of something. Using it to describe resources is inappropriate. The correct option is (d).

**Q.36)** (d) The word "arduous" means involving or requiring strenuous effort; difficult and tiring. Using it to describe making friends is inappropriate. The correct option is (d).

**Q.37)** (d) The word "copious" means abundant in supply or quantity. Using it to describe a student is inappropriate. The correct option is (d).

**Q.38)** (d) The word "egalitarian" means believing in or based on the principle that all people are equal and deserve equal rights and opportunities. Using it to describe a hierarchical structure is inappropriate. The correct option is (d).

**Q.39) (C)**

Solutions Replace TO with INTO. Hands are out into the pocket and not to the pocket.

**Q.40) (D)**

The usage of the word 'mark' here is inappropriate. It doesn't make for a meaningful sentence.

**Q.41)**

The correct order of the sentences to form a coherent paragraph is as follows:

D) They faced countless challenges and obstacles on their journey to escape oppression.

B) Through the darkest times, they held onto hope.

A) However, their dreams of freedom persisted.

C) These brave individuals risked everything for the chance to live in a land where they could be free.

E) In the end, their unwavering determination and resilience triumphed.

The paragraph begins with the challenges faced by these individuals as they sought freedom (sentence D), followed by their unwavering hope (sentence B). Despite the challenges, their dreams of freedom persisted (sentence A), and it is explained that they risked everything for a chance at freedom (sentence C). The paragraph concludes with their triumph (sentence E). Therefore, option C is the correct arrangement of the sentences to form a coherent paragraph.

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**Q.42)** The correct order of the sentences to form a coherent paragraph is as follows:

A) In the heart of the city, a bustling market offered a vibrant array of goods and fresh produce.

B) The aroma of street food wafted through the air, tempting passersby with its enticing flavours.

C) Crowds of people bustled about, each on their own mission to find treasures and bargains.

D) Artisans displayed their craftsmanship, showcasing handmade jewellery and textiles.

E) It was a sensory feast, where the sights, sounds, and scents of the city converged.

The paragraph begins with the description of the bustling market in the city (sentence A), followed by the mention of tempting street food aromas (sentence B). The crowds and their pursuits are described next (sentence C), followed by the artisans displaying their craftsmanship (sentence D). The paragraph concludes by emphasising the sensory experience of the city market (sentence E).

Therefore, option B is the correct arrangement of the sentences to form a coherent paragraph.

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**Q.43)** The correct answer is the **fourth option**.

B. The Indian union cabinet approved the country's national education strategy on 29 July 2020.

A. It superseded India's previous educational strategy, which was created in 1986.

D. This policy significantly improves India's educational system. Restructuring India's educational system is the primary goal of the National Education Policy 2022.

C. And it provides a framework for education from the primary grades up to higher education, as well as for vocational training in both urban and rural settings.

This order presents the information in a logical sequence, starting with the subject (the union cabinet) approving the national education strategy in statement (A). This statement is followed by the statement (B), as the statement (B) begins with the pronoun (It). The statement (B) is followed by statement (D), which mentions the primary goal of the national education policy and statement (D) is followed by statement (C), as it is its extension since this statement begins with the conjunction **and**.

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**Q.44) Correct Answer:- 1423**

**Explanation:-** Statement 1 is the opening sentence as it mentions about the existence of energy. Statement 4 further states the role played by this energy. Therefore, statement 1 is followed by statement 4.

Also, statement 4 talks about 'galaxies getting apart from each other' which leads to the expansion of the universe (as mentioned in statement 2). Further, statement 3 complements statement 2. So, correct order is 1423.

Addl info: 3-2 is incorrect as there's no flow from 4 to 3. Also, why push is perpetual is better explained by 4-2 pair. 3 sums ups

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**Q.45) Correct Answer:- 2413**

**Explanation:-** Statement 2 is the opening sentence as it introduces Dr. Thomas Percival who is being talked about in the further statements.

Statement 2 is followed by statement 4 as '**Percival's proposal**' (mentioned in st. 4) refers to '**a radical reform**' (mentioned in st. 2). Statement 1 will be next in order as it throws light on what actually was Percival's proposal. Statement 3 will be the concluding sentence as it presents the consequences of the proposal. So, the correct order is 2413.

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## Mock TEST - 3

### Question Paper

#### Quantitative Aptitude Short Answer (SA) type

**Q.1)** if  $a \in R$  and the equation  $-3(x - [x])^2 + 2(x - [x]) + a^2 = 0$  (where  $[x]$  denotes the greatest integer  $\leq x$ ) has no integral solution, then all possible values of  $a$  lie in the interval:

$a \in (-1, 0) \cup (0, p)$  what is the value of  $p$

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**Q.2)** If  $x = a, y = b, z = c$  is a solution of the system of linear equations

$$x + 8y + 7z = 0$$

$$9x + 2y + 3z = 0$$

$$x + y + z = 0$$

such that the point  $(a, b, c)$  lies on the plane  $x + 2y + z = 6$ , then  $2a + b + c$  equals :

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**Q.3)** No. of zeros at the end of  $(45!)^{450}$

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**Q.4)** A committee of 4 person is to be formed from 2 ladies , 2 old men and 4 young men such that it includes at least 1 lady, at least 1 old man and at most 2 young men . Then the total number of ways in which this committee can be formed is :

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**Q.5)** Let  $S_n = \frac{1}{1^3} + \frac{1+2}{1^3+2^3} + \frac{1+2+3}{1^3+2^3+3^3} + \dots + \frac{1+2+\dots+n}{1^3+2^3+\dots+n^3}$ .

If  $100 S_n = n$ , then  $n$  is equal to :

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**Q.6)**

if  $S = \tan^{-1} \left( \frac{1}{n^2 + n + 1} \right) + \tan^{-1} \left( \frac{1}{n^2 + 3n + 3} \right) + \dots$   
 $+ \tan^{-1} \left( \frac{1}{1 + (n + 19)(n + 20)} \right)$ , then S is equal to  $\frac{p}{n^2 + 20n + 1}$  what is  
value of p.

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**Q.7)** If  $3x + 2|y| + y = 7$  and  $x + |x| + 3y = 1$  then  $x + 2y$  is:

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**Q.8)** Consider an ellipse, whose centre is at the origin and its major axis is along the x-axis. If its eccentricity is  $\frac{3}{5}$  and the distance between its foci is 6, then the area (in sq. units) of the quadrilateral inscribed in the ellipse, with the vertices as the end points of major and minor axes of ellipse, is

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**Q.9)** For any three positive real numbers a, b and c,  $9(25a^2 + b^2) + 25(c^2 - 3ac) = 15b(3a + c)$ . Then:  $b = ka$  value of k is

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**Q.10)** In a class of 100 students, 73 like coffee, 80 like tea and 52 like lemonade. It may be possible that some students do not like any of these three drinks. Then the difference between the maximum and minimum possible number of students who like all the three drinks is

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**Q.11)** A sum of money under compound interest doubles itself in 4 years. In how many years will it become 16 times itself?

**Q.12)** Two trains A and B were moving in opposite directions, their speeds being in the ratio 5 : 3. The front end of A crossed the rear end of B 46 seconds after the front ends of the trains had crossed each other. It took another 69 seconds for the rear ends of the trains to cross each other. The ratio of length of train A to that of train B is  $\frac{P}{2}$  than value of p is?

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**Q.13)** Seven men and Five Robots can finish a job in double the time as taken by five men and twelve robots to finish the same job. If one robot can finish the half of the job in 30 days, then how many men can finish the job in 30 days?

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**Q.14)** Solve for x and y:  $11x + 15y = -23, 7x - 2y = 20$  then find the value of  $2x+y$

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**Q.15)** The area (in sq. units) of the region

$$\{(x, y) : x \geq 0, x + y \leq 3, x^2 \leq 4y \text{ and } y \leq 1 + \sqrt{x}\}$$

is:  $\frac{k}{2}$  value of k is

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### Quantitative Ability MCQ type

**Q.1)** Let  $f_k(x) = \frac{1}{k} (\sin^k x + \cos^k x)$  where  $x \in \mathbb{R}$  and  $k \geq 1$  Then  $f_4(x) - f_6(x)$  equals :

A)  $\frac{1}{4}$

B)  $\frac{1}{12}$

C)  $\frac{1}{6}$

D)  $\frac{1}{3}$

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Q.2) If  $A = \begin{bmatrix} 2 & -3 \\ -4 & 1 \end{bmatrix}$ , then  $\text{adj}(3A^2 + 12A)$  is equal to :

A)  $\begin{bmatrix} 51 & 63 \\ 84 & 72 \end{bmatrix}$

B)  $\begin{bmatrix} 51 & 84 \\ 63 & 72 \end{bmatrix}$

C)  $\begin{bmatrix} 72 & -63 \\ -84 & 51 \end{bmatrix}$

D)  $\begin{bmatrix} 72 & -84 \\ -63 & 51 \end{bmatrix}$

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Q.3) Find the last digit of  $15+25+35+\dots+995$

A) 1

B) 0

C) 3

D) 5

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**Q.4)** The sum of the digits in the unit's place of all the 4-digit numbers formed by using the numbers 3, 4, 5 and 6, without repetition, is :

- A) 432 B) 108 C)36 D)18**

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**Q.5)** Let  $a, b, c, \in R$  if  $f(x) = ax^2 + bx + c$  is such that  $a+b+c=3$  and

$$f(x+y) = f(x) + f(y) + xy \quad \forall x, y \in R \text{ then}$$

$\sum_{n=1}^{10} f(n)$  is equal to :

- A) 165**  
**B) 190**  
**C) 255**  
**D) 330**

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**Q.6)** Let  $x \in (0, 1)$ . The set of all  $x$  such that  $\sin^{-1}x > \cos^{-1}x$ , is the interval :

- A)  $\left(\frac{1}{2}, \frac{1}{\sqrt{2}}\right)$**   
**B)  $\left(\frac{1}{\sqrt{2}}, 1\right)$**   
**C) (1,2)**

D)  $\left(0, \frac{\sqrt{3}}{2}\right)$

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Q 7). Solve  $\frac{(x-1)(x+4)^4}{(x-3)^2} > 0$

- 1)  $(1, \infty)$
  - 2)  $(1, \infty) - \{3\}$
  - 3)  $(-4, 1)$
  - 4)  $(-4, 3)$
- 
- 

**Q.8)** A square, of each side 2, lies above the x-axis and has one vertex at the origin. If one of the sides passing through the origin makes an angle  $30^\circ$  with the positive direction of the x-axis, then the sum of the x-coordinates of the vertices of the square

- A)  $2\sqrt{3} - 1$
  - B)  $2\sqrt{3} - 2$
  - C)  $\sqrt{3} - 2$
  - D)  $\sqrt{3} - 1$
- 
- 

**Q.9)** Let  $f$  be an odd function defined on the set of real numbers such that for  $x \geq 0$ ,

$$f(x) = 3 \sin x + 4 \cos x.$$

Then  $f(x)$  at  $x = -\frac{11\pi}{6}$  is equal to:

- A)  $\frac{3}{2} + 2\sqrt{3}$

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**B)**  $-\frac{3}{2} + 2\sqrt{3}$

**C)**  $\frac{3}{2} - 2\sqrt{3}$

**D)**  $-\frac{3}{2} - 2\sqrt{3}$

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**Q.10)** If S is the set of distinct values of 'b' for which the following system of linear equations

$$x+y+z=1$$

$$x+ay+z=1$$

$$ax+by+z=0$$

has no solution, then S is :

**A)** an infinite set

**B)** a finite set containing two or more elements

**C)** a singleton

**D)** an empty set

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**Q.11)** How many pairs (a, b) of positive integers are there such that  $a \leq b$  and  $ab = 4^{2017}$  ?

**A)** 2018

**B)** 2019

**C)** 2017

**D)** 2020

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**Q.12)** An eight digit number divisible by 9 is to be formed using digits from 0 to 9 without repeating the digits. The number of ways in which this can be done is

- A)  $72(7!)$
  - B)  $18(7!)$
  - C)  $40(7!)$
  - D)  $36(7!)$
- 
- 

**Q.13)** Let  $x, y, z$  be positive real numbers such that  $x + y + z = 12$  and  $x^3 y^4 z^5 = (0.1)(600)^3$ . Then  $x^3 + y^3 + z^3$  is equal to:

- A) 270
  - B) 258
  - C) 342
  - D) 216
- 
- 

**Q.14)** The number of solutions of the equation  $\sin 2x - 2 \cos x + 4 \sin x = 4$  in the interval  $[0, 5\pi]$  is

- A) 3
  - B) 5
  - C) 4
  - D) 6
- 
- 

**Q.15)** Solution of  $||x|-2| \leq 2$  is

- 1)  $[-4, 4]$

- 2) (-4,4)
  - 3) R
  - 4) Noneofthese
- 
- 

**Q.16)** A line drawn through the point P(4, 7) cuts the circle  $x^2+y^2=9$  at the points A and B. Then PA · PB is equal to :

- A)53 B)56 C)74 D)65**
- 
- 

**Q.17)** The eccentricity of an ellipse having centre at the origin, axes along the co-ordinate axes and passing through the points (4, -1) and (-2, 2) is :

- A)  $\frac{1}{2}$
  - B)  $\frac{2}{\sqrt{5}}$
  - C)  $\frac{\sqrt{3}}{2}$
  - D)  $\frac{\sqrt{3}}{4}$
- 
- 

**Q.18)** A glass contains 500 cc of milk and a cup contains 500 cc of water. From the glass, 150 cc of milk is transferred to the cup and mixed thoroughly. Next, 150 cc of this mixture is transferred from the cup to the glass. Now, the amount of water in the glass and the amount of milk in the cup are in the ratio

- A) 1 : 1**

**B) 10 : 13**

**C) 3:10**

**D) 10:3**

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**Q.19)** A shopkeeper intended to earn a profit in the range of 40% to 50%. Which of the following could be the value of percent by which the cost price of an article be marked up such that even after allowing a discount of 50%, he could have earned the intended profit?

**A) 100 B) 150 C) 50 D) 190**

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**Q.20)** The real number  $k$  for which the equation,  $2x^2 + 3x + k = 0$  has two distinct real roots in  $[0, 1]$ .

**A) does not exist. B) lies between 1 and 2 . C)**

**lies between 2 and 3 . D) lies between -1 and 0 .**

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**Q.21)** The point  $(2, 1)$  is translated parallel to the line  $L : x - y = 4$  by  $2\sqrt{3}$  units. If the new point  $Q$  lies in the third quadrant, then the equation of the line passing through  $Q$  and perpendicular to  $L$  is :

**A)  $x + y = 2 - \sqrt{6}$**

**B)  $x + y = 3 - 3\sqrt{6}$**

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C)  $x + y = 3 - 2\sqrt{6}$

D)  $2x + 2y = 1 - \sqrt{6}$

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**Q.22)** During the annual sports meet on 25th January 1983, at St Xavier's School, Durgapur, two big jerricans were arranged by the P.T. Sir Mr Shantimoy Biswas for the refreshment purposes of the students participating. One of the jerricans was filled with 20 litres of freshly extracted pure orange juice, while the other was filled with 20 litres of cold drinking water mixed with Electoral ORS powder. Sir Biswas took a 2-litre mug and transferred one mug of orange juice from the first jerrican to the second. He then moved the same amount from the second jerrican to the first. He repeated the whole process one more time, and the two different drinks were ready. The drink in the first jerrican became such a hit among the students that it was named the Shanti-Punch, and the participation in the school sports rose considerably in the subsequent years to be able to have the Shanti-punch. What was the final concentration of pure orange juice in the Shanti-Punch ?

- A) 100/121 B) 109/121 C) 101/121 D) 10/11
- 
- 

**Q.23)** The sum of the rational terms in the binomial expansion of  $\left(2^{\frac{1}{2}} + 3^{\frac{1}{5}}\right)^{10}$  is

A) 25

B) 24

C) 23

D) 22

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Q.24) The last integral value of  $\alpha$  of  $x$  such that  $\frac{x-5}{x^2+5x-14} > 0$  satisfies,

A)  $\alpha^2 + 3\alpha - 4 = 0$

B)  $\alpha^2 - 5\alpha + 4 = 0$

C)  $\alpha^2 - 7\alpha + 6 = 0$

D)  $\alpha^2 + 5\alpha - 6 = 0$

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Q.25)

If  $P = \begin{bmatrix} \frac{\sqrt{3}}{2} & \frac{1}{2} \\ -\frac{1}{2} & \frac{\sqrt{3}}{2} \end{bmatrix}$ ,  $A = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}$  and  $Q = PAP^T$ , then  $P^T Q^{2015} P$  is :

A)  $\begin{bmatrix} 0 & 2015 \\ 0 & 0 \end{bmatrix}$

B)  $\begin{bmatrix} 2015 & 1 \\ 0 & 1 \end{bmatrix}$

C)  $\begin{bmatrix} 2015 & 0 \\ 1 & 2015 \end{bmatrix}$

D)  $\begin{bmatrix} 1 & 2015 \\ 0 & 1 \end{bmatrix}$

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**Directions (Q.26-Q.30):**

In a football tournament six teams A, B, C, D, E and F participated. Every pair of teams had exactly one match among them. For any team, a win fetches 2 points, a draw fetches 1 point,

and a loss fetches no points. Both the teams  $\mathrm{E}$  and  $\mathrm{F}$  ended with less than 5 points. At the end of the tournament points table is as follows (some of the entries are not shown):

Teams	Played	Wins	Losses	Draws	Points
A	5		0		8
B	5		2		6
C	5		2		5
D	5		1		5
E	5		1		
F	5				

It is known that: (1) Team B defeated Team C, and (2) Team C defeated Team D.

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26.

Total number of matches ending in draw is

- a)12
- b)4
- c)5
- d)6

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27. Which team had highest number of

draws? a) Team A b) Team C c) Team D d)

Team E

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28.

Total points Team F got was

- a)0
- b)1
- c)2
- d)3

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29. Which team was not defeated by Team A?  
a) Team B b) Team C c) Team D d) Team F

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30. Team E was defeated by  
a) Teams A and B only  
b) Only Team A c) Only Team B  
d) Teams A, B and D only

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## Verbal Ability & Reading Comprehension

Q.1)

**Directions:** read the following passage and answer the questions.

**Passage: Title: "The Solar System: A Cosmic Ballet"**

The solar system, a celestial masterpiece, unfolds its intricate dance across the cosmos. Comprising the sun, eight planets, and a multitude of celestial companions, this cosmic ballet is a testament to the marvels of the universe.

The sun, a blazing orb of searing energy, reigns at the centre, providing the gravitational anchor that dictates the movements of its planetary entourage. Mercury, the swiftest and closest companion, traces its rapid orbit, followed by Venus, cloaked in a veil of thick clouds. Earth, the cradle of life, spins in perfect harmony, adorned with oceans and continents.

Further out, Mars, the "Red Planet," stands as a testament to the mysteries of our neighbouring worlds. Jupiter, a colossal giant, commands a retinue of moons, while Saturn's majestic rings shimmer in the distant light. Uranus and Neptune, the ice giants, waltz in the far reaches, their presence a reminder of the diversity that permeates our cosmic home.

Beyond the planets, a symphony of asteroids, comets, and interstellar debris weaves through the cosmic expanse. Each celestial body, a silent participant in the grand ballet, traces its path through the inky void.

This dance of the celestial bodies, choreographed by the laws of physics and celestial mechanics, unfolds in a timeless spectacle. It is a reminder of the beauty and wonder that lies beyond our terrestrial confines, beckoning humanity to explore, to learn, and to dream.

What is the main theme of the passage?

- 1)  
The scientific properties of the planets in the solar system
- 2)  
The intricate dance and beauty of the solar system's celestial bodies
- 3)  
The mysteries surrounding Mars, the "Red Planet"
- 4)  
The exploration of asteroids, comets, and interstellar debris

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**Q.2) Directions: read the following passage and answer the questions.**

**Passage: Title: "The Solar System: A Cosmic Ballet"**

The solar system, a celestial masterpiece, unfolds its intricate dance across the cosmos. Comprising the sun, eight planets, and a multitude of celestial companions, this cosmic ballet is a testament to the marvels of the universe.

The sun, a blazing orb of searing energy, reigns at the centre, providing the gravitational anchor that dictates the movements of its planetary entourage. Mercury, the swiftest and closest companion, traces its rapid orbit, followed by Venus, cloaked in a veil of thick clouds. Earth, the cradle of life, spins in perfect harmony, adorned with oceans and continents.

Further out, Mars, the "Red Planet," stands as a testament to the mysteries of our neighbouring worlds. Jupiter, a colossal giant, commands a retinue of moons, while Saturn's majestic rings shimmer in the distant light. Uranus and Neptune, the ice giants, waltz in the far reaches, their presence a reminder of the diversity that permeates our cosmic home.

Beyond the planets, a symphony of asteroids, comets, and interstellar debris weaves through the cosmic expanse. Each celestial body, a silent participant in the grand ballet, traces its path through the inky void.

This dance of the celestial bodies, choreographed by the laws of physics and celestial mechanics, unfolds in a timeless spectacle. It is a reminder of the beauty and wonder that lies beyond our terrestrial confines, beckoning humanity to explore, to learn, and to dream.

How is Earth described in the passage?

- 1) As a blazing orb of searing energy
- 2) As the "Red Planet"
- 3) As the cradle of life adorned with oceans and continents
- 4) As the closest companion to the sun

**Q.3) Directions: read the following passage and answer the questions.**

**Passage: Title: "The Solar System: A Cosmic Ballet"**

The solar system, a celestial masterpiece, unfolds its intricate dance across the cosmos. Comprising the sun, eight planets, and a multitude of celestial companions, this cosmic ballet is a testament to the marvels of the universe.

The sun, a blazing orb of searing energy, reigns at the centre, providing the gravitational anchor that dictates the movements of its planetary entourage. Mercury, the swiftest and closest companion, traces its rapid orbit, followed by Venus, cloaked in a veil of thick clouds. Earth, the cradle of life, spins in perfect harmony, adorned with oceans and continents.

Further out, Mars, the "Red Planet," stands as a testament to the mysteries of our neighbouring worlds. Jupiter, a colossal giant, commands a retinue of moons, while Saturn's majestic rings shimmer in the distant light. Uranus and Neptune, the ice giants, waltz in the far reaches, their presence a reminder of the diversity that permeates our cosmic home.

Beyond the planets, a symphony of asteroids, comets, and interstellar debris weaves through the cosmic expanse. Each celestial body, a silent participant in the grand ballet, traces its path through the inky void.

This dance of the celestial bodies, choreographed by the laws of physics and celestial mechanics, unfolds in a timeless spectacle. It is a reminder of the beauty and wonder that lies beyond our terrestrial confines, beckoning humanity to explore, to learn, and to dream.

What is mentioned as a distinctive feature of Jupiter in the passage?

1)

Its colossal size

2)

Its rapid orbit around the sun

3)

Its thick veil of clouds

4)

Its majestic rings

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**Q.4) Directions: read the following passage and answer the questions.**

**Passage: Title: "The Solar System: A Cosmic Ballet"**

The solar system, a celestial masterpiece, unfolds its intricate dance across the cosmos. Comprising the sun, eight planets, and a multitude of celestial companions, this cosmic ballet is a testament to the marvels of the universe.

The sun, a blazing orb of searing energy, reigns at the centre, providing the gravitational anchor that dictates the movements of its planetary entourage. Mercury, the swiftest and closest companion, traces its rapid orbit, followed by Venus, cloaked in a veil of thick clouds. Earth, the cradle of life, spins in perfect harmony, adorned with oceans and continents.

Further out, Mars, the "Red Planet," stands as a testament to the mysteries of our neighbouring worlds. Jupiter, a colossal giant, commands a retinue of moons, while Saturn's majestic rings

shimmer in the distant light. Uranus and Neptune, the ice giants, waltz in the far reaches, their presence a reminder of the diversity that permeates our cosmic home.

Beyond the planets, a symphony of asteroids, comets, and interstellar debris weaves through the cosmic expanse. Each celestial body, a silent participant in the grand ballet, traces its path through the inky void.

This dance of the celestial bodies, choreographed by the laws of physics and celestial mechanics, unfolds in a timeless spectacle. It is a reminder of the beauty and wonder that lies beyond our terrestrial confines, beckoning humanity to explore, to learn, and to dream.

How are Uranus and Neptune described in the passage?

1)

As the closest companions to the sun

2)

As the ice giants waltzing in the far reaches

3)

As planets adorned with majestic rings

4)

As swift and close companions to the sun

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Q.5) Directions: Read the following passage and answer the question.

Passage: Title: "The Future of Space Exploration"

As humanity stands on the brink of a new era of space exploration, questions about the ethical and practical implications of venturing beyond our home planet loom large. The ambitious plans

to establish colonies on the Moon and Mars raise complex issues that must be carefully considered.

One of the primary challenges is the preservation of celestial environments. As humans set foot on extraterrestrial bodies, they bring with them the potential for contamination. Microbes from Earth, invisible to the naked eye, could inadvertently hitch a ride, disrupting ecosystems that have existed for millennia.

Furthermore, questions of governance arise. Who has the authority to regulate and oversee these off-world colonies? Should they be governed by international bodies or by the nations or corporations responsible for their establishment? Striking a balance between autonomy and accountability will be crucial.

Ethical concerns also come to the forefront. How should we handle potential discoveries of extraterrestrial life? What protocols should be in place to ensure the respectful treatment of any life forms we may encounter? These questions demand thoughtful consideration and an approach grounded in respect for the unknown.

Finally, the economic viability of space colonies remains a critical factor. Balancing the immense costs of space exploration with the potential benefits—both scientific and economic—requires careful economic planning and international collaboration.

As we embark on this new chapter of space exploration, it is imperative that we approach it with a sense of responsibility, guided by ethical considerations and a dedication to the preservation of the cosmic environments we may soon call home.

**According to the passage, what is one of the primary challenges of establishing colonies on celestial bodies?**

1)

**Ensuring the mental well-being of space colonists**

2)

**Controlling the climate on extraterrestrial bodies**

3)

**Preserving the environments from potential contamination**

4)

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## Regulating the economic activities of space colonies

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**Q.6)** Directions: Read the following passage and answer the question.

Passage: Title: "The Future of Space Exploration"

As humanity stands on the brink of a new era of space exploration, questions about the ethical and practical implications of venturing beyond our home planet loom large. The ambitious plans to establish colonies on the Moon and Mars raise complex issues that must be carefully considered.

One of the primary challenges is the preservation of celestial environments. As humans set foot on extraterrestrial bodies, they bring with them the potential for contamination. Microbes from Earth, invisible to the naked eye, could inadvertently hitch a ride, disrupting ecosystems that have existed for millennia.

Furthermore, questions of governance arise. Who has the authority to regulate and oversee these off-world colonies? Should they be governed by international bodies or by the nations or corporations responsible for their establishment? Striking a balance between autonomy and accountability will be crucial.

Ethical concerns also come to the forefront. How should we handle potential discoveries of extraterrestrial life? What protocols should be in place to ensure the respectful treatment of any life forms we may encounter? These questions demand thoughtful consideration and an approach grounded in respect for the unknown.

Finally, the economic viability of space colonies remains a critical factor. Balancing the immense costs of space exploration with the potential benefits—both scientific and economic—requires careful economic planning and international collaboration.

As we embark on this new chapter of space exploration, it is imperative that we approach it with a sense of responsibility, guided by ethical considerations and a dedication to the preservation of the cosmic environments we may soon call home.

What is a central question raised in the passage regarding the governance of off-world colonies?

1)

How to ensure complete autonomy for space colonies

2)

Who should have the authority to regulate and oversee space colonies

3)

How to establish a unified international government for space exploration

4)

Whether space colonies should be governed by corporations

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**Q.7)** Directions: Read the following passage and answer the question.

Passage: Title: "The Future of Space Exploration"

As humanity stands on the brink of a new era of space exploration, questions about the ethical and practical implications of venturing beyond our home planet loom large. The ambitious plans to establish colonies on the Moon and Mars raise complex issues that must be carefully considered.

One of the primary challenges is the preservation of celestial environments. As humans set foot on extraterrestrial bodies, they bring with them the potential for contamination. Microbes from Earth, invisible to the naked eye, could inadvertently hitch a ride, disrupting ecosystems that have existed for millennia.

Furthermore, questions of governance arise. Who has the authority to regulate and oversee these off-world colonies? Should they be governed by international bodies or by the nations or corporations responsible for their establishment? Striking a balance between autonomy and accountability will be crucial.

Ethical concerns also come to the forefront. How should we handle potential discoveries of extraterrestrial life? What protocols should be in place to ensure the respectful treatment of any life forms we may encounter? These questions demand thoughtful consideration and an approach grounded in respect for the unknown.

Finally, the economic viability of space colonies remains a critical factor. Balancing the immense costs of space exploration with the potential benefits—both scientific and economic—requires careful economic planning and international collaboration.

As we embark on this new chapter of space exploration, it is imperative that we approach it with a sense of responsibility, guided by ethical considerations and a dedication to the preservation of the cosmic environments we may soon call home.

What ethical concern is discussed in the passage regarding potential discoveries of extraterrestrial life?

1)

The potential threat posed by extraterrestrial life forms

2)

The potential economic benefits of studying extraterrestrial life

3)

The protocols for the respectful treatment of extraterrestrial life forms

4)

The legal framework for interactions with extraterrestrial beings

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**Q.8)** Q.5) Directions: Read the following passage and answer the question.

Passage: Title: "The Future of Space Exploration"

As humanity stands on the brink of a new era of space exploration, questions about the ethical and practical implications of venturing beyond our home planet loom large. The ambitious plans to establish colonies on the Moon and Mars raise complex issues that must be carefully considered.

One of the primary challenges is the preservation of celestial environments. As humans set foot on extraterrestrial bodies, they bring with them the potential for contamination. Microbes from Earth, invisible to the naked eye, could inadvertently hitch a ride, disrupting ecosystems that have existed for millennia.

Furthermore, questions of governance arise. Who has the authority to regulate and oversee these off-world colonies? Should they be governed by international bodies or by the nations or corporations responsible for their establishment? Striking a balance between autonomy and accountability will be crucial.

Ethical concerns also come to the forefront. How should we handle potential discoveries of extraterrestrial life? What protocols should be in place to ensure the respectful treatment of any life forms we may encounter? These questions demand thoughtful consideration and an approach grounded in respect for the unknown.

Finally, the economic viability of space colonies remains a critical factor. Balancing the immense costs of space exploration with the potential benefits—both scientific and economic—requires careful economic planning and international collaboration.

As we embark on this new chapter of space exploration, it is imperative that we approach it with a sense of responsibility, guided by ethical considerations and a dedication to the preservation of the cosmic environments we may soon call home.

According to the passage, what is a critical factor in establishing space colonies?

1)

Ensuring complete autonomy for space colonies

2)

Balancing the costs of space exploration with potential benefits

3)

Relying solely on international funding for space colonies

4)

Collaborating with extraterrestrial beings for economic support

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### Q.9) Instructions

The passage below is accompanied by a set of questions. Choose the best answer to each question. Comprehension:

Stories concerning the Undead have always been with us. From out of the primal darkness of Mankind's earliest years, come whispers of eerie creatures, not quite alive (or alive in a way which we can understand), yet not quite dead either. These may have been ancient and primitive deities who dwelt deep in the surrounding forests and in remote places, or simply those deceased who refused to remain in their tombs and who wandered about the countryside, physically tormenting and frightening those who were still alive. Mostly they were ill-defined—strange sounds in the night beyond the comforting glow of the fire, or a shape, half-glimpsed in the twilight along the edge of an encampment. They were vague and indistinct, but they were always there with the power to terrify and disturb. They had the power to touch the minds of our early ancestors and to fill them with dread. Such fear formed the basis of the earliest tales although the source and exact nature of such terrors still remained very vague.

And as Mankind became more sophisticated, leaving the gloom of their caves and forming themselves into recognizable communities— towns, cities, whole cultures—so the Undead travelled with them, inhabiting their folklore just as they had in former times. Now they began to take on more definite shapes. They became walking cadavers; the physical embodiment of former deities and things which had existed alongside Man since the Creation. Some still remained vague and ill-defined but, as Mankind strove to explain the horror which it felt towards them, such creatures emerged more readily into the light.

In order to confirm their abnormal status, many of the Undead were often accorded attributes, which defied the natural order of things— the power to transform themselves into other shapes, the ability to sustain themselves by drinking human blood, and the ability to influence human minds across a distance. Such powers—described as supernatural—only [lent] an added dimension to the terror that humans felt regarding them.

And it was only natural, too, that the Undead should become connected with the practice of magic. From very early times, Shamans and witchdoctors had claimed at least some power and control over the spirits of departed ancestors, and this has continued down into more “civilized” times. Formerly, the invisible spirits and forces that thronged around men's earliest encampments, had spoken “through” the tribal Shamans but now, as entities in their own right, they were subject to magical control and could be physically summoned by a competent sorcerer. However, the relationship between the magician and an Undead creature was often a very tenuous and uncertain one. Some sorcerers might have even become Undead entities once they died, but they might also have been susceptible to the powers of other magicians when they did.

From the Middle Ages and into the Age of Enlightenment, theories of the Undead continued to grow and develop. Their names became more familiar—werewolf, vampire, ghoul—each one certain to strike fear into the hearts of ordinary humans.

**Question:-**

“In order to confirm their abnormal status, many of the Undead were often accorded attributes, which defied the natural order of things . . .” Which one of the following best expresses the claim made in this statement?

- A) Human beings conceptualise the Undead as possessing abnormal features.
- B) The Undead are deified in nature’s order by giving them divine attributes.
- C) The natural attributes of the Undead are rendered abnormal by changing their status.
- D) According the Undead an abnormal status is to reject the natural order of things.

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**Q.10) Instructions**

The passage below is accompanied by a set of questions. Choose the best answer to each question. Comprehension:

Stories concerning the Undead have always been with us. From out of the primal darkness of Mankind’s earliest years, come whispers of eerie creatures, not quite alive (or alive in a way which we can understand), yet not quite dead either. These may have been ancient and primitive deities who dwelt deep in the surrounding forests and in remote places, or simply those deceased who refused to remain in their tombs and who wandered about the countryside, physically tormenting and frightening those who were still alive. Mostly they were ill-defined—strange sounds in the night beyond the comforting glow of the fire, or a shape, half-glimpsed in the twilight along the edge of an encampment. They were vague and indistinct, but they were always there with the power to terrify and disturb. They had the power to touch the minds of our early ancestors and to fill them with dread. Such fear formed the basis of the earliest tales although the source and exact nature of such terrors still remained very vague.

And as Mankind became more sophisticated, leaving the gloom of their caves and forming themselves into recognizable communities— towns, cities, whole cultures—so the Undead travelled with them, inhabiting their folklore just as they had in former times. Now they began to take on more definite shapes. They became walking cadavers; the physical embodiment of former deities and things which had existed alongside Man since the Creation. Some still remained vague and ill-defined but, as Mankind strove to explain the horror which it felt towards them, such creatures emerged more readily into the light.

In order to confirm their abnormal status, many of the Undead were often accorded attributes, which defied the natural order of things— the power to transform themselves into other shapes,

the ability to sustain themselves by drinking human blood, and the ability to influence human minds across a distance. Such powers—described as supernatural—only [lent] an added dimension to the terror that humans felt regarding them.

And it was only natural, too, that the Undead should become connected with the practice of magic. From very early times, Shamans and witchdoctors had claimed at least some power and control over the spirits of departed ancestors, and this has continued down into more “civilized” times. Formerly, the invisible spirits and forces that thronged around men’s earliest encampments, had spoken “through” the tribal Shamans but now, as entities in their own right, they were subject to magical control and could be physically summoned by a competent sorcerer. However, the relationship between the magician and an Undead creature was often a very tenuous and uncertain one. Some sorcerers might have even become Undead entities once they died, but they might also have been susceptible to the powers of other magicians when they did.

From the Middle Ages and into the Age of Enlightenment, theories of the Undead continued to grow and develop. Their names became more familiar—werewolf, vampire, ghoul—each one certain to strike fear into the hearts of ordinary humans.

**Question:-**

Which one of the following observations is a valid conclusion to draw from the statement, “From out of the primal darkness of Mankind’s earliest years, come whispers of eerie creatures, not quite alive (or alive in a way which we can understand), yet not quite dead either.”?

- A) Mankind’s early years were marked by a belief in the existence of eerie creatures that were neither quite alive nor dead.
- B) Long ago, eerie creatures used to whisper in the primal darkness that they were not quite dead.
- C) Mankind’s primal years were marked by creatures alive with eerie whispers, but seen only in the darkness.
- D) We can understand the lives of the eerie creatures in Mankind’s early years through their whispers in the darkness.

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**Q.11) Instructions**

The passage below is accompanied by a set of questions. Choose the best answer to each question. Comprehension:

Stories concerning the Undead have always been with us. From out of the primal darkness of Mankind’s earliest years, come whispers of eerie creatures, not quite alive (or alive in a way which we can understand), yet not quite dead either. These may have been ancient and

primitive deities who dwelt deep in the surrounding forests and in remote places, or simply those deceased who refused to remain in their tombs and who wandered about the countryside, physically tormenting and frightening those who were still alive. Mostly they were ill-defined—strange sounds in the night beyond the comforting glow of the fire, or a shape, half-glimpsed in the twilight along the edge of an encampment. They were vague and indistinct, but they were always there with the power to terrify and disturb. They had the power to touch the minds of our early ancestors and to fill them with dread. Such fear formed the basis of the earliest tales although the source and exact nature of such terrors still remained very vague.

And as Mankind became more sophisticated, leaving the gloom of their caves and forming themselves into recognizable communities— towns, cities, whole cultures—so the Undead travelled with them, inhabiting their folklore just as they had in former times. Now they began to take on more definite shapes. They became walking cadavers; the physical embodiment of former deities and things which had existed alongside Man since the Creation. Some still remained vague and ill-defined but, as Mankind strove to explain the horror which it felt towards them, such creatures emerged more readily into the light.

In order to confirm their abnormal status, many of the Undead were often accorded attributes, which defied the natural order of things— the power to transform themselves into other shapes, the ability to sustain themselves by drinking human blood, and the ability to influence human minds across a distance. Such powers—described as supernatural—only [lent] an added dimension to the terror that humans felt regarding them.

And it was only natural, too, that the Undead should become connected with the practice of magic. From very early times, Shamans and witchdoctors had claimed at least some power and control over the spirits of departed ancestors, and this has continued down into more “civilized” times. Formerly, the invisible spirits and forces that thronged around men’s earliest encampments, had spoken “through” the tribal Shamans but now, as entities in their own right, they were subject to magical control and could be physically summoned by a competent sorcerer. However, the relationship between the magician and an Undead creature was often a very tenuous and uncertain one. Some sorcerers might have even become Undead entities once they died, but they might also have been susceptible to the powers of other magicians when they did.

From the Middle Ages and into the Age of Enlightenment, theories of the Undead continued to grow and develop. Their names became more familiar—werewolf, vampire, ghoul—each one certain to strike fear into the hearts of ordinary humans.

**Question:-**

Which one of the following statements best describes what the passage is about?

- A) The writer discusses the transition from primitive thinking to the Age of Enlightenment.
- B) The passage discusses the evolution of theories of the Undead from primitive thinking to the Age of Enlightenment.

- C) The passage describes the failure of human beings to fully comprehend their environment.
- D) The writer describes the ways in which the Undead come to be associated with Shamans and the practice of magic.
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### Q.12) Instructions

The passage below is accompanied by a set of questions. Choose the best answer to each question. Comprehension:

Stories concerning the Undead have always been with us. From out of the primal darkness of Mankind's earliest years, come whispers of eerie creatures, not quite alive (or alive in a way which we can understand), yet not quite dead either. These may have been ancient and primitive deities who dwelt deep in the surrounding forests and in remote places, or simply those deceased who refused to remain in their tombs and who wandered about the countryside, physically tormenting and frightening those who were still alive. Mostly they were ill-defined—strange sounds in the night beyond the comforting glow of the fire, or a shape, half-glimpsed in the twilight along the edge of an encampment. They were vague and indistinct, but they were always there with the power to terrify and disturb. They had the power to touch the minds of our early ancestors and to fill them with dread. Such fear formed the basis of the earliest tales although the source and exact nature of such terrors still remained very vague.

And as Mankind became more sophisticated, leaving the gloom of their caves and forming themselves into recognizable communities— towns, cities, whole cultures—so the Undead travelled with them, inhabiting their folklore just as they had in former times. Now they began to take on more definite shapes. They became walking cadavers; the physical embodiment of former deities and things which had existed alongside Man since the Creation. Some still remained vague and ill-defined but, as Mankind strove to explain the horror which it felt towards them, such creatures emerged more readily into the light.

In order to confirm their abnormal status, many of the Undead were often accorded attributes, which defied the natural order of things— the power to transform themselves into other shapes, the ability to sustain themselves by drinking human blood, and the ability to influence human minds across a distance. Such powers—described as supernatural—only [lent] an added dimension to the terror that humans felt regarding them.

And it was only natural, too, that the Undead should become connected with the practice of magic. From very early times, Shamans and witchdoctors had claimed at least some power and control over the spirits of departed ancestors, and this has continued down into more “civilized” times. Formerly, the invisible spirits and forces that thronged around men's earliest encampments, had spoken “through” the tribal Shamans but now, as entities in their own right, they were subject to magical control and could be physically summoned by a competent sorcerer. However, the relationship between the magician and an Undead creature was often a

very tenuous and uncertain one. Some sorcerers might have even become Undead entities once they died, but they might also have been susceptible to the powers of other magicians when they did.

From the Middle Ages and into the Age of Enlightenment, theories of the Undead continued to grow and develop. Their names became more familiar—werewolf, vampire, ghoul—each one certain to strike fear into the hearts of ordinary humans.

**Question:-**

All of the following statements, if false, could be seen as being in accordance with the passage, EXCEPT:

- A) the Undead remained vague and ill-defined, even as Mankind strove to understand the horror they inspired.
- B) the transition from the Middle Ages to the Age of Enlightenment saw new theories of the Undead.
- C) the growing sophistication of Mankind meant that humans stopped believing in the Undead.
- D) the relationship between Shamans and the Undead was believed to be a strong and stable one.

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**Q.13)** In each of the question given below a/an idiom/phrase is given in bold which is then followed by five options which then try to decipher its meaning. Choose the option which gives the correct meaning of the phrases. The company is still doing business, but ever since the recession hit they've been teetering on the brink of closing down.

- A) **To argue**
- B) **To be near to**
- C) **To attempt to avoid**
- D) **To deceive someone**
- E) **None of the above**

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**Q.14) Direction:** In the question, sentence are given with blanks to be filled in with an appropriate word. Four alternatives are suggested for each question. Choose the correct alternative out of the four alternatives.

All jobs are respectable .....of their nature.

- A) irrelevant
  - B) immaterial
  - C) irresponsible
  - D) irrespectful
- 
- 

**Q.15) Direction:** In the question, sentence are given with blanks to be filled in with an appropriate word. Four alternatives are suggested for each question. Choose the correct alternative out of the four alternatives.

We are happy to .....the receipt of your order No 4041 dated 13.3.96.

- A) admit
  - B) accept
  - C) acknowledge
  - D) respond
- 
- 

**Q.16) Direction:** In the question, sentence are given with blanks to be filled in with an appropriate word. Four alternatives are suggested for each question. Choose the correct alternative out of the four alternatives.

The police sprayed tear gas.....on the protesters.

- A) indirectly
  - B) intensively
  - C) indifferently
  - D) indiscriminately
- 
- 

**Q.17) Direction:** In the question, sentence are given with blanks to be filled in with an appropriate word. Four alternatives are suggested for each question. Choose the correct alternative out of the four alternatives.

Unhappy about the treatment meted out to her, Shanti....demanded justice.

(1) sumptuously

(2) voraciously

(3) spasmodically

(4) vociferously

**A)** sumptuously

**B)** voraciously

**C)** spasmodically

**D)** vociferously

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**Q.18) Direction:** In the question, sentence are given with blanks to be filled in with an appropriate word. Four alternatives are suggested for each question. Choose the correct alternative out of the four alternatives.

He was caught red-handed and could not ....the charges, **A)** refute **B)** refuse **C)** rebuke **D)** revoke

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**Q.19) Direction:** In the question, sentence are given with blanks to be filled in with an appropriate word. Four alternatives are suggested for each question. Choose the correct alternative out of the four alternatives.

The statue was so .... that people stared at it in horror.

**A)** grotesque

**B)** exquisite

- C) beatific
- D) cumbersome

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**Q.20) In** each of the questions given below four words are given in bold. These four words may or may not be in their correct position. The sentence is then followed by options with the correct combination of words that should replace each other in order to make the sentence grammatically and contextually correct. Find the correct combination of the words that replace each other. If the sentence is correct as it then select option (e) as your choice. They were such failure (A) providers of catastrophic (B) and business loans that important (C) would have been mortgages (D).

- Only A-B  
**A)**
- Only A-D  
**B)**
- Both A-B and C-D  
**C)**
- D) Both A-C and B-D.
- E) The sentence is correct.

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**Q.21) In** each of the questions given below four words are given in bold. These four words may or may not be in their correct position. The sentence is then followed by options with the correct combination of words that should replace each other in order to make the sentence grammatically and contextually correct. Find the correct combination of the words that replace each other. If the sentence is correct as it then select option (e) as your choice. Their study (A) of small working groups across a range (B) of sectors suggests (C) that just one bad person in a team will destroy (D) the entire ethos.

- A)** Both A-C and B-D
- B)** both A-D and B-C
- C)** A-B
- D) The sentence is correct.

**Q.22)** In each of the questions given below four words are given in bold. These four words may or may not be in their correct position. The sentence is then followed by options with the correct combination of words that should replace each other in order to make the sentence grammatically and contextually correct. Find the correct combination of the words that replace each other. If the sentence is correct as it then select option (e) as your choice. He suggests (A) finding another challenge (B) that does not rely on where the competitors (C) is in relation to its company (D).

**A)** A-B and C-D

**B)** Only B-C

**C)** A-C and B-D

**D)** The sentence is correct.

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**Q.23)** In each of the questions given below four words are given in bold. These four words may or may not be in their correct position. The sentence is then followed by options with the correct combination of words that should replace each other in order to make the sentence grammatically and contextually correct. Find the correct combination of the words that replace each other. If the sentence is correct as it then select option (e) as your choice. It will fuel contender (A) that the shadow business (B) secretary is positioning (C) himself as a leadership speculation (D).

**A)** A-C

**B)** A-D

**C)** B-C and A-D

**D)** A-B

**(E)** The sentence is correct

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**Q.24)** In each of the questions below, four statements are given which may or may not contain error. Choose the one that is grammatically and meaningfully correct.

(A) And they accept that mediocrity is good enough.

(B) And you could argue that the team seemed pleased with mediocrity.

- (C) There is a genuine issue about how far a ceiling on pay might merely encourage mediocrity.
  - (D) The alternative is to accept mediocrity and find excuses for failure.
  - (E) All are correct
- 
- 

**Q.25) Directions for the Question:** The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

**Question:**

Railway meals may never be the same again. Having been scolded by the government auditor and a number of passengers for serving food that didn't quite pass muster, Indian Railways is planning to go for quality over quantity, starting with premium trains such as the Rajdhani and the Shatabdis.

- A) The difference will be marked down by 150 grams in terms of weight.
  - B) The evident growth in quality can thus be then assured.
  - C) This will be implemented from next month.
  - D) The government of the country will be held responsible for giving food below the minimum quantity prescribed by the WHO.
- 
- 

**Q.26)** The question below has a paragraph given with one sentence missing at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

**Question:**

He wakes up on the front lawn of Aimee Finicky, a girl in his year whose name he doesn't know. Aimee is about to do her mother's paper route, because she too is sleeping off the night before. Sutter helps her out and they have a good time. He sits with her at lunch and asks her to tutor him in geometry, which he is failing, and learns she is smart, funny and into sci-fi and comics. Sutter invites Aimee to a party, where he introduces her to some Sci-Fi fans and then asks Cassidy to have a drink with him, but Marcus arrives to pick her up. Sutter and Aimee go for a walk and get drunk from his hip flask. Aimee confesses she has never been drunk before, never

had a boyfriend and doesn't think she can go to college because she has to take care of her irresponsible mother.

- A) Aimee walks away as he watches her go.
  - B) The movie is a dramatic monologue as it starts and ends abruptly without any indication.
  - C) Sutter tells her she is not responsible for her mother.
  - D) Sutter finds it odd and then he decides to walk away from her forever.
- 
- 

**Q.27) Directions for the Question:** The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Question:

The Honda Forza 125 is one of the most popular maxi-scooters in Europe, and now Honda will release an updated version of the Forza 125 for 2018, with updated styling, electrically adjustable windscreen, LED indicators, new instrumentation, new colours and increased underseat storage. The 2018 Forza 125 will have enough space under the seat to store two full-face helmets, and the revised instrument panel will include an analogue speedometer and tachometer, with a digital display with three modes.

(\_\_\_\_\_)

- A) The new scooter industry has been setting up examples with the adaptation of innovative technologies.
  - B) There has been a rise in road accidents in the country and the Ministry is pretty much concerned about the safety features.
  - C) The display of the scooter will be controlled via a switch in the handlebar, as will the new adjustable screen.
  - D) The overall package can be a value-for-money purchase and hence the company aims to find success with its new model.
- 
- 

**Q.28) Directions for the Question:** The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Question:

In Shashanka Ghosh's *Veere Di Wedding*, a female bonding dramedy that plays strictly by standard rules of the genre, four girls, friends since their school days in Delhi, reunite for an obscenely ostentatious wedding and expend all their time and energy on the task of growing "some balls" in the face of personal crises and social pressures, some self-created, others imposed. They mimic the men. Not a great idea at all! The actors are quite far away from their budding youth era. The feisty quartet use the F-word liberally, smoke, drink, do drugs and generally make a nuisance of themselves in order to prove that they are no pushovers. They could surely have done better. When women set the bar so low that they end up looking like wannabe rebels without either a pause or a cause, the impact that they have is exactly the opposite of the one that is intended. They cut sorry figures.

(\_\_\_\_\_)

- A) The movie will not fetch any good gains in the box office.
- B) The audience can be made to comment on the movie as we do not expect anything positive coming our way.
- C) They are portraying the culture of girls in the posh circle successfully.
- D) Who would take women nearing 30 seriously if they still insist on acting like a gaggle of girls just out of school?

\_\_\_\_\_  
\_\_\_\_\_

**Directions (Q.29-Q.34):** The sentences below have words that are missing. Choose the best option from those given below to complete the sentence.

**Q.29)** When we think about listening, we tend to assume that it is basically the same as hearing; this is a \_\_\_\_\_ because it leads us to believe that effective listening is \_\_\_\_\_. As a result, we make little effort to learn, or develop listening skills and thereby \_\_\_\_\_ a vital communication function. (a) blunder, spontaneous, forget (b) fallacy, impulsive, ignore (c) mistake, natural, reject (d) misconception, instinctive, neglect

\_\_\_\_\_  
\_\_\_\_\_

**Q.30)** As vaccination rates rise and governments relax their pandemic\_\_\_\_\_. The recovery of the event ecosystem is happening faster than expected. Event management

\_\_\_\_\_ see the number of events and event attendance reaching and potentially \_\_\_\_\_ pre-pandemic levels in 2019.

- (a) regulations, professionals, surpassing
- (b) monitoring, experts, confounding
- (c) resolutions, practitioners, reducing
- (d) systems, masters, exceeding

**Q.31)** This \_\_\_\_\_, \_\_\_\_\_ man was actually the \_\_\_\_\_ manager the company ever had.

- (a) assiduous, ludicrous, most able
- (b) assiduous, analytical, best
- (c) well-groomed, assertive, compassionate
- (d) kind-hearted, thoughtful, friendly

**Q.32)** The best strategy to give an \_\_\_\_\_ is to deliver it orally as well as in \_\_\_\_\_. It is also important to \_\_\_\_\_ the employee's achievements in the same manner. (a) approval, awards, promote (b) indictment, memos, realise (c) appraisal, writing, recognize (d) appreciation, increments, advertises

**Q.33)** The Aravalli range is the oldest \_\_\_\_\_ geological feature anywhere in the world. These were once tall mountains, possibly as high as the Himalayas. Over hundreds of millions of years these tall mountains have been \_\_\_\_\_ to low hills and ridges. Yet, these diminutive hills have been \_\_\_\_\_ to many important events in Indian history.

- (a) existing, reduced, sentinel
- (b) prevailing, destroyed, testament
- (c) surviving, eroded, witness
- (d) continuing, broken down, observers

**Q.34)** The manners and \_\_\_\_\_ of the nouveau riche is a recurrent \_\_\_\_\_ in the literature.

- (a) style, motif
  - (b) morals, story
  - (c) wealth, theme
  - (d) morals, theme
- 
- 

**Directions (Q.35-Q.40):** One of the statements below contains a word used incorrectly. Choose the option which has the incorrect or inappropriate usage of the word.

**Q.35)** One of the statements below contains a word used incorrectly. Choose the option which has the incorrect or inappropriate usage of the word.

- (a) Naturally, the fauna of the region varies with climatic changes.
  - (b) Some plants adapt themselves to a variety of climatic conditions.
  - (c) When the last tree dies in the climactic scene, the message in the movie becomes clear.
  - (d) The climactic changes from summer to winter affected the moods of the hero of the film
- 
- 

**Q.36)** One of the statements below contains a word used incorrectly. Choose the option which has the incorrect or inappropriate usage of the word.

- (a) The lives of the little princes in the large castle in the rich city were luxurious.
  - (b) The rooms were adorned with luxuriant trimmings of gold, silk and velvet.
  - (c) They were handsome men who were distinguished by their luxuriant, golden tresses.
  - (d) The cruise ship was of medium size, but the suites were very luxurious.
- 
- 

**Q.37)** One of the statements below contains a word used incorrectly. Choose the option which has the incorrect or inappropriate usage of the word.

- (a) The king was under intensive pressure to protect the borders of his vast empire.
  - (b) The subject's loathing of the cruel emperor was intense.
  - (c) Without intensive study, it is difficult for most students to get admitted into any course.
  - (d) The intense debate between states led to the resolution of issues across the border.
- 
- 

**Q.38)** One of the statements below contains a word used incorrectly. Choose the option which has the incorrect or inappropriate usage of the word.

- (a) We called a mechanic to appraise the car before we bought it.

- (b) The principal called a meeting to apprise the school's governing board of the progress made by all the students in the past year.
- (c) At the end of each practice session, the teacher trainees are expected to appraise their own performance.
- (d) The soldiers returned to the camp to appraise the commanding officer of the enemy's location.
- 
- 

**Q.39)** One of the statements below contains a word used incorrectly. Choose the option which has the incorrect or inappropriate usage of the word.

- (a) The young girl said, "I now request our chief guest to come forward for the lighting of the lamp."
- (b) I just read that two men who took shelter under a tall tree during a thunderstorm were struck by lightning.
- (c) I believe that skin lightning products have a lot of undesirable side effects.
- (d) The young girl helped her mother carry some of the groceries home, thereby lightening her heavy load.
- 
- 

**Q.40)** A word has been used in sentences in four different ways. Choose the option corresponding to the sentence in which the usage of the word is INCORRECT or INAPPROPRIATE.

Agog

- (a) The boys were all agog to see their parents.
- (b) She was all agog at the surprise announcement.
- (c) The victory set the whole state agog with excitement.
- (d) All are correct
- 
- 

**Q.41)** Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph.

- A. Because of the region's scorching heat and aridity, a considerable amount of water evaporates.
- B. As a result, the salt and other minerals become increasingly concentrated.
- C. It is then unable to exit the lake and is forced to evaporate.
- D. The Dead Sea is one of the saltiest bodies of water on the planet, with about ten times the salt content of typical saltwater.

E. This is because water flows into the Dead Sea from a single primary tributary, the Jordan River.

**A) DECAB B) DCBAE C) DEABC D) DACEB**

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**Q.42)** Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph. A) Bauxite is used as the main raw material for the production of aluminium. B) Precipitation is a pre-final stage for actual production. C) Sodium aluminate is acquired in the next step. D) The smelting process actually extracts aluminium as a final product from its oxide.

**A) ABCD B) ACBD C) DCAB D) ADCB**

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**Q.43)** Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph. A. She dashed from one side to the other, taking care not to destroy the lovely flowers in the garden. B. Karen took a stroll in a lovely garden full of tulips and butterflies. C. She discovered a swing constructed of tree branches behind a large bush. D. Karen went onto the swing without hesitation and began swinging, causing the wind to dishevel her hair. E. The small girl adored the outdoors and relished the breeze blowing through her hair.

**A) BEACD B) DBCAE C) BDECA**

D) BDCAE

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**Q.44) DIRECTIONS for the question:** The four sentences (labelled 1,2,3 and 4) given in this question, when properly sequenced, form a coherent paragraph. Decide on the proper order for the sentence and key in this sequence of four numbers as your answer.

1. He whispered to six of the students that their mice had been especially picked for their particularly well developed sense of orientation, and told the other six that, for genetic reasons no great success could be expected from their mice.
2. When the training periods was over Robert Rosenthal found that the overrated mice had performed surprisingly well while the underestimated ones had hardly moved from the starting point.
3. In reality these differences existed only in the mind of the students since the sixty mice were identical in every respect.
4. An American professor of psychology, Robert Rosenthal, once had the apparently preposterous idea of calling together twelve of his students, giving each of them five grey mice and giving them a few weeks to teach the mice find their way through a maze.

A) 4132 B) 4213 C) 4231 D) 2143

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**Q.45) Directions for question :** In the following question, rearrange the five sentences in order to form a meaningful paragraph.

1. Therefore, capitalism must be upgraded in a way that is compatible with societal and cultural values and with the fairness principle to provide equal opportunities.
2. The survival of billions of people will depend on our ability to drastically increase innovation rates and to generate more pluralistic innovations.
3. As today's form of capitalism is not compatible with our social and cultural value system, sooner or later it will be damaging to the foundations of societies and the values they are built on.

4. Since a change of the world's carrying capacity by 1% effectively decides over the lives and deaths of about 80 million people, it is unacceptable that innovations are obstructed or restricted to those that are compatible with current business models.

A) 3142

B) 1234

C) 2341

D) 3412-

### Answer Key

Quantitative Aptitude Short Answer (SA) type		Quantitative Ability MCQ type				Verbal Ability & Reading Comprehension					
1	1	1	B	16	B	1	B	16	D	31	B
2	1	2	A	17	C	2	C	17	D	32	C
3	4500	3	B	18	A	3	A	18	A	33	C
4	41	4	B	19	D	4	B	19	A	34	D
5	199	5	D	20	D	5	C	20	D	35	A
6	20	6	B	21	C	6	B	21	D	36	B
7	0	7	B	22	C	7	C	22	B	37	A
8	40	8	B	23	D	8	B	23	B	38	D
9	5	9	A	24	D	9	A	24	E	39	C
10	47	10	D	25	D	10	A	25	A	40	D
11	16	11	A	26	D	11	B	26	C	41	A

12	3	12	D	27	D	12	B	27	C	42	B
13	9	13	D	28	C	13	B	28	D	43	A
14	1	14	A	29	C	14	D	29	D	44	A
15	5	15	A	30	C	15	C	30	A	45	A

## Solution

### Quantitative Aptitude Short Answer (SA) type

**Q.1)** Here, we have,

$$-3(x - [x])^2 + 2(x - [x]) + a^2 = 0$$

now,  $x - [x] = \{x\} = t$  (say)

And,  $t \in [0, 1)$

hence, we have

$$\begin{aligned} -3t^2 + 2t + a^2 &= 0 \\ \Rightarrow a^2 &= 3t^2 - 2t = 3t\left(t - \frac{2}{3}\right) \end{aligned}$$

Now, Let us consider that this equation has some solution.

then, as LHS is always positive or zero.

And,  $t \in [0, 1)$

Hence,  $RHS \in [0, 1]$

therefore, for solution to happen LHS should also be same.

Hence, for no solution

$$a \in (-1, 0) \cup (0, 1)$$

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**Q.2)** As we learnt in

Cramer's rule for solving system of linear equations -

When  $\Delta = 0$  and  $\Delta_1 = \Delta_2 = \Delta_3 = 0$ ,

then the system of equations has infinite solutions.

- wherein

$$a_1x + b_1y + c_1z = d_1$$

$$a_2x + b_2y + c_2z = d_2$$

$$a_3x + b_3y + c_3z = d_3$$

and

$$\Delta = \begin{vmatrix} a_1 & b_1 & c_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix}$$

$\Delta_1, \Delta_2, \Delta_3$  are obtained by replacing column 1,2,3 of  $\Delta$  by  $(d_1, d_2, d_3)$  column

$$a + 8b + 7c = 0$$

$$9a + 2b + 3c = 0$$

$$a + b + c = 0$$

and  $a + 2b + c = 6$  given

solve for a,b, and c

so that

$$a = 1$$

$$b = 6$$

$$c = -7$$

$$\therefore 2a + b + c = 2 \times 1 + 6 - 7$$

$$= 2 + 6 - 7$$

$$= 8 - 7 = 1$$



**Q.3)**  $45!450$   
 $45/5=9$   
 $9+1=10$   
 (10 zeros)450  
 $10*450=4500$

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**Q.4)** 2 lady + 2 old men + 4 young men

Case 1

0 young men 2 old men and 2 lady

Case 2

1 young men 1 old men and 2 lady

Case 3

1 young men 2 old men and 1 lady

Case 4

2 young men 1 old men and 1 lady

Hence

$$\begin{aligned}
 & (0YM + 2L + 2OM) + (1YM + 1L + 2OM) + (1YM + 1L + 1OM) + (2YM + 1L + 1OM) \\
 &= ({}^4C_0 \cdot {}^2C_2 \cdot {}^2C_2) + ({}^4C_1 \cdot {}^2C_1 \cdot {}^2C_2) + ({}^4C_1 \cdot {}^2C_2 \cdot {}^2C_1) + ({}^4C_2 \cdot {}^2C_1 \cdot {}^2C_1) \\
 &= 1 \cdot 1 \cdot 1 + 4 \cdot 2 \cdot 1 + 4 \cdot 1 \cdot 2 + 6 \cdot 2 \cdot 2 \\
 &= 1 + 8 + 8 + 24 = 41
 \end{aligned}$$


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**Q.5)**  $\frac{1}{1^3} + \frac{1+2}{1^3+2^3} + \frac{1+2+3}{1^3+2^3+3^3} + \dots + \frac{1+2+3+\dots+n}{1^3+2^3+\dots+n^3}$

Its  $T_n$  term is  $\frac{1+2+3+\dots+n}{1^3+2^3+3^3+\dots+n^3}$

$$= \frac{\left(\frac{n(n+1)}{2}\right)}{\left[\frac{n(n+1)}{2}\right]^2}$$

$$= \frac{1}{\frac{n(n+1)}{2}}$$

$$= \frac{2}{n(n+1)}$$

$$T_n = 2 \left[ \frac{(n+1) - n}{n(n+1)} \right]$$

$$= 2 \left[ \frac{1}{n} - \frac{1}{n+1} \right]$$

$$T_1 = 2 \left[ \frac{1}{1} - \frac{1}{2} \right]$$

$$T_2 = 2 \left[ \frac{1}{2} - \frac{1}{3} \right]$$

.....

$$T_n = 2 \left[ \frac{1}{n} - \frac{1}{n+1} \right]$$

Adding all these

$$S_n = 2 \left[ 1 - \frac{1}{n+1} \right]$$

$$= 2 \left( \frac{n+1-1}{n+1} \right)$$

$$= \left( \frac{2n}{n+1} \right)$$

$$\text{Now } 100S_n = \frac{2n}{n+1} \times 100 = n(\text{given})$$

$$\therefore n + 1 = 200$$

$$n = 199$$


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**Q.6)**

$$S = \tan^{-1} \left( \frac{1}{n^2 + n + 1} \right) + \tan^{-1} \left( \frac{1}{n^2 + 3n + 3} \right) + \dots + \tan^{-1} \left( \frac{1}{1 + (n + 19)(n + 20)} \right)$$

$$\begin{aligned} S &= \tan^{-1} \frac{1}{1 + n(n + 1)} + \tan^{-1} \frac{1}{1 + (n + 1)(n + 2)} + \dots + \tan^{-1} \frac{1}{1 + (n + 19)(n + 20)} \\ &= \tan^{-1} \frac{n + 1 - n}{1 + n(n + 1)} + \tan^{-1} \frac{(n + 2) - (n + 1)}{1 + (n + 1)(n + 2)} + \dots + \tan^{-1} \frac{(n + 20) - (n + 19)}{1 + (n + 19)(n + 20)} \\ &= (\tan^{-1}(n + 1) - \tan^{-1} n) + (\tan^{-1}(n + 2) - \tan^{-1}(n + 1)) + \dots \\ &\quad + (\tan^{-1}(n + 20) - \tan^{-1}(n + 19)) \\ &= \tan^{-1}(n + 20) - \tan^{-1} n \end{aligned}$$

$$S = \tan^{-1} \frac{(n + 20) - (n)}{1 + n(n + 20)} = \tan^{-1} \frac{20}{n^2 + 20n + 1}$$


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**Q.7)** We need to check for all regions:  $x \geq 0, y \geq 0$   $x \geq 0, y < 0$   $x < 0, y \geq 0$   $x < 0, y < 0$  However,

once we find out the answer for any one of the regions, we do not need to calculate for other

regions since the options suggest that there will be a single answer. Let us start with  $x \geq 0, y$

$$y \geq 0, 3x + 3y = 7$$

$$2x+3y=1$$

Hence,  $x = 6$  and  $y = -11/3$

Since  $y \geq 0$ , this is not satisfying the set of rules.

Next, let us test  $x \geq 0, y < 0$ ,

$$3x-y=7$$

$$2x+3y=1$$

Hence,  $y = -1$

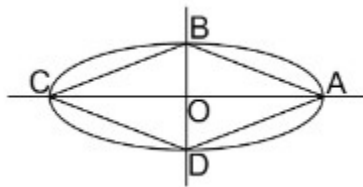
$$x=2.$$

This satisfies both the conditions. Hence, this is the correct point.

We need the value of  $x + 2y$

$$x+2y=2+2(-1)=2-2=0.$$

**Q.8)**



Given

$$e = \frac{3}{5}$$

and

$$2ae = 6 \Rightarrow ae = 3$$

Hence  $a = 5$

$$b^2 = a^2(1 - e^2) \Rightarrow b = 4$$

$$\text{Area of quadrilateral ABCD} = 4 \text{ Ar}(\triangle AOB)$$

$$= 4 \times \frac{1}{2} \times a \times b$$

$$= 4 \times \frac{1}{2} \times 5 \times 4$$

$$= 40$$

**Q.9)**  $9(25a^2 + b^2) + 25(c^2 - 3ac) = 15b(3a + c)$

$$= 225a^2 + 9b^2 + 25c^2 - 75ac = 45ab + 15bc$$

$$225a^2 + 9b^2 + 25c^2 - 45ab - 15bc - 75ac = 0$$

multiply and divide by 2

$$\frac{1}{2} [450a^2 + 18b^2 + 50c^2 - 90ab - 30bc - 150ac] = 0$$

$$225a^2 + 9b^2 + 25c^2 + 225a^2 + 9b^2 + 25c^2 - 2(15a)(3b) - 2(3b)(5c) - 2(5c)(15a) = 0$$

$$\therefore (15a - 3b)^2 + (3b - 5c)^2 + (5c - 15a)^2 = 0$$

So that  $15a - 3b = 0$  and  $3b - 5c = 0$

So that

$$5a = b$$

thus value of k is 5

**Q.10)** Let n, s, d, and t be the number of students who like none of the drinks, exactly one drink, exactly 2 drinks, and all three drinks, respectively.

It is given,

$$n + s + d + t = 100 \dots (1)$$

$$s + 2d + 3t = 73 + 80 + 52$$

$$s + 2d + 3t = 205 \dots\dots (2)$$

Eq. (2) – (1), we get the following:

$$d + 2t - n = 105$$

The maximum value  $t$  can take is 52, i.e.,  $t = 52$ ,  $d = 1$ , and  $n = 0$

The minimum value  $t$  can take is 5, i.e.,  $t = 5$ ,  $d = 95$ , and  $n = 0$

(This also satisfies equation (1).)

Thus, the required difference =  $52 - 5 = 47$

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**Q.11)** if time is constant then the ratio of principal and amount is always constant in compound interest .

in 4 years sum become doubled P become 2P

$p$  \_\_\_\_\_ 4 years \_\_\_\_\_  $2p$  \_\_\_\_\_ 4 years \_\_\_\_\_  $8p$  \_\_\_\_\_ 4 years \_\_\_\_\_  $16p$

$4+4+4+4= 16$  years

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**Q.12)** Let the speeds of trains A and B be  $5x$  and  $3x$ , respectively, and their lengths be  $p$  and  $q$ , respectively.

Given that,

The length of Train B,  $q$ , is covered in 46 seconds, and the length of Train A,  $p$ , is covered in 69 seconds.

$$\text{Then, } \frac{p}{Q} = \frac{(5x + 3x) \times 69}{(5x + 3x) \times 46} = \frac{69}{46} = \frac{3}{2}$$

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**Q.13)** Since Seven men and Five Robots can finish a job in double the time as taken by five men and twelve robots to finish the same job. So, five men and twelve Robots can do double the work that was done by seven men and five robots in the same time.

So,

$$2(7M + 5R) = (12R + 5M)$$

$$\Rightarrow 9M = 2R$$

$$\Rightarrow M/R = 2/9$$

1 Men can do 2 units work in a day whereas a robot can do 9 units work in a day.

Total work =  $60 \times 9 = 540$  units

1 man can do 60 units of work in 30 days.

Number of men require =  $540/60 = 9$

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**Q.14)** The given equations are

$$11x + 15y = -23 \quad \dots (1)$$

$$7x - 2y = 20 \quad \dots (2)$$

Multiplying (1) by 2 and (2) by 15 and adding the results, we get

$$22x + 105x = -46 + 300$$

$$\Rightarrow 127x = 254$$

$$\Rightarrow x = \frac{254}{127} = 2$$

Putting  $x = 2$  in (1), we get

$$22 + 15y = -23$$

$$\Rightarrow 15y = -23 - 22$$

$$\Rightarrow 15y = -45$$

$$\Rightarrow y = \frac{-45}{15} = -3$$

Hence,  $x = 2$  and  $y = -3$

$$2x + y = 1$$

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**Q.15)** As learnt in

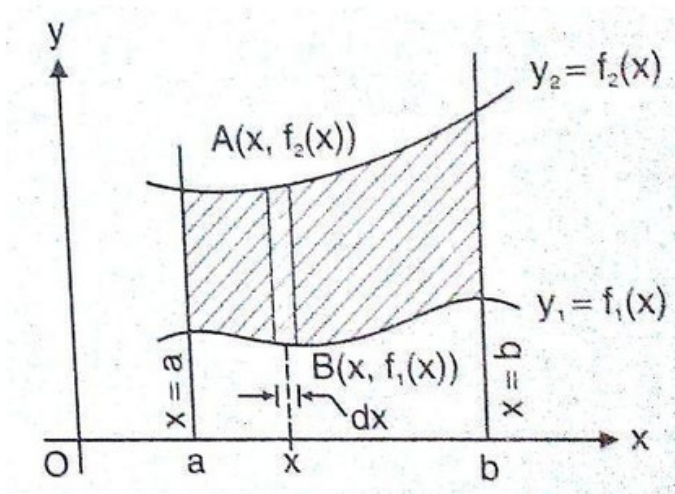
Area along x axis -

Let  $y_1 = f_1(x)$  and  $y_2 = f_2(x)$  be two curves then area bounded between the curves and the lines

$x=a$  and  $x=b$  is

$$\left| \int_a^b \Delta y \, dx \right| = \left| \int_a^b (y_2 - y_1) \, dx \right|$$

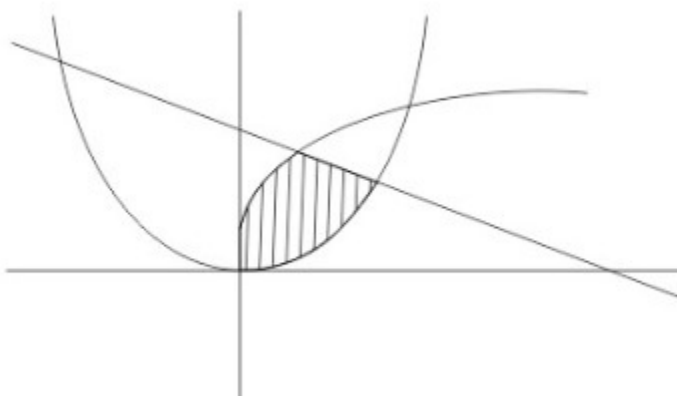
- wherein



Where  $\Delta y = f_2(x) - f_1(x)$

Point of intersection of

$$x + y = 3; y = 1 + \sqrt{x}; x^2 = 4y$$



$$\begin{aligned}
\text{Area} &= \int_0^1 (1 + \sqrt{x}) \, dx + \int_1^2 (3 - x) \, dx - \int_0^2 \left(\frac{x^2}{4}\right) \, dx \\
&= \left[x + \frac{2}{3}x^{\frac{3}{2}}\right]_0^1 + \left[3x - \frac{x^2}{2}\right]_1^2 - \left[\frac{x^3}{12}\right]_0^2 \\
&= \left[1 + \frac{2}{3}\right] + 3 - \frac{3}{2} - \frac{8}{12} \\
&= \frac{5}{3} + \frac{3}{2} - \frac{2}{3} \\
&= 1 + \frac{3}{2} \\
&= \frac{5}{2}
\end{aligned}$$


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## Quantitative Ability MCQ type

**Q.1)** As we have learnt in

Double Angle Formula -

$$\sin 2\alpha = 2 \sin \alpha \cos \alpha$$

$$\cos 2\alpha = \cos^2 \alpha - \sin^2 \alpha$$

$$= 2 \cos^2 \alpha - 1$$

$$= 1 - 2 \sin^2 \alpha$$

$$\tan 2\alpha = \frac{2 \tan \alpha}{1 - \tan^2 \alpha}$$

These are formulae for double angles.

$$\begin{aligned}
& \frac{1}{4}(\sin^4 x + \cos^4 x) - \frac{1}{6}(\sin^6 x + \cos^6 x) \\
&= \frac{1}{4}(1 - 2\sin^2 x \cos^2 x) - \frac{1}{6}((\sin^2 x + \cos^2 x)(\sin^4 x + \cos^4 x - \sin^2 x \cos^2 x)) \\
&= \frac{1}{4}(1 - 2\sin^2 x \cos^2 x) - \frac{1}{6}(1 - 2\sin^2 x \cos^2 x - \sin^2 x \cos^2 x) \\
&= \frac{1}{4}(1 - 2\sin^2 x \cos^2 x) - \frac{1}{6}(1 - 3\sin^2 x \cos^2 x) = \frac{1}{12}
\end{aligned}$$


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**Q.2)**

$$A = \begin{bmatrix} 2 & -4 \\ -4 & 1 \end{bmatrix}$$

$$\therefore A^2 = \begin{bmatrix} 2 & -3 \\ -4 & 1 \end{bmatrix} \begin{bmatrix} 2 & -3 \\ -4 & 1 \end{bmatrix} = \begin{bmatrix} 16 & -9 \\ -12 & 13 \end{bmatrix}$$

$$\begin{aligned}
3A^2 + 12A &= \begin{bmatrix} 48 & -27 \\ -36 & 39 \end{bmatrix} + \begin{bmatrix} 24 & -36 \\ -48 & 12 \end{bmatrix} \\
&= \begin{bmatrix} 72 & -63 \\ -84 & 51 \end{bmatrix}
\end{aligned}$$

adj A = Transpose of cofactors

so that  $\begin{bmatrix} 51 & 63 \\ 84 & 72 \end{bmatrix}$

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**Q.3)** 15+25+.....+995

1+2+3+.....+99

99\*50=0

Option B

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**Q.4)** No. of 4 digits number formed = 4 !

Now each digit comes equal no. of times at unit place = 3!

Each digit appears at unit place

So sum = 3! (3+4+5+6)

=6x18

=108

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**Q.5)** As we learnt in

Summation of series of natural numbers -

$$\sum_{k=1}^n K = \frac{1}{2}n(n+1)$$

and

$$\sum_{k=1}^n K^2 = \frac{1}{6}n(n+1)(2n+1)$$

Now,

$$f(x) = ax^2 + bx + c$$

$$a + b + c = 3$$

$$f(x+y) = f(x) + f(y) + xy$$

$$\sum_{n=1}^{10} f(n)$$

Then

$$f(1) = a + b + c = 3$$

$$\therefore f(1) = 3$$

$$\text{put } x=1, y=1$$

$$f(2) = f(1) + f(1) + 1 \times 1$$

$$= 2f(1) + 1$$

$$= 2 \times 3 + 1 = 7$$

$$\text{put } x=1, y=2$$

$$f(3) = f(1) + f(2) + 2 \times 1$$

$$= 3 + 7 + 2$$

$$= 12$$

$$\text{Similarly } f(4) = 18 \quad (\text{By putting } x=2 \text{ and } y=2)$$

$$\therefore f(1) + f(2) + f(3) + f(4) + \dots = 3 + 7 + 12 + 18 + \dots$$

Now, as differences of consecutive terms are 4, 5, 6, ..... which is an AP, so

$$\text{Let } T_n = An^2 + Bn + C$$

$$\text{put } n=1: \quad 3 = A + B + C$$

$$\text{At } n=2: \quad 7 = 4A + 2B + C$$

$$\text{At } n=3: \quad 12 = 9A + 3B + C$$

Subtracting these equations

$$4 = 3A + B \quad \text{and} \quad 5 = 5A + B$$

$$1 = 2A$$

$$\therefore A = \frac{1}{2}$$

$$\therefore B + C = 3 - \frac{1}{2} = \frac{5}{2}$$

$$\therefore 2B + C$$

$$= 7 - 4 \times \frac{1}{2}$$

$$=7-2=5$$

$$B = \frac{5}{2}$$

$$C=0$$

$$\text{So } T_n = \frac{n^2}{2} + \frac{5n}{2}$$

$$\begin{aligned} S_n &= \sum T_n = \frac{1}{2} \cdot \frac{n(n+1)(2n+1)}{6} + \frac{5}{2} \times \frac{n(n+1)}{2} \\ &= \frac{n(n+1)(2n+1)}{12} + \frac{5n(n+1)}{4} \end{aligned}$$

put  $n=10$

$$\begin{aligned} S_{10} &= \frac{10 \times 11 \times 21}{12} + \frac{50 \times 11}{4} \\ &= \frac{55 \times 7}{2} + \frac{25 \times 11}{2} \\ &= \frac{385 + 275}{2} \\ &= \frac{660}{2} \end{aligned}$$

$$=330$$

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**Q.6)**

$$\begin{aligned} &\text{Given } \sin^{-1} x > \cos^{-1} x \text{ where } x \in (0, 1) \\ &\Rightarrow \sin^{-1} x > \frac{\pi}{2} - \sin^{-1} x \\ &\Rightarrow 2 \sin^{-1} x > \frac{\pi}{2} \Rightarrow \sin^{-1} x > \frac{\pi}{4} \\ &\Rightarrow x > \sin \frac{\pi}{4} \Rightarrow x > \frac{1}{\sqrt{2}} \end{aligned}$$

Maximum value of  $\sin^{-1} x$  is  $\frac{\pi}{2}$   
 So, maximum value of  $x$  is 1.  
 So,  $x \in \left(\frac{1}{\sqrt{2}}, 1\right)$

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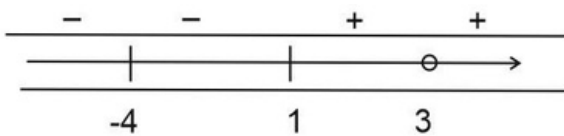


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**Q.7)** Roots are  $x=1, -4$

Roots of denominator  $x = 3$

Sign scheme



For  $> 0$

$$(1, 3), \cup(3, \infty)$$

$$(1, \infty) - \{3\}$$


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**Q.8)** As we learnt in

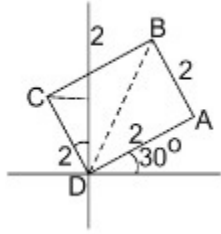
Parametric form -

$$x = x_1 + r \cos \Theta$$

$$y = y_1 + r \sin \Theta$$

- wherein

Where  $\Theta$  is the inclination of the line and  $r$  is the distance between  $(x, y)$  and  $(x_1, y_1)$



x-coordinates of A is  $2\cos 30^\circ$

$$= 2 \times \frac{\sqrt{3}}{2} = \sqrt{3}$$

angle of OB with positive x-axis is  $30^\circ + 45^\circ = 75^\circ$

Hence x - coordinate of B is  $2\sqrt{2} \cos 75^\circ$

$$= 2\sqrt{2} \left( \frac{\sqrt{3}-1}{2\sqrt{2}} \right) = (\sqrt{3}-1)$$

x-coordinate of C is  $-2\sin 30^\circ = -1$

Hence Sum =  $(\sqrt{3} + \sqrt{3} - 1 + (-1))$

$$= 2\sqrt{3} - 2$$


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**Q.9)**  $f(x) = 3\sin x + 4\cos x$ .

$$f\left(\frac{-11\pi}{6}\right) = 3\sin\left(\frac{-11\pi}{6}\right) + 4\cos\left(\frac{-11\pi}{6}\right)$$

$$f\left(\frac{-11\pi}{6}\right) = -3\sin\left(\frac{11\pi}{6}\right) + 4\cos\left(\frac{11\pi}{6}\right)$$

$$f\left(\frac{-11\pi}{6}\right) = -3\sin\left(2\pi - \frac{\pi}{6}\right) + 4\cos\left(2\pi - \frac{\pi}{6}\right)$$

$$f\left(\frac{-11\pi}{6}\right) = +3\sin\left(\frac{\pi}{6}\right) + 4\cos\left(\frac{\pi}{6}\right)$$

$$f\left(\frac{-11\pi}{6}\right) = \frac{3}{2} + 4\frac{\sqrt{3}}{2}$$


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**Q.10)** As we learnt in

Cramer's rule for solving system of linear equations -

When  $\Delta = 0$  and  $\Delta_1 = \Delta_2 = \Delta_3 = 0$ ,

then the system of equations has infinite solutions.

- wherein

$$a_1x + b_1y + c_1z = d_1$$

$$a_2x + b_2y + c_2z = d_2$$

$$a_3x + b_3y + c_3z = d_3$$

and

$$\Delta = \begin{vmatrix} a_1 & b_1 & c_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix}$$

$\Delta_1, \Delta_2, \Delta_3$  are obtained by replacing column 1,2,3 of  $\Delta$  by  $(d_1, d_2, d_3)$  column

$$\begin{vmatrix} 1 & 1 & 1 \\ 1 & a & 1 \\ a & b & 1 \end{vmatrix} = 0$$

$$= 1(a-b) - 1(1-a) + 1(b-a^2) = 0$$

$$= a - b - 1 + a + b - a^2 = 0$$

$$\Rightarrow 2a - 1 - a^2 = 0$$

$$\Rightarrow a^2 - 2a + 1 = 0$$

$$\Rightarrow (a-1)^2 = 0$$

$$\Rightarrow a = 1$$

It is independent of b

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**Q.11)**  $a = 4 \times 2017 = 2 \times 4034$

The total number of factors = 4035.

out of these 4035 factors, we can choose two numbers a, b such that  $a < b$  in  $[4035/2] = 2017$ .

And since the given number is a perfect square we have one set of two equal factors.

$\therefore$  many pairs (a,b) of positive integers are there such that  $a \leq b$  and  $ab = 4 \times 2017 = 2018$ .

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**Q.12)** Here,  $0+1+2+\dots+9 = 45$ , which is divisible by 9

Now we have to select 8 digits to form an 8-digit number, which means we have to reject 2 no.s while keeping the sum divisible by 9

So, (0,9), (1,8), (2,7), (3,6), (4,5) can be rejected.

1) if (0,9) is rejected, we can form numbers in  $8!$  ways

2) If other 4 sets are rejected, we can form numbers in  $7 \cdot 7!$  (0 can't be at first place)

So no. of ways =  $4 \cdot 7 \cdot 7!$

Adding (1) and (2):  $(8)! + 28(7!) = 36(7!)$

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**Q.13)** As we have learned

Relation between AM, GM and HM of two positive numbers -

$$AM \geq GM \geq HM$$

Now,

$$x + y + z = 12$$

$$\left(\frac{x}{3} + \frac{x}{3} + \frac{x}{3}\right) + \left(\frac{y}{4} + \frac{y}{4} + \frac{y}{4} + \frac{y}{4}\right) + \left(\frac{z}{5} + \frac{z}{5} + \frac{z}{5} + \frac{z}{5} + \frac{z}{5}\right) = 12$$

$$\frac{\left(\frac{x}{3} + \frac{x}{3} + \frac{x}{3}\right) + \left(\frac{y}{4} + \frac{y}{4} + \frac{y}{4} + \frac{y}{4}\right) + \left(\frac{z}{5} + \frac{z}{5} + \frac{z}{5} + \frac{z}{5} + \frac{z}{5}\right)}{12} = 1$$

This is the AM between these 12 numbers

Now let us find GM between these 12 numbers

$$\text{G.M} = [(x/3)^3(y/4)^4(z/5)^5]^{1/12}$$

$$\text{G.M} = \left[\frac{(x)^3(y)^4(z)^5}{(3)^3(4)^4(5)^5}\right]^{1/12}$$

Now, as A.M  $\geq$  G.M

$$1 \geq \left[\frac{(x)^3(y)^4(z)^5}{(3)^3(4)^4(5)^5}\right]^{1/12}$$

$$\Rightarrow (x^3y^4z^5) \leq (0.1)(600)^3$$

$$\text{But given } x^3y^4z^5 = (0.1)(600)^3$$

Which means as given A.M = G.M

$$\Rightarrow x/3 = y/4 = z/5$$

From above result and  $x + y + z = 12$ , we get  $x = 3, y = 4, z = 5$

$$\Rightarrow x^3 + y^3 + z^3 = 3^3 + 4^3 + 5^3 = 216$$

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**Q.14)**

$$\begin{aligned} \sin 2x - 2 \cos x + 4 \sin x &= 4 \\ \Rightarrow 2 \sin x \cdot \cos x - 2 \cos x + 4 \sin x - 4 &= 0 \\ \Rightarrow (\sin x - 1)(\cos x - 2) &= 0 \end{aligned}$$

$$\begin{aligned} \because \cos x - 2 &\neq 0, \therefore \sin x = 1 \\ \therefore x &= \frac{\pi}{2}, \frac{5\pi}{2}, \frac{9\pi}{2} \end{aligned}$$


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**Q.15)**

$$\begin{aligned} ||x| - 2| &\leq 2 \\ \Rightarrow -2 &\leq |x| - 2 \leq 2 \\ \Rightarrow 0 &\leq |x| \leq 4 \\ \Rightarrow 0 &\leq |x| \text{ and } |x| \leq 4 \\ \Rightarrow x &\in R \text{ and } -4 \leq x \leq 4 \\ \Rightarrow x &\in R \cap [-4, 4] \\ \Rightarrow x &\in [-4, 4]. \end{aligned}$$


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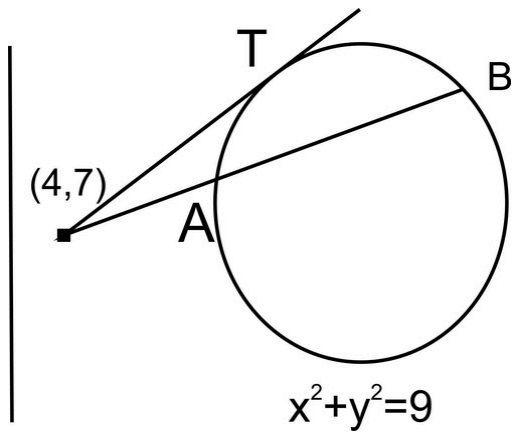
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**Q.16)** As we learnt

Length of a tangent -

$$L = \sqrt{x_1^2 + y_1^2 + 2gx_1 + 2fy_1 + c}$$

Length of tangent from an external point  $(x_1, y_1)$  to circle  $x^2 + y^2 + 2gx + 2fy + c = 0$



Since we know,

$$PA \cdot PB = PT^2$$

$$PT = \sqrt{4^2 + 7^2 - 9}$$

$$\Rightarrow PT^2 = (\sqrt{56})^2 = 56$$

**Q.17)** As we learnt in

Eccentricity -

$$e = \sqrt{1 - \frac{b^2}{a^2}}$$

- wherein

For the ellipse

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

It passes through (4,-1) and (-2,2)

$$\frac{16}{a^2} + \frac{1}{b^2} = 1$$

$$\text{and } \frac{4}{a^2} + \frac{4}{b^2} = 1 \quad \} \times 4$$

$$\frac{15}{b^2} = 3 \Rightarrow b^2 = 5$$

$$\frac{4}{a^2} + \frac{4}{5} = 1$$

$$a^2 = 20$$

$$e = \sqrt{1 - \frac{b^2}{a^2}} = \sqrt{1 - \frac{5}{20}} = \frac{\sqrt{3}}{2}$$

**Q.18)** Initially: a glass 500cc milk and a cup 500cc water Step 1: 150 cc of milk is transferred to the cup from glass After step 1: Glass - 350 cc milk, Cup - 150 cc milk and 500 cc water

Step 2: 150 cc of this mixture is transferred from the cup to the glass

After step 2:

Glass - 350 cc milk + 150 cc mixture with milk : water ratio 3:10

Cup - 500 cc mixture with milk : water ratio 3:10

water in glass : milk in cup =  $\frac{10}{13} \times 150 : \frac{3}{13} \times 500 = 1 : 1$  The answer is option A.

**Q.19)** Let  $CP = 100x$

So, SP must be in the range of  $140x$  to  $150x$

Since 50% discount is given

If  $SP = 140x$  then  $MP = 280x$

If  $SP = 150x$  then  $MP = 300x$

So, MP must be in the range of  $280x$  and  $300x$

Therefore, Markup percent must be in the range of

$$\frac{(280x - 100x) * 100}{100x} \text{ to } \frac{(300x - 100x) * 100}{100x}$$

i.e. 180% to 200%

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**Q.20)** As we have learned

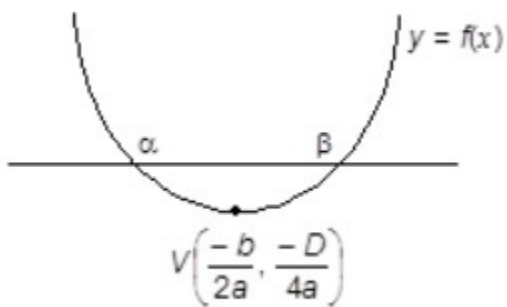
Quadratic Expression Graph when  $a > 0$  &  $D > 0$  -

Real and distinct roots of

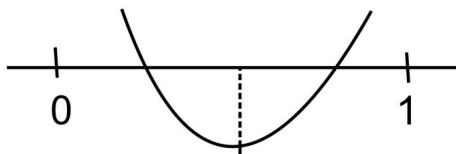
$$f(x) = ax^2 + bx + c$$

$$\& D = b^2 - 4ac$$

- wherein



$$2x^2 + 3x + k = 0$$



$$\frac{-b}{2a} = -3/4 \text{ is the abscissa of vertex}$$

and , it should lie in  $(0,1)$  but it's not true

S, no value of 'k' exists

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**Q.21)**

Parametric form -

$$x = x_1 + r \cos \Theta$$

$$y = y_1 + r \sin \Theta$$

- wherein

Where  $\Theta$  is the inclination of the line and  $r$  is the distance between  $(x, y)$  and  $(x_1, y_1)$

Slope – point form of a straight line -

$$y - y_1 = m(x - x_1)$$

- wherein

$m \rightarrow$  slope

$(x_1, y_1) \rightarrow$  point through which line passes

Condition for perpendicular lines -

$$m_1 m_2 = -1$$

- wherein

Here  $m_1, m_2$  are the slope of perpendicular lines.

$$\text{So, } Q = (2 - 2\sqrt{3} \cos 45^\circ, 1 - 2\sqrt{3} \sin 45^\circ)$$

$$Q = (2 - \sqrt{6}, 1 - \sqrt{6})$$

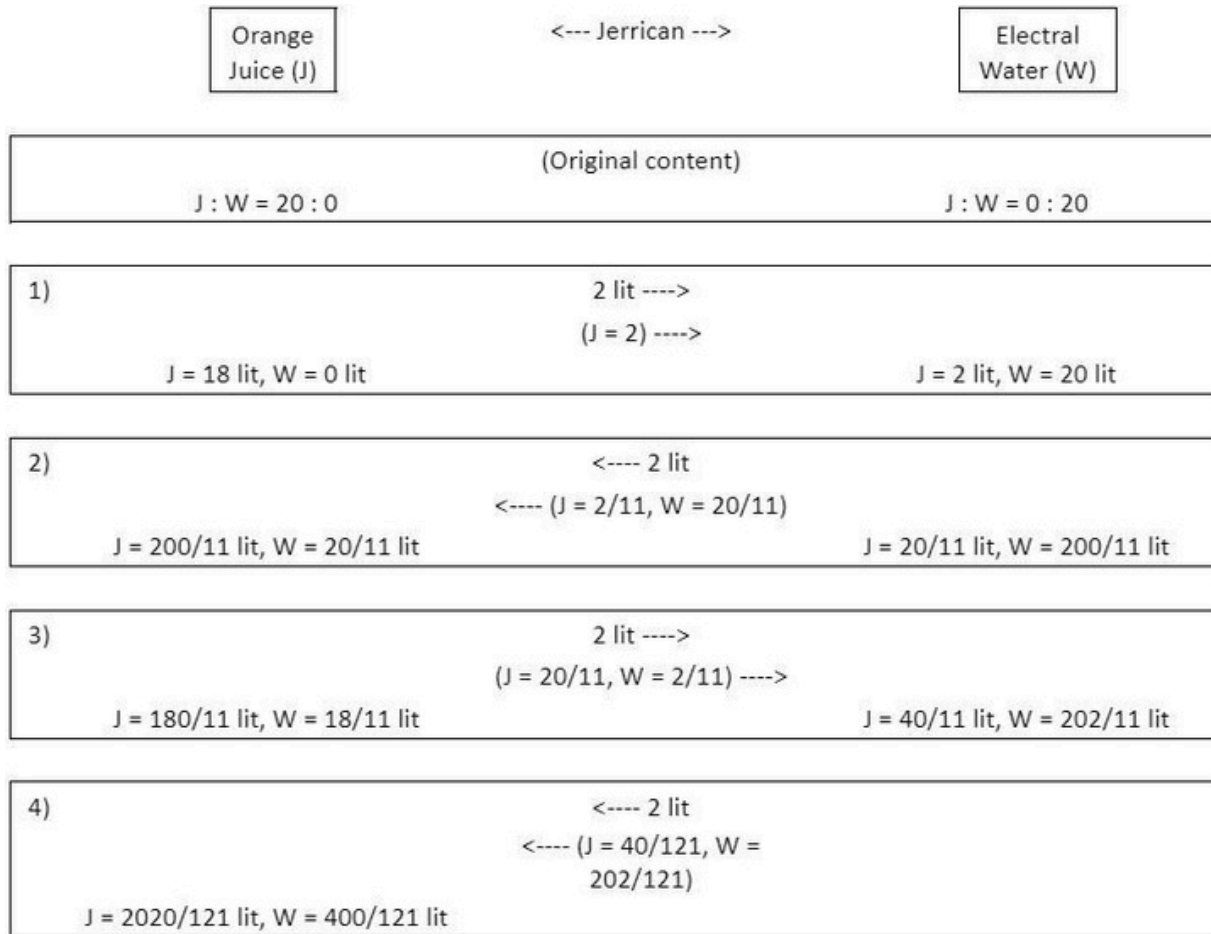
Line Required

$$(y - 1 + \sqrt{6}) = (-1)(x - 2 + \sqrt{6})$$

$$(y - 1 + \sqrt{6}) = (-x + 2 - \sqrt{6})$$

$$x + y = 3 - 2\sqrt{6}$$

**Q.22)**



Final ratio of pure orange juice and water in the first jerrican

$$= 2020/121 : 400/121$$

**Q.23)**

$$\left(2^{\frac{1}{2}} + 3^{\frac{1}{5}}\right)^{10} = {}^{10}C_0 (2^{1/2})^{10} + {}^{10}C_1 (2^{1/2})^9 (3^{1/5}) + \dots + {}^{10}C_{10} (3^{1/5})^{10}$$

There are only two rational terms - first term and last term.

$$\text{Sum of two rational terms} = (2)^5 + (3)^2 = 32 + 9 = 41$$


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**Q.24)**

$$\frac{x-5}{x^2+5x-14} > 0$$

$$\frac{x-5}{(x-2)(x+7)} > 0$$

$$-7 < x < 2 \quad \text{or} \quad x > 5$$

$\alpha = -6$  satisfies

$$\alpha^2 + 5\alpha - 6 = 0$$


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**Q.25)**

$$P^T Q^{2015} P$$

$$= P^T Q \cdot \underset{\text{2015 times}}{Q \cdot Q \cdot Q \cdot \dots \cdot Q} P$$

$$\text{Now, if } P = \begin{bmatrix} \sqrt{3}/2 & 1/2 \\ -1/2 & \sqrt{3}/2 \end{bmatrix}$$

$$\text{so, } P^T P = \begin{bmatrix} \sqrt{3}/2 & -1/2 \\ 1/2 & \sqrt{3}/2 \end{bmatrix} \begin{bmatrix} \sqrt{3}/2 & 1/2 \\ -1/2 & \sqrt{3}/2 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} = I$$

$$\rightarrow P^T Q^{2015} = A^{2015}$$

$$= \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix} \dots \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 2015 \\ 0 & 1 \end{bmatrix}$$

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26.

The question is " Total number of matches ending in draw is "

Hence, the answer is ' 6 '

Choice D is the correct answer.

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27

The question is "Which team has the highest number of draws "

Hence, the answer is ' E '

Choice D is the correct answer.

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28.

The question is " Total points Team F scored was "

Hence, the answer is ' 2 '

Choice C is the correct answer.

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29.

The question is " Which team was not defeated by team A "

Hence, the answer is 'D '

Choice C is the correct answer.

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30.

The question is " Team E was defeated by "

Hence, the answer is 'Only team B'

Choice C is the correct answer.

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## Verbal Ability & Reading Comprehension

**Q. 1. (b)** The main theme of the passage is the description of the solar system as an intricate dance of celestial bodies and the beauty it holds.

**Q. 2. (c)** Earth is described as the cradle of life adorned with oceans and continents in the passage.

**Q. 3. (a) Jupiter is mentioned for its colossal size in the passage.**

**Q. 4. (a) Uranus and Neptune are described as the ice giants waltzing in the far reaches of the solar system.**

**Q. 5. (c) The passage highlights the challenge of preserving celestial environments from potential contamination by microorganisms brought from Earth.**

**Q. 6. (b) The passage raises the question of who should have the authority to regulate and oversee the off-world colonies.**

**Q. 7. (c) The passage discusses the need for protocols to ensure the respectful treatment of any extraterrestrial life forms that may be encountered.**

**Q. 8. (b) The passage emphasises the importance of balancing the costs of space exploration with the potential benefits, both scientific and economic, in establishing space colonies.**

**Q.9) Option A:** The term "deified" suggests that the Undead were elevated to the status of gods and worshipped, which is not what the original sentence conveys. The sentence merely states that certain attributes were assigned to the Undead, not that they were glorified or sanctified in any divine manner. Therefore, Option A is not a fitting interpretation of the sentence.

**Option B:** This option argues that assigning abnormal characteristics to the Undead signifies a rejection of the natural order. However, the original sentence doesn't necessarily imply that people rejected the natural order of things; it simply states that abnormal attributes were given to the Undead. Ascribing attributes is not the same as actively rejecting natural norms. Hence, Option B doesn't accurately reflect the meaning of the original sentence.

**Option C:** This is the most accurate interpretation of the original sentence. The Undead are perceived as abnormal entities, and to emphasize this abnormality, people assigned particular characteristics to them. This doesn't imply worship or a rejection of the natural order but rather reinforces the notion that the Undead exist outside what is considered normal. Therefore, Option C is the most fitting explanation based on the original sentence.

In summary, while Options A and B introduce elements not present in the original sentence—such as deification or the rejection of natural order—Option C stays true to the original meaning by stating that attributes were accorded to the Undead to emphasize their abnormal nature.

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**Q.10) Option A** is the most accurate conclusion that can be derived from the sentence "From out of the primal darkness of Mankind's earliest years, come whispers of eerie creatures, not quite alive (or

alive in a way which we can understand), yet not quite dead either." The statement clearly highlights that during the formative period of human history, there were circulating rumors or folklore about strange beings that didn't fit neatly into our standard categories of life or death. Therefore, Option A rightly encapsulates the notion that in those early years of human existence, there was a prevailing belief or at least, an oral tradition, that spoke of such mysterious entities.

Option B, on the other hand, is not a viable conclusion to draw from the original statement. The text does not imply in any way that these 'eerie creatures' were themselves spreading rumors or whispers about their own mortality or lack thereof. It talks about "whispers of eerie creatures," which means that people were talking about these creatures, not that the creatures were talking or whispering about themselves.

Option C is likewise not a correct interpretation of the text. The phrase "primal darkness of Mankind's earliest years" is more metaphorical and speaks to the obscurity and lack of knowledge in early human history, rather than implying that these creatures were only sighted or believed to exist in literal darkness. There's no evidence in the statement to suggest their existence was restricted to dark settings.

Lastly, Option D is not supported by the information in the statement either. While the statement does indicate that the creatures are "not quite alive (or alive in a way which we can understand)," it doesn't provide any insights into how one might go about understanding the life forms or characteristics of these eerie creatures. Therefore, claiming that the passage gives us tools to understand these creatures would be inaccurate.

In summary, Option A stands as the most fitting conclusion to draw from the given text, as it faithfully reflects the idea that during the early phases of human history, there was a shared belief or narrative about the existence of creatures that defied conventional definitions of life and death. Options B, C, and D do not align well with the original statement and thus are not valid conclusions to draw from it.

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**Q.11)** Option B is the most accurate summary of the passage, which delves into the historical presence and transformation of the concept of the Undead in human folklore. The passage outlines how these eerie creatures were initially rather ambiguous and nebulous in the ancient human narratives but gained more concrete identities and attributes as human societies evolved. With advancements in civilization, the Undead became more specific entities, often endowed with supernatural abilities such as shape-shifting, blood-drinking, and mental manipulation. In modern times, these entities have been given distinct names like werewolves, vampires, and ghouls, which are often invoked to induce fear in ordinary people. Therefore, Option B encapsulates the overarching idea of the passage: that the Undead have undergone a process of evolution and specification in alignment with human societal progress.

Option A, however, is not a valid summary because the passage doesn't touch upon the transition from archaic modes of thinking to the Age of Enlightenment. There's no mention of any

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philosophical or intellectual shifts in the text, which focuses solely on the evolution of the folklore surrounding the Undead.

Option C is also not a reliable choice. The passage does not center on the human failure to "fully comprehend their environment." While the concept of the Undead might imply a certain level of mystery or incomprehensibility, the primary focus of the passage is the evolutionary nature of these entities as society has advanced, rather than an emphasis on human limitations in understanding.

Option D, although it may touch upon an aspect of the Undead – likely their supernatural powers – does not encapsulate the complete essence of the passage. The passage isn't solely about one facet of the Undead; it's about the historical transformation and diversification of these entities as human societies have grown more complex.

In summary, Option B remains the most fitting choice as it cohesively summarizes the passage's primary points regarding the long-standing existence of the Undead in human folklore and their evolving characteristics over time. Options A, C, and D either miss the focus or capture only a fragment of the passage's overall message. Therefore, Option B is the correct choice.

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**Q.12)** Option B emerges as the correct choice based on the framework set by the question, which employs the term "except" to look for a statement that would be in agreement with the information provided in the passage. The passage outlines that as human societies progressed in complexity, the concept of the Undead also evolved, becoming more well-defined. It further alludes to the ongoing development of theories related to the Undead from the Middle Ages through the Age of Enlightenment. Therefore, Option B aligns perfectly with this narrative, implying that any negation or contradiction of this statement would introduce inconsistencies when compared to the passage's content.

On the contrary, if the other options are found to be untrue, they would actually conform to the text in the passage. Option A diverges from the passage's main argument; it claims that the Undead remained nebulous and ambiguous despite human attempts to understand them. This stands in direct contrast to the passage, which asserts that the Undead became more defined as human societies became more advanced.

Option C also proves to be incompatible with the passage's narrative. It posits that as humans became more sophisticated, they ceased to believe in the concept of the Undead. This idea is not substantiated by the passage, which focuses on the evolution and elaboration of the Undead in folklore rather than on a decline in belief.

Similarly, Option D is not congruent with the passage's content. The passage makes no mention of Shamans or the strength and stability of their relationships with the Undead, rendering Option D inconsistent with the passage's themes and information.

In summary, Option B is the only choice that, if proven false, would contradict the information provided in the passage. As such, it stands as the correct answer in the context of a question searching for an "except" clause. Options A, C, and D, if proven false, would not conflict with the passage's content, making them incorrect choices for this particular question. Therefore, Option B remains the correct selection.

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**Q.13) (b)** on the brink of means on the verge of doing something or of having some imminent event happen, especially that which is bad or disastrous.

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**Q.14) (d)**

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\_\_\_\_\_

**Q.15) (c)**

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**Q.16) (d)**

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\_\_\_\_\_

**Q.17) (d)**

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**Q.18) (a)**

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**Q.19) (a)**

**Q.20)** The correct sentence is "They were such important providers of mortgages and business loans that failure would have been catastrophic." Hence, the option (d) is the correct answer.

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**Q.21) The** sentence is grammatically correct. Hence, the option (e) is the correct answer.

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**Q.22) The** correct sentence is “He suggests finding another challenge that does not rely on where the company is in relation to its competitors.” Hence, the option (b) is the correct answer.

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**Q.23) The** correct sentence is “It will fuel speculation that the shadow business secretary is positioning himself as a leadership contender.”

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**Q.24)(E) all** the given sentences are grammatically correct.

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**Q.25)** The last line of the paragraph gives us the idea that the railways are going to compromise on quantity to ensure quality. The immediate question that can come into our mind is -How much? Well this goes without saying that option A explains the quantity cut perfectly. Hence this is the answer. Option B speaks about the concluding line. This can only follow option A. Hence we can eliminate this one. Option C speaks of ‘this’. What is ‘this’? The answer comes in option A. Option D is completely irrelevant

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**Q.26)** This is a plot of a dramatic romantic film. When Aimee confesses and tells Sutter about her mother the primary romantic reaction would be to calm her down and to provide comfort to her. Option A is actually overstepping as Sutter might have had a conversation with her about her mother’s case. Option B speaks about things that we don’t know as we are unaware of the beginning and the end of the film. Option C can be the suitable answer because he is trying to pacify her, naturally. Option D is not natural as his reaction is unheard of. Thus it seems a little absurd for him to walk away as it is clear that he is interested in her.

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**Q.27)** The entire passage is about a new scooter. The last few lines of the passage are based on the features.

Option C is also highlighting a feature. Hence this has got the proximity to be the right answer choice.

Option A is a general statement. This can come at the end of the article or after mentioning the main ideas of the passage. This definitely cannot be placed ahead of option C.

Option B talks about road safety. We are unaware of this as the passage we have with us is a description of a bike.

Option C is the answer.

Option D can come only after mentioning all the features which make up value for the money that the customer is going to pay. Hence this definitely cannot come before option C.

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**Q.28)** We need to know that the line which states that “the actors are quite far away from their budding youth era” plays an important role here. Now looking from a critic’s point of view, the mention about their age is actually kept reserved for a negative note.

“The feisty quartet use the F-word liberally, smoke, drink, do drugs and generally make a nuisance of themselves in order to prove that they are no pushovers.”- This sentence literally brings in the life of the very common metro girls these days.

A critic will link these two things together.

Option A speaks about the box-office record. We are indifferent towards this as we are cross referring the content of the film.

Option B leaves the power to comment to the audience. Are we in charge of doing this?

Option C is redundant as we can already gather the idea from the line “The feisty quartet use the F-word liberally, smoke, drink, do drugs and generally make a nuisance of themselves in order to prove that they are no pushovers.” Hence this won’t be the answer.

Option D is a perfect criticism summing up the two cases-the age of the actors and the young girl life of the character. These two things do not go hand in hand. Hence, we are free to mark this option as the answer.

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**Q.29) (d)** To get the answer right, all the three words should fit in the blanks contextually and grammatically. Option A and C can be eliminated as one can’t ‘forget’ or ‘reject’ a vital function. Fallacy – is a false idea as it is based on incorrect facts or reasoning whereas misconception means a wrong idea or understanding of something. Therefore, misconception, instinctive and neglect fit perfectly in the given blanks.

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**Q.30) (a)** To get the answer right, all the three words should fit in the blanks contextually and grammatically. Pandemic resolutions or systems can't be relaxed hence options c and d can be eliminated. Confounding which means confusing is a misfit in the third blank. The correct answer is option A.

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**Q.31) (b)** To get the answer right, all the three words should fit in the blanks contextually and grammatically. Solution: option B The words "compassionate and friendly" won't fit the third blank as it requires a superlative. Option C and D get eliminated. Assiduous - diligent Analytical - systematic and logical Ludicrous – absurd Option A will be a misfit because both the adjectives are contrasting. Option B is a good answer choice.

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**Q.32) (c)** Appraisal – the act of assessing something/someone Recognise – identify To get the answer right, all three words should fit in the blanks contextually and grammatically. The word writing in the second blank is the key. "The best strategy to give an appraisal is to deliver it orally as well as in writing." No company would advertise or realize its employee's achievements. Therefore option b and d get eliminated. The approval can't be delivered as award hence option will also get eliminated.

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**Q.33) (c)** To get the answer right, all three words should fit in the blanks contextually and grammatically. Surviving – continuing to exist, Eroded – to gradually wear away Witness – observer Third word in option d observers will be a misfit as these diminutive hills can't be observers 'to' many important events. Therefore option D gets eliminated. Second word 'destroyed' in option B is a misfit as when rocks, soil and mountains wear away, they get eroded not destroyed or reduced. Thus option B and A also get eliminated.

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**Q.34) (d)** nouveau riche means newly arrived, modern or developed. In the first blank "morals" fits better than style and wealth. In the second blank "theme" fits better than "story" as it's recurring in literature.

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**Q.35) (a)** Climatic – relating to climate Climactic – final, culminating, forming an exciting climax. The words climatic and climactic have been correctly used in sentence b, c and d. however, the usage is incorrect in sentence a.

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**Q.36) (b)** Luxurious – opulent, sumptuous, extremely comfortable Luxuriant – rich and profuse in growth The usage is incorrect in sentence B.

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**Q.37). (a)** Intensive: Thorough, exhaustive Intense – great, enormous. The words intense and intensive have been correctly used in sentence b, c and d. the usage in sentence A is wrong.

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**Q.38). (d)** Appraise – to evaluate, assess, estimate Apprise – to inform, tell The words appraise and apprise have been correctly used in sentence a, c and b. the word appraise in sentence D has been incorrectly used hence it is the answer.

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**Q.39). (c)** To get the answer, first we need to understand the meaning of the words that have been repeated in all the four sentences. Lighting: abrupt electric discharge from cloud to cloud Lighting: Illumination Lightning: To become lighter or less dark; brighter So, apparently, the word lighting and lightning have been used correctly in sentence A and B respectively. In sentence C however, the usage is incorrect. The word that should have been used is lightening which means to make brighter.

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**Q.40). (d)** Agog means full of intense interest or excitement; eager. It has been used correctly in the given sentences.

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Q.41) The correct answer is the first option.

Here are the sentences arranged in the correct order to form a meaningful and coherent paragraph:

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D. The Dead Sea is one of the saltiest bodies of water on the planet, with about ten times the salt content of typical saltwater.

E. This is because water flows into the Dead Sea from a single primary tributary, the Jordan River.

C. It is then unable to exit the lake and is forced to evaporate.

A. Because of the region's scorching heat and aridity, a considerable amount of water evaporates.

B. As a result, the salt and other minerals become increasingly concentrated.

This order presents the process of how the Dead Sea becomes so salty due to the unique geographical conditions and the lack of an outlet for the water.

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Q.42) The correct choice is the second option.

To arrange the sentences in a meaningful and coherent paragraph, consider the logical flow of information in the aluminium production process. Here's the correct order:

A) Bauxite is used as the main raw material for the production of aluminium.

C) Sodium aluminate is acquired in the next step.

B) Precipitation is a pre-final stage for actual production.

D) The smelting process actually extracts aluminium as a final product from its oxide.

This order introduces bauxite as the raw material in statement (A), explains the step of acquiring sodium aluminate in statement (C), mentions the precipitation stage as a preliminary step in statement (B), and concludes with the extraction of aluminium through the smelting process in statement (D).

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Q.43) The correct answer is the **first option (BEACD)**.

The statement (B) introduces Karen's visit to the garden. This is followed by statement (E), mentioning her appreciation for the outdoors. Statement (E) is in turn followed by statement (A), mentioning her careful navigation in the garden, which is followed by statement (C), mentioning the discovery of the swing (C). Finally, the paragraph concludes with the statement (D) which mentions her spontaneous decision to swing.

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**Q.44) Correct Answer:- 4132**

**Explanation:-** The paragraph talks about an experiment being conducted. Statement 4 is the opening sentence as it introduces the professor.

'He' in statement 1 refers to 'Robert Rosenthal' in statement 4. Also, statement 1 talks about division of twelve students (mentioned in statement 4). Thus, statement 1 follows statement 4.

'these differences' used in statement 3 refers to the difference between mice (as mentioned in statement 1). Thus, statement 3 follows statement 1. 1-3 are linked by 'in reality' what was put in minds of researchers to what was in reality Statement 2 is the concluding sentence as it presents the result/outcome of the experiment conducted. So, the correct order would be 4132.

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**Q.45)** Sentence 3 is introductory in nature and therefore will be the first sentence. The next sentence will be 1 as it relates to the point of cultural values of society. 4 and 2 make a mandatory pair as sentence 4 describes the problem that innovations are obstructed and 2 gives the solution and conclusion. This makes 3142 the correct order.

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## Mock TEST - 4

### Question Paper

#### Quantitative Aptitude Short Answer (SA) type

**Q.1)** The function  $f(x) = |\sin 4x| + |\cos 2x|$ , is a periodic function with a period of  $\frac{\pi}{k}$  value of k is.

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**Q.2)** The number of distinct real roots of the

equation, 
$$\begin{vmatrix} \cos x & \sin x & \sin x \\ \sin x & \cos x & \sin x \\ \sin x & \sin x & \cos x \end{vmatrix} = 0$$
 in the

interval  $\left[-\frac{\pi}{4}, \frac{\pi}{4}\right]$  is

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**Q.3)** In a first-year common mathematics class in an engineering college in Kolkata, the Professor, due to some reason, wrote down all the numbers from 1 to 360 on the black-board and took a washroom break. Utilizing the opportunity, a very naughty but bright student rubbed off all the multiples of 2, 3 and 5 from the list. On entering the class, the Professor immediately understood what had happened, and quite angrily asked the class to add all the leftover numbers on the blackboard and tell him the answer immediately. The bright student promptly gave the answer. What was it ?

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**Q.4)** 8 - digit numbers are formed using the digits 1, 1, 2, 2, 2, 3, 4, 4. The number of such numbers in which the odd digits do not occupy odd places, is :

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**Q.5)** Let  $a_1, a_2, a_3, \dots, a_n, \dots$  be in A.P. If  $a_3 + a_7 + a_{11} + a_{15} = 72$ , then the sum of its first 17 terms is equal to :

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**Q.6)**

if  $S = \tan^{-1} \left( \frac{1}{n^2 + n + 1} \right) + \tan^{-1} \left( \frac{1}{n^2 + 3n + 3} \right) + \dots$   
 $+ \tan^{-1} \left( \frac{1}{1 + (n + 19)(n + 20)} \right)$ , then S is equal to  $\frac{p}{n^2 + 20n + 1}$  what is  
the value of p

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**Q.7)** Reduce  $\frac{391}{667}$  to lowest terms. that is  $\frac{k}{29}$  find the value of k.

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**Q.8)** If  $y = mx + c$  is the normal at a point (in first quadrant) on the parabola  $y^2 = 8x$  whose  
focaldistanceis8units,then|c|isequalto  $p\sqrt{3}$  valueofpis.

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**Q.9)** A copper sphere of diameter 18 cm is drawn into a wire of diameter 6 mm. Find the  
length of the wire.

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**Q.10)** Find 16th term in the series 7, 13, 19, 25, ...

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**Q.11)** Two numbers are 25% and 40% less than the third number. What % is the second of  
the first?

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**Q.12)** The number of ways of selecting 15 teams from 15 men and 15 women, such that  
each team consists of a man and a woman, is  $n!$ . Find the value of n

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**Q.13)** What is the product of zeros of the polynomial  $x^3 - 2x^2 - 7x + 14$

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**Q.14)** An unbiased coin is tossed eight times. The probability of obtaining at least one head and at least one tail is:  $\frac{k}{128}$  value of k is

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**Q.15)** If the 2nd, 5th and 9th terms of a non-constant A.P. are in G.P., then the common ratio of this G.P. is  $k/3$  find the value of k.

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### Quantitative Ability MCQ type

**Q.1)** Let  $f : A \rightarrow B$  be a function defined as  $f(x) = \frac{x-1}{x-2}$ , where  $A = R - \{2\}$  and  $B = R - \{1\}$ . Then

A)  $f^{-1}(y) = \frac{3y-1}{y-1}$

B)  $f^{-1}(y) = \frac{2y-1}{y-1}$

C)  $f^{-1}(y) = \frac{2y+1}{y-1}$

D)  $f^{-1}(y) = \frac{2y-1}{y+1}$

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**Q.2)** Let A be a  $3 \times 3$  matrix such that  $A^2 - 5A + 7I = O$ .

Statement - I :  $A^{-1} = \frac{1}{7}(5I - A)$ .

Statement - II : The polynomial  $A^3 - 2A^2 - 3A + I$  can be reduced to  $5(A - 4I)$ .

A) Statement-I is true, but Statement-II is false.

**B)** Statement-I is false, but Statement-II is true.

**C)** Both the statements are true.

**D)** Both the statements are false.

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**Q.3)** Which of the following must be subtracted from 214369 so that it becomes a multiple of 11?

**A)4 B)2 C)3 D)1**

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**Q.4)** If in a regular polygon the number of diagonals is 54, then the number of sides of this polygon is :

**A)10 B)12 C)9 D)6**

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**Q.5)** If the sum of the first ten terms of the series

$$\left(1\frac{3}{5}\right)^2 + \left(2\frac{2}{5}\right)^2 + \left(3\frac{1}{5}\right)^2 + 4^2 + \left(4\frac{4}{5}\right)^2 + \dots \text{is } \frac{16}{5}m$$

then m is equal to:

**A) 102 B) 101 C)**

**100 D)99**

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**Q.6)** A value of  $x$  for which  $\sin(\cot^{-1}(1+x)) = \cos(\tan^{-1} x)$  , is:

A)  $-\frac{1}{2}$

B) 1

C) 0

D)  $\frac{1}{2}$

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**Q.7)** What is the remainder  $5^{1000}$  divided by 26?

A) 5

B) 6

C) 7

D) 8

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**Q.8)** The two adjacent sides of a cyclic quadrilateral are 2 and 5 and the angle between them is  $60^\circ$ . If the area of the quadrilateral is  $4\sqrt{3}$  then the perimeter of the quadrilateral is:

A) 12.5 B) 13.2

C) 12 D) 13

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**Q.9)** Let a function  $f : (0, \infty) \rightarrow [0, \infty)$  be defined by  $f(x) = \left| 1 - \frac{1}{x} \right|$ .

Then  $f$  is:

- A) not injective but surjective
  - B) both injective as well as surjective
  - C) neither injective nor surjective
  - D) injective only
- 
- 

**Q.10** if  $A = \begin{bmatrix} -4 & -1 \\ 3 & 1 \end{bmatrix}$ , then the determinant of the matrix  $(A^{2016} - 2A^{2015} - A^{2014})$  is:

- A) 2014
  - B) -175
  - C) 2016
  - D) -25
- 
- 

**Q.11** How many three-digit numbers are greater than 100 and increase by 198 when the three digits are arranged in the reverse order?

- A) 70
  - B) 65
  - C) 75
  - D) 55
- 
- 

**Q.12** The number of integers greater than 6,000 that can be formed, using the digits 3, 5, 6, 7 and 8, without repetition, is :

- A) 216 B) 192 C) 120

D) 72

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**Q.13)** Let the sum of the first three terms of an A.P. be 39 and the sum of its last four terms be 178. If the first term of this A.P. is 10, then the number of terms of the A.P. is :

A)12 B)13 C)14 D)15

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**Q.14)** The number of solutions of the equation,  $\sin^{-1} x = 2 \tan^{-1} x$  (in principal values) is:

A) B)

C) D)

2

3

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**Q.15)** Find the unit's digit of the remainder of  $59n - 31n$  divided by 28.

A) 14

B) 0

C)

D)

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**Q.16)** Let  $k$  be an integer such that the triangle with vertices  $(k, -3k)$ ,  $(5, k)$  and  $(-k, 2)$  has area 28 sq. units. Then the value of  $k$  is

A)3 B)1

C) 2

D) None of these

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**Q.17)** 50 monkeys went picnicking. 30 monkeys were selected to annoy goats, while 25 were selected to annoy bulls. How many decided to annoy both the animals?

A)9 B)5 C)6 D)7

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**Q.18)** Sum of money invested at simple interest becomes 7 times of itself in 15 years. How many times will it become in 5 years' time at the same rate if compounded annually?

A) 4.68 times

B) 7.2 times

C) 6 times

D) 5.38 times

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**Q.19)** Two cars travel from different locations at constant speeds. To meet each other after starting at the same time, they take 1.5 hours if they travel towards each other, but 10.5 hours if they travel in the same direction. If the speed of the slower car is 60 km/hr, then the distance traveled, in km, by the slower car when it meets the other car while traveling towards each other, is

A) 100 B)90 C) 120 D) 150

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**Q.20)** Amit is twice as efficient as Bunty and thrice as efficient as Chintu. Bunty can finish a job in 40 days, if he works alone. They started work in following manner:

- (i) On day 1 all the three work together
- (ii) On day 2 Amit worked alone, on day 3, Bunty work alone, and on day 4 Chintu work alone
- (iii) On day 5 again all the three worked together, and then, they continue the work by repeating this four-day roster.

Then, the total number of days Amit would have worked when the job gets finished, is

- A)** 12 days
  - B)**  $120/11$  days
  - C)**  $110/11$  days
  - D)**  $60/11$  days
- 
- 

**Q.21)** Calculate the LCM of  $\{72\}/\{250\}$ ,  $\{126\}/\{75\}$  and  $\{162\}/\{165\}$ .

- A)**  $756/5$
  - B)**  $10/11$
  - C)**  $130/25$
  - D)**  $120/125$
- 
- 

**Q.22)** The area (in sq. units) of the region described by  $A = \{(x, y) | y \geq x^2 - 5x + 4, x + y \geq 1, y \leq 0\}$  is:

- A)**  $\frac{7}{2}$
- B)**  $\frac{19}{6}$
- C)**  $\frac{13}{6}$

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D)  $\frac{17}{6}$

**Q.23)** The radius of a circle, having minimum area, which touches the curve  $y=4-x^2$

and the lines,  $y = |x|$  is:

A)  $2(\sqrt{2} - 1)$

B)  $4(\sqrt{2} - 1)$

C)  $4(\sqrt{2} + 1)$

D)  $2(\sqrt{2} + 1)$

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**Q.24)** A cocktail shaker has 120 ml of sherry-martini, a cocktail consisting of Amontillado sherry, Smirnoff vodka and Lillet-blanc in the ratio of 2 : 3 : 5. The bar-tender removes 20 ml from the mixture and replaces it with Lillet-blanc. He repeats this one more time. Find the final ratio of sherry, vodka and Lillet-blanc in the sherry-martini ?

**A)13:18:48 B)10:15:47 C)14:21:37 D) None of the above**

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**Q.25)** A shop provides a flat 50% discount on one shirt, while another provides two successive discounts of 30% and 30%. If the difference in the bill is Rs. 43, find the price of the shirt.

**A) Rs. 3,580 B) Rs. 3,850 C) Rs. 3,260**

D) Rs. 4,300

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**Directions (Q.26-Q.30):**

A showroom is open on all seven days of the week throughout the year. There are five employees Alex, Bhabha, Cathy, Dilip and Ethan who work in the showroom. Every day except Sunday, two employees are required while on Sunday three employees need to work. Every employee works for three days in a week. Some additional information is also provided:

- Every employee works on two consecutive days while the third day is not consecutive.
- Alex and Dilip work together on Tuesday and Wednesday while the other working day differs for them.
- Neither Bhabha nor Cathy works with Alex on any day.
- Cathy does not work either on Saturday or on Monday.

**Q.26)** Number of days Bhabha and Cathy work together in a week is

- A) 0
- B) 1
- C) 3
- D) 2

**Q.27)** The consecutive days on which Ethan works are

- A) Thursday and Friday
- B) Sunday and Monday
- C) Saturday and Sunday
- D) Friday and Saturday

**Q.28)** Which among the following employees do not work together on any of the days?

- A) Cathy and Dilip
- B) Bhabha and Dilip
- C) Dilip and Ethan
- D) Bhabha and Ethan

**Q.29)** Employees who work on Sunday are

- A) Alex, Dilip and Ethan
- B) Bhabha, Cathy and Dilip
- C) Bhabha, Cathy and Ethan
- D) Cathy, Dilip and Ethan

**Q.30)** One of the days Alex works on is

- A) Saturday
- B) Friday
- C) Monday
- D) Sunday

## Verbal Ability & Reading Comprehension

**Q.1) Direction:** The passage below is accompanied by a set of questions. Choose the best answer to each question.

As software improves, the people using it become less likely to sharpen their own know-how. Applications that offer lots of prompts and tips are often to blame; simpler, less solicitous programs push people harder to think, act and learn.

Ten years ago, information scientists at Utrecht University in the Netherlands had a group of people carry out complicated analytical and planning tasks using either rudimentary software that provided no assistance or sophisticated software that offered a great deal of aid. The researchers found that the people using the simple software developed better strategies, made fewer mistakes and developed a deeper aptitude for the work. The people using the more advanced software, meanwhile, would often “aimlessly click around” when confronted with a tricky problem. The supposedly helpful software actually short-circuited their thinking and learning.

[According to] philosopher Hubert Dreyfus . . . our skills get sharper only through practice, when we use them regularly to overcome different sorts of difficult challenges. The goal of modern software, by contrast, is to ease our way through such challenges. Arduous, painstaking work is exactly what programmers are most eager to automate—after all, that is where the immediate efficiency gains tend to lie. In other words, a fundamental tension ripples between the interests of the people doing the automation and the interests of the people doing the work.

Nevertheless, automation’s scope continues to widen. With the rise of electronic health records, physicians increasingly rely on software templates to guide them through patient exams. The programs incorporate valuable checklists and alerts, but they also make medicine more routinized and formulaic—and distance doctors from their patients. . . . Harvard Medical School professor Beth Lown, in a 2012 journal article . . . warned that when

doctors become “screen-driven,” following a computer’s prompts rather than “the patient’s narrative thread,” their thinking can become constricted. In the worst cases, they may miss important diagnostic signals. . . . In a recent paper published in the journal *Diagnosis*, three medical researchers . . . examined the misdiagnosis of Thomas Eric Duncan, the first person to die of Ebola in the U.S., at Texas Health Presbyterian Hospital Dallas. They argue that the digital templates used by the hospital’s clinicians to record patient information probably helped to induce a kind of tunnel vision. “These highly constrained tools,” the researchers write, “are optimized for data capture but at the expense of sacrificing their utility for appropriate triage and diagnosis, leading users to miss the forest for the trees.” Medical software, they write, is no “replacement for basic history-taking, examination skills, and critical thinking.” . . .

There is an alternative. In “human-centred automation,” the talents of people take precedence. . . . In this model, software plays an essential but secondary role. It takes over routine functions that a human operator has already mastered, issues alerts when unexpected situations arise, provides fresh information that expands the operator’s perspective and counters the biases that often distort human thinking. The technology becomes the expert’s partner, not the expert’s replacement.

**Question:**

In the Ebola misdiagnosis case, we can infer that doctors probably missed the forest for the trees because:

- A) they were led by the data processed by digital templates
- B) the data collected were not sufficient for appropriate triage.
- C) the digital templates forced them to acquire tunnel vision
- D) they used the wrong type of digital templates for the case.

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**Q.2) Direction:**

The passage below is accompanied by a set of questions. Choose the best answer to each question.

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**Question:**

In the context of the passage, all of the following can be considered examples of human-centered automation, EXCEPT:

- A)** medical software that provides optional feedback on the doctor’s analysis of the medical situation.
- B)** a smart-home system that changes the temperature as instructed by the resident.
- C)** software that auto-completes text when the user writes an email.
- D)** software that offers interpretations when requested by the human operator.

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**Q.3) Direction:**

The passage below is accompanied by a set of questions. Choose the best answer to each question.

As software improves, the people using it become less likely to sharpen their own know-how. Applications that offer lots of prompts and tips are often to blame; simpler, less solicitous programs push people harder to think, act and learn.

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**Question:**

From the passage, we can infer that the author is apprehensive about the use of sophisticated automation for all of the following reasons EXCEPT that:

- A) it stunts the development of its users.
  - B) it could mislead people.
  - C) computers could replace humans.
  - D) it stops users from exercising their minds.
- 
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**Q.4) Direction:**

The passage below is accompanied by a set of questions. Choose the best answer to each question.

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**Question:**

It can be inferred that in the Utrecht University experiment, one group of people was “aimlessly clicking around” because:

- A) they did not have the skill-set to address complicated tasks.
  - B) they were hoping that the software would help carry out the tasks.
  - C) the other group was carrying out the tasks more efficiently.
  - D) they wanted to avoid making mistakes.
- 
- 

**Q.5) Direction:**

The passage below is accompanied by a set of questions. Choose the best answer to each question.

Nature has all along yielded her flesh to humans. First, we took nature’s materials as food, fibers, and shelter. Then we learned to extract raw materials from her biosphere to create our own new synthetic materials. Now Bios is yielding us her mind—we are taking her logic.

Clockwork logic—the logic of the machines—will only build simple contraptions. Truly complex systems such as a cell, a meadow, an economy, or a brain (natural or artificial) require a rigorous nontechnological logic. We now see that no logic except bio-logic can assemble a thinking device, or even a workable system of any magnitude.

It is an astounding discovery that one can extract the logic of Bios out of biology and have something useful.

Although many philosophers in the past have suspected one could abstract the laws of life and apply them elsewhere, it wasn’t until the complexity of computers and human-made systems became as complicated as living things, that it was possible to prove this. It’s eerie how much of life can be transferred. So far, some of the traits of the living that have successfully been transported to mechanical systems are: self-replication, self-governance, limited self-repair, mild evolution, and partial learning.

We have reason to believe yet more can be synthesized and made into something new. Yet at the same time that the logic of Bios is being imported into machines, the logic of Technos is being imported into life. The root of bioengineering is the desire to control the organic long

enough to improve it. Domesticated plants and animals are examples of technos-logic applied to life. The wild aromatic root of the Queen Anne’s lace weed has been fine-tuned over generations by selective herb gatherers until it has evolved into a sweet carrot of the garden; the udders of wild bovines have been selectively enlarged in an “unnatural” way to satisfy humans rather than calves. Milk cows and carrots, therefore, are human inventions as much as steam engines and gunpowder are. But milk cows and carrots are more indicative of the kind of inventions humans will make in the future: products that are grown rather than manufactured.

Genetic engineering is precisely what cattle breeders do when they select better strains of Holsteins, only bioengineers employ more precise and powerful control. While carrot and milk cow breeders had to rely on diffuse organic evolution, modern genetic engineers can use directed artificial evolution—purposeful design—which greatly accelerates improvements.

The overlap of the mechanical and the lifelike increases year by year. Part of this bionic convergence is a matter of words. The meanings of “mechanical” and “life” are both stretching until all complicated things can be perceived as machines, and all self-sustaining machines can be perceived as alive. Yet beyond semantics, two concrete trends are happening: (1) Human-made things are behaving more lifelike, and (2) Life is becoming more engineered. The apparent veil between the organic and the manufactured has crumpled to reveal that the two really are, and have always been, of one being.

**Question:**

Which one of the following sets of words/phrases best serves as keywords to the passage?

- A) Complex systems; Carrots; Milk cows; Convergence; Technos-logic
- B) Nature; Computers; Carrots; Milk cows; Genetic engineering
- C) Nature; Bios; Technos; Self-repair; Holsteins
- D) Complex systems; Bio-logic; Bioengineering; Technos-logic; Convergence

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**Q.6) Direction:**

The passage below is accompanied by a set of questions. Choose the best answer to each question.

Nature has all along yielded her flesh to humans. First, we took nature’s materials as food, fibers, and shelter. Then we learned to extract raw materials from her biosphere to create our own new synthetic materials. Now Bios is yielding us her mind—we are taking her logic.

Clockwork logic—the logic of the machines—will only build simple contraptions. Truly complex systems such as a cell, a meadow, an economy, or a brain (natural or artificial) require a rigorous nontechnological logic. We now see that no logic except bio-logic can assemble a thinking device, or even a workable system of any magnitude.

It is an astounding discovery that one can extract the logic of Bios out of biology and have something useful.

Although many philosophers in the past have suspected one could abstract the laws of life and apply them elsewhere, it wasn't until the complexity of computers and human-made systems became as complicated as living things, that it was possible to prove this. It's eerie how much of life can be transferred. So far, some of the traits of the living that have successfully been transported to mechanical systems are: self-replication, self-governance, limited self-repair, mild evolution, and partial learning.

We have reason to believe yet more can be synthesized and made into something new. Yet at the same time that the logic of Bios is being imported into machines, the logic of Technos is being imported into life. The root of bioengineering is the desire to control the organic long enough to improve it. Domesticated plants and animals are examples of technos-logic applied to life. The wild aromatic root of the Queen Anne's lace weed has been fine-tuned over generations by selective herb gatherers until it has evolved into a sweet carrot of the garden; the udders of wild bovines have been selectively enlarged in an "unnatural" way to satisfy humans rather than calves. Milk cows and carrots, therefore, are human inventions as much as steam engines and gunpowder are. But milk cows and carrots are more indicative of the kind of inventions humans will make in the future: products that are grown rather than manufactured.

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**Question:**

The author claims that, "Part of this bionic convergence is a matter of words". Which one of the following statements best expresses the point being made by the author?

- A) "Bios" and "Technos" are both convergent forms of logic, but they generate meanings about the world that are mutually exclusive.
- B) "Mechanical" and "life" are words from different logical systems and are, therefore, fundamentally incompatible in meaning.
- C) A bionic convergence indicates the meeting ground of genetic engineering and artificial intelligence.

D) “Mechanical” and “life” were earlier seen as opposite in meaning, but the difference between the two is increasingly blurred.

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**Q.7) Direction:**

The passage below is accompanied by a set of questions. Choose the best answer to each question.

Nature has all along yielded her flesh to humans. First, we took nature’s materials as food, fibers, and shelter. Then we learned to extract raw materials from her biosphere to create our own new synthetic materials. Now Bios is yielding us her mind—we are taking her logic.

Clockwork logic—the logic of the machines—will only build simple contraptions. Truly complex systems such as a cell, a meadow, an economy, or a brain (natural or artificial) require a rigorous nontechnological logic. We now see that no logic except bio-logic can assemble a thinking device, or even a workable system of any magnitude.

It is an astounding discovery that one can extract the logic of Bios out of biology and have something useful.

Although many philosophers in the past have suspected one could abstract the laws of life and apply them elsewhere, it wasn’t until the complexity of computers and human-made systems became as complicated as living things, that it was possible to prove this. It’s eerie how much of life can be transferred. So far, some of the traits of the living that have successfully been transported to mechanical systems are: self-replication, self-governance, limited self-repair, mild evolution, and partial learning.

We have reason to believe yet more can be synthesized and made into something new. Yet at the same time that the logic of Bios is being imported into machines, the logic of Technos is being imported into life. The root of bioengineering is the desire to control the organic long enough to improve it. Domesticated plants and animals are examples of technos-logic applied to life. The wild aromatic root of the Queen Anne’s lace weed has been fine-tuned over generations by selective herb gatherers until it has evolved into a sweet carrot of the garden; the udders of wild bovines have been selectively enlarged in an “unnatural” way to satisfy humans rather than calves. Milk cows and carrots, therefore, are human inventions as much as steam engines and gunpowder are. But milk cows and carrots are more indicative of the kind of inventions humans will make in the future: products that are grown rather than manufactured.

Genetic engineering is precisely what cattle breeders do when they select better strains of Holsteins, only bioengineers employ more precise and powerful control. While carrot and milk cow breeders had to rely on diffuse organic evolution, modern genetic engineers can use directed artificial evolution—purposeful design—which greatly accelerates improvements.

The overlap of the mechanical and the lifelike increases year by year. Part of this bionic convergence is a matter of words. The meanings of “mechanical” and “life” are both

stretching until all complicated things can be perceived as machines, and all self-sustaining machines can be perceived as alive. Yet beyond semantics, two concrete trends are happening: (1) Human-made things are behaving more lifelike, and (2) Life is becoming more engineered. The apparent veil between the organic and the manufactured has crumpled to reveal that the two really are, and have always been, of one being.

**Question:**

The author claims that, “The apparent veil between the organic and the manufactured has crumpled to reveal that the two really are, and have always been, of one being.” Which one of the following statements best expresses the point being made by the author here?

- A)** Organic reality has crumpled under the veil of manufacturing, rendering the apparent and the real as the same being.
- B)** The crumpling of the organic veil between apparent and manufactured reality reveals them to have the same being.
- C)** Scientific advances are making it increasingly difficult to distinguish between organic reality and manufactured reality.
- D)** Apparent reality and organic reality are distinguished by the fact that the former is manufactured.

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**Q.8) Direction:**

The passage below is accompanied by a set of questions. Choose the best answer to each question.

Nature has all along yielded her flesh to humans. First, we took nature’s materials as food, fibers, and shelter. Then we learned to extract raw materials from her biosphere to create our own new synthetic materials. Now Bios is yielding us her mind—we are taking her logic.

Clockwork logic—the logic of the machines—will only build simple contraptions. Truly complex systems such as a cell, a meadow, an economy, or a brain (natural or artificial) require a rigorous nontechnological logic. We now see that no logic except bio-logic can assemble a thinking device, or even a workable system of any magnitude.

It is an astounding discovery that one can extract the logic of Bios out of biology and have something useful.

Although many philosophers in the past have suspected one could abstract the laws of life and apply them elsewhere, it wasn’t until the complexity of computers and human-made systems became as complicated as living things, that it was possible to prove this. It’s eerie how much of life can be transferred. So far, some of the traits of the living that have successfully been transported to mechanical systems are: self-replication, self-governance, limited self-repair, mild evolution, and partial learning.

We have reason to believe yet more can be synthesized and made into something new. Yet at the same time that the logic of Bios is being imported into machines, the logic of Technos

is being imported into life. The root of bioengineering is the desire to control the organic long enough to improve it. Domesticated plants and animals are examples of technos-logic applied to life. The wild aromatic root of the Queen Anne's lace weed has been fine-tuned over generations by selective herb gatherers until it has evolved into a sweet carrot of the garden; the udders of wild bovines have been selectively enlarged in an "unnatural" way to satisfy humans rather than calves. Milk cows and carrots, therefore, are human inventions as much as steam engines and gunpowder are. But milk cows and carrots are more indicative of the kind of inventions humans will make in the future: products that are grown rather than manufactured.

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**Question:**

None of the following statements is implied by the arguments of the passage, EXCEPT:

- A) historically, philosophers have known that the laws of life can be abstracted and applied elsewhere.
- B) genetic engineers and bioengineers are the same insofar as they both seek to force evolution in an artificial way.
- C) the biological realm is as complex as the mechanical one; which is why the logic of Bios is being imported into machines.
- D) purposeful design represents the pinnacle of scientific expertise in the service of human betterment and civilisational progress.

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**Q.9) Instructions**

The passage below is accompanied by a set of questions. Choose the best answer to each question. Comprehension:

The Chinese have two different concepts of a copy. Fangzhipin . . . are imitations where the difference from the original is obvious. These are small models or copies that can be purchased in a museum shop, for example. The second concept for a copy is fuzhipin . . .

They are exact reproductions of the original, which, for the Chinese, are of equal value to the original. It has absolutely no negative connotations. The discrepancy with regard to the understanding of what a copy is has often led to misunderstandings and arguments between China and Western museums. The Chinese often send copies abroad instead of originals, in the firm belief that they are not essentially different from the originals. The rejection that then comes from the Western museums is perceived by the Chinese as an insult. . . .

The Far Eastern notion of identity is also very confusing to the Western observer. The Ise Grand Shrine [in Japan] is 1,300 years old for the millions of Japanese people who go there on pilgrimage every year. But in reality this temple complex is completely rebuilt from scratch every 20 years. . . .

The cathedral of Freiburg Minster in southwest Germany is covered in scaffolding almost all year round. The sandstone from which it is built is a very soft, porous material that does not withstand natural erosion by rain and wind. After a while, it crumbles. As a result, the cathedral is continually being examined for damage, and eroded stones are replaced. And in the cathedral's dedicated workshop, copies of the damaged sandstone figures are constantly being produced. Of course, attempts are made to preserve the stones from the Middle Ages for as long as possible. But at some point they, too, are removed and replaced with new stones.

Fundamentally, this is the same operation as with the Japanese shrine, except in this case the production of a replica takes place very slowly and over long periods of time. In the field of art as well, the idea of an unassailable original developed historically in the Western world. Back in the 17th century [in the West], excavated artworks from antiquity were treated quite differently from today. They were not restored in a way that was faithful to the original. Instead, there was massive intervention in these works, changing their appearance. . . .

It is probably this intellectual position that explains why Asians have far fewer scruples about cloning than Europeans. The South Korean cloning researcher Hwang Woo-suk, who attracted worldwide attention with his cloning experiments in 2004, is a Buddhist. He found a great deal of support and followers among Buddhists, while Christians called for a ban on human cloning. Hwang legitimised his cloning experiments with his religious affiliation: 'I am Buddhist, and I have no philosophical problem with cloning. And, as you know, the basis of Buddhism is that life is recycled through reincarnation. In some ways, I think, therapeutic cloning restarts the circle of life.'

**Question:-**

Based on the passage, which one of the following copies would a Chinese museum be unlikely to consider as having less value than the original?

- A) Pablo Picasso's painting of Vincent van Gogh's original painting, bearing Picasso's signature.
- B) Pablo Picasso's painting of Vincent van Gogh's original painting, identical in every respect.
- C) Pablo Picasso's photograph of Vincent van Gogh's original painting, printed to exactly the same scale.

D) Pablo Picasso's miniaturised, but otherwise faithful and accurate painting of Vincent van Gogh's original painting.

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### Q.10) Instructions

The passage below is accompanied by a set of questions. Choose the best answer to each question. Comprehension:

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**Question:-**

Which one of the following scenarios is unlikely to follow from the arguments in the passage?

- A) A 17th century British painter would have no problem adding personal touches when restoring an ancient Roman painting.
  - B) A 20th century Japanese Buddhist monk would value a reconstructed shrine as the original.
  - C) A 17th century French artist who adhered to a Christian worldview would need to be completely true to the original intent of a painting when restoring it.
  - D) A 21st century Christian scientist is likely to oppose cloning because of his philosophical orientation.
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**Q.11) Instructions**

The passage below is accompanied by a set of questions. Choose the best answer to each question. Comprehension:

The Chinese have two different concepts of a copy. Fangzhipin . . . are imitations where the difference from the original is obvious. These are small models or copies that can be purchased in a museum shop, for example. The second concept for a copy is fuzhipin . . . They are exact reproductions of the original, which, for the Chinese, are of equal value to the original. It has absolutely no negative connotations. The discrepancy with regard to the understanding of what a copy is has often led to misunderstandings and arguments between China and Western museums. The Chinese often send copies abroad instead of originals, in the firm belief that they are not essentially different from the originals. The rejection that then comes from the Western museums is perceived by the Chinese as an insult. . . .

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**Question:-**

Which one of the following statements does not correctly express the similarity between the Ise Grand Shrine and the cathedral of Freiburg Minster?

- A) Both were built as places of worship.
  - B) Both can be regarded as very old structures.
  - C) Both are continually undergoing restoration.
  - D) Both will one day be completely rebuilt.
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**Q.12) Instructions**

The passage below is accompanied by a set of questions. Choose the best answer to each question. Comprehension:

The Chinese have two different concepts of a copy. Fangzhipin . . . are imitations where the difference from the original is obvious. These are small models or copies that can be purchased in a museum shop, for example. The second concept for a copy is fuzhipin . . . They are exact reproductions of the original, which, for the Chinese, are of equal value to the original. It has absolutely no negative connotations. The discrepancy with regard to the understanding of what a copy is has often led to misunderstandings and arguments between China and Western museums. The Chinese often send copies abroad instead of originals, in the firm belief that they are not essentially different from the originals. The rejection that then comes from the Western museums is perceived by the Chinese as an insult. . . .

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**Question:-**

The value that the modern West assigns to "an unassailable original" has resulted in all of the following EXCEPT:

- A) it discourages them from simultaneous displays of multiple copies of a painting.
- B) it allows regular employment for certain craftsmen.
- C) it discourages them from making interventions in ancient art.
- D) it discourages them from carrying out human cloning.

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**Q.13) Direction:** In the question, sentence are given with blanks to be filled in with an appropriate word. Four alternatives are suggested for each question. Choose the correct alternative out of the four alternatives.

Gita was known to be a ..... so nobody entrusted any important work to her.

- A) joker
- B) worker

C) shocker

D) shirker

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**Q.14) Direction:** In the question, sentence are given with blanks to be filled in with an appropriate word. Four alternatives are suggested for each question. Choose the correct alternative out of the four alternatives.

It was his....that led him to penury.

A) flamboyance

B) arrogance

C) extravagance

D) ebullience

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**Q.15) Direction:** In the question, sentence are given with blanks to be filled in with an appropriate word. Four alternatives are suggested for each question. Choose the correct alternative out of the four alternatives.

He .....himself a stiff drink before making his statement to the police officer.

A) threw

B) poured

C) filled

D) sipped

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**Q.16) Direction:** In the question, sentence are given with blanks to be filled in with an appropriate word. Four alternatives are suggested for each question. Choose the correct alternative out of the four alternatives.

The fish of the torch ..... a cobra.

A) exposed

B) displayed

C) disclosed

D) revealed

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**Q.17) Directions:** In the following question, a sentence is given with a blank that is to be filled in with an appropriate word. Four alternatives are suggested; choose the correct alternative out of them as your answer.

The order is \_\_\_\_\_ and you must abide by it, as there is not even the slightest chance of its being modified or withdrawn.

A) irretrievable

B) irreparable

C) irrevocable

D) irreconcilable

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**Q.18) Directions:** In the following question, a sentence is given with a blank that is to be filled in with an appropriate word. Four alternatives are suggested; choose the correct alternative out of them as your answer.

He talked on and on \_\_\_\_\_.

A) ad infinitum

B) voraciously

C) hesitatingly

D) ad interim

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**Q.19) Directions:** In the following question, a sentence is given with a blank that is to be filled in with an appropriate word. Four alternatives are suggested; choose the correct alternative out of them as your answer.

He would always be late with submission because he would \_\_\_\_\_ whatever he was supposed to do.

A) prevaricate

B) procrastinate

C) interrogate

D) discriminate

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**Q.20) In** each of the questions below, four statements are given which may or may not contain error. Choose the one that is grammatically and meaningfully correct.

- (A) It was not just the weather that reached boiling point that summer.
  - (B) The sadness for me is that rock has reached a dead end.
  - (C) The list of those who came through the centres and reached the first team is a long and distinguished one.
  - (D) The new system extends the reached of national insurance.
  - (E) All are correct
- 
- 

**Q.21) In** each of the questions below, four statements are given which may or may not contain error. Choose the one that is grammatically and meaningfully correct.

- (A) Your information will only be used for the purposes of this competition.
  - (B) Such housebuilders will always look for quick profits.
  - (C) Anyway, I caught Dennis at a good time, so I invited him for find Sammy and help me out.
  - (D) To help you a sample letter is included here for you to use.
  - (E) All are correct
- 
- 

**Q.22) In** each of the questions below, four statements are given which may or may not contain error. Choose the one that is grammatically and meaningfully correct.

- (A) Cratyn was going to find taking Medalon a lot harder than he imagined.
- (B) There was a lot of noise in the background, like a restaurant, I thought.
- (C) I weighed the same as a bag of sugar and had to have lot of operations as I have chronic lung disease.
- (D) I suspect he'll find it a lot easier to give away his daughter than his precious cannon.

(E) All are correct

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**Q.23) In** each of the questions below, four statements are given which may or may not contain error. Choose the one that is grammatically and meaningfully correct.

(A) Yet there is surprisingly little help for people like us.

(B) Add the icing sugar little at a time and mix until smooth.

(C) Yet there is little hard evidence to support these ideas.

(D) At present there is often very little that doctors can do to help them to recover.

(E) All are correct

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**Q.24) In** each of the questions given below four words are given in bold. These four words may or may not be in their correct position. The sentence is then followed by options with the correct combination of words that should replace each other in order to make the sentence grammatically and contextually correct. Find the correct combination of the words that replace each other. If the sentence is correct as it then select option (e) as your choice. These persons extensively (A) supervise the managers (B) work of others but are themselves directly (C) controlled by top and middle routine (D).

**A)** only A-B

**B)** Only A-D

**C)** Both A-B and C-D

**D)** Both A-C and B-D

**E)** The sentence is correct

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**Q.25) Directions for the Question:** The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

**Question:**

The question below has a paragraph given with one sentence missing at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

It is a brave move to stage a World Cup in a country where the chairman of the board believes “the younger generation” and the “Asian community” are not attracted to your sport, and braver still to make those two audiences such a key part of your marketing strategy. Which is what the International Cricket Council has done for this tournament.

( \_\_\_\_\_ )

**A)** ICC used the local channel to spread the news of him playing at the ground with some players.

**B)** ICC said that they are going to build cricket stadiums in the area keeping it open to the international players whenever they want to stay away from their homeland.

**C)** ICC brought together a lot of children to play street cricket in the area provided by them.

**D)** ICC planned to bring together a lot of stars and musicians to create a grand arts ceremony in order to get them recognition.<

\_\_\_\_\_

\_\_\_\_\_

**Q.26) Directions for the Question:** The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

**Question:**

One of the main drivers for increased protein consumption has been the gym culture that took off in the late 1990s, and the accompanying trend for putting on muscle mass. But scientists believe that the idea of requiring additional protein in your diet to build up muscle, either through meat or supplements such as protein shakes, is a myth. “There are some quite nice trials which now show that giving people extra protein doesn’t actually increase muscle mass,” Sanders says. What builds up muscle is exercise and load bearing, and the body has ways of conserving its existing protein to do that. ( \_\_\_\_\_ )

**A)** If you eat more protein, the body just breaks it down into ammonia and urea, and you excrete it.

**B)** If you do not exercise regularly, it must be affecting your body, leading to weakness of the overall organs.

**C)** Hence, more protein does not help you, as it is going to be digested.

**D)** But we can notice that the scientists are wrong, as we have seen the results when people take protein powders.

\_\_\_\_\_

\_\_\_\_\_

**Q.27) Directions for the Question:** The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

**Question:** As per iOS 12, Apple's improved the Siri watch face, a promising feature which launched last year but failed to live up to its lofty aims of offering only the necessary information on your watch. Siri shortcuts will now show up there, and so will information from third-party apps. If you lift your watch to speak into it, you no longer need to say Hey Siri to start Siri. Apple Watch apps can now push interactive notifications, letting you do things like rate a carshare driver, or alter a restaurant booking. (\_\_\_\_\_)

**A)** To sum up, iOS 12 is a rockstar among the new operating systems hitting the market in mid -2018.

**B)** But we should look into the stability of iOS 12 as iOS 11 lacked stability. **C)** I personally believe that Siri shortcuts are unused by most of the users, opening up the fact that the users should ask the company to give them what they want instead of adding things that they feel like.

**D)** The Apple Watch can now display web views-not to browse the net, but so that you can at least scan links texted to you

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**Q.28) Direction for the Question:** The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

**Question:** At least 33 people, including three children, have been killed and nearly 300 injured in the most violent eruption of Guatemala's Fuego volcano in more than four decades, officials said. Fuego, whose name means "fire", spewed an 8km (five-mile) stream of lava and belched a thick plume of black smoke and ash that rained onto the capital and other regions. Dozens of communities on the southern slopes of Fuego were buried in a searing mix of mud, ash and rocks as the explosions continued for over 16 hours. Fresh lava flows hampered search and rescue efforts on Monday, forcing emergency services to withdraw from the area. Hundreds of people remain unaccounted for.  
(\_\_\_\_\_)

**A)** Speaking on Monday, the head of Guatemala's disaster agency said 33 people had died, and the death toll was expected to rise further.

**B)** Proper measures to avert the disastrous effect of volcanic eruptions should be brought into action by the government of the state in order to reduce the number of victims.

**C)** Guatemala is a home for tourists from all over the world as tourism is one of its major income.

**D)** This has been an issue discussed all over the world by the media and hence the entire world is praying for the people there.

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**Direction (Q.29-Q.34):** The sentences below have words that are missing. Choose the best option from those given below to complete the sentence.

**Q.29)** Achieving spaceflight enabled humans to begin to explore the solar system and the rest of the \_\_\_\_\_, to understand the many objects and \_\_\_\_\_ that are better observed from a space perspective, and to use for human benefit the resources and attributes of the space environment. All of these activities - discovery, scientific understanding, and the \_\_\_\_\_ of that understanding to serve human purposes – are elements of space \_\_\_\_\_.

- (a) galaxy; ideologies; enormity; visualisation (b) universe; phenomena; application; exploration (c) cosmos; materials; principles; identification (d) configuration; elements; functioning; vastness

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**Q.30)** Visually strong, \_\_\_\_\_ films of the 1920s are \_\_\_\_\_ preserved and suffer from censorship cuts, leading to the \_\_\_\_\_ that they were primitive and barely watchable.

- (a) monochrome; barely; observation  
(b) silent; poorly; misconception  
(c) action-packed; badly; accusation  
(d) classic; dispassionately; conclusion

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**Q.31)** Everyday more than 1 billion promotional messages are sent that are commercial and \_\_\_\_\_. Although \_\_\_\_\_ have used more technology to stop this, \_\_\_\_\_ find ways around it.

- (a) educational; firewalls; hackers  
(b) inescapable; governments; advertisers  
(c) informative; authorities; promoters  
(d) unsolicited; regulators; spammers
- 
-

**Q.32)** The investigators have \_\_\_\_\_ that he had leaked confidential \_\_\_\_\_ information about the acquisition, thereby allowing associates to profit \_\_\_\_\_ from the deal.

- (a) announced; financial; treacherously
  - (b) discovered; internal; enormously
  - (c) alleged; insider; illicitly
  - (d) Accused ;important; dramatically
- 
- 

**Q.33)** The beauty of \_\_\_\_ is that it poses thought-provoking questions and inspires us to think deeply about and life in general. Further, \_\_\_\_\_ about the ideas and perspectives outlined by different thinkers can help us to gain a better \_\_\_\_\_ of the world we live in.

- (a) philosophy; ourselves; pondering; understanding
  - (b) linguistics; language; cogitating; picture
  - (c) history; animals; mulling; acquaintance
  - (d) orthography; writing; speaking; perspective
- 
- 

**Q.34)** In an anthropocentric \_\_\_\_\_, animals are no more than property to human beings. Therefore, the concepts of 'humane' treatment and 'necessary' \_\_\_\_\_ are economic in nature. The idea that killing animals is not a serious issue as long as animals are not made to suffer rests \_\_\_\_\_ on the widely accepted idea that animals do not have a right to life.

- (a) construct; comfort; somewhat
  - (b) belief; well-being; partially
  - (c) worldview; suffering; explicitly
  - (d) universe; gain; entirely Direction
- 
- 

**(Q.35-Q.40): One of the statements below contains a word used incorrectly. Choose the option which has the incorrect or inappropriate usage of the word.**

**Q.35).**

- (a) She wanted to make a good impression but, at the last moment, she discovered a spot of ink on her collar.
  - (b) There was a scenic spot not very far from our cottage where we used to go for picnics.
  - (c) Such a spot on his career was difficult to ignore when deciding promotions.
  - (d) He was unsure if he could respond to the question asked; fortunately, his answer was spot on
- 
- 

**Q.36).**

- (a) Although he thinks he is the life of the party, his remarks are insensitive, and his jokes are vulgar, cross, and crude.
  - (b) It was a long journey by road, and they had yet to find a boat that would help them to cross the river.
  - (c) The mistakes of his youth are the cross that he has to bear for the rest of his life.
  - (d) We were told that she had lived through tough times which made her cross and cranky as she grew older.
- 
- 

**Q.37)**

- (a) The problems caused by flouting rules are many, but some people do not care.
  - (b) Her fault was that she flouted the dress code and refused to wear the uniform.
  - (c) The orchestra decided to flout tradition and played their instruments wearing ordinary clothes.
  - (d) She flouted her designer wear and accessories in front of her classmates.
- 
- 

**Q.38).**

- (a) The judicial magistrate asked the prosecuting lawyer to state the grounds on which the defendant had been arrested.
  - (b) The state of his grandfather's health was critical, but it was difficult for him to get in touch with all the members of the family.
  - (c) Uttar Pradesh, being the most densely populated state in India, has the highest number of representatives in Parliament.
  - (d) Her admirers considered her demeanour to be of great state and refinement, and most impressive.
- 
- 

**Q.39).**

- (a) As he was very old, he didn't have the strength to draw water from the well near his house.
  - (b) He was lucky enough to win the draw in the lottery, where the prize was a rare painting.
  - (c) He used to keep all his important documents in the draw of his cupboard.
  - (d) The cricket match was heading for a draw, when the batsman hit a sixer and our team won.
- 
- 

**Q.40).**

- (a) The policeman collaborated with the film makers who were shooting a crime thriller.
- (b) Some treacherous relatives of Indian rulers collaborated with the British Empire.
- (c) When the women were asked to join the protest, they refused to collaborate.

(d) She interviewed many teens to collaborate her thesis on their mental health issues.

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**Q.41)** Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph. A. In 1944, he was honoured by King George VI with a Knighthood and became Sir Alexander Fleming. B. On receiving this great honour, Fleming said in his usual modest way, "Wherever I go, people thank me for saving their lives. I didn't do anything; I just found a remedy that was there." C. Fleming became famous overnight and was regarded as one of the most distinguished scientists of his time. D. The next year, he and his fellow bacteriologists, whose combined efforts had led to the great discovery, were honoured with a joint Nobel Prize.

**A) DBCA B) ADBC C) CADB D) BCDA**

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**Q.42)** Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph. A. It was the night before the day fixed for his coronation, and the young King was sitting alone in his beautiful chamber. B. And, indeed, it was the hunters who had found him, coming upon him almost by chance as, bare-limbed and pipe in hand, he was following the flock of the poor goat herd who had brought him up, and whose son he had always fancied himself to be. C. The lad—for he was only a lad, being but sixteen years of age not sorry at their departure, and had flung himself back with a deep sigh of relief on the soft cushions of his embroidered couch, lying there, wild-eyed and open-mouthed, like a brown woodland Faun, or some young animal of the forest newly snared by the hunters. D. His courtiers had all taken their leave of him, bowing their heads to the ground, according to the ceremonious usage of the day, and had retired to the Great Hall of the Palace, to receive a few last lessons from the Professor of Etiquette; there being some of them who had still quite natural manners, which in a courtier is, I need hardly say, a very grave offence.

**A) ADCB B) CBDA C) ACDB D) CDBA**

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**Q.43)** Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph. A. Water gives itself away for our agriculture and other uses. B. Trees give flowers, fruits and wood. C. Giving soothes an individual with the vibration of joy. D. Unconditional giving is a natural principle and evident everywhere in nature which gives us solid, liquids and minerals.

**A) ACDB B) CDAB C) CBDA D) BDCA**

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**Q.44) Directions for question:** In the following question, rearrange the five sentences in order to form a meaningful paragraph.

1. The vast collections stood as a testament to man's genius, nature's diversity, and the acquisitional might of the British Empire.
2. At the time, most similar collections were privately held and required a letter of introduction for admission. The British Museum, on the other hand, welcomed "studious and curious Persons" of all ages and social classes.
3. The British Museum was founded in 1753 to house the collection of curiosities amassed by naturalist Sir Hans Sloane, some 71,000 artworks, specimens, and antiquities.
4. The first public museums were created to embody nationalist ambitions and the enlightenment values of reason, progress, and universal rights.

**A) 4312 B) 1234 C) 2341 D) 3421**

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**Q.45) Directions for question:** In the following question, rearrange the five sentences in order to form a meaningful paragraph.

**Question:** 1. This points out the disturbing fact that the present generation is not very interested in doing hard work and they want to get everything by hook or by crook but certainly not in the proper manner.

2. The Amazon Black Friday deals are going to come and once again there will be a crowd of online customers lining up for products at a cheaper price and that also within the convenience of being at their own homes.

3. It further points to the fact that most of the youngsters are very impatient and they do not want to wait for the right time to set in, instead they consider the present as the right time.

4. This mentality can bring a lot of tension to the individuals because they may not get everything they desire and that failure should not engulf the joy of getting whatever they have.

**A) 2134 B) 1234 C) 4321 D) 3412**

## Answer Key

Quantitative Aptitude Short Answer (SA) type		Quantitative Ability MCQ type				Verbal Ability & Reading Comprehension					
1	2 2	1	B	16	C	1	A	16	D	31	D
2	17280	2	C	17	B	2	C	17	C	32	C
3	120	3	D	18	D	3	C	18	A	33	A
4	306	4	B	19	B	4	B	19	B	34	C
5	20 17	5	B	20	D	5	D	20	D	35	C
6	10	6	A	21	A	6	D	21	C	36	A
7	108	7	A	22	B	7	C	22	C	37	D
8	97	8	C	23	B	8	B	23	B	38	D
9		9	A	24	B	9	B	24	D	39	C
10		10	D	25	D	10	C	25	C	40	D

11	80%	11	A	26	D	11	C	26	A	41	C
12	15	12	B	27	D	12	D	27	D	42	A
13	-14	13	C	28	C	13	D	28	A	43	B
14	127	14	D	29	B	14	C	29	B	44	A
15	4	15	D	30	A	15	B	30	B	45	A

## Solution

### Quantitative Aptitude Short Answer (SA) type

**Q.1)** As we have learnt,

- If period of  $f(x)$  is  $T$ , then period of  $f(cx+d)$  is  $T/|c|$
- If period of  $f(x)$  is  $T_1$  and period of  $g(x)$  is  $T_2$ , then period of  $f(x)+g(x)$  is the lcm of  $T_1$  and  $T_2$
- Period of  $|\sin(x)|$  and  $|\cos(x)|$  is

Now,

As period of  $|\sin(x)|$  is  $\pi$ , so period of  $|\sin(4x)|$  is  $\pi/4$ , and

As period of  $|\cos(x)|$  is  $\pi$ , period of  $|\cos(2x)|$  is  $\pi/2$

So period of  $|\sin(4x)| + |\cos(2x)|$  is the lcm of  $\pi/4$  and  $\pi/2$ , which is  $\pi/2$

**Q.2)** As we learnt in

Cramer's rule for solving system of linear equations -

When  $\Delta = 0$  and  $\Delta_1 = \Delta_2 = \Delta_3 = 0$ ,

then the system of equations has infinite solutions.

- wherein

$$a_1x + b_1y + c_1z = d_1$$

$$a_2x + b_2y + c_2z = d_2$$

$$a_3x + b_3y + c_3z = d_3$$

and

$$\Delta = \begin{vmatrix} a_1 & b_1 & c_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix}$$

$\Delta_1, \Delta_2, \Delta_3$  are obtained by replacing column 1,2,3 of  $\Delta$  by  $(d_1, d_2, d_3)$  column

$$\begin{vmatrix} \cos x & \sin x & \sin x \\ \sin x & \cos x & \sin x \\ \sin x & \sin x & \cos x \end{vmatrix} = 0$$

$C1 \rightarrow C1+C2+C3$

$$\begin{vmatrix} \cos x + 2 \sin x & \sin x & \sin x \\ \cos x + 2 \sin x & \cos x & \sin x \\ \cos x + 2 \sin x & \sin x & \cos x \end{vmatrix} = 0$$

$$\Rightarrow (\cos x + 2 \sin x) \begin{vmatrix} 1 & \sin x & \sin x \\ 1 & \cos x & \sin x \\ 1 & \sin x & \cos x \end{vmatrix} = 0$$

$$\Rightarrow (\cos x + 2 \sin x) \begin{vmatrix} 0 & \sin x - \cos x & 0 \\ 0 & \cos x - \sin x & \sin x - \cos x \\ 1 & \sin x & \cos x \end{vmatrix} = 0$$

$$\Rightarrow (\cos x + 2 \sin x)(\cos x - \sin x)^2$$

$$\Rightarrow \tan x = -\frac{1}{2} \text{ and } \tan x = 1$$

$$\text{so two solution } \left[ \frac{-\pi}{4}, \frac{\pi}{4} \right]$$

**Q.3)** The prime factors of 360 are  $2^3 \times 3^2 \times 5^1$

The numbers that will be left on the board out of 1 to 360 after the student rubbed off all the multiples of 2, 3 and 5 will be the numbers that are less than 360, but co-prime to it. So what the Professor had essentially asked the class was the result of the summation of the numbers constituting the Euler's number of 360.

Since  $360 = 2^3 \times 3^2 \times 5^1$ , the Euler's number of 360

$$= 360 \times \left(\frac{1-1}{2}\right) \times \left(\frac{1-1}{3}\right) \times \left(\frac{1-1}{5}\right)$$

$$= 360 \times \frac{1}{2} \times \frac{2}{3} \times \frac{4}{5}$$

$$= 360 \times \frac{4}{5}$$

$$= 96$$

Now, the summation of the numbers constituting the Euler's number of 360

$$= \frac{360}{2} \times 96$$

$$= 180 \times 96$$

$$= 17280$$

Hence the answer promptly given by the bright student was 17280

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**Q.4)** Odd nos - 1,1,3

Even nos . - 2,2,2,4,4

Let us first find places for odd numbers

1,1,3 can come at any of the 4 even places (2nd, 4th, 6th and 8th)

First select three places for them in  $4C3$  ways (=4)

Now, 1,1,3 can be arranged in these 3 places in  $(3!)/(2!)$  ways (=3)

So, number of ways for arranging 1,1,3 =  $4 \times 3 = 12$

Now 2,2,2,4,4 can be arranged in remaining 5 places

Number of ways of doing that =  $5! / (3!)(2!) = 10$  ways

So total number of ways =  $12 \times 10 = 120$

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**Q.5)** Given that

$a_1, a_2, a_3, \dots, a_n, \dots$  are in AP

Also given that

$$a_3 + a_7 + a_{11} + a_{15} = 72$$

$$a_3 + a_{15} = a_7 + a_{11} = a_1 + a_{17} = 36$$

Sum of first 17 term

$$\begin{aligned} S_{17} &= \frac{17}{2} (a_1 + a_{17}) \\ &= \frac{17}{2} \times 36 \\ &= 306 \end{aligned}$$

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**Q6)**

$$S = \tan^{-1} \left( \frac{1}{n^2 + n + 1} \right) + \tan^{-1} \left( \frac{1}{n^2 + 3n + 3} \right) + \dots + \tan^{-1} \left( \frac{1}{1 + (n + 19)(n + 20)} \right)$$

$$\begin{aligned} S &= \tan^{-1} \frac{1}{1 + n(n + 1)} + \tan^{-1} \frac{1}{1 + (n + 1)(n + 2)} + \dots + \tan^{-1} \frac{1}{1 + (n + 19)(n + 20)} \\ &= \tan^{-1} \frac{n + 1 - n}{1 + n(n + 1)} + \tan^{-1} \frac{(n + 2) - (n + 1)}{1 + (n + 1)(n + 2)} + \dots + \tan^{-1} \frac{(n + 20) - (n + 19)}{1 + (n + 19)(n + 20)} \\ &= (\tan^{-1}(n + 1) - \tan^{-1} n) + (\tan^{-1}(n + 2) - \tan^{-1}(n + 1)) + \dots \\ &\quad + (\tan^{-1}(n + 20) - \tan^{-1}(n + 19)) \\ &= \tan^{-1}(n + 20) - \tan^{-1} n \end{aligned}$$

$$S = \tan^{-1} \frac{(n + 20) - (n)}{1 + n(n + 20)} = \tan^{-1} \frac{20}{n^2 + 20n + 1}$$

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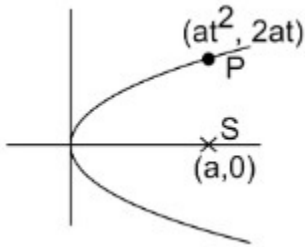
**Q.7)**  $391 / 667 = (17 * 23) / (23 * 29)$

$17 / 29$

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**Q.8)** Here  $y^2 = 4ax$ ;  $a = 2$



We know that for  $y^2 = 4ax$ ,

Focal distance = a + x-coordinate of the point

Thus  $8 = 2 + at^2$

$2t^2 = 6$

$t = \sqrt{3}$

Now

*Equation of normal is  $y + tx = 2at + at^3$*

Put value  $a = 2, t = \sqrt{3}$

$y = -\sqrt{3}x + 2(2)\sqrt{3} + 2(\sqrt{3})^3$

Comparing with  $y = mx + c$

$|c| = 4\sqrt{3} + 6\sqrt{3} = 10\sqrt{3}$

**Q.9)** Diameter of sphere = 18 cm

Radius of sphere,  $R = 9$  cm

Diameter of wire = 6 mm

The radius of wire,  $r = 3$  mm = 0.3 cm

Let  $l$  be the length of the wire.

Volume of sphere = volume of wire

$$\frac{4}{3}\pi R^3 = \pi r^2 l \Rightarrow \frac{4}{3} \times 729 = 0.32l$$

$$l = \frac{3 \times 0.9}{0.32} = 10800 \text{ cm} = 108 \text{ m}$$

Hence, the answer is 108 m.

**Q.10)**  $a = 7$

$$d = 13 - 7 = 6$$

$$16\text{th term, } t_{16} = a + (n-1)d = 7 + (16 - 1)6 = 7 + 90 = 97$$

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**Q.11)** let three numbers be A,B and C. If C=100 it means B=60 and A=75

$$\text{Hence B is } \frac{60}{75} \times 100 \text{ of } A = 80\%$$

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**Q.12)** Let us fix men (M1, M2, .....,M15), and pair them with women

To find a team-mate for M1, we have 15 options To find a team-mate

for M2, we have 14 options To find a team-mate for M3, we have 13

options ..... To find a team-mate for M15, we have 1 option So, total

$$\text{number of ways} = 15 \cdot 14 \cdot 13 \cdot 12 \cdot \dots \cdot 1 = 15!$$

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**Q.13)** Compare the cubic polynomial with  $ax^3 + bx^2 + cx + d$

We get,  $a=1, b=-2, c=-7$  and  $d=14$

$$\text{product of zeroes } (\alpha\beta\gamma) = -\frac{\text{Constant term}}{\text{Coefficient of } x^3} = -\frac{d}{a}$$

$$\text{So product of zeros} = -14/1 = -14$$

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**Q.14)** Number of throws = 8

Let 'getting at least one head' be represented by A, and 'getting at least one tail' be represented by B

P(Atleast one H and atleast one T)

$$=P(A \cap B)$$

$$=1-P((A \cap B)')$$

$$=1-P(A' \cup B') \quad (\text{Using De Morgan's Law})$$

Now A' means getting no Head (all tails) and B' means getting no Tails (all heads)

$$=1-(P(A')+P(B')-0) \quad (\text{As } A' \cap B' \text{ is empty set})$$

$$=1 - \left( \frac{1}{256} + \frac{1}{256} \right)$$

$$=1 - \frac{2}{256} = \frac{127}{128}$$

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**Q.15** A, B, C are in G.P where A, B, C are 2nd, 5th and 9th terms of an A.P

For AP, let first term is a and common difference is d, and for GP first term is G and common ratio be r then

A, B and C are in G.P.

So let A = G, B = Gr, and C = Gr<sup>2</sup>

$$A = a + d = G$$

$$B = a + 4d = Gr$$

$$C = a + 8d = Gr^2$$

Now,

$$a + 4d - (a + d) = Gr - G = G(r - 1)$$

$$\Rightarrow 3d = G(r - 1) \dots \dots \dots (1)$$

$$\text{And } a + 8d - (a + 4d) = Gr^2 - Gr = Gr(r - 1)$$

$$\Rightarrow 4d = Gr(r - 1) \dots \dots \dots (2)$$

divide (2) by (1)

$$\frac{4d}{3d} = \frac{Gr(r - 1)}{G(r - 1)}$$

$$\Rightarrow r = \frac{4}{3}$$

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## Quantitative Ability MCQ type

**Q.1)**  $f(x) = \frac{x-1}{x-2} = y$

$$\Rightarrow xy - 2y = x - 1$$

$$\Rightarrow x(y-1) = 2y-1 \Rightarrow x = \frac{2y-1}{y-1}$$

The function is invertible and  $f^{-1}(y) = \frac{2y-1}{y-1}$

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**Q.2)** Given that

$$A^2 - 5A + 7I = O$$

$$\Rightarrow A^2 = 5A - 7I$$

$$\Rightarrow AA = 5A - 7I$$

$$\Rightarrow AAA^{-1} = 5AA^{-1} - 7IA^{-1}$$

$$\Rightarrow AI = 5I - 7A^{-1}$$

$$\Rightarrow A^{-1} = \frac{1}{7}(5I - A)$$

The statement is 1 is true

$$\begin{aligned} A^3 - 2A^2 - 3A + I &= A(5A - 7I) - 2A^2 - 3A + I \\ &= 5A^2 - 7A - 2A^2 - 3A + I \\ &= 3A^2 - 10A + I \\ &= 3(5A - 7I) - 10A + I \\ &= 15A - 21I - 10A + I \\ &= 5A - 20I \\ &= 5(A - 4I) \end{aligned}$$

Statement 2 is also correct

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**Q.3)** Number subtracted from 214369 so that it become multiple of 1

$$(1+3+9)-(2+4+6)=1$$

1 should be subtracted

2Option D

**Q.4)** As we have learned

The number of diagonals of n sided convex polygon is  ${}^nC_2 - n$  (Where  $n > 3$ )

Now,

$$\text{no. of diagonals} = {}^nC_2 - n = 54$$

$$\Rightarrow \frac{n(n-1)}{2} - n = 54$$

$$\Rightarrow n^2 - n - 2n - 108 = 0$$

$$\Rightarrow n^2 - 3n - 108 = 0$$

$$\Rightarrow n^2 - 12n + 9n - 108 = 0$$

$$\Rightarrow (n-12)(n+9) = 0$$

$$\Rightarrow n = 12$$

**Q.5)**  $\left(\frac{1}{5}\right)^2 + \left(\frac{2}{5}\right)^2 + \left(\frac{3}{5}\right)^2 + 4^2 + \left(\frac{4}{5}\right)^2 \dots\dots\dots$

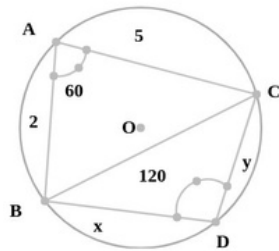
$$\Rightarrow \left(\frac{8}{5}\right)^2 + \left(\frac{12}{5}\right)^2 + \left(\frac{16}{5}\right)^2 + \left(\frac{20}{5}\right)^2 + \dots\dots\dots$$

$$\therefore \frac{1}{25} [8^2 + 12^2 + 16^2 + 20^2 + \dots\dots]$$

$$\therefore \frac{1}{25} \times 4^2 [2^2 + 3^2 + 4^2 + 5^2 + \dots\dots + 11^2]$$



**Q.8)** As we have Learnt



Using concept ABDC, **Cyclic quadrilateral (opp. angles are supplementary)**, and concept of properties of triangle

$$\text{Area of } \Delta ABC = \frac{1}{2} \times 2.5 \sin 60^\circ$$

$$\Delta ABC = 5 \frac{\sqrt{3}}{2}$$

$$\text{Area of } \Delta BCD = \frac{1}{2} xy \sin 120^\circ = \frac{1}{2} xy \times \frac{\sqrt{3}}{2}$$

now,

$$ar(\Delta ABC) + ar(\Delta BCD) = ar(ABDC)$$

$$5 \frac{\sqrt{3}}{2} + \frac{1}{2} xy \times \frac{\sqrt{3}}{2} = 4\sqrt{3}$$

$$xy = 6$$

$$\cos 60^\circ = \frac{5^2 + 2^2 - d^2}{2 \times 5 \times 2} \quad (\text{Using cosine's rule})$$

$$d = \sqrt{2^2 + 5^2 - 2.25 \cos 60^\circ}$$

$$d^2 = 19$$

and

$$\cos 120^\circ = \frac{x^2 + y^2 - d^2}{2 \times x \times y} \quad (\text{Using cosine's rule})$$

$$d^2 = x^2 + y^2 + xy$$

$$xy = 6$$

Also

$$19 = x^2 + y^2 + xy$$

$$19 + xy = x^2 + y^2 + 2xy$$

$$25 = (x + y)^2$$

$$x + y = 5$$

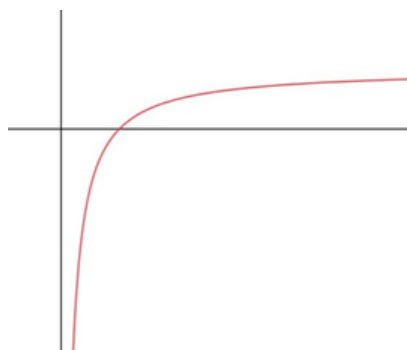
Hence, Perimeter =  $(x+y) + 5 + 2 = 5 + 7 = 12$

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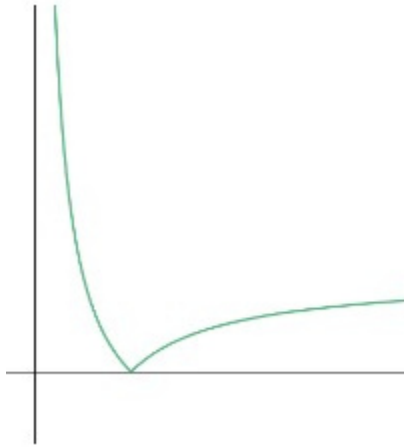
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**Q.9)** Curve of  $f(x) = \left|1 - \frac{1}{x}\right|$

$$y = 1 - \frac{1}{x}$$



$$y = \left|1 - \frac{1}{x}\right|$$



Hence, it is not injective but surjective

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**Q. 10)**

We need to find the determinant of the matrix  $(A^{2016} - 2A^{2015} - A^{2014})$

$$|A^{2016} - 2A^{2015} - A^{2014}| = |A|^{2014} |A^2 - 2A - I|$$

$$A^2 - 2A - I = \begin{bmatrix} 13 & 3 \\ -9 & -2 \end{bmatrix} - \begin{bmatrix} -8 & -2 \\ 6 & 2 \end{bmatrix} - \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} = \begin{bmatrix} 20 & 5 \\ -15 & -5 \end{bmatrix}$$

$$|A| = -4 \times 1 - (-3 \times 1) = -1$$

$$|A|^{2014} |A^2 - 2A - I| = 1 \begin{vmatrix} 20 & 5 \\ -15 & -5 \end{vmatrix} = (-100 + 75) = -25$$


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**Q.11)** Let the numbers be of the form  $100a + 10b + c$ , where  $a$ ,  $b$ , and  $c$  represent single digits.

Then  $(100c + 10b + a) - (100a + 10b + c) = 198$

$$99c - 99a = 198$$

$$c - a = 2.$$

Now,  $a$  can take the values 1-7.  $a$  cannot be zero as the initial number has 3 digits and cannot be 8 or 9 as then  $c$  would not be a single-digit number.

Thus, there can be 7 cases.

$B$  can take the value of any digit from 0-9, as it does not affect the answer. Hence, the total cases will be  $7 \times 10 = 70$ .

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**Q.12)** Such numbers can be 4-digit or 5 digit

**1. Four-digit numbers can be**

$$\begin{array}{cccc} \overline{\phantom{3}} & \overline{\phantom{4}} & \overline{\phantom{3}} & \overline{\phantom{2}} \\ \downarrow & \downarrow & \downarrow & \\ 3 & \times & 4 & \times & 3 & \times & 2 & = & 72 \end{array}$$

3 options (6,7,8) for first place as number has to be greater than 6,000

**2. Five-digit numbers**

As all 5 digit numbers will be greater than 6000, so

$$5 \times 4 \times 3 \times 2 \times 1 = 120$$

$$\text{Total} = 192$$

The correct option is 2.

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**Q.13)** Let the AP is

$$a, a + d, a + 2d \dots a + (n - 4)d, a + (n - 3)d, a + (n - 2)d, a + (n - 1)d$$

$$\text{given } a + a + d + a + 2d = 39$$

$$3a + 3d = 39$$

$$a + d = 13$$

$$d = 13 - 10$$

$$d = 3 \text{ [}\because a = 10 \text{ given]}$$

$$\text{Now } a + (n - 4)d + a + (n - 3)d + a + (n - 2)d + a + (n - 1)d$$

$$\Rightarrow 4a + d(4n - 10) = 178$$

$$\therefore n = 14 \text{ [put } a = 10 \text{] } [d = 3]$$

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**Q.14)** Given equation is

$$\sin^{-1} x = 2 \tan^{-1} x$$

$$\sin^{-1} x = \sin^{-1} \left( \frac{2x}{1+x^2} \right)$$

$$x = \frac{2x}{1+x^2}$$

$$x(1+x^2) = 2x$$

$$x+x^3 = 2x$$

$$x^3 - x = 0$$

$$x = 0, x = 1, \text{ or } x = -1$$

So, the number of solutions is 3.

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**Q.15)** Unit digit of  $(59n-31n)/28$

$$(59n-31n)/(59-31)=0$$

Option D

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**Q.16)** Area = 28 sq units

$$\text{Area} = \frac{1}{2} |k(k-2) + 5(2+3k) - k(-3k-k)| = 28$$

$$|5k^2 + 13k + 10| = 56$$

$$5k^2 + 13k + 10 = 56 \quad \text{or} \quad 5k^2 + 13k + 10 = -56$$

$$5k^2 + 13k - 46 = 0 \quad \text{or} \quad 5k^2 + 13k + 66 = 0$$

On solving  $k=2$  is the only integral solution

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**Q.17)** Let the number of monkeys who want to disturb goats be G

The number of monkeys who wanted to disturb bulls is B

Therefore,  $n(G)=30$

$n(B)=25$

Let the number of monkeys who wanted to annoy both,  $n(G) \cap n(B)$  be x

According to the question, the total number of monkeys =  $n(G \cup B) = 50$

We know,

$$n(G \cup B) = n(G) + n(B) - n(G \cap B)$$

Substituting the above values, we get

$$50 = 30 + 25 - x$$

$$50 = 55 - x$$

$$x = 5$$

Therefore 5 monkeys decided to irritate both bulls as well as goats.

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**Q.18)** Let Principal = 100

Interest in 15 yrs = 600 (Since the amount becomes 7 times of principal)

$$\text{Rate of Interest} = \left( \frac{600}{15} \right) = 40\%$$

$$\frac{A}{P} = \left( \frac{7}{5} \right)^5$$

Since rate of interest is compounded annually

$$\frac{A}{P} = \frac{16807}{3125} = 5.38$$

$$A = 5.38P$$

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**Q.19)** Both the cars take 1.5 hrs to meet when they travel towards each other.

It is given, speed of slower car is 60 km/hr

Therefore, distance covered by slower car before they meet =  $60 \times 1.5 = 90$  km

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**Q.20)** Since Amit is twice as efficient as Bunty and thrice as efficient as Chintu. Bunty can finish a job in 40 days

Amit can finish the job in 20 days and Chintu can finish the job in 60 days.

Let the total work be 120 units.

Amit's 1 day work = 6 units; Bunty's 1 day work = 3 units; Chintu's 1 day work = 2 units  
 Day 1 = 6+ 3+ 2= 11 units work is done Day 2 = 6 units work is done Day 3 = 3 units work is done Day 4 = 2 units work is done In this manner, 22 units work is done in four days. So, in 20 days 110 units work will be done in which each of them has worked for 10 days. Remaining 10 units work be done by Amit in 10/11 days. So, Amit has worked for  $10 + \frac{10}{11} = \frac{120}{11}$  days.

**Q.21)** Here,  $\frac{72}{250} = \frac{36}{125}$ ,  $\frac{126}{75} = \frac{42}{25}$  and  $\frac{162}{165} = \frac{54}{55}$

According to the formula,

$$\text{Required LCM} = \frac{\text{LCM of } 36, 42 \text{ and } 54}{\text{HCF of } 125, 25 \text{ and } 55} = \frac{756}{5} = 151\frac{1}{5}$$

**Q.22)** As learnt in concept

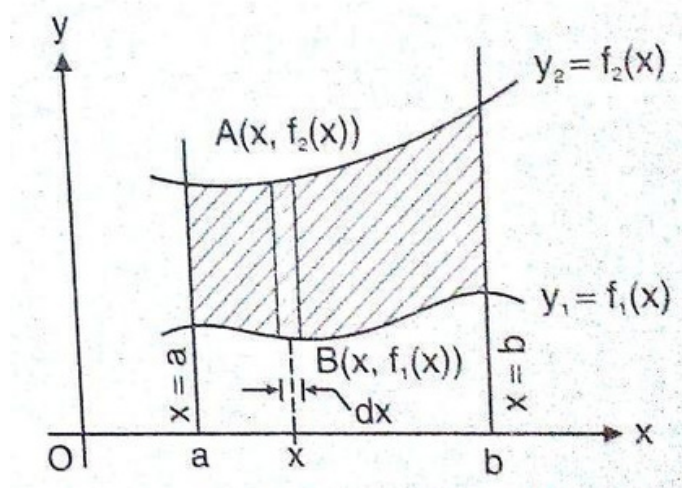
Area along x axis -

Let  $y_1 = f_1(x)$  and  $y_2 = f_2(x)$  be two curve then area bounded between the curves and the lines

$x=a$  and  $x=b$  is

$$\left| \int_a^b \Delta y \, dx \right| = \left| \int_a^b (y_2 - y_1) \, dx \right|$$

- wherein



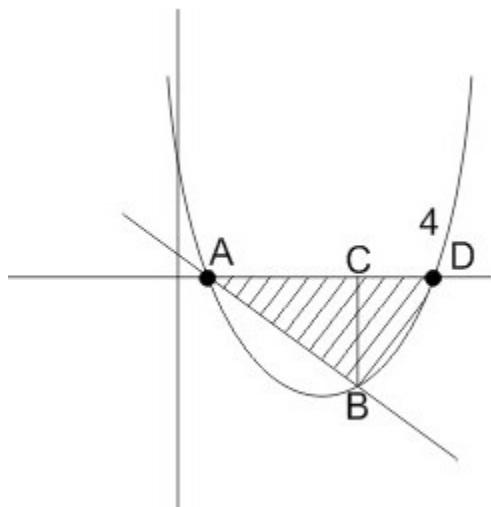
Where  $\Delta y = f_2(x) - f_1(x)$

Point of intersection of

$y = x^2 - 5x + 4$  and  $x + y = 1$  are  $x = 1, 3$

at  $x = 1, y = 0$ ;

$x = 3, y = -2$



$$\text{Req Area} = \text{Area } \triangle ABC + \left| \int_3^4 (x^2 - 5x + 4) dx \right|$$

$$= \frac{1}{2} \times 2 \times 2 + \left[ \frac{x^3}{3} - \frac{5x^2}{2} + 4x \right]_3^4$$

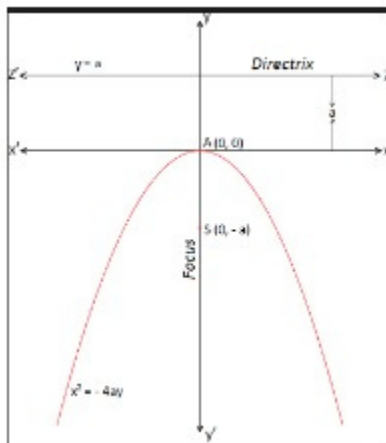
$$= \frac{19}{6}$$

**Q.23)** As we learnt in

Standard equation of parabola -

$$x^2 = -4ay$$

- wherein



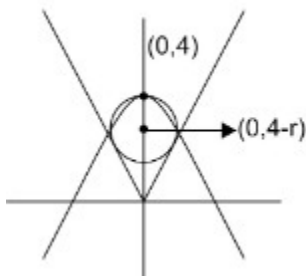
and concept

Perpendicular distance of a point from a line -

$$\rho = \frac{|ax_1 + by_1 + c|}{\sqrt{a^2 + b^2}}$$

- wherein

$\rho$  is the distance from the line  $ax + by + c = 0$  .



This figure shows the circle with least area satisfying the conditions.

Circle touches  $y=x$ ;

In the figure, centre  $(x,y)$  of the circle is  $(0,4-r)$

Now using distance formula to determine the radius of the circle,

$$\therefore \left| \frac{0 - (4 - r)}{\sqrt{2}} \right| = r (\text{distance of point from a line})$$

$$4 - r = \sqrt{2}r$$

$$r = \frac{4}{\sqrt{2} + 1}$$

On rationalising,

$$\Rightarrow r = 4(\sqrt{2} - 1)$$

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**Q.24)** Amount of Amontillado sherry, Smirnoff vodka and Lillet-blanc in 120 ml of sherry-martini

= 24, 36 and 60 ml resp

After removing 20 ml mixture, amount of Amontillado sherry, Smirnoff vodka and Lillet-blanc in 100 ml of sherry-martini

=  $24 \cdot (100/120)$ ,  $36 \cdot (100/120)$ , and  $60 \cdot (100/120)$  ml resp

= 20, 30 and 50 ml resp

Amount of Amontillado sherry, Smirnoff vodka and Lillet-blanc in 120 ml of sherry-martini after adding 20 ml of Lillet-blanc = 20, 30 and 70 ml resp.

After again removing 20 ml mixture, amount of Amontillado sherry, Smirnoff vodka and Lillet-blanc in 100 ml of sherry-martini =  $20 \cdot (100/120)$ ,  $30 \cdot (100/120)$  and  $70 \cdot (100/120)$  ml resp

=  $100/6$ , 25 and  $350/6$  ml resp.

Amount of Amontillado sherry, Smirnoff vodka and Lillet-blanc in 120 ml of sherry-martini after again adding 20 ml of Lillet-blanc =  $100/6$ , 25 and  $470/6$  ml resp

Hence final ratio =  $100/6 : 25 : 470/6$

$$\begin{aligned} &= 100 : 150 : 470 \\ &= 10 : 15 : 47 \end{aligned}$$

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**Q.25)** Assume the price is Rs. 100.

After a flat 50% discount, the selling price is  $(100 - 50) = \text{Rs. } 50$

After two successive discounts of 30% and 30%, the selling price  $= \frac{100 \times 70 \times 70}{100} \times 100 = 49$

So, the difference is Re. 1 when the price is Rs. 100.

Here, the given difference is Rs. 43.

So, the price of the shirt is  $(43 \times 100) = \text{Rs. } 4,300$

Hence, the correct answer is Rs. 4,300.

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**Q.26)** (d) Bhabha and Cathy work together for 2 days.

**Q.27)** (d) The consecutive days Ethan works on Friday & Saturday.

**Q.28)** (c) Dilip and Ethan do not work together at all.

**Q.29)** (b) Bhabha, Cathy and Ethan work on Sunday.

**Q.30)** (a) One of the days Alex work is Saturday.

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## Verbal Ability & Reading Comprehension

**Q.1)** In the article featured in the journal Diagnosis, a trio of medical researchers scrutinized the unfortunate case of Thomas Eric Duncan, who holds the grim distinction of being the first person to succumb to Ebola in the United States. This occurred at Texas Health Presbyterian Hospital Dallas. The researchers propose that the digital templates employed by the medical staff at this hospital for logging patient information likely contributed to a form of tunnel vision, thereby impairing accurate diagnosis.

The researchers further elaborate that these digital tools are designed primarily for efficient data collection. However, this comes at a significant cost: the tools are not optimized for effective patient triage or accurate diagnosis. This has the effect of causing medical professionals to overlook the broader context or 'the forest for the trees,' as the researchers metaphorically put it. Essentially, while these digital systems efficiently store data, they inadvertently steer healthcare providers away from the vital skill sets of taking comprehensive patient histories, conducting thorough examinations, and applying critical thinking.

Based on this detailed examination, it is evident that the primary issue leading to the misdiagnosis is the limited and perhaps misleading data collected through the digital templates, which guides medical practitioners in the wrong direction. Option A, which attributes the misdiagnosis to the tunnel vision induced by the data recorded in the digital templates, is therefore the correct choice.

Options B, C, and D do not align with this particular analysis and are thus not supported by the information presented in the journal article. For these reasons, they are not the correct options to choose in this context.

Upon an in-depth evaluation, it becomes apparent that Option A most accurately reflects the conclusions drawn by the medical researchers in the Diagnosis journal article, making it the correct selection.

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**Q.2)** The passage describes an alternative paradigm called "human-centered automation," wherein the unique capabilities of humans take precedence over technology. In this framework, software serves a crucial but supportive role. It is designed to handle routine tasks that human operators have already mastered, provide alerts during unforeseen situations, supply new information that enhances the operator's understanding, and counteract biases that can skew human judgment. In this manner, technology acts as a complement to human expertise rather than replacing it.

Option A: In this particular instance, the software's function is limited to providing feedback on the doctor's diagnostic process. This closely aligns with the human-centered approach as outlined in the passage, where the software takes a backseat and serves only to aid the human practitioner. Therefore, Option A is not the correct choice since it exemplifies the human-centered model rather than contradicting it.

Option B: Here again, the technology operates based on the directives issued by the human resident. It remains a tool to facilitate the resident's actions, thereby following the human-centered automation model. As such, Option B is also not the correct answer.

Option C: Contrarily, in this option, the software operates autonomously through its auto-completion feature, without specific human input or oversight. This approach doesn't align with the human-centered model which prioritizes human skills and decision-making. Therefore, Option C is the correct choice as it stands in contrast to the principles of human-centered automation articulated in the passage.

Option D: In this scenario, the software springs into action only upon the user's request. This model adheres to the human-centered approach where the software serves only when explicitly asked to, emphasizing human control and decision-making. Therefore, Option D is not the correct answer.

In summary, Option C is the correct choice as it presents a situation where the software acts independently of human interaction or supervision, thereby deviating from the human-centered automation model described in the passage.

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**Q.3)** The passage delves into the limitations of advanced software tools, especially their impact on human cognition and decision-making. Specifically, it mentions research from information scientists at Utrecht University and a paper published in the journal "Diagnosis" to illustrate these points.

Option A: The research conducted by information scientists at Utrecht University, referenced in the second paragraph, suggests that the excessive use of sophisticated software tools can have a detrimental effect on human cognitive capabilities. It argues that such tools may, in fact, impede thinking and learning. Given that this observation aligns with the passage's critique of advanced software, Option A cannot be the correct answer.

Option B: The passage's penultimate paragraph argues that "highly constrained tools," primarily designed for data capture, can mislead users by causing them to overemphasize less relevant data. This could lead them away from achieving their intended objectives. Similar to Option A, this point complements the passage's overarching argument, thereby disqualifying Option B as the correct answer.

Option C: The passage makes no claim that advanced software can fully replace human capabilities. In fact, it argues quite the opposite. The example cited from the journal "Diagnosis" serves to underline the limitations of using such software, especially in critical areas like medical diagnosis. Therefore, Option C is the correct choice as it correctly identifies that the software is not a replacement for human skills and judgment, a point implicitly made by the passage.

Option D: This option can be traced back to the ideas presented in the second and third paragraphs of the passage, but these sections don't establish it as the answer to the central question posed. Therefore, Option D is not the correct answer.

In summary, the correct answer is Option C. This option accurately reflects the passage's stance that while software may serve as a valuable tool, it cannot serve as a complete substitute for human judgment and expertise.

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**Q.4)** The passage presents findings from an experiment conducted at Utrecht University, which explored the impact of different types of software on human problem-solving behavior. The experiment compared two groups of people: one group used simple software, while the other utilized more advanced, sophisticated software. The results showed that those using simpler software were more effective in strategizing and made fewer mistakes. On the other hand, those who used the more advanced software seemed to disengage from strategic thinking and would often "aimlessly click around" when presented with challenging problems. This suggests that the more advanced software, rather than aiding the users, may actually hinder their ability to think critically and solve problems effectively.

Option A: The passage does not raise questions about the competency levels of the users in either group. Rather, it focuses on how the type of software being used affects problem-solving behavior. Consequently, Option A is not a valid inference based on the given information.

Option B: The passage clearly indicates that those using more sophisticated software tended to "aimlessly click around" when faced with challenging scenarios. This suggests a level of dependency on the software for problem-solving, which supports Option B as the correct choice.

Option C: While the phrase "aimlessly click around" does describe the behavior of the group using advanced software, it is not specifically used to compare or contrast the strategies adopted by the two different groups. Therefore, Option C is not an accurate representation of the passage's content.

Option D: There is nothing in the passage that implies this inference, so Option D is not the correct choice.

In summary, Option B accurately reflects the key point made by the passage, namely that dependency on more advanced software can potentially undermine the ability to think critically and solve problems. Therefore, the correct answer is Option B.

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**Q.5)** The passage initially delves into the intricate nature of the biosphere and posits that it is unfeasible to construct an intelligent system devoid of bio-logic. As the narrative progresses, the author shifts focus to the increasingly intricate nature of human-engineered systems. Remarkably, the complexity of these artificial systems has reached a point where it is comparable to biological systems, thus enabling the transference of characteristics from bio-logic to mechanical systems. This transference is evident in fields such as bioengineering and genetic engineering. Finally, the author ties these threads together in the conclusion, suggesting a converging trajectory between bio-logic and techno-logic.

Given this layout of the passage, options B and C do not capture the crux of the author's concluding remarks, which discuss the convergence of bio-logic and techno-logic. These options are therefore irrelevant to the passage's main idea and can be immediately dismissed.

Now, when considering options A and D, it becomes essential to focus on the more general terms 'bio-logic' and 'techno-logic.' The reason is that these terms encapsulate the broader conceptual framework that the author presents, as opposed to the more specific examples of 'carrots and cows.' Hence, it would be more accurate to pick an option that includes these terms.

Upon this evaluation, Option D stands out as the most aligned with the overarching message of the passage, which is the convergence of bio-logic and techno-logic. Thus, the correct answer must be Option D.

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**Q.6)** In the excerpt, the author examines the progressively blurring boundaries between what is categorized as 'mechanical' and what is considered 'lifelike.' He argues that the distinction between these two realms is becoming increasingly indistinct, to the point that our very understanding of the terms is evolving. Ultimately, he suggests that we are headed towards a future where all complex entities could be understood as mechanical systems and all self-sustaining mechanical systems could be considered as possessing characteristics of life.

Option A: This choice contradicts the author's main point, which focuses on the increasing convergence between the 'mechanical' and the 'lifelike.' Rather than asserting separateness, the author is highlighting their growing similarity. Therefore, Option A is not the correct choice.

Option B: Similar to Option A, Option B misrepresents the author's argument by distorting the essence of what the author is trying to convey. It diverges from the idea of increasing overlap between 'mechanical' and 'lifelike,' and as such, cannot be the correct answer.

Option C: While this choice introduces specific fields like 'genetic engineering' and 'mechanical engineering,' it misinterprets the core message of the author. The author's focus is not on showing the intersection of these two specific engineering fields but rather on illustrating a more generalized convergence of 'mechanical' and 'lifelike.' Therefore, Option C is not the correct choice.

Option D: This option encapsulates the central theme that the author addresses: the growing convergence between 'mechanical' and 'lifelike' systems. It accurately mirrors the author's argument that our definitions and perceptions of these terms are evolving to become virtually synonymous.

Given these evaluations, Option D emerges as the choice that most faithfully represents the main idea articulated by the author. Therefore, the correct option is D.

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**Q.7)** In the concluding paragraph of the text, the author emphasizes two clear trends that are reshaping our understanding of 'organic' and 'manufactured' realities. Firstly, he points out that human-made objects are increasingly exhibiting characteristics traditionally ascribed to living entities. Secondly, he argues that organic life itself is becoming more and more a product of engineering. The author asserts that these developments are eroding the distinctions between the organic and the manufactured, suggesting that they have always been more closely related than previously acknowledged.

Option A: This choice misinterprets the author's message. It's not that the organic realm is collapsing under the influence of manufacturing. Rather, both the organic and manufactured are converging due to advancements in science and technology. Therefore, Option A does not accurately represent the author's point and is not the correct choice.

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Option B: This option accurately captures the essence of the author's argument. It recognizes that although genetic engineering has a lower degree of control compared to bioengineering, both fields aim for artificial enhancement and evolution. As a result, Option B is the choice most aligned with the author's discussion.

Upon analyzing the options in depth, it's clear that Option B most faithfully represents the author's arguments and is, therefore, the correct choice.

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**Q.9)** The passage dives deep into the cultural distinctions that surround the concept of a "copy" and the value placed on original works, particularly when it comes to the realm of art and religious architecture. Within Chinese culture, the term for copies, "fuzhipin," carries no negative weight and, in fact, these reproductions are deemed as valuable as the original works themselves. In contrast, Western cultures have historically placed a premium on the idea of an untouchable, invaluable original. This contrasting viewpoint has occasionally led to misunderstandings and even tensions when Chinese museums choose to send these copies abroad for display in Western institutions.

With this cultural context in mind, Option B—Pablo Picasso's painting that is an exact replica of Vincent van Gogh's original work—would be unlikely to be perceived as inferior by a Chinese museum. This aligns perfectly with the Chinese philosophy where a "fuzhipin" is an exact duplicate of the original work and is thus considered to be equally valuable and free of negative connotations.

In contrast, Option A, which involves a painting by Pablo Picasso based on Vincent van Gogh's original but with Picasso's signature, would not be classified as a "fuzhipin" within the framework of Chinese cultural understanding. This is because the work diverges from being an exact reproduction by virtue of bearing the signature of a different artist, thereby making it distinct from the original.

Similarly, Options C and D would also fall outside the purview of what could be defined as a "fuzhipin" according to Chinese culture. The reason is that neither of them represents an exact reproduction of the original work, but rather they exist as different versions or formats of the original.

Therefore, taking all these factors into consideration, Option B emerges as the correct choice. It is the only option that would align with the Chinese cultural concept of "fuzhipin," being an exact reproduction and thus holding equal value to the original work as understood in Chinese philosophy.

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**Q.10)** The passage provides historical context for how artworks from ancient times were treated during the 17th century in Western civilizations. Unlike today's preservation-focused approach, artists and restorers during this period did not aim to faithfully replicate the original artworks. Rather, they frequently made significant modifications to these excavated pieces,

resulting in substantial changes to their original appearance.

In light of this historical backdrop, Option C—which posits that a 17th-century French artist with Christian beliefs would be obligated to stay entirely faithful to the original intention of a painting during the restoration process—appears to be at odds with the practices described in the passage. The text explicitly states that during the 17th century, the priority was not on preserving the original form of an artwork. There was "massive intervention" in these pieces, meaning they were altered considerably during the restoration process. This suggests that the reverence for an "unassailable original" may not have been as deeply ingrained in 17th-century restoration practices as it is in contemporary ones.

Contrastingly, Options A, B, and D are scenarios about which the passage does not provide enough information to form a definitive judgment. Therefore, they remain ambiguous in the context of the passage's insights.

Therefore, based on the arguments and evidence presented in the passage, Option C emerges as the most improbable scenario. It contradicts the historical practices described by suggesting that a 17th-century French artist, even one adhering to a Christian worldview, would be strictly committed to restoring an artwork faithfully to its original form. Hence, Option C is the correct choice for this question.

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**Q.11)** The passage describes the unique nature of the Ise Grand Shrine in Japan, emphasizing its significant age of 1,300 years and the millions of Japanese pilgrims who visit it annually. However, the passage also reveals a fascinating detail—this venerable shrine is not just preserved or maintained but is entirely rebuilt from the ground up every two decades.

With this context, let's consider the comparison with the cathedral of Freiburg Minster, which is continually undergoing restoration. The situation at Ise Grand Shrine stands in contrast; it's not about ongoing, incremental restoration. The shrine is not being 'restored' in the sense that the term is used in the passage about Freiburg Minster. Instead, it is periodically demolished and reconstructed anew. This represents a fundamentally different approach to maintaining a historical monument.

So, when it comes to the question of continuous restoration, the evidence provided does not support the notion that the Ise Grand Shrine is in a perpetual state of being restored, at least not in the way that Freiburg Minster is. The Shrine's methodology for preservation involves complete reconstruction at regular intervals, rather than the continual, piece-by-piece restoration seen in the case of the cathedral.

Therefore, based on the information given, Option C emerges as the most accurate choice. It highlights that the Ise Grand Shrine and the cathedral of Freiburg Minster differ in their preservation approaches: the former is entirely rebuilt every 20 years, while the latter undergoes ongoing restoration. Hence, Option C is the correct choice for this question.

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**Q.12) Option A:** In Western cultures, the notion of an "unassailable original" artwork holds substantial weight, often overshadowing any copies, no matter how meticulously created. This ingrained cultural perspective would likely deter Western museums or galleries from showcasing multiple copies of a single painting alongside the original. The original work is perceived as possessing an intrinsic value and authenticity that copies simply cannot replicate. Therefore, Option A stands as a valid conclusion based on the given passage.

**Option B:** The reverence for originality in the Western world extends to the practice of art restoration and preservation. Given the high esteem for original artworks, it's reasonable to infer that there would be consistent employment for skilled artisans and craftsmen. These professionals would be tasked with maintaining the original works of art, ensuring they remain as close as possible to their original state. This could involve assessing the artworks for any signs of deterioration and taking measures to restore any eroded or damaged elements. Hence, Option B is also a valid interpretation.

**Option C:** The Western cultural emphasis on the inviolability of original art may also discourage substantial alterations to ancient artworks. While it was once common to significantly modify these works during restoration processes, such practices have increasingly fallen out of favor. The trend now leans toward preserving the artwork's original form as much as possible, highlighting the growing importance of maintaining the originality and authenticity of ancient art. Therefore, Option C is a plausible interpretation as well.

**Option D:** The passage discusses the Western concept of the untouchable originality of artworks and how this viewpoint has influenced various attitudes, including those toward cloning. While it may suggest different approaches to cloning between Europe and Asia, it does not explicitly state that Western attitudes about the value of original artworks have had a direct impact on perspectives regarding human cloning. Consequently, Option D stands out as the correct answer, since it correctly notes the absence of any direct connection between the Western valuation of original artworks and attitudes toward human cloning.

In summary, while Options A, B, and C are valid interpretations based on the Western value placed on original artworks, Option D is the correct answer as it acknowledges that the passage doesn't directly discuss the influence of this valuation on attitudes toward human cloning.

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**Q.13) (D)**

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**Q.14) (C)**

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**Q.15) (B)**

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**Q.16) (D)**

**Q.17)** The correct option is the **third option**.

**Explanation:** In the context of the sentence, the sentence emphasises that the order is final and cannot be changed or revoked. "Irrevocable" means unable to be revoked or changed, making it the most suitable word in this context.

Irretrievable: This term means unable to be retrieved or recovered, typically referring to something lost or gone forever.

Irreparable: This term means unable to be repaired or fixed, often referring to physical damage or harm.

Irreconcilable: This term means unable to be reconciled or resolved, often used in the context of conflicts or differences between individuals or groups.

So the sentence would be: The order is **irrevocable** and you must abide by it, as there is not even the slightest chance of its being modified or withdrawn.

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**Q.18)** The correct option is the **first option**.

**Explanation:** In the context of the sentence, "He talked on and on" suggests continuous, never-ending speech. "**Ad infinitum**" is a Latin phrase that means "**to infinity**" or "**endlessly**", making it an appropriate choice to indicate continuous talking without a definite endpoint.

Voraciously: This word means with great eagerness or greed. It doesn't convey the idea of continuous speech without end.

Hesitatingly: This word means with hesitation or uncertainty, which is the opposite of continuous and endless talking.

Ad interim: This phrase means "in the meantime" or "temporarily". It doesn't convey the idea of continuous speech without end; instead, it implies a temporary or interim situation.

So the sentence would be: He talked on and on **ad infinitum**.

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**Q.19)** The correct option is the **second option**.

**Explanation:** In the context of the sentence, the word should convey the idea that the person is habitually late with submissions because they delay or postpone doing what they are supposed to do. "**Procrastinate**" means to delay or postpone tasks, which fits the meaning in this context.

Prevaricate: This word means to speak or act in an evasive or deceptive way, typically to avoid answering a question or revealing the truth.

Interrogate: This word means to question or examine someone, often in a formal or intense manner.

Discriminate: This word means to treat someone unfairly or differently based on their characteristics, such as race or gender.

So the sentence would be: He would always be late with submission because he would **procrastinate** whatever he was supposed to do.

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**Q.20)** Replace 'reached' by 'reach' as any form of Do [like – do, does, did] is followed by V1. e.g. Hardly does he come (V1) to me. Seldom did he go (V1) there.

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**Q.21)** Replace 'for' by 'to' as the correct syntax is "Subject + invite (somebody) to dinner/a function etc." e.g. I invited him to dinner. Or, "Subject + To Be + invited + to + dinner/a function" e.g. He was invited to dinner.

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**Q.22)** Replace 'lot' either by "a lot" or "lots" as the plural of 'lot' is 'lots of' or 'a lot of'. e.g. He has done a lot of work. He has done lots of work.

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**Q.23)** Use 'a' before 'little' as 'little' means 'almost none' while 'a little' means 'some'. Hence "little water" means "almost no water" while "a little water" means "some water".

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**Q.24)** The correct sentence is “These persons directly supervise the routine work of others but are themselves extensively controlled by top and middle managers.” Hence, the option (d) is the correct answer.

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**Q.25)** The motive of ICC is to make the people (younger generation) fans of the game. So in order to achieve this, they need to let them play the game and become addicts.

Option A suggests that they should use the local channels to spread the news of the ICC chairman and some players playing the game. In a nation where the sports do not have a fan following, this will be of no use.

Option B: suggests that cricket stadiums must be built. If people are not attracted to the sports then there is no use of building cricket stadiums around as no one will turn up to play.

Option C: is the correct answer as the game should be spread among the younger generations so that they start enjoying the game. This will create a huge and concrete fan following.

Option D: has a completely useless idea as the people will enjoy the show and then they’ll disappear without trying the game.

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**Q.26)** The passage is about the effect of taking excessive proteins on the body. We should notice that the idea has reached a point where the muscles grow due to load bearing and not because of the extra protein consumed. Hence we should note that any option regarding this can be avoided.

Option A: tells us what happens with the extra proteins. This can be a continuation to the scientific explanation. Hence this can be the suitable option.

Option B: speaks about keeping the body fit. Our expected content is actually regarding the consumption of protein and its effects on the body.

Option C: should come only after option A, as option A makes the premise for going into option C.

Option D: is something that we assume without any relevant information. Hence this can be disregarded.

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**Q.27)** The passage is a plain description of the new features of the OS. Hence we can understand the next sentence would be about another feature.

Option A could have been the answer if there were no other features mentioned in the other options.

Option B is a criticism of the OS. This is not the time to criticise the OS because it speaks about the positive attributes of the same.

Option C is where you can notice that a narrative style stating the author’s viewpoint is written there.

Option D is highlighting another feature and hence it can be the answer.

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**Q.28)** The passage is based on a new report as we can see. Hence we should be focusing on the newline sequence. We notice that the passage ends before mentioning the number of casualties. Hence we can understand that we have to find something related to it. It is obvious that such a natural calamity would lead to the death of many. Hence we can conclude A as the answer. Moreover, option A is reported from the person who works in the impacted zone. Option B is a suggestion of what can be done in the future. Hence this will come only at the end of the news report. Option C is a description (attribute) of the affected state. This is irrelevant in the passage. Option D is something that comes after the statement in option A as the news report proceeds. Hence, D cannot be the answer.

The question below has a paragraph given with one sentence missing at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

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**Q.29). (b)** Universe (n)– cosmos Ideologies - a set of ideas which form the basis for a political or economic system Phenomenon (singular) - an observable fact or event ; Phenomena (plural) Configuration (n) - the way in which the parts of something, or a group of things, are arranged Option (d) can be ruled out as the word configuration would be a misfit in the first blank. Option (a) can be ruled out as achieving spaceflights helps observe objects and 'ideologies' that are better observed from a space perspective, probably not; it won't be parallel. Option (c) can be ruled out as the aforementioned activities aren't the elements of space 'identification'. Let's place option B in the blanks and see its impact Achieving spaceflight enabled humans to begin to explore the solar system and the rest of the universe , to understand the many objects and phenomena that are better observed from a space perspective, and to use for human benefit the resources and attributes of the space environment. All of these activities - discovery, scientific understanding, and the application of that understanding to serve human purposes – are elements of space exploration.

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**Q.30). (b)** Monochrome (adj)- using only black, white and shades of grey Barely (adv)- only just; almost not Misconception (n) – wrong idea or understanding of something. Accusation (n)– a charge of wrong doing. Classic (adj)– typical Dispassionately (adj) - in an unemotional, rational, and impartial manner Option (d) can be ruled out as the movies can't be preserved 'dispassionately'. Option (c) will be ruled out as accusation will be a misfit in the third blank. If the films aren't preserved well, it will probably lead to some conclusion not accusation. Option (a) will be ruled out as barely won't fit as beautifully and meaningfully as poorly in the second blank.

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**Q.31). (d)** Educational (adj) – providing or relating to education Firewall - A firewall is a network security device that monitors incoming and outgoing network traffic and decides whether to allow or block specific traffic based on a defined set of security rules hackers (n) - a person who uses a computer to look at and/or change information on another computer without permission Inescapable( adj) – that can't be avoided. Unsolicited – not asked for; uninvited Regulators – a person or thing that regulates/controls something Spammer (n) - a person or organization that sends irrelevant or unsolicited messages over the internet, typically to large numbers of users, for the purposes of advertising, phishing, spreading malware, etc. Let's evaluate the options for the first blank. The messages are promotional (done to advertise your products) that means these won't be educational or informative so we can rule out options (a) and (c). unsolicited (not asked for) looks like a better answer choice than inescapable (something that can't be avoided). Hence, option (d) is the perfect answer choice for this question.

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**Q.32). (c)** Treacherously (adv) – in a disloyal and faithless manner Enormously (adv)– to a great degree or extent Alleged (adj)– accused but not proven or convicted Insider (n) – a person who knows a lot about a group or an organization because he's a part of it. Illicitly (adv)– in a way that is contrary or forbidden by law, rules or custom Accused (n)– a person who has been arrested for or formally charged with a crime Dramatically (adv) – something done with great flare or done in an overly exaggerated or theatrical manner. Though grammatically all the options look alright, we need to carefully evaluate them. Now, instead of announcing, the investigator would probably allege or even accuse that someone has leaked the information. Hence, options (a) and (b) can be eliminated. If we look at the third blank, the associate made profits illicitly (Illegally) not dramatically.

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**Q.33). (a)** Orthography - the system of spelling in a language Linguistics – the scientific study of language Cogitate - think deeply about something; meditate or reflect. Ponder/Mull - to think about something carefully or for a long time Options (b), (c), and (d) can be ruled out because the words language, animals and writing won't fit in the second blank. One wouldn't want to think deeply about these and life in general. Option (a) looks like a good answer choice. The beauty of philosophy is that it poses thoughtprovoking questions and inspires us to think deeply about ourselves and life in general. Further, pondering about the ideas and perspectives outlined by different thinkers can help us to gain a better understanding of the world we live in. The sentences below have words that are missing. Choose the best option from those given below to complete the sentence.

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**Q.34). (c) Belief** - a firm thought that something is true, often based on revelation  
Worldview - a comprehensive conception or apprehension of the world especially from a specific standpoint  
The paragraph begins with an anthropocentric view where humankind is the central or most important element of existence. Since, this can't be a construct (something that is created, often with a complex form) or universe (cosmos), option a and d can be eliminated. So we're left with option b and c. Now, let's take a look at the third blank. The idea about killing animals painlessly can be 'explicitly' (clearly stated) and not 'partially' on some widely accepted idea.

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**Q.35) (c) Spot (n)** - a small dirty mark on something  
Spot – location  
Stain on career - something bad that someone has done that spoils their reputation  
Spot on (adj)– exactly right  
Sentences (a), (b), and (d) have used the words correctly. Stain on career would be a better fit instead of spot on his career in sentence (c).

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**Q.36). (a) crass (adj)** - stupid, showing that you do not understand something  
Cross - to go from one side of something to the other  
Bear the cross - a problem that causes trouble or worry for someone over a long period of time  
Cross - angry or annoyed  
Sentence (b), (c), and (d) have used the word cross appropriately. Crass should be used instead of cross in sentence a.

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**Q.37). (d) flout** - to refuse to obey or accept something  
Flaunt - to show something that you are proud of so that other people will admire it  
Sentence (a), (b) and (c) have used the word flout correctly. Flaunt should be used in sentence 4 to give the sentence its correct meaning.

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**Q.38). (d) State (v)** – to say or write something, especially formally  
State (n) - a condition or way of being  
State (n) - a division under the Indian constituency  
The word state is correctly used in the first three sentences. The demeanour (behaviour towards others) can't be of great 'state'. Hence, the word state has been inappropriately been used in option D.

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**Q.39). (c) Draw** as used in sentence (a) means to pull something out of its resting place  
Draw as used in sentence (b) means an act of deciding something by chance by pulling out names or numbers from a bag, etc.  
Draw as used in sentence (d) means a result of a game or competition in which both players and teams get the same score so that neither of them wins.  
Drawer - a container which forms part of a piece of furniture such as a desk that you

can pull out to put things in. The word drawer should be used in place of draw in sentence (c) to give the sentence its correct meaning.

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**Q.40). (d) Collaborate** - to work together (with somebody), especially to create or produce something  
**Corroborate** - to support a statement, idea, etc. by providing new evidence  
Sentence (a), (b) and (c) have used the word collaborate correctly. The word, however, to be used in sentence (d) should be corroborate.

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**Q.41)** The correct choice is the **third option**. To arrange the sentences in a meaningful and coherent paragraph, consider the logical flow of events. Here's the correct order:

**C.** Fleming became famous overnight and was regarded as one of the most distinguished scientists of his time.

**A.** In 1944, he was honoured by King George VI with a knighthood and became Sir Alexander Fleming.

**D.** The next year, he and his fellow bacteriologists, whose combined efforts had led to the great discovery, were honoured with a joint Nobel Prize.

**B.** On receiving this great honour, Fleming said in his usual modest way, "Wherever I go, people thank me for saving their lives. I didn't do anything; I just found a remedy that was there.

Sentence **(C)** introduces the fact that Fleming became famous and was highly regarded for his work. Sentence **(A)** provides a chronological event, mentioning the honour he received from King George VI, becoming Sir Alexander Fleming, further establishing his recognition and prominence. Sentence **(D)** follows, explaining that he and his fellow bacteriologists were jointly awarded the Nobel Prize for their discovery, showing the extent of their achievements and recognition. Sentence **(B)** concludes the paragraph by sharing Fleming's modest response to the honours, highlighting his humility and gratitude, and tying the narrative together.

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**Q.42)** The correct choice is the **third option** i.e., **ADCB**.

The paragraph describes the events leading up to a young King's coronation. It begins with the King in his chamber, followed by his courtiers leaving for etiquette lessons. It highlights the King's youth and includes background about how he was found by hunters.

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**Q.43)** The correct answer is the **second option: CDAB.**

To arrange the sentences in a meaningful and coherent paragraph, consider the logical flow of events. Here's the correct order:

- **C.** Giving soothes an individual with the vibration of joy.
- **D.** Unconditional giving is a natural principle and is evident everywhere in nature, which gives us solids, liquids, and minerals.
- **A.** Water gives itself away for our agriculture and other uses.
- **B.** Trees give flowers, fruits, and wood.

The statement **(C)** discusses the purpose of the subject, which is followed by statement **(D)** defining the subject broadly. It is further followed by statement **(A)** mentioning the example of the subject, that is stated. Finally, the paragraph concludes with statement **(B)** giving more examples to support the purpose of the subject.

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**Q.44)** Sentence 4 gives an introduction to the first public museums and sentence 3 mentions the British Museums of 1753. This makes them a mandatory pair. Sentence 1 is referring to the collection mentioned in sentence 3, and sentence 2 is discussing the conclusion which makes 4312 the correct order.

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**Q.45)** Statement 2 can be the perfect opening for the passage, as with its help the topic of changing mindsets of the young generations can be taken forward. Statement 1 follows as it exactly points out this fact regarding the young generation. Statement 3 continues further, what this trend among the young generation means, so it follows statement 1. Statement 4 can be the concluding statement as it gives the ill-effects of such mentality. This makes the proper sequence of sentences as 2-1-3-4

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## Mock TEST - 5

### Question Paper

#### Quantitative Aptitude Short Answer (SA) type

**Q.1)**

Let  $f : \mathbb{R} \rightarrow \mathbb{R}$  be defined by  $f(x) = \frac{x}{1+x^2}$ ,  $x \in \mathbb{R}$ . Then the range of  $f$  is  $[-\frac{1}{k}, \frac{1}{k}]$  find the value of  $k$ .

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**Q.2)**

$A = \begin{bmatrix} 5a & -b \\ 3 & 2 \end{bmatrix}$  and  $A \text{ adj } A = AA^T$ , then  $5a + b$  is equal to :

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**Q.3)** Aron bought some pencils and sharpeners. Spending the same amount of money as Aron, Aditya bought twice as many pencils and 10 less sharpeners. If the cost of one sharpener is 2 more than the cost of a pencil, then the minimum possible number of pencils bought by Aron and Aditya together is

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**Q.4)** 8 - digit numbers are formed using the digits 1, 1, 2, 2, 2, 3, 4, 4. The number of such numbers in which the odd digits do not occupy odd places, is :

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**Q.5)** The value of  $\sum_{r=16}^{30} (r+2)(r-2)$  is equal to

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**Q.6)** Let  $f : \mathbb{R} \rightarrow \mathbb{R}$  be a function defined by

$f(x) = \log_{\sqrt{m}}\{\sqrt{2}(\sin x - \cos x) + m - 2\}$ , for some  $m$ , such that the range of  $f$  is  $[0, 2]$ . Then the value of  $m$  is

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**Q.7)** Two numbers are in the ratio of 6 : 5. If their HCF is 3, then what is the LCM of the two numbers?

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**Q.8)** The eccentricity of an ellipse whose centre is at the origin is  $\frac{1}{2}$ . If one of its directrices is  $x = -4$ , then the equation of the normal to it at  $\left(1, \frac{3}{2}\right)$  is  $4x + 2y = p$  find the value of  $p$ .

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**Q.9)** if  $\frac{1}{\sqrt{\alpha}}$  and  $\frac{1}{\sqrt{\beta}}$  are the root of equation  $ax^2 + bx + 1 = 0$  ( $a \neq 0, a, b, \in R$ ),

then the equation  $x(x + b^3) + (a^3 - 3abx) = 0$  has root  $\alpha^{\frac{k}{2}}$  and  $\beta^{\frac{k}{2}}$  find the value of  $k$ ?

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**Q.10)** A circle passes through  $(-2, 4)$  and touches the  $y$  - **axis** at  $(0, 2)$ . the  $2x - ky + 10 = 0$  equations can represent the diameter of this circle. what is value of  $k$ .

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**Q.11)** Five students, including Amit, appear for an examination in which possible marks are integers between 0 and 50, both inclusive. The average marks for all the students is 38 and exactly three students got more than 32. If no two students got the same marks and Amit got the least marks among the five students, then the difference between the highest and lowest possible marks of Amit is

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**Q.12)** If the 7th term in the binomial expansion of  $\left(\frac{3}{\sqrt[3]{84}} + \sqrt{3} \ln x\right)^9$ ,  $x > 0$ , is equal to 729, then  $x$  can be  $e^k$ . What is the value of  $k$ .

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**Q.13)** If the median and the range of four numbers  $\{x, y, 2x + y, x - y\}$  where,  $0 < y < x < 2y$ , are 10 and 28 respectively, then the mean of the numbers is:

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**Q.14)** The system of linear equations  $x + \lambda y - z = 0$   
 $\lambda x - y - z = 0$   
 $x + y - \lambda z = 0$

has a non-trivial solution. possible value of  $\lambda$  are.

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**Q.15)** A circle is inscribed in a rhombus with diagonals 12 cm and 16 cm. The ratio of the area of a circle to the area of a rhombus is  $n\pi/25$ . What is the value of  $n$ ?

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### Quantitative Ability MCQ type

**Q.1)** Let  $f(x) = a^x$  ( $a > 0$ ) be written as  $f(x) = f_1(x) + f_2(x)$ , where  $f_1(x)$  is an even function and  $f_2(x)$  is an odd function. Then  $f_1(x + y) + f_1(x - y)$  equals:

- A)  $2f_1(x)f_1(y)$
- B)  $2f_1(x + y)f_1(x - y)$
- C)  $2f_1(x)f_2(y)$
- D)  $2f_1(x - y)f_1(x + y)$

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**Q.2)** The least value of the product  $xyz$  for which the determinant

$$\begin{vmatrix} x & 1 & 1 \\ 1 & y & 1 \\ 1 & 1 & z \end{vmatrix} \text{ is}$$

non-negative, is :

- A)  $-2\sqrt{2}$
  - B)  $-16\sqrt{2}$
  - C)  $-8$
  - D)  $-1$
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**Q.3)** Among 100 students,  $x_1$  have birthdays in January,  $x_2$  have birthdays in February, and soon. If  $x_0 = \max(x_1, x_2, \dots, x_{12})$ , then the smallest possible value of  $x_0$  is

- A) 8   B) 9
  - C) 10
  - D) 12
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**Q.4)** The value of  $\sum_{r=1}^{15} r^2 \left( \frac{{}^{15}C_r}{{}^{15}C_{r-1}} \right)$  is equal to:

- A) 560
- B) 680
- C) 1240
- D) 1085

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**Q.5)** The sum of the 3rd and the 4th terms of a G.P. is 60 and the product of its first three terms is 1000. If the first term of this G.P. is positive, then its 7th term is :

- A)** 7290 **B)** 320 **C)** 640 **D)** 2430

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**Q.6)** A bird is sitting on the top of a vertical pole 20 m high and its elevation from a point O on the ground is 45°. It flies off horizontally straight away from the point O. After one second, the elevation of the bird from O is reduced to 30°. Then the speed (in m/s) of the bird is :

- A)**  $20\sqrt{2}$   
**B)**  $20(\sqrt{3} - 1)$   
**C)**  $40(\sqrt{2} - 1)$   
**D)**  $40(\sqrt{3} - \sqrt{2})$

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**Q.7)** Find the unit's digit of the remainder of  $59n - 31n$  divided by 28.

- A)** 21  
**B)** 14  
**C)** 7  
**D)** 0

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**Q.8)** A hyperbola passes through the point  $P(\sqrt{2}, \sqrt{3})$  and has foci at  $(\pm 2, 0)$ .

Then the tangent to this hyperbola at P also passes through the point

- A)  $(2\sqrt{2}, 3\sqrt{3})$
  - B)  $(\sqrt{3}, \sqrt{2})$
  - C)  $(-\sqrt{2}, -\sqrt{3})$
  - D)  $(3\sqrt{2}, 2\sqrt{3})$
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Q.9) If  $f(x) = \log_e \left( \frac{1-x}{1+x} \right)$ ,  $|x| < 1$ , then  $f \left( \frac{2x}{1+x^2} \right)$  is equal to:

- A)  $2f(x^2)$
  - B)  $2f(x)$
  - C)  $-2f(x)$
  - D)  $(f(x))^2$
- 
- 

Q.10) If  $A = \begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$ , then which one of the following statements is **not** correct ?

- A)  $A^4 - I = A^2 + I$
  - B)  $A^3 - I = A(A - I)$
  - C)  $A^2 + I = A(A^2 - I)$
  - D)  $A^3 + I = A(A^3 - I)$
- 
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**Q.11)** What is the unit digit in the product (684 x 759 x 413 x 676)?

A) 6 8 2 None of

B) these

C)

D)

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**Q.12)** if  $\frac{{}^{n+2}C_6}{{}^{n-2}P_2} = 11$ , then  $n$  satisfies the equation :

A)  $n^2 + 3n - 108 = 0$

B)  $n^2 + 5n - 84 = 0$

C)  $n^2 + 2n - 80 = 0$

D)  $n^2 + n - 110 = 0$

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**Q.13)** If  $\sum_{n=1}^5 \frac{1}{n(n+1)(n+2)(n+3)} = \frac{k}{3}$ , then  $k$  is equal to:

A)  $\frac{55}{336}$

B)  $\frac{17}{105}$

C)  $\frac{1}{6}$

D)  $\frac{19}{112}$

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**Q.14)** The number of values of  $\alpha$  in  $[0, 2\pi]$  for which  $2 \sin^3 \alpha - 7 \sin^2 \alpha + 7 \sin \alpha = 2$ , is :

A) 6

B) 4

C) 3

D) 1

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**Q.15)** Which of the following is binomial?

A)  $(y + 1)(y - 1)$

B)  $x^2 + x - 1$

C)  $x^3$

D) None of the above

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**Q.16)** If the tangent at a point P, with parameter  $t$ , on the curve  $x = 4t^2 + 3y = 8t^3 - 1, t \in \mathbf{R}$ , meets the curve again at a point Q, then the coordinates of Q are :

A)  $(t^2+3, -t^3-1)$

B)  $(4t^2 + 3, -8t^3 - 1)$

C)  $(t^2+ 3, t^3- 1)$

D)  $(16t^2 + 3, -64t^3 - 1)$

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**Q.17)** Find  $4 + 7 + 10 + 13 + 16 + \dots$  up to 20 terms

A) 650

B) 225

C) 275

D) 115

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**Q.18)** After receiving two successive raises, Harish's salary became equal to  $2\frac{1}{7}$  times of his initial salary. By how much percent was the salary raised the first time if the second raise was twice as high (in percent) as the first?

- A) 15%
  - B) 20%
  - C) 25%
  - D) 50%
- 
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**Q.19)** If all the words (with or without meaning) having five letters, formed using the letters of the word SMALL are arranged as in a dictionary; then the position of the word SMALL is :

- A) 46th
  - B) 59th
  - C) 52nd
  - D) 58th
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**Q.20)** Given that  $x^{2018}y^{2017} = \frac{1}{2}$  and  $x^{2016}y^{2019} = 8$ , the value of  $x^2 + y^3$  is

- A)  $\frac{35}{4}$
  - B)  $\frac{37}{4}$
  - C)  $\frac{31}{4}$
  - D)  $\frac{33}{4}$
- 
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**Q.21)** From a group of 10 men and 5 women, four member committees are to be formed each of which must contain at least one woman. Then the probability for these committees to have more women than men is :

- A)  $\frac{21}{220}$

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B)  $\frac{3}{11}$

C)  $\frac{1}{11}$

D)  $\frac{2}{23}$

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**Q.22)** If  $m$  is the A.M. of two distinct real numbers  $l$  and  $n$  ( $l, n > 1$ ) and  $G_1, G_2$  and  $G_3$  are three geometric means between  $l$  and  $n$ , then  $G_1^4 + 2G_2^4 + G_3^4$  equals.

- A)  $4l^2mn$   
B)  $4lm^2n$   
C)  $4lmn^2$   
D)  $4l^2m^2n^2$
- 
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**Q.23)** If  $A = \{1, 4, 6, 9, 10\}$  and  $B = \{3, 9, 12\}$ , what is  $A \cap B$ ?

- A)  $\{3, 9\}$   
B)  $\{1, 4, 6, 9, 10\}$   
C)  $\{6\}$   
D)  $\{\}$
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**Q.24)** Find the interest earned in the first year on Rs.400 at 20%p.a. compound interest, the interest being compounded half yearly.

- A) Rs.42 B) Rs.72 C) Rs.84 D) Rs.144

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**Q.25)** A motorcyclist covers two stretches of  $x$  km each at the speeds of 20 kmph, 30 kmph respectively. He then, covers two equal stretches of  $2x$  km each at the speeds of 30 kmph and 40 kmph. Find the difference between average speeds during first two stretches and last two stretches. (in kmph)

A) 9.72

B) 10.28

C) 0

D) Cannot be determined

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**Directions (Q.26-Q.30):**

In a football tournament six teams A, B, C, D, E and F participated. Every pair of teams had exactly one match among them. For any team, a win fetches 2 points, a draw fetches 1 point, and a loss fetches no points. Both the teams  $\text{E}$  and  $\text{F}$  ended with less than 5 points. At the end of the tournament points table is as follows (some of the entries are not shown):

Teams	Played	Wins	Losses	Draws	Points
A	5		0		8
B	5		2		6
C	5		2		5
D	5		1		5
E	5		1		
F	5				

It is known that: (1) Team B defeated Team C, and (2) Team C defeated Team D.

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26.

Total number of matches ending in draw is

a) 12

b) 4

c) 5

d) 6

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27. Which team had highest number of draws? a) Team A b) Team C c) Team D d) Team E

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28. Total points Team F got was  
a)0  
b)1  
c)2  
d)3

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29. Which team was not defeated by Team A? a) Team B b) Team C c) Team D d) Team F

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30. Team E was defeated by a) Teams A and B only  
b) Only Team A c) Only Team B d) Teams A, B and D only

## Verbal Ability & Reading Comprehension

### Q.1) Instructions:

The passage below is accompanied by a set of questions. Choose the best answer to each question.

In a low-carbon world, renewable energy technologies are hot business. For investors looking to redirect funds, wind turbines and solar panels, among other technologies, seem a straightforward choice. But renewables need to be further scrutinized before being championed as forging a path toward a low-carbon future. Both the direct and indirect impacts of renewable energy must be examined to ensure that a climate-smart future does not intensify social and environmental harm. As renewable energy production requires land, water, and labor, among other inputs, it imposes costs on people and the environment. Hydropower projects, for instance, have led to community dispossession and exclusion . . . Renewable energy supply chains are also intertwined with mining, and their technologies contribute to growing levels of electronic waste . Furthermore, although renewable energy can be produced and distributed through small-scale, local systems, such an approach might not generate the high returns on investment needed to attract capital.

Although an emerging sector, renewables are enmeshed in long-standing resource extraction through their dependence on minerals and metals . . . Scholars document the negative consequences of mining . . . even for mining operations that commit to socially responsible practices[.] “many of the world’s largest reservoirs of minerals like cobalt, copper, lithium, [and] rare earth minerals”—the ones needed for renewable technologies—“are found in fragile states and under communities of marginalized peoples in Africa, Asia, and Latin America.” Since the demand for metals and minerals will increase substantially in a renewable-powered future . . . this intensification could exacerbate the existing consequences of extractive activities.

Among the connections between climate change and waste, O’Neill . . . highlights that “devices developed to reduce our carbon footprint, such as lithium batteries for hybrid and electric cars or solar panels[,] become potentially dangerous electronic waste at the end of their productive life.” The disposal of toxic waste has long perpetuated social injustice through the flows of waste to the Global South and to marginalized communities in the Global North . .

While renewable energy is a more recent addition to financial portfolios, investments in the sector must be considered in light of our understanding of capital accumulation. As agricultural finance reveals, the concentration of control of corporate activity facilitates profit generation. For some climate activists, the promise of renewables rests on their ability not only to reduce emissions but also to provide distributed, democratized access to energy . . . But Burke and Stephens . . . caution that “renewable energy systems offer a possibility but not a certainty for more democratic energy futures.” Small-scale, distributed forms of energy are only highly profitable to institutional investors if control is consolidated somewhere in the financial chain. Renewable energy can be produced at the household or neighborhood level. However, such small-scale, localized production is unlikely to generate high returns for investors. For financial growth to be sustained and expanded by the renewable sector, production and trade in renewable energy technologies will need to be highly concentrated, and large asset management firms will likely drive those developments.

**Question:-**

Which one of the following statements best captures the main argument of the last paragraph of the passage?

- A) The development of the renewable energy sector is a double-edged sword.
- B) Renewable energy systems are not democratic unless they are corporate-controlled.

C) Renewable energy produced at the household or neighbourhood level is more efficient than mass-produced forms of energy.

D) Most forms of renewable energy are not profitable investments for institutional investors.

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## Q.2) Instructions

The passage below is accompanied by a set of questions. Choose the best answer to each question.

In a low-carbon world, renewable energy technologies are hot business. For investors looking to redirect funds, wind turbines and solar panels, among other technologies, seem a straightforward choice. But renewables need to be further scrutinized before being championed as forging a path toward a low-carbon future. Both the direct and indirect impacts of renewable energy must be examined to ensure that a climate-smart future does not intensify social and environmental harm. As renewable energy production requires land, water, and labor, among other inputs, it imposes costs on people and the environment. Hydropower projects, for instance, have led to community dispossession and exclusion . . . Renewable energy supply chains are also intertwined with mining, and their technologies contribute to growing levels of electronic waste . Furthermore, although renewable energy can be produced and distributed through small-scale, local systems, such an approach might not generate the high returns on investment needed to attract capital.

Although an emerging sector, renewables are enmeshed in long-standing resource extraction through their dependence on minerals and metals . . . Scholars document the negative consequences of mining . . . even for mining operations that commit to socially responsible practices[:] “many of the world’s largest reservoirs of minerals like cobalt, copper, lithium, [and] rare earth minerals”—the ones needed for renewable technologies—“are found in fragile states and under communities of marginalized peoples in Africa, Asia, and Latin America.” Since the demand for metals and minerals will increase substantially in a renewable-powered future . . . this intensification could exacerbate the existing consequences of extractive activities.

Among the connections between climate change and waste, O’Neill . . . highlights that “devices developed to reduce our carbon footprint, such as lithium batteries for hybrid and electric cars or solar panels, become potentially dangerous electronic waste at the end of their productive lives.” The disposal of toxic waste has long perpetuated social injustice through the flows of waste to the Global South and to marginalized communities in the Global North . .

While renewable energy is a more recent addition to financial portfolios, investments in the sector must be considered in light of our understanding of capital accumulation. As agricultural finance reveals, the concentration of control of corporate activity facilitates profit generation. For some climate activists, the promise of renewables rests on their ability not only to reduce emissions but also to provide distributed, democratized access to energy . . . But Burke and Stephens . . . caution that “renewable energy systems offer a possibility but not a certainty for more democratic energy futures.” Small-scale, distributed forms of energy are only highly profitable to institutional investors if control is consolidated somewhere in the financial chain. Renewable energy can be produced at the household or neighborhood level. However, such small-scale, localized production is unlikely to generate high returns for

investors. For financial growth to be sustained and expanded by the renewable sector, production and trade in renewable energy technologies will need to be highly concentrated, and large asset management firms will likely drive those developments.

**Question:-**

Which one of the following statements, if true, could be an accurate inference from the first paragraph of the passage?

- A) The author has reservations about the consequences of renewable energy systems.
  - B) The author has reservations about the consequences of non-renewable energy systems.
  - C) The author does not think renewable energy systems can be as efficient as non-renewable energy systems.
  - D) The author's only reservation is about the profitability of renewable energy systems.
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**Q.3) Instructions**

The passage below is accompanied by a set of questions. Choose the best answer to each question.

In a low-carbon world, renewable energy technologies are hot business. For investors looking to redirect funds, wind turbines and solar panels, among other technologies, seem a straightforward choice. But renewables need to be further scrutinized before being championed as forging a path toward a low-carbon future. Both the direct and indirect impacts of renewable energy must be examined to ensure that a climate-smart future does not intensify social and environmental harm. As renewable energy production requires land, water, and labor, among other inputs, it imposes costs on people and the environment. Hydropower projects, for instance, have led to community dispossession and exclusion . . . Renewable energy supply chains are also intertwined with mining, and their technologies contribute to growing levels of electronic waste . Furthermore, although renewable energy can be produced and distributed through small-scale, local systems, such an approach might not generate the high returns on investment needed to attract capital.

Although an emerging sector, renewables are enmeshed in long-standing resource extraction through their dependence on minerals and metals . . . Scholars document the negative consequences of mining . . . even for mining operations that commit to socially responsible practices[:] “many of the world’s largest reservoirs of minerals like cobalt, copper, lithium, [and] rare earth minerals”—the ones needed for renewable technologies—“are found in fragile states and under communities of marginalized peoples in Africa, Asia, and Latin America.” Since the demand for metals and minerals will increase substantially in a renewable-powered future . . . this intensification could exacerbate the existing consequences of extractive activities.

Among the connections between climate change and waste, O’Neill . . . highlights that “devices developed to reduce our carbon footprint, such as lithium batteries for hybrid and electric cars or solar panels[,] become potentially dangerous electronic waste at the end of their productive life.” The disposal of toxic waste has long perpetuated social injustice through the flows of waste to the Global South and to marginalized communities in the Global North . .

While renewable energy is a more recent addition to financial portfolios, investments in the sector must be considered in light of our understanding of capital accumulation. As agricultural finance reveals, the concentration of control of corporate activity facilitates profit generation. For some climate activists, the promise of renewables rests on their ability not only to reduce emissions but also to provide distributed, democratized access to energy . . . But Burke and Stephens . . . caution that “renewable energy systems offer a possibility but not a certainty for more democratic energy futures.” Small-scale, distributed forms of energy are only highly profitable to institutional investors if control is consolidated somewhere in the financial chain. Renewable energy can be produced at the household or neighborhood level. However, such small-scale, localized production is unlikely to generate high returns for investors. For financial growth to be sustained and expanded by the renewable sector, production and trade in renewable energy technologies will need to be highly concentrated, and large asset management firms will likely drive those developments.

**Question:-**

Which one of the following statements, if false, could be seen as best supporting the arguments in the passage?

- A) Renewable energy systems are as expensive as non-renewable energy systems.
- B) Renewable energy systems have little or no environmental impact.
- C) Renewable energy systems are not as profitable as non-renewable energy systems.
- D) The production and distribution of renewable energy through small-scale, local systems is not economically sustainable.

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**Q.4) Instructions**

The passage below is accompanied by a set of questions. Choose the best answer to each question.

In a low-carbon world, renewable energy technologies are hot business. For investors looking to redirect funds, wind turbines and solar panels, among other technologies, seem a straightforward choice. But renewables need to be further scrutinized before being championed as forging a path toward a low-carbon future. Both the direct and indirect impacts of renewable energy must be examined to ensure that a climate-smart future does not intensify social and environmental harm. As renewable energy production requires land, water, and labor, among other inputs, it imposes costs on people and the environment. Hydropower projects, for instance, have led to community dispossession and exclusion . . . Renewable energy supply chains are also intertwined with mining, and their technologies contribute to growing levels of electronic waste . Furthermore, although renewable energy can be produced and distributed through small-scale, local systems, such an approach might not generate the high returns on investment needed to attract capital.

Although an emerging sector, renewables are enmeshed in long-standing resource extraction through their dependence on minerals and metals . . . Scholars document the negative consequences of mining . . . even for mining operations that commit to socially responsible practices[:] “many of the world’s largest reservoirs of minerals like cobalt, copper, lithium, [and] rare earth minerals”—the ones needed for renewable

technologies—“are found in fragile states and under communities of marginalized peoples in Africa, Asia, and Latin America.” Since the demand for metals and minerals will increase substantially in a renewable-powered future . . . this intensification could exacerbate the existing consequences of extractive activities.

Among the connections between climate change and waste, O’Neill . . . highlights that “devices developed to reduce our carbon footprint, such as lithium batteries for hybrid and electric cars or solar panels[,] become potentially dangerous electronic waste at the end of their productive life.” The disposal of toxic waste has long perpetuated social injustice through the flows of waste to the Global South and to marginalized communities in the Global North . . .

While renewable energy is a more recent addition to financial portfolios, investments in the sector must be considered in light of our understanding of capital accumulation. As agricultural finance reveals, the concentration of control of corporate activity facilitates profit generation. For some climate activists, the promise of renewables rests on their ability not only to reduce emissions but also to provide distributed, democratized access to energy . . . But Burke and Stephens . . . caution that “renewable energy systems offer a possibility but not a certainty for more democratic energy futures.” Small-scale, distributed forms of energy are only highly profitable to institutional investors if control is consolidated somewhere in the financial chain. Renewable energy can be produced at the household or neighborhood level. However, such small-scale, localized production is unlikely to generate high returns for investors. For financial growth to be sustained and expanded by the renewable sector, production and trade in renewable energy technologies will need to be highly concentrated, and large asset management firms will likely drive those developments.

**Question:-**

All of the following statements, if true, could be seen as supporting the arguments in the passage, EXCEPT:

- A) The example of agricultural finance helps us to see how to concentrate corporate activity in the renewable energy sector.
- B) One reason for the perpetuation of social injustice lies in the problem of the disposal of toxic waste.
- C) Marginalised people in Africa, Asia and Latin America have often been the main sufferers of corporate mineral extraction projects
- D) The possible negative impacts of renewable energy need to be studied before it can be offered as a financial investment opportunity.

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**Q.5) Instructions**

The passage below is accompanied by a set of questions. Choose the best answer to each question.

Aggression is any behavior that is directed toward injuring, harming, or inflicting pain on another living being or group of beings. Generally, the victim(s) of aggression must wish to avoid such behavior in order for it to be considered true aggression. Aggression is also categorized according to its ultimate intent. Hostile aggression is an aggressive act that

results from anger, and is intended to inflict pain or injury because of that anger. Instrumental aggression is an aggressive act that is regarded as a means to an end other than pain or injury. For example, an enemy combatant may be subjected to torture in order to extract useful intelligence, though those inflicting the torture may have no real feelings of anger or animosity toward their subject. The concept of aggression is very broad, and includes many categories of behavior (e.g., verbal aggression, street crime, child abuse, spouse abuse, group conflict, war, etc.). A number of theories and models of aggression have arisen to explain these diverse forms of behavior, and these theories/models tend to be categorized according to their specific focus. The most common system of categorization groups the various approaches to aggression into three separate areas, based upon the three key variables that are present whenever any aggressive act or set of acts is committed. The first variable is the aggressor him/herself. The second is the social situation or circumstance in which the aggressive act(s) occur. The third variable is the target or victim of aggression. Regarding theories and research on the aggressor, the fundamental focus is on the factors that lead an individual (or group) to commit aggressive acts. At the most basic level, some argue that aggressive urges and actions are the result of inborn, biological factors. Sigmund Freud (1930) proposed that all individuals are born with a death instinct that predisposes us to a variety of aggressive behaviors, including suicide (self directed aggression) and mental illness (possibly due to an unhealthy or unnatural suppression of aggressive urges). Other influential perspectives supporting a biological basis for aggression conclude that humans evolved with an abnormally low neural inhibition of aggressive impulses (in comparison to other species), and that humans possess a powerful instinct for property accumulation and territorialism. It is proposed that this instinct accounts for hostile behaviors ranging from minor street crime to world wars. Hormonal factors also appear to play a significant role in fostering aggressive tendencies. For example, the hormone testosterone has been shown to increase aggressive behaviors when injected into animals. Men and women convicted of violent crimes also possess significantly higher levels of testosterone than men and women convicted of non violent crimes. Numerous studies comparing different age groups, racial/ethnic groups, and cultures also indicate that men, overall, are more likely to engage in a variety of aggressive behaviors (e.g., sexual assault, aggravated assault, etc.) than women. One explanation for higher levels of aggression in men is based on the assumption that, on average, men have higher levels of testosterone than women. **Question:-** All of the following statements can be seen as logically implied by the arguments of the passage, EXCEPT:

- A)** a common theory of aggression is that it is the result of an abnormally low neural regulation of testosterone.
- B)** if the alleged aggressive act is not sought to be avoided, it cannot really be considered aggression.
- C)** Freud's theory of aggression proposes that aggression results from the suppression of aggressive urges.

D) the Freudian theory of suicide as self-inflicted aggression implies that an aggressive act need not be sought to be avoided in order for it to be considered aggression.

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**Q.6) Instructions** The passage below is accompanied by a set of questions. Choose the best answer to each question. Aggression is any behavior that is directed toward injuring, harming, or inflicting pain on another living being or group of beings. Generally, the victim(s) of aggression must wish to avoid such behavior in order for it to be considered true aggression. Aggression is also categorized according to its ultimate intent. Hostile aggression is an aggressive act that results from anger, and is intended to inflict pain or injury because of that anger. Instrumental aggression is an aggressive act that is regarded as a means to an end other than pain or injury. For example, an enemy combatant may be subjected to torture in order to extract useful intelligence, though those inflicting the torture may have no real feelings of anger or animosity toward their subject. The concept of aggression is very broad, and includes many categories of behavior (e.g., verbal aggression, street crime, child abuse, spouse abuse, group conflict, war, etc.). A number of theories and models of aggression have arisen to explain these diverse forms of behavior, and these theories/models tend to be categorized according to their specific focus. The most common system of categorization groups the various approaches to aggression into three separate areas, based upon the three key variables that are present whenever any aggressive act or set of acts is committed. The first variable is the aggressor him/herself. The second is the social situation or circumstance in which the aggressive act(s) occur. The third variable is the target, or victim, of aggression. Regarding theories and research on the aggressor, the fundamental focus is on the factors that lead an individual (or group) to commit aggressive acts. At the most basic level, some argue that aggressive urges and actions are the result of inborn, biological factors. Sigmund Freud (1930) proposed that all individuals are born with a death instinct that predisposes us to a variety of aggressive behaviors, including suicide (self directed aggression) and mental illness (possibly due to an unhealthy or unnatural suppression of aggressive urges). Other influential perspectives supporting a biological basis for aggression conclude that humans evolved with an abnormally low neural inhibition of aggressive impulses (in comparison to other species), and that humans possess a powerful instinct for property accumulation and territorialism. It is proposed that this instinct accounts for hostile behaviors ranging from minor street crime to world wars. Hormonal factors also appear to play a significant role in fostering aggressive tendencies. For example, the hormone testosterone has been shown to increase aggressive behaviors when injected into animals. Men and women convicted of violent crimes also possess significantly higher levels of testosterone than men and women convicted of non violent crimes. Numerous studies comparing different age groups, racial/ethnic groups, and cultures also indicate that men, overall, are more likely to engage in a variety of aggressive behaviors (e.g., sexual assault, aggravated assault, etc.) than women. One explanation for higher levels of aggression in men is based on the assumption that, on average, men have higher levels of testosterone than women.

**Question:-**

The author identifies three essential factors according to which theories of aggression are most commonly categorised. Which of the following options is closest to the factors identified by the author?

A) Aggressor - Circumstances of aggression - Victim.

B) Psychologically - Sociologically - Medically.

C) Hostile - Instrumental - Hormonal.

D) Extreme - Moderate - Mild.

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### Q.7) Instructions

The passage below is accompanied by a set of questions. Choose the best answer to each question. Aggression is any behavior that is directed toward injuring, harming, or inflicting pain on another living being or group of beings. Generally, the victim(s) of aggression must wish to avoid such behavior in order for it to be considered true aggression. Aggression is also categorized according to its ultimate intent. Hostile aggression is an aggressive act that results from anger, and is intended to inflict pain or injury because of that anger. Instrumental aggression is an aggressive act that is regarded as a means to an end other than pain or injury. For example, an enemy combatant may be subjected to torture in order to extract useful intelligence, though those inflicting the torture may have no real feelings of anger or animosity toward their subject. The concept of aggression is very broad, and includes many categories of behavior (e.g., verbal aggression, street crime, child abuse, spouse abuse, group conflict, war, etc.). A number of theories and models of aggression have arisen to explain these diverse forms of behavior, and these theories/models tend to be categorized according to their specific focus. The most common system of categorization groups the various approaches to aggression into three separate areas, based upon the three key variables that are present whenever any aggressive act or set of acts is committed. The first variable is the aggressor him/herself. The second is the social situation or circumstance in which the aggressive act(s) occur. The third variable is the target or victim of aggression. Regarding theories and research on the aggressor, the fundamental focus is on the factors that lead an individual (or group) to commit aggressive acts. At the most basic level, some argue that aggressive urges and actions are the result of inborn, biological factors. Sigmund Freud (1930) proposed that all individuals are born with a death instinct that predisposes us to a variety of aggressive behaviors, including suicide (self directed aggression) and mental illness (possibly due to an unhealthy or unnatural suppression of aggressive urges). Other influential perspectives supporting a biological basis for aggression conclude that humans evolved with an abnormally low neural inhibition of aggressive impulses (in comparison to other species), and that humans possess a powerful instinct for property accumulation and territorialism. It is proposed that this instinct accounts for hostile behaviors ranging from minor street crime to world wars. Hormonal factors also appear to play a significant role in fostering aggressive tendencies. For example, the hormone testosterone has been shown to increase aggressive behaviors when injected into animals.

Men and women convicted of violent crimes also possess significantly higher levels of testosterone than men and women convicted of non violent crimes. Numerous studies comparing different age groups, racial/ethnic groups, and cultures also indicate that men, overall, are more likely to engage in a variety of aggressive behaviors (e.g., sexual assault, aggravated assault, etc.) than women. One explanation for higher levels of aggression in men is based on the assumption that, on average, men have higher levels of testosterone than women.

**Question:-**

“[A]n enemy combatant may be subjected to torture in order to extract useful intelligence, though those inflicting the torture may have no real feelings of anger or animosity toward their subject.” Which one of the following best explicates the larger point being made by the author here?

- A) In certain kinds of aggression, inflicting pain is not the objective, and is no more than a utilitarian means to achieve another end.
- B) Information revealed by subjecting an enemy combatant to torture is not always reliable because of the animosity involved.
- C) When an enemy combatant refuses to reveal information, the use of torture can sometimes involve real feelings of hostility.
- D) The use of torture to extract information is most effective when the torturer is not emotionally involved in the torture.

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**Q.8) Instructions**

The passage below is accompanied by a set of questions. Choose the best answer to each question.

Aggression is any behavior that is directed toward injuring, harming, or inflicting pain on another living being or group of beings. Generally, the victim(s) of aggression must wish to avoid such behavior in order for it to be considered true aggression. Aggression is also categorized according to its ultimate intent. Hostile aggression is an aggressive act that results from anger, and is intended to inflict pain or injury because of that anger. Instrumental aggression is an aggressive act that is regarded as a means to an end other than pain or injury. For example, an enemy combatant may be subjected to torture in order to extract useful intelligence, though those inflicting the torture may have no real feelings of anger or animosity toward their subject. The concept of aggression is very broad, and includes many categories of behavior (e.g., verbal aggression, street crime, child abuse, spouse abuse, group conflict, war, etc.). A number of theories and models of aggression have arisen to explain these diverse forms of behavior, and these theories/models tend to be categorized according to their specific focus. The most common system of categorization groups the various approaches to aggression into three separate areas, based upon the three key variables that are present whenever any aggressive act or set of acts is committed.

The first variable is the aggressor him/herself. The second is the social situation or circumstance in which the aggressive act(s) occur.

The third variable is the target or victim of aggression.

Regarding theories and research on the aggressor, the fundamental focus is on the factors that lead an individual (or group) to commit aggressive acts. At the most basic level, some argue that aggressive urges and actions are the result of inborn, biological factors. Sigmund Freud (1930) proposed that all individuals are born with a death instinct that predisposes us to a variety of aggressive behaviors, including suicide (self directed aggression) and mental illness (possibly due to an unhealthy or unnatural suppression of aggressive urges). Other influential perspectives supporting a biological basis for aggression conclude that humans evolved with an abnormally low neural inhibition of aggressive impulses (in comparison to other species), and that humans possess a powerful instinct for property accumulation and territorialism. It is proposed that this instinct accounts for hostile behaviors ranging from minor street crime to world wars. Hormonal factors also appear to play a significant role in fostering aggressive tendencies. For example, the hormone testosterone has been shown to increase aggressive behaviors when injected into animals. Men and women convicted of violent crimes also possess significantly higher levels of testosterone than men and women convicted of non violent crimes. Numerous studies comparing different age groups, racial/ethnic groups, and cultures also indicate that men, overall, are more likely to engage in a variety of aggressive behaviors (e.g., sexual assault, aggravated assault, etc.) than women. One explanation for higher levels of aggression in men is based on the assumption that, on average, men have higher levels of testosterone than women. **Question:-** The author discusses all of the following arguments in the passage, EXCEPT that:

- A) men in general are believed to be more hormonally driven to exhibit violence than women.
- B) several studies indicate that aggression may have roots in the biological condition of humanity.
- C) aggression in most societies is kept under control through moderating the death instinct identified by Freud.
- D) the nature of aggression can vary depending on several factors, including intent.

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**Q.9) Direction:**

The passage below is accompanied by a set of questions. Choose the best answer to each question.

Humans today make music. Think beyond all the qualifications that might trail after this bald statement: that only certain humans make music, that extensive training is involved, that many societies distinguish musical specialists from nonmusicians, that in today's societies most listen to music rather than making it, and so forth. These qualifications, whatever their local merit, are moot in the face of the overarching truth that making music, considered from a cognitive and psychological vantage, is the province of all those who perceive and experience what is made. We are, almost all of us, musicians — everyone who can entrain (not necessarily dance) to a beat, who can recognize a repeated tune (not necessarily sing

it), who can distinguish one instrument or one singing voice from another. I will often use an antique word, recently revived, to name this broader musical experience. Humans are musicking creatures. . . .

The set of capacities that enable musicking is a principal marker of modern humanity. There is nothing polemical in this assertion except a certain insistence, which will figure often in what follows, that music be included in our thinking about fundamental human commonalities. The capacities involved in musicking are many and take shape in complicated ways, arising from innate dispositions . . . Most of these capacities overlap with nonmusical ones, though a few may be distinct and dedicated to musical perception and production. In the area of overlap, linguistic capacities seem to be particularly important, and humans are (in principle) language-makers in addition to music-makers — speaking creatures as well as musicking ones.

Humans are symbol-makers too, a feature tightly bound up with language, not so tightly with music. The species Cassirer dubbed *Homo symbolicus* cannot help but tangle musicking in webs of symbolic thought and expression, habitually making it a component of behavioral complexes that form such expression. But in fundamental features, music is neither language-like nor symbol-like, and from these differences come many clues to its ancient emergence.

If musicking is a primary, shared trait of modern humans, then to describe its emergence must be to detail the coalescing of that modernity. This took place, archaeologists are clear, over a very long duration: at least 50,000 years or so, more likely something closer to 200,000, depending in part on what that coalescence is taken to comprise. If we look back 20,000 years, a small portion of this long period, we see the lives of humans whose musical capacities were probably a little different from our own. As we look farther back we reach horizons where this similarity can no longer hold — perhaps 40,000 years ago, perhaps 70,000, perhaps 100,000. But we never cross a line before which all the cognitive capacities recruited in modern musicking abruptly disappear. Unless we embrace the incredible notion that music sprang forth in full-blown glory, its emergence will have to be tracked in gradualist terms across a long period.

This is one general feature of a history of music's emergence . . . The history was at once sociocultural and biological . . . The capacities recruited in musicking are many, so describing its emergence involves following several or many separate strands.

**Question:**

Which one of the following sets of terms best serves as a keyword for the passage?

- A) Musicking; Cognitive psychology; Antique; Symbol-makers; Modernity.
- B) Humans; Capacities; Language; Symbols; Modernity.
- C) Humans; Musicking; Linguistic capacities; Symbol-making; Modern humanity.
- D) Humans; Psychological vantage; Musicking; Cassirer; Emergence of music.

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**Q.10) Direction:** The passage below is accompanied by a set of questions. Choose the best answer to each question.

Humans today make music. Think beyond all the qualifications that might trail after this bald statement: that only certain humans make music, that extensive training is involved, that many societies distinguish musical specialists from nonmusicians, that in today's societies most listen to music rather than making it, and so forth. These qualifications, whatever their local merit, are moot in the face of the overarching truth that making music, considered from a cognitive and psychological vantage, is the province of all those who perceive and experience what is made. We are, almost all of us, musicians — everyone who can entrain (not necessarily dance) to a beat, who can recognize a repeated tune (not necessarily sing it), who can distinguish one instrument or one singing voice from another. I will often use an antique word, recently revived, to name this broader musical experience. Humans are musicking creatures. . . .

The set of capacities that enable music is a principal marker of modern humanity. There is nothing polemical in this assertion except a certain insistence, which will figure often in what follows, that music be included in our thinking about fundamental human commonalities. Capacities involved in musicking are many and take shape in complicated ways, arising from innate dispositions . . . Most of these capacities overlap with nonmusical ones, though a few may be distinct and dedicated to musical perception and production. In the area of overlap, linguistic capacities seem to be particularly important, and humans are (in principle) language-makers in addition to music-makers — speaking creatures as well as musicking ones.

Humans are symbol-makers too, a feature tightly bound up with language, not so tightly with music. The species Cassirer dubbed *Homo symbolicus* cannot help but tangle musicking in webs of symbolic thought and expression, habitually making it a component of behavioral complexes that form such expression. But in fundamental features music is neither language-like nor symbol-like, and from these differences come many clues to its ancient emergence.

If musicking is a primary, shared trait of modern humans, then to describe its emergence must be to detail the coalescing of that modernity. This took place, archaeologists are clear, over a very long duration: at least 50,000 years or so, more likely something closer to 200,000, depending in part on what that coalescence is taken to comprise. If we look back 20,000 years, a small portion of this long period, we reach the lives of humans whose musical capacities were probably a little different from our own. As we look farther back we reach horizons where this similarity can no longer hold — perhaps 40,000 years ago, perhaps 70,000, perhaps 100,000. But we never cross a line before which all the cognitive capacities recruited in modern music abruptly disappear. Unless we embrace the incredible notion that music sprang forth in full-blown glory, its emergence will have to be tracked in gradualist terms across a long period.

This is one general feature of a history of music's emergence . . . The history was at once sociocultural and biological . . . The capacities recruited in musicking are many, so describing its emergence involves following several or many separate strands.

**Question:**

“Think beyond all the qualifications that might trail after this bald statement . . .” In the context of the passage, what is the author trying to communicate in this quoted extract?

- A) A bald statement is one that is trailed by a series of qualifying clarifications and caveats.
  - B) A bald statement is one that requires no qualifications to infer its meaning.
  - C) Although there may be many caveats and other considerations, the statement is essentially true.
  - D) Thinking beyond qualifications allows us to give free reign to musical expressions.
- 
- 

**Q.11) Direction:**

The passage below is accompanied by a set of questions. Choose the best answer to each question.

Humans today make music. Think beyond all the qualifications that might trail after this bald statement: that only certain humans make music, that extensive training is involved, that many societies distinguish musical specialists from nonmusicians, that in today’s societies most listen to music rather than making it, and so forth. These qualifications, whatever their local merit, are moot in the face of the overarching truth that making music, considered from a cognitive and psychological vantage, is the province of all those who perceive and experience what is made. We are, almost all of us, musicians — everyone who can entrain (not necessarily dance) to a beat, who can recognize a repeated tune (not necessarily sing it), who can distinguish one instrument or one singing voice from another. I will often use an antique word, recently revived, to name this broader musical experience. Humans are musicking creatures. . . .

The set of capacities that enable music is a principal marker of modern humanity. There is nothing polemical in this assertion except a certain insistence, which will figure often in what follows, that music be included in our thinking about fundamental human commonalities. The capacities involved in musicking are many and take shape in complicated ways, arising from innate dispositions . . . Most of these capacities overlap with nonmusical ones, though a few may be distinct and dedicated to musical perception and production. In the area of overlap, linguistic capacities seem to be particularly important, and humans are (in principle) language-makers in addition to music-makers — speaking creatures as well as music ones. Humans are symbol-makers too, a feature tightly bound up with language, not so tightly with music. The species Cassirer dubbed *Homo symbolicus* cannot help but tangle musicking in webs of symbolic thought and expression, habitually making it a component of behavioral complexes that form such expression. But in fundamental features, music is neither language-like nor symbol-like, and from these differences come many clues to its ancient emergence.

If musicking is a primary, shared trait of modern humans, then to describe its emergence must be to detail the coalescing of that modernity. This took place, archaeologists are clear, over a very long duration: at least 50,000 years or so, more likely something closer to 200,000, depending in part on what that coalescence is taken to comprise. If we look back 20,000 years, a small portion of this long period, we reach the lives of humans whose musical capacities were probably little different from our own. As we look farther back we reach horizons where this similarity can no longer hold — perhaps 40,000 years ago, perhaps 70,000, perhaps 100,000. But we never cross a line before which all the cognitive capacities recruited in modern music abruptly disappear. Unless we embrace the incredible notion that music sprang forth in full-blown glory, its emergence will have to be tracked in gradualist terms across a long period.

This is one general feature of a history of music's emergence . . . The history was at once sociocultural and biological . . . The capacities recruited in musicking are many, so describing its emergence involves following several or many separate strands.

**Question:**

Based on the passage, which one of the following statements is a valid argument about the emergence of music/musicking?

- A) Anyone who can perceive and experience music must be considered capable of musicking.
- B) Although musicking is not language-like, it shares the quality of being a form of expression.
- C) 20,000 years ago, human musical capacities were not very different from what they are today.
- D) All musical work is located in the overlap between linguistic capacity and music production.

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**Q.12) Direction:**

The passage below is accompanied by a set of questions. Choose the best answer to each question.

Humans today make music. Think beyond all the qualifications that might trail after this bald statement: that only certain humans make music, that extensive training is involved, that many societies distinguish musical specialists from nonmusicians, that in today's societies most listen to music rather than making it, and so forth. These qualifications, whatever their local merit, are moot in the face of the overarching truth that making music, considered from a cognitive and psychological vantage, is the province of all those who perceive and experience what is made. We are, almost all of us, musicians — everyone who can entrain (not necessarily dance) to a beat, who can recognize a repeated tune (not necessarily sing it), who can distinguish one instrument or one singing voice from another. I will often use an antique word, recently revived, to name this broader musical experience. Humans are musicking creatures. . . .

The set of capacities that enables music is a principal marker of modern humanity. There is nothing polemical in this assertion except a certain insistence, which will figure often in what follows, that musicking be included in our thinking about fundamental human commonalities. Capacities involved in musicking are many and take shape in complicated ways, arising from innate dispositions . . . Most of these capacities overlap with nonmusical ones, though a few may be distinct and dedicated to musical perception and production. In the area of overlap, linguistic capacities seem to be particularly important, and humans are (in principle) language-makers in addition to music-makers — speaking creatures as well as musicking ones.

Humans are symbol-makers too, a feature tightly bound up with language, not so tightly with music. The species Cassirer dubbed *Homo symbolicus* cannot help but tangle musicking in webs of symbolic thought and expression, habitually making it a component of behavioral complexes that form such expression. But in fundamental features music is neither language-like nor symbol-like, and from these differences come many clues to its ancient emergence.

If musicking is a primary, shared trait of modern humans, then to describe its emergence must be to detail the coalescing of that modernity. This took place, archaeologists are clear, over a very long *durée*: at least 50,000 years or so, more likely something closer to 200,000, depending in part on what that coalescence is taken to comprise. If we look back 20,000 years, a small portion of this long period, we reach the lives of humans whose musical capacities were probably little different from our own. As we look farther back we reach horizons where this similarity can no longer hold — perhaps 40,000 years ago, perhaps 70,000, perhaps 100,000. But we never cross a line before which all the cognitive capacities recruited in modern music abruptly disappear. Unless we embrace the incredible notion that music sprang forth in full-blown glory, its emergence will have to be tracked in gradualist terms across a long period.

This is one general feature of a history of music's emergence . . . The history was at once sociocultural and biological . . . The capacities recruited in musicking are many, so describing its emergence involves following several or many separate strands.

**Question:**

Which one of the following statements, if true, would weaken the author's claim that humans are musicking creatures?

- A)** Nonmusical capacities are of far greater consequence to human survival than the capacity for music.
- B)** From a cognitive and psychological vantage, musicking arises from unconscious dispositions, not conscious ones.
- C)** As musicking is neither language-like nor symbol-like, it is a much older form of expression.
- D)** Musical capacities are primarily socio-cultural, which explains the wide diversity of musical forms.

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**Q.13) Directions:** In the following question, a sentence is given with a blank that is to be filled in with an appropriate word. Four alternatives are suggested; choose the correct alternative out of them as your answer.

Eight cylinder engines are \_\_\_\_\_ that use great amount of petrol.

- A) conveyances
  - B) devices
  - C) instruments
  - D) apparatus
- 
- 

**Q.14) Directions:** In the following question, a sentence is given with a blank that is to be filled in with an appropriate word. Four alternatives are suggested; choose the correct alternative out of them as your answer.

\_\_\_ man standing in that corner is a police man in plain clothes.

- A) Some
  - B) Any
  - C) A
  - D) The
- 
- 

**Q.15) Directions:** In the following question, a sentence is given with a blank that is to be filled in with an appropriate word. Four alternatives are suggested; choose the correct alternative out of them as your answer. Never \_\_\_ met any girl so beautiful.

- A) have I
  - B) I have
  - C) I had
  - D) did I
- 
-

**Q.16) Directions:** In the following question, a sentence is given with a blank that is to be filled in with an appropriate word. Four alternatives are suggested; choose the correct alternative out of them as your answer.

The relation between the Indian P.M. and the U.S. President is perfectly \_\_\_\_\_.

- A) excellent
- B) smooth
- C) informed
- D) cordial

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**Q.17) Directions:** In the following question, a sentence is given with a blank that is to be filled in with an appropriate word. Four alternatives are suggested; choose the correct alternative out of them as your answer.

The army has been \_\_\_\_\_ to be ready to control the floods.

- A) alerted
- B) warned
- C) awakened
- D) wanted

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**Q.18) Directions:** In the following question, a sentence is given with a blank that is to be filled in with an appropriate word. Four alternatives are suggested; choose the correct alternative out of them as your answer.

The traditional way of saying that you feel fine is to say that you are \_\_\_\_\_.

- A) alright
- B) all collect
- C) all good
- D) all right

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**Q.19) Directions:** In the following question, a sentence is given with a blank that is to be filled in with an appropriate word. Four alternatives are suggested; choose the correct alternative out of them as your answer.

The quake also \_\_\_\_ mud-slides on the outskirts of the city.

- A) Tempered B) Tampered C) Erupted D) Triggered**
- 
- 

**Q.20) In** each of the questions given below four words are given in bold. These four words may or may not be in their correct position. The sentence is then followed by options with the correct combination of words that should replace each other in order to make the sentence grammatically and contextually correct. Find the correct combination of the words that replace each other. If the sentence is correct as it then select option (e) as your choice. It said many protected (A) measures had been ensure (B) since then to introduced (C) that young people were positive (D).

- A) BOTH A-C and B-D**  
**B) BOTH A-D and B-C**  
**C) ONLY A-B**  
**(D) C-D**  
**E) The sentence D is correct**
- 
- 

**Q.21) In** each of the questions given below four words are given in bold. These four words may or may not be in their correct position. The sentence is then followed by options with the correct combination of words that should replace each other in order to make the sentence grammatically and contextually correct. Find the correct combination of the words that replace each other. If the sentence is correct as it then select option (e) as your choice. There are a technical (A) of coaches, back-up coaches and tactical and multitude (B) thinkers rugby (C) their lives trying to change spending (D) for the better.

- A) A-B and C-D**  
**B) Only B-C**  
**C) A-C and B-D**  
**D) A-D**

E) The sentence is correct

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**Q.22)** In each of the questions given below four words are given in bold. These four words may or may not be in their correct position. The sentence is then followed by options with the correct combination of words that should replace each other in order to make the sentence grammatically and contextually correct. Find the correct combination of the words that replace each other. If the sentence is correct as it then select option (e) as your choice. In doing so they found (A) that, just as in forests on land (B), there were distinct choruses (C) at different times (D) of the day.

A) Only A-B

B) Only A-D

C) Both A-B and B-D D) The sentence is correct E) Both A-C and B-D

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**Q.23)** In each of the questions given below four words are given in bold. These four words may or may not be in their correct position. The sentence is then followed by options with the correct combination of words that should replace each other in order to make the sentence grammatically and contextually correct. Find the correct combination of the words that replace each other. If the sentence is correct as it then select option (e) as your choice. The minds (A) of sleep our bodies and amount (B) need may be different to the amount of sleep we think (C) we ought(D) to have.

A) A-B

B) A-C

C) B-C and A-D

D) A-D

E) The sentence is correct

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**Q.24)** In the following question, some part of the sentence may have errors. Find out which part of the sentence has an error and select the appropriate option. If a sentence is free from

error, select 'No Error'. Seeta complimented Rohan A/ for his success B/ in the examination.  
C/ no error D

**A)A B)B C)C D)D**

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**Q.25) Directions for the Question:** The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Question: The question below has a paragraph given with one sentence missing at the end.

From

among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Snowden knew at that moment his old life was over. "It was scary but it was liberating," he said. "There was a sense of finality. There was no going back." What has happened in the five years since? He is one of the most famous fugitives in the world, the subject of an Oscar-winning documentary, a Hollywood movie, and at least a dozen books. Courts, on the basis of his revelations, have ruled surveillance by the US and UK governments illegal. New legislation has been passed in both countries. (\_\_\_\_\_)

**A)** The nations were shattered as all the secrets were floating online. **B)** The five years have

indeed affected his life as he has been on the run. The US has been trying to capture him.

**C)** The internet companies, responding to a public backlash over privacy, have made encryption commonplace.

**D)** breached badly.

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**Q.26) Directions for the Question:** The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

Question:

Its demise coincides with grime's eventual transformation into a mainstream genre. Rappers like Skepta are now regularly plastered across music video channels that once wouldn't air them, and this is perhaps in part what rendered the station redundant: black British music now dominates the charts, garners international acclaim and is embedded in British culture to an extent we've never seen before. But all this would have been impossible without Channel U. (\_\_\_\_\_)

**A)** Founded in 2003 by Darren Platt, the satellite channel sat at 385 and its position – huddled several clicks away from more mainstream channels like Kiss, The Box and MTV – was a perfect allegory for the scene it represented.

**B)** Even when artists were commercially successful, it didn't mean the mainstream were willing to give them airtime. Channel U did this.

**C)** Before its existence, fans relied on pirate radio stations, YouTube uploads, and audio files Blue toothed back and forth at the back of the bus; Channel AKA took the scene from phones to televisions.

**D)** It quickly became the home of the young and label-less, putting faces to the voices that lived in our Blackberrys.

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**Q.27) Directions for the Question:** The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

**Q-** Chris Grayling announced an inquiry into the timetable fiasco that has left passengers in northern and south-east England facing widespread cancellations and delays. In the face of calls for him to resign, Grayling told the Commons he had been personally assured by GTR that it was ready to deliver the new timetable, "as little as three weeks before". He repeated criticism of Network Rail, for overrunning engineering work and delays in approving the new timetables. But he said it was now "clear that GTR and Northern were not sufficiently prepared to manage a timetable change of this scale". (\_\_\_\_\_)

**A)** He blamed the Thameslink Readiness Board, an expert industry group set up to advise him, for not raising the apparent risks.

**B)** His actions were found unacceptable by the Minister and he demanded an explanation.

**C)** This caused a serious loss to the entire railway sector as it has been showing a lot of fluctuations here and there causing a widespread altercation in the railway ministry.

**D)** He accepted that there was a lack of planning on his side and he will solely take the responsibility for the confusion.

**Q.28) Directions for the Question:** The question below has a paragraph given with one sentence missing in at the end. From among the answer choices given, select the sentence that can fill the blank to form a coherent paragraph.

**Q-** North West, the oldest of Kim Kardashian and Kanye West's brood, may still have her age in single digits but her life is way more glamorous than most of ours. North will be turning all of 5 years old on 15th June and even before the D-day arrives, the little girl is being spoiled silly. And we aren't talking about new shoes or dollhouses. On Instagram, Kim Kardashian took to sharing birthday presents that North had received much before she turned a year older. The presents are from none other than designer Alexander Wang. The designer sent North two bags - a leopard print shoulder sling and another sparkling silver one, both mini sized for the little girl from his designer brand. (\_\_\_\_\_)

- A)** Along with it is a sweet note signed by the designer saying, "North happy birthday! Every girl needs a lil sparkle. Hope you <3 it. Alex"
- B)** These very expensive gifts have been winning a lot of tweets and it sure makes her parents happy.
- C)** Along with it, there were expensive gifts from other stars in the music and film industry. **D)**

A long list of gifts awaits her, and we need to focus on their relevance of them to sharpen our economics.

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**Q.29) The sentences below have words that are missing. Choose the best option from those given below to complete the sentences.**

\_\_\_\_\_ have to label their \_\_\_\_\_ posts in order to bring about transparency and \_\_\_\_\_ the interests of the customers.

- (a) Influencers; promotional; safeguard
- (b) Promoters; social media; incite
- (c) Distributors; Facebook; multiply
- (d) Advertisers; commercials; capture

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**Q.30)** Working from home requires that you may have to put your \_\_\_\_\_ life on \_\_\_\_\_. Some people find this very \_\_\_\_\_ as they like to keep their work and home lives separate.

- (a) actual; video; uncomfortable
- (b) private; screen; disconcerting

- (c) family; microscope; disturbing
  - (d) entire; camera; complicated
- 
- 

**Q.31)** In its early stages, dementia is often \_\_\_\_\_ from normal ageing, in which the older brain may naturally begin to show signs of cognitive impairment. Neither dementia nor cognitive ageing is currently \_\_\_\_\_, though they may be slowed through diet, exercise, and keeping the mind agile with social and intellectual activity.

- (a) indistinguishable; reversible
  - (b) irreversible; manageable
  - (c) differentiated; visible
  - (d) distinguishable; permanent
- 
- 

**Q.32)** The culture of the 21st century – on an increasingly \_\_\_\_\_ scale – is oriented around the practical principles of utility, effectiveness, and impact. Things are good to the extent that they are instrumental, with instrumentality usually defined as the capacity to produce money or things. The worth of anything – an idea, an activity, an artwork, a with another person – is determined \_\_\_\_\_.

- (a) global; relationship; pragmatically
  - (b) nominal; dinner; meaningfully
  - (c) conspicuous; dialogue; diligently
  - (d) ordinal; conversation; imaginatively
- 
- 

**Q.33)** The human resource chief said that the company will not \_\_\_\_\_ on investing in people and has \_\_\_\_\_ spending on employee needs in order to \_\_\_\_\_ them and provide them with a sense of stability and certainty.

- (a) debate; assured; confront
- (b) compromise; prioritised; reassure
- (c) delay; assured; empower
- (d) prioritise; compromised; include

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**Q.34)** In the alleyways of old Cairo, in its cafes, warehouses and barbershops, framed portraits of Egyptian icons are \_\_\_\_\_. Kings, presidents, religious and political figures are all \_\_\_\_\_ on fading walls, held up as symbols of a glorious past.

- (a) ubiquitous; immortalised
  - (b) fashionable; confounded
  - (c) rare; abundant
  - (d) substantial; dispersed
- 
- 

**One of the statements below contains a word used incorrectly or inappropriately.**

**Q.35)** Choose the option which has the incorrect or inappropriate usage of the word.

- (a) The musician would hear a cord in his head and play each note individually.
  - (b) Teenagers may feel a need to cut the umbilical cord tying them to their homes.
  - (c) To keep the key safe, she wore it on a cord around her neck.
  - (d) He purchased a cord of wood from the market.
- 
- 

**Q.36)** One of the statements below contains a word used incorrectly or inappropriately. Choose the option which has the incorrect or inappropriate usage of the word.

- (a) To catch the terrorist the security forces formed a ring around the house where he was hiding.
  - (b) They were all soaking wet and their mother told them to ring their clothes first and then put them out to dry.
  - (c) The witch waved her wand, recited a magical verse, pressed the blue stone on her ring and vanished into thin air.
  - (d) She had left home for the first time, so her parents made her promise that she would ring them up every day
- 
-

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**Q.37)** One of the statements below contains a word used incorrectly or inappropriately. Choose the option which has the incorrect or inappropriate usage of the word.

- (a) Under certain climatic conditions, hailstorms are formed in the atmosphere, resulting in unexpected accidents.
  - (b) Our products have to function in extreme weather conditions, which is why we put them through climatic testing.
  - (c) The passengers in the bus were sweating profusely because of the hot climatic conditions.
  - (d) The climatic moment of the match was when the captain got caught behind the wicket.
- 
- 

**Q.38)** One of the statements below contains a word used incorrectly or inappropriately. Choose the option which has the incorrect or inappropriate usage of the word.

- (a) It was a full moon night and the tide was high, but he went boating and, unfortunately, he drowned.
  - (b) The bags placed on the carrier were not securely tied, which led to an unfortunate accident.
  - (c) After many years of knowing one another, they eventually tied the knot.
  - (d) I have a good chance of a promotion since my firm has recently tied up with a global conglomerate.
- 
- 

**Q.39)** One of the statements below contains a word used incorrectly or inappropriately. Choose the option which has the incorrect or inappropriate usage of the word.

- (a) The politician was so flustered by the animosity of the crowd that he refused to answer further questions.
  - (b) I live farther away from college than all my classmates.
  - (c) If you need to farther your career, you should avoid all kinds of distractions.
  - (d) We need to discuss this problem right away and avoid letting it fester any further
- 
-

**Q.40)** One of the statements below contains a word used incorrectly or inappropriately. Choose the option which has the incorrect or inappropriate usage of the word.

- (a) When the witness was summoned by the lawyer, he made grave allegations against the accused.
  - (b) The landlord issued a warning to the tenants that non-payment of rent was a grave matter and would lead to a court case.
  - (c) They found that all the flowers placed on their mother's grave had withered within a week.
  - (d) The pet dog could not come to terms with his master's death and went to grave for him, even refusing to eat for several days.
- 
- 

**Q.41)** Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph. A. The movement began in reaction to the ugliness of the industrial age. B. This idea was amplified by JW von Goethe, JL Tieck and others in Germany. C. Aestheticism was a European arts movement which centred on the doctrine that art exists for the sake of its beauty alone. D. Its philosophical foundations were laid in the 18th century by Immanuel Kant.

**A) BADC B) CADB C) CBDA D) ADBC**

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**Q.42)** The sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph.

- A. Another boy tried his luck and won a comb, a fountain pen, a wristwatch, and a table lamp one after the other in the many chances that he played.
- B. An old man won a beautiful clock. The old man did not want the clock, so the shopkeeper took it back and paid 15 rupees to the old man.
- C. Bhaiya encouraged him, but Rasheed was not lucky when he tried his luck. He won only cheap items like pencils and an ink bottle, and soon lost all his money.
- D. He sold all the items to the shopkeeper and went away happily. Rasheed also wanted to play and try his luck.

**A) BADC**

B) DCAB

C) BDCA

D) BCDA

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**Q.43)** The sentences of a paragraph are given below in jumbled order. Arrange the sentences in the correct order to form a meaningful and coherent paragraph. A. "The most essential thing I learnt from 'Ready Now' was the need to have a backup plan in case of an emergency," she stated. B. The instruction, according to Nickola, was inspiring and confirmed her capacity to live effectively with a disability. C. I made sure I had a generator, wheelchair batteries, and at least a week's worth of food, water, and prescription medication." D. "When I heard about the impending snowstorm, I emailed all of my caregivers to see who lived nearby and would be accessible."

A) ADCB B) ACBD C) CDAB D) BCDA

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**Q.44) Directions for question:** In the following question, rearrange the five sentences in order to form a meaningful paragraph.

**Question:**

1. Early on, the law of the conservation of energy – the principle that the quantity of energy in the physical universe remains constant – clashed with the notion that bodily movement is explained by a non-physical mind injecting energy into the physical world.
2. And Charles Darwin's theory of evolution supported the idea that every aspect of human beings – including their mental capacities – evolved in response to physical selection pressures.
3. During the course of the 19th century, the Cartesian concept of mind-body dualism came under increasing pressure.
4. The study of aphasia, disorders of speech caused by lesions to the brain, showed that the mental faculty of language was intimately bound up with particular regions of the ball of nerve tissue between our ears.

- A) 3142
  - B) 1234
  - C) 4321
  - D) 3214
- 
- 

**Q.45) Directions for question:** In the following question, rearrange the five sentences in order to form a meaningful paragraph.

**Question:** 1. “Think Charlottesville couldn’t happen in the U.K.?” ran the headline in the prominent liberal magazine, The New Statesman, on Monday.

2. With the link drawn by U.S. President Donald Trump and others between his electoral campaign and that for Brexit, the events in Charlottesville have triggered some uncomfortable discussions in Britain.

3. He launched a stinging attack on Muslims, concluding with the question, “What will we do about The Muslim Problem then?”

4. It pointed, in particular, to a piece published in the right wing Rupert Murdoch-owned tabloid The Sun, by Trevor Kavanagh, the paper’s former political editor

- A) 2143 B) 1234 C) 4321 D) 3214**
- 
- 

### Answer Key

<b>Quantitative Aptitude Short Answer (SA) type</b>	<b>Quantitative Ability MCQ type</b>	<b>Verbal Ability &amp; Reading Comprehension</b>
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1	2 5	1	A	16	C	1	A	16	D	31	A
2	33	2	C	17	A	2	A	17	A	32	A
3	120	3	B	18	D	3	B	18	D	33	B
4	8155	4	B	19	D	4	D	19	D	34	A
5	5 90	5	B	20	D	5	A	20	D	35	A
6	1 3 3	6	B	21	C	6	A	21	A	36	B
7	20 1	7	D	22	B	7	A	22	D	37	D
8	14 3	8	A	23	B	8	C	23	A	38	A
9	6	9	B	24	C	9	C	24	B	39	C
10		10	C	25	B	10	C	25	C	40	D
11		11	B	26	D	11	C	26	A	41	B
12		12	A	27	D	12	D	27	A	42	A
13		13	A	28	C	13	B	28	A	43	A
14		14	C	29	C	14	D	29	A	44	A
15		15	A	30	C	15	A	30	B	45	A

## Solution

### Quantitative Aptitude Short Answer (SA) type

**Q.1)**

Range of function -

All possible values of the domain  $(f)$  is known as Range

$$f(x) = \frac{x}{\left(\frac{1}{x} + x\right)}$$

$$AM \geq GM$$

$$\Rightarrow \frac{1}{AM} \leq \frac{1}{GM} \quad \text{if } x > 0$$

$$f(x) \leq \frac{1}{2\left(\frac{1}{x} \times x\right)}$$

$$\Rightarrow f(x) \leq \frac{1}{2}$$

if  $x < 0$ ,

$$-AM \geq GM$$

$$\Rightarrow f(x) \geq -\frac{1}{2}$$

Range of  $f(x) \equiv \left[-\frac{1}{2}, \frac{1}{2}\right]$

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**Q.2)**

$$A = \begin{bmatrix} 5a & -b \\ 3 & 2 \end{bmatrix}$$

$$\Rightarrow \text{adj}(A) = \begin{bmatrix} 2 & b \\ -3 & 5a \end{bmatrix}$$

Hence,

$$\Rightarrow A \cdot \text{adj}(A) = \begin{bmatrix} 5a & -b \\ 3 & 2 \end{bmatrix} \begin{bmatrix} 2 & b \\ -3 & 5a \end{bmatrix} = \begin{bmatrix} 10a + 3b & 0 \\ 0 & 10a + 3b \end{bmatrix}$$

And

$$\Rightarrow AA^T = \begin{bmatrix} 5a & -b \\ 3 & 2 \end{bmatrix} \begin{bmatrix} 5a & 3 \\ -b & 2 \end{bmatrix} = \begin{bmatrix} 25a^2 + b^2 & 15a - 2b \\ 15a - 2b & 13 \end{bmatrix}$$

Given that these two matrices are equal, so by comparing the elements of these 2 matrices

$$15a - 2b = 0 \quad \text{and} \quad 10a + 3b = 13$$

$$\therefore a = \frac{2}{5} \quad \text{and} \quad b = 3$$

(Also for these values  $25a^2 + b^2 = 13$ , so these values are correct)

$$\therefore 5a + b = 2 + 3 = 5$$

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**Q.3)** Let the price of each pencil be Rs.  $x$  and price of each sharpens be Rs.  $y$

$$\text{Aron } y - x = 2 \Rightarrow \therefore x = y - 2$$

$$a(y - 2) + b(y) = 2a(y - 2) + (b - 10)y$$

$$10y = a(y - 2) \rightarrow (1)$$

$$\text{Required value} = 3a$$

$$\text{From (1)} \quad a = \frac{10y}{y - 2} \quad a \in \mathbb{I}^+$$

Its possible only when  $y = 22$

$$\therefore a = 11$$

$$\text{Required answer} = 33$$

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**Q.4)** Odd nos - 1,1,3

Even nos . - 2,2,2,4,4

Let us first find places for odd numbers

1,1,3 can come at any of the 4 even places (2nd, 4th, 6th and 8th)

First select three places for them in  ${}^4C_3$  ways (=4)

Now, 1,1,3 can be arranged in these 3 places in  $(3!)/(2!)$  ways (=3)

So, number of ways for arranging 1,1,3 =  $4 \times 3 = 12$

Now 2,2,2,4,4 can be arranged in remaining 5 places

Number of ways of doing that =  $5! / (3!)(2!) = 10$  ways

So total number of ways =  $12 \times 10 = 120$

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**Q.5)**

$$\sum_{r=16}^{30} (r + 2)(r - 2)$$

$$= \sum_{r=16}^{30} (r^2 - 4)$$

$$= (16^2 + 17^2 + 18^2 + \dots + 30^2) - 4 \times 15$$

$$\text{Now } 1^2 + 2^2 + 3^2 + \dots + 30^2 = \frac{30 \times 31 \times 61}{6}$$

$$\text{So that } 16^2 + 17^2 + \dots + 30^2$$

$$= \frac{30 \times 31 \times 61}{6} - (1^2 + 2^2 + \dots + 15^2)$$

$$= \frac{30 \times 31 \times 61}{6} - \frac{15 \times 16 \times 31}{6}$$

$$= \frac{31}{6} [1830 - 240]$$

$$= \frac{31}{6} \times 1590$$

$$= \frac{31}{6} \times 265$$

$$= 8215$$

$$\text{So } \sum_{r=16}^{30} (16^2 + 17^2 + \dots + 30^2) - 60$$

$$= 8215 - 60$$

$$= 8155$$

Q.6)

$$\begin{aligned} \because -\sqrt{2} &\leq \sin x - \cos x \leq \sqrt{2} \\ \Rightarrow -2 &\leq \sqrt{2}(\sin x - \cos x) \leq 2 \\ \Rightarrow m - 4 &\leq \sqrt{2}(\sin x - \cos x) + m - 2 \leq m \\ \Rightarrow \log_{\sqrt{m}}^{(m-4)} &\leq \log_{\sqrt{m}}^{\{\sqrt{2}(\sin x - \cos x) + m - 2\}} \leq \log_{\sqrt{m}}^m \\ &\Downarrow \\ &0 \\ \Rightarrow \log_{\sqrt{m}}^{(m-4)} &= 0 \\ \Rightarrow m &= 5 \end{aligned}$$

**Q.7)** Given: The two numbers are in the ratio 6 : 5.  
 Their HCF is 3.  
 Let the numbers be 6x and 5x  
 $\text{HCF}(6x, 5x) = x$   
 So,  $x = 3$   
 The numbers are 18 and 15.  
 $\text{LCM}(18, 15) = 90$   
 Hence, the correct answer is 90.

**Q.8)** We have

$$e = \frac{1}{2}$$

Directrix:  $x = -4$

$$-\frac{a}{e} = -4 \Rightarrow a = 4e$$

So,  $a = 2$

$$\text{Now, } b^2 = a^2(1 - e^2) = 3$$

Hence, the equation of the ellipse is

$$\frac{x^2}{4} + \frac{y^2}{3} = 1$$

Using point form of normal, the equation of normal at  $(1, \frac{3}{2})$  is

$$\frac{a^2x}{x_1} - \frac{b^2y}{y_1} = a^2 - b^2$$

$$\frac{4x}{1} - \frac{3y \cdot 2}{3} = 4 - 3$$

$$4x - 2y = 1$$

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**Q.9)** As we have learned

Sum of Roots in Quadratic Equation -

$$\alpha + \beta = \frac{-b}{a}$$

- wherein

$\alpha$  and  $\beta$  are root of quadratic equation

$$ax^2 + bx + c = 0$$

$$a, b, c \in C$$

Product of Roots in Quadratic Equation -

$$\alpha\beta = \frac{c}{a}$$

- wherein

$\alpha$  and  $\beta$  are roots of quadratic equation:

$$ax^2 + bx + c = 0$$

$$a, b, c \in C$$

We have ,

$$\frac{1}{\sqrt{\alpha}} + \frac{1}{\sqrt{\beta}} = \frac{-b}{a}$$

$$\frac{1}{\sqrt{\alpha\beta}} = 1/a$$

Now,  $x^2 - 3abx + b^3x + a^3 = 0$

$$\Rightarrow x^2 + (b^3 - 3ab)x + a^3 = 0$$

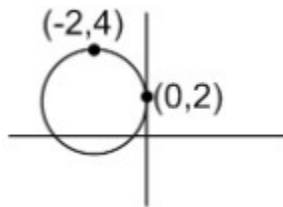
$$\left( \text{since } \alpha\beta = a^2 \text{ and } \frac{\sqrt{\alpha} + \sqrt{\beta}}{a} = -b/a \Rightarrow \sqrt{\alpha} + \sqrt{\beta} = -b \right)$$

$$\Rightarrow x^2 + (-\sqrt{\alpha} + \sqrt{\beta})((\sqrt{\alpha} + \sqrt{\beta})^2 - 3\sqrt{\alpha\beta})x + (\alpha\beta)^{3/2} = 0$$

$$\Rightarrow x^2 - (\sqrt{\alpha} + \sqrt{\beta})(\alpha + \beta - \sqrt{\alpha\beta})^{3/2} = 0$$

$$\Rightarrow x^2 - (\alpha^{3/2} + \beta^{3/2})x + (\alpha\beta)^{3/2} = 0$$

**Q.10)**



Using Family of circles, a circle touching a given line  $L=0$  at  $(x_1, y_1)$  is

$$(x - x_1)^2 + (y - y_1)^2 + \lambda L = 0$$

Since circle touches  $x=0$  at the point  $(0, 2)$ , so let the equation of circle be

$$(x - 0)^2 + (y - 2)^2 + \lambda x = 0$$

$$x^2 + y^2 - 4y + \lambda x + 4 = 0$$

It passes through  $(-2, 4)$

$$\text{Thus, } 4 + 16 - 16 - 2\lambda + 4 = 0$$

$$\lambda = 4$$

The equation of circle is

$$x^2 + y^2 - 4y + 4x + 4 = 0$$

Centre of the circle is (-2, 2)

equation of diameter is

$$2x - 3y + 10 = 0$$

Hence, the correct answer is 3.

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**Q.11)** To get the minimum marks Amit scored, let's assume the other people scored as high as possible.

$$\text{That is, then } A + 32 + 48 + 49 + 50 = 5 \times 38 = 190 \text{ then } A = 11$$

As only 3 people received more than 32 and Amit scored the least, the highest possible marks of Amit = 31 and the next person gets 32. Thus, the remaining 127 is distributed among the remaining 3 people.

$$\text{Difference} = 31 - 11 = 20$$

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**Q.12)** Given expansion is

$$\left( \frac{3}{\sqrt[3]{84}} + \sqrt{3} \ln x \right)^9$$

We have

$$T_{r+1} = {}^n C_r (x)^{n-r} a^r \text{ for } (x + a)^n$$

According to the question

$$T_7 = {}^9 C_6 \left( \frac{3}{\sqrt[3]{84}} \right)^3 \cdot (\sqrt{3} \ln x)^6 = 729$$

$$\Rightarrow 3^6 = 84 \times \frac{3^3}{84} \times 3^3 \times (6 \ln x)$$

$$\Rightarrow (\ln x)^6 = 1 \Rightarrow (\ln x)^6 = (\ln e)^6$$

$$\Rightarrow x = e$$

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**Q.13)**

Since  $0 < y < x < 2y$

$$\therefore y > x, x - y < \frac{x}{2}$$

$$\therefore x - y < y < x < 2x + y$$

$$\text{Hence median} = \frac{y + x}{2} = 10$$

$$x + y = 20 - 0$$

$$\text{And range} = (2x + y) - (x - y) = x + 2y$$

$$\text{But range} = 28$$

$$\therefore x + 2y = 28$$

From above equations

$$x = 12, y = 8$$

$$\text{Mean} = \frac{x - y + y + x + (2x + y)}{4} = \frac{4x + y}{4}$$

$$= x + y = 12 + \frac{8}{4}$$

$$= 14$$

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**Q.14)** As we learnt in

Cramer's rule for solving system of linear equations -

When  $\Delta = 0$  and  $\Delta_1 = \Delta_2 = \Delta_3 = 0$ ,

then the system of equations has infinite solutions.

- wherein

$$a_1x + b_1y + c_1z = d_1$$

$$a_2x + b_2y + c_2z = d_2$$

$$a_3x + b_3y + c_3z = d_3$$

and

$$\Delta = \begin{vmatrix} a_1 & b_1 & c_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix}$$

$\Delta_1, \Delta_2, \Delta_3$  are obtained by replacing column 1,2,3 of  $\Delta$  by  $(d_1, d_2, d_3)$  column

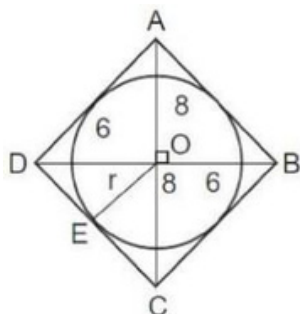
$$\begin{vmatrix} 1 & \lambda & -1 \\ \lambda & -1 & -1 \\ 1 & 1 & -\lambda \end{vmatrix} = 0$$

$$\Rightarrow 1(\lambda + 1) - \lambda(1 - \lambda^2) - 1(1 + \lambda) = 0$$

$$\Rightarrow (1 + \lambda)[\lambda^2 - \lambda] = 0$$

$$\Rightarrow \lambda = -1, 0, 1$$

**Q.15)**



Given the circle is inscribed in the rhombus of diagonals 12 and 16. Let O be the point of intersection of the diagonals of the rhombus. Then, OE (radius)  $\perp$  DC.

Also  $DC = \sqrt{6^2 + 8^2} = 10$  As area of triangle ODC should be the same, we have,

$$\frac{1}{2} \times 6 \times 8 = \frac{1}{2} \times OE \times 10 \Rightarrow OE = 4.8$$

$\therefore$  The required ratio of areas

$$= \frac{\pi(4.8)^2}{\frac{1}{2} \times 12 \times 16} = \frac{6\pi}{25}$$

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### Quantitative Ability MCQ type

**Q.1)**  $f(x) = a^x, a > 0$

$$f(x) = \frac{a^x + a^{-x} + a^x - a^{-x}}{2}$$

$$\Rightarrow f_1(x) = \frac{a^x + a^{-x}}{2}$$

$$f_2(x) = \frac{a^x - a^{-x}}{2}$$

Now,

$$\begin{aligned} & f_1(x+y) + f_2(x-y) \\ &= \frac{a^{x+y} + a^{-x-y}}{2} + \frac{a^{x-y} + a^{-x+y}}{2} \\ &= \frac{a^x + a^{-x}}{2} (a^y + a^{-y}) \\ &= f_1(x) \times 2f_1(y) \\ &= 2f_1(x) \times f_1(y) \end{aligned}$$

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**Q.2)** As we learnt in

Value of determinants of order 3 -

### DETERMINANT OF ORDER 3

The determinant of a 3 X 3 matrix

$$\begin{aligned}\Delta &= \begin{vmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{vmatrix} \\ &= a_{11}(a_{22}a_{33} - a_{23}a_{32}) \\ &\quad - a_{12}(a_{21}a_{33} - a_{31}a_{23}) \\ &\quad + a_{13}(a_{21}a_{32} - a_{31}a_{22})\end{aligned}$$

$$\begin{vmatrix} x & 1 & 1 \\ 1 & y & 1 \\ 1 & 1 & z \end{vmatrix} \geq 0$$

$$\therefore x(yz - 1) - 1(z - 1) + 1(1 - y) \geq 0$$

$$\therefore xyz - x - y - z + 2 \geq 0$$

$$\therefore xyz + z \geq x + y + z$$

So that minimum value of x, y, z are: x = -2, y = -2 and z = -2 which satisfy this inequality.

$$\therefore xyz = -2 \times -2 \times -2 = -8$$

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**Q.3)**  $x_0 = \max(x_1, x_2, \dots, x_{12})$

$x_0$  will be minimum if  $x_1, x_2 \dots x_{12}$  are close to each other

$$100 / 12 = 8.33$$

$\therefore \max(x_1, x_2, \dots, x_{12})$  will be minimum if  $(x_1, x_2, \dots, x_{12}) = (9, 9, 9, 9, 8, 8, 8, 8, 8, 8, 8, 8, )$

,

Option B is correct.

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**Q.4)** As we learnt,

$${}^n C_r = \frac{(n)!}{r!(n-r)!}$$

Now, given expression equals

$$\begin{aligned} &= \sum_{r=1}^{15} r^2 \times \frac{\frac{15!}{r!(15-r)!}}{\frac{15!}{(r-1)!(16-r)!}} \\ &= \sum_{r=1}^{15} r^2 \times \frac{(16-r)}{r} \\ &= \sum_{r=1}^{15} r(16-r) \\ &= \sum_{r=1}^{15} 16r - \sum_{r=1}^{15} r^2 \\ &= 16 \left[ \frac{n \times (n+1)}{2} \right] - \left[ \frac{n \times (n+1) \times (2n+1)}{6} \right] \\ &= \frac{16 \times 15 \times 16}{2} - \frac{15 \times 16 \times 31}{6} = 1920 - 1240 = 680 \end{aligned}$$

Correct option is 2.

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**Q.5)** As we learnt in

General term of a GP -

$$T_n = ar^{n-1}$$

where

$a \rightarrow$  first term

$r \rightarrow$  common ratio

Now, let first term is  $a$  and common ratio is  $r$  then

$$ar^2 + ar^3 = 60$$

$$\therefore ar^2(1+r) = 60 \text{ --- (i)}$$

Also  $a \times ar \times ar^2 = 1000$

$$\therefore a^3r^3 = 1000$$

$$(ar)^3 = 1000$$

$$ar = 10$$

$$r = \frac{10}{a}$$

put  $r$  in (i)

$$\frac{a \times 100}{a^2} \left(1 + \frac{10}{a}\right) = 60$$

$$\frac{5}{a} \left(\frac{a+10}{a}\right) = 3$$

$$\therefore 3a^2 = 5a + 50$$

$$\therefore 3a^2 - 5a - 50 = 0$$

$$3a^2 - 15a + 10a - 50 = 0$$

$$\therefore a = 5, r = 2$$

$$\therefore T_7 = ar^6$$

$$= 5 \times 2^6 = 5 \times 64 = 320$$

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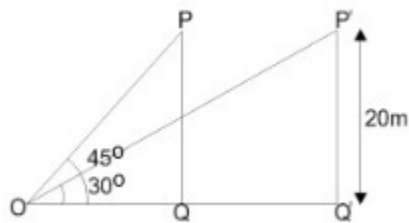
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**Q.6)** As we learnt in

Height and Distances -

The height or length of an object or the distance between two distant objects can be determined with the help of trigonometric ratios.

-



$$\text{In } \triangle PQQ, \tan 45^\circ = \frac{PQ}{OQ}$$

$$\Rightarrow OQ = 20\text{m}$$

$$\text{In } \triangle P'Q'O, \tan 30^\circ = \frac{20}{OQ'} \Rightarrow OQ' = 20\sqrt{3}$$

$$\text{Thus } QQ' = 20\sqrt{3} - 20 = 20(\sqrt{3} - 1)$$

$$\text{Thus speed} = \text{distance/time} = \frac{20(\sqrt{3} - 1)}{1} = 20(\sqrt{3} - 1) \text{ m/sec}$$

**Q.7)** Unit digit of  $(59n-31n)/28$

$$(59n-31n)/(59-31)=0$$

Option D

**Q.8)** As foci lie on x-axis and mid-point of foci is the origin, so the equation of hyperbola can

be assumed to be  $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$

Focus is  $(\pm 2, 0) \Rightarrow ae = 2;$

Also we know,  $b^2 = a^2(e^2 - 1) \Rightarrow b^2 = a^2e^2 - a^2 \Rightarrow a^2 + b^2 = 4$

Hyperbola passes through  $(\sqrt{2}, \sqrt{3})$ , so

$$\frac{2}{a^2} - \frac{3}{b^2} = 1$$

Solving these 2 equations we get

$$a^2 = 1, b^2 = 3$$

Equation of hyperbola is  $\frac{x^2}{1} - \frac{y^2}{3} = 1$

Equation of tangent at P using point form is  $\sqrt{2}x - \frac{\sqrt{3}y}{3} = 1$

Out of the given options  $(2\sqrt{2}, 3\sqrt{3})$  satisfies it.

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**Q.9)**  $f(x) = \log_e \left( \frac{1-x}{1+x} \right), |x| < 1,$

$$f\left(\frac{2x}{1+x^2}\right) = ?$$

$$f\left(\frac{2x}{1+x^2}\right) = \log_e \left( \frac{1 - \frac{2x}{1+x^2}}{1 + \frac{2x}{1+x^2}} \right)$$

$$= \log_e \left( \frac{\frac{1+x^2-2x}{1+x^2}}{\frac{1+x^2+2x}{1+x^2}} \right)$$

$$= \log_e \frac{x^2 - 2x + 1}{x^2 + 2x + 1} = \log_e \left( \frac{(1-x)^2}{(x+1)^2} \right)$$

$$= \log_e \left( \frac{1-x}{x+1} \right)^2$$

$$= 2 \log_e \left( \frac{1-x}{x+1} \right), |x| < 1$$

$$= 2f(x)$$

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**Q.10)** As we learnt in

$$A = \begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$$

$$A^2 = \begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}, A^3 = \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix},$$

$$A^4 = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

For option 3,

$$A^2 + I = A^3 - AI$$

$$\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix} \neq \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix} - \begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix} \neq \begin{bmatrix} 0 & 2 \\ -2 & 0 \end{bmatrix}$$

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**Q.11)**  $684 \cdot 759 \cdot 413 \cdot 676$

$$4 \cdot 9 \cdot 3 \cdot 6 = 648$$

Last digit = 8

Option B

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**Q.12)**

$$\begin{aligned} \frac{{}^{n+2}C_6}{{}^{n-2}P_2} &= \frac{\frac{(n+2)!}{6!(n+2-6)!}}{\frac{(n-2)!}{(n-2-2)!}} = \frac{(n+2)!}{6!(n-2)!} = 11 \\ \Rightarrow \frac{(n+2)(n+1)(n)(n-1)(n-2)!}{(n-2)!} &= 6! \times 11 \\ \Rightarrow (n+2)(n+1)(n)(n-1) &= 11 \cdot 10 \cdot 9 \cdot 8 \\ \Rightarrow n &= 9 \end{aligned}$$

which satisfies the equation  $n^2 + 3n - 108 = 0$

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**Q.13)**

$$\sum_{n=1}^5 \frac{1}{n(n+1)(n+2)(n+3)} = \frac{k}{3}$$

$$T_n = \frac{1}{n(n+1)(n+2)(n+3)}$$

$$T_n = \frac{1}{3} \cdot \frac{(n+3) - n}{n(n+1)(n+2)(n+3)}$$

$$T_n = \frac{1}{3} \cdot \left[ \frac{1}{n(n+1)(n+2)} - \frac{1}{(n+1)(n+2)(n+3)} \right]$$

So,

$$T_1 = \frac{1}{3} \cdot \left[ \frac{1}{1.2.3} - \frac{1}{2.3.4} \right]$$

$$T_2 = \frac{1}{3} \cdot \left[ \frac{1}{2.3.4} - \frac{1}{3.4.5} \right]$$

.....

$$T_5 = \frac{1}{3} \cdot \left[ \frac{1}{5.6.7} - \frac{1}{6.7.8} \right]$$

Adding these

$$S_5 = \frac{1}{3} \cdot \left[ \frac{1}{1.2.3} - \frac{1}{6.7.8} \right]$$

Given, this equals  $k/3$

$$\frac{1}{3} \cdot \left[ \frac{1}{1.2.3} - \frac{1}{6.7.8} \right] = \frac{k}{3}$$

$$k = \frac{55}{336}$$

**Q.14)** As we learnt in

Trigonometric Equations -

The equations involving trigonometric function of unknown angles are known as trigonometric equations.

- wherein

e.g.  $\cos^2 \Theta - 4 \cos \Theta = 1$

$$2 \sin^3 \alpha - 7 \sin^2 \alpha + 7 \sin \alpha = 2$$

$$\Rightarrow (2 \sin^2 \alpha - 5 \sin \alpha + 2) (\sin \alpha - 1) = 0$$

$$\Rightarrow \sin \alpha = 1 \text{ or } \sin \alpha = \frac{5 \pm \sqrt{25 - 16}}{4} = \frac{8}{4}$$

Hence, possible solutions are  $\sin \alpha = 1$  or  $\frac{1}{2}$

Hence solutions are  $\frac{\pi}{6}$ ,  $\frac{\pi}{2}$  and  $\frac{3\pi}{6}$

**Q.15)**

Degree of a term -

Polynomial	$b + 1$	$4y^2 - 7y + 2$	$5x^5 - 4x^4 + x^3 + 8x^2 - 9x + 1$
Monomial	5	$4b^2$	$-9x^3$
Binomial	$3a - 7$	$y^2 - 9$	$17x^3 + 14x^2$
Trinomial	$x^2 - 5x + 6$	$4y^2 - 7y + 2$	$5a^4 - 3a^3 + a$

$$(y - 1)(y + 1) = y^2 - y + y - 1 = y^2 - 1$$

**Q.16)** As learnt in concept @MNOP

$$x = 4t^2 + 3 \text{ and } y = 8t^3 - 1$$

$$P(4t^2 + 3, 8t^3 - 1) \text{ and } Q(4t_1^2 + 3, 8t_1^3 - 1)$$

$$\text{atP; } \frac{dy}{dx} = \frac{dy/dt}{dx/dt} = \frac{24t^2}{8t} = 3t$$

Tangent at P is

$$y - (8t^3 - 1) = 3t[x - (4t^2 + 3)]$$

$$\text{Put } (4t_1^2 + 3, 8t_1^3 - 1)$$

We get

$$8t_1^3 - 8t^3 = 3t(4t_1^2 - 4t^2)$$

$$2(t_1^2 + t_1t + t^2) = 3(t_1 + t)$$

$$(t_1 - t)(2t_1 + t) = 0$$

$$\text{Hence } t_1 = \frac{t}{2}$$

$$\text{Hence, } Q = (t^2 + 3, t^3 - 1)$$

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**Q.17)**  $a = 4$

$$d = 7 - 4 = 3$$

Sum of first 20 terms,

$$S_{20} = \frac{n}{2}[2a + (n-1)d] = \frac{20}{2}[(2 \times 4) + (20-1)3]$$

$$= 10[8 + (19 \times 3)] = 10[8 + 57] = 650$$

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**Q.18)** Let the first raise in salary is  $x\%$

Then second raise is  $2x\%$

$$\text{Net change} = [x + 2x + x(2x)/100]\%$$

$$\text{Also, net change} = 14 \times 100/7 = 200\%$$

Therefore,

$$x + 2x + x(2x)/100 = 200$$

$$\Rightarrow 300x + 2x^2 = 20000$$

$$\Rightarrow x^2 + 150x - 10000 = 0$$

On solving,  $x = 50\%$

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**Q.19)** Alphabetical order A, L, L, M, S

Starting with A :  $4! / 2! = 12$  words

Starting with L :  $4! = 24$  words Starting

with M :  $4! / 2! = 12$  words Starting

with SA :  $3! / 2! = 3$  words Starting

with SL :  $3! = 6$  words

Next word is SMALL itself: 1 word

Position =  $12+24+12+3+6+1 = 58$ th

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**Q.20)** Given that

$$x^{2018}y^{2017} = \frac{1}{2} \dots\dots\dots(1)$$

And  $x^{2016}y^{2019} = 8 \dots\dots\dots(2)$

Dividing (1) by (2),  $\frac{x^2}{y^2} = \frac{1}{16}$

$$\frac{x}{y} = \frac{1}{4} \text{ i.e. } x = \pm \frac{1}{4}y$$

$$\left(\pm \frac{1}{4}y\right)^{2018} y^{2017} = \frac{1}{2}$$

$$y^{4035} = 2^{4035}$$

$$y = 2$$

Therefore,  $x = \pm \frac{1}{4}y = \pm \frac{1}{2}$   
Hence,  $x^2 + y^3 = \frac{1}{4} + 8 = \frac{33}{4}$

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**Q.21)** Let A be the event that at least one woman is selected in the committee

So A' is the event that no woman is selected in the committee

$P(A) = P(\text{at least 1 woman}) = 1 - P(A') = 1 - P(\text{no woman is selected in the committee})$

$$= 1 - \frac{{}^{10}C_4}{{}^{15}C_4}$$

$$= 1 - \frac{210}{1365} = 1 - \frac{42}{273}$$

$$= 1 - \frac{2}{13} = \frac{11}{13}$$

Let B be the event that there are more women than men in the committee

$$P(B) = \frac{{}^5C_3 \times {}^{10}C_1 + {}^5C_4 \times {}^{10}C_0}{{}^{15}C_4}$$

$$= \frac{100 + 5}{1365} = \frac{21}{273} = \frac{1}{13}$$

So,

$$P\left(\frac{B}{A}\right) = \frac{P(B \cap A)}{P(A)} = \frac{\frac{1}{13}}{\frac{11}{13}} = \frac{1}{11}$$

(Note that here B is a subset of A, so their intersection equals B itself)

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**Q.22)** As we learnt in

Arithmetic mean of two numbers (AM)

$$A = \frac{a + b}{2}$$

and

Geometric mean of two numbers (GM) -

$$GM = \sqrt{ab}$$

Now,

$$\text{Given } l + n = 2m \quad \dots\dots\dots(i)$$

G1, G2 and G3 are three geometric means between l and n

So, n is 5th term of GP: l, G1, G2, G3, n

$$\therefore n = l.r^4, r = \left(\frac{n}{l}\right)^{\frac{1}{4}}$$

$$\begin{aligned} \therefore G_1^4 + 2(G_2)^4 + (G_3)^4 &= (lr)^4 + 2(lr^2)^4 + (lr^3)^4 \\ &= l^4r^4 + 2l^4r^8 + l^4r^{12} \\ &= l^4r^4 [1 + 2r^4 + r^8] \\ &= l^4 \cdot \frac{n}{l} \left[1 + \frac{2n}{l} + \frac{n^2}{l^2}\right] \\ &= \frac{nl^3}{l^2} [l^2 + 2nl + n^2] \\ &= nl(l + n)^2 \\ &= nl(2m)^2 \\ &= 4m^2nl \quad (\text{from (i)}) \end{aligned}$$

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**Q.23)** The intersection of A and the complement of  $B(A \cap B')$  contains the elements that are in A but not in B. Since B' includes numbers not in B, all elements of A are in  $A \cap B'$

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**Q.24)** Because the interest compound half yearly  
When interest calculated half yearly rate will be half and time will be double.  
 $P=400, R=20\%P.A, T=1\text{year}$   
 $40+40+4$

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**Q.25)** Average speed during first two stretches  $= \frac{2*20*30}{20 + 30} = 24\text{Kmph}$

Average speed during first two stretches  $= \frac{2*30*40}{30 + 40} = 34.28\text{Kmph}$

Difference =  $34.28 - 24 = 10.28 \text{ kmph}$

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26.  
The question is " Total number of matches ending in draw is "  
Hence, the answer is ' 6 '  
Choice D is the correct answer.

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27  
The question is "Which team has the highest number of draws "  
Hence, the answer is ' E '  
Choice D is the correct answer.

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28.  
The question is " Total points Team F scored was "  
Hence, the answer is ' 2 '

Choice C is the correct answer.

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29.  
The question is " Which team was not defeated by team A "  
Hence, the answer is 'D '  
Choice C is the correct answer.

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30.

The question is " Team E was defeated by "  
Hence, the answer is 'Only team B'  
Choice C is the correct answer.

## Verbal Ability & Reading Comprehension

**Q.1)** The final paragraph of the passage elaborates on the dual aspects of renewable energy. On one hand, it discusses the potential for producing renewable energy at local or even household levels. On the other hand, it points out the financial hurdles that could hamper the effective implementation of this energy form. This duality suggests that renewable energy presents both opportunities and challenges, akin to a double-edged sword. Therefore, we can safely assert that **Option A** is the most fitting answer, accurately capturing the essence of what the passage conveys. It delineates the simultaneous promise and complexity of adopting renewable energy at a smaller scale.

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**Q.2)** The opening paragraph of the passage calls attention to the need for a more thorough evaluation of renewable energy systems before declaring them as the solution for a low-carbon future. The author cautions that not only the direct but also the indirect impacts of renewable energy need to be carefully assessed. The passage emphasizes that the production of renewable energy involves various costs—such as land, water, and labor—that can potentially have social and environmental repercussions. Option (2) is factually incorrect, as it doesn't align with the author's stated reservations about renewable energy. Option 3 is not relevant to the discussion, as the passage doesn't engage in direct comparisons between renewable energy and other forms. Option (4) captures some essence of the author's caution but falls short because it doesn't account for the variety of concerns the author has mentioned. Therefore, Option A is the most accurate representation of the author's nuanced position. It encompasses not just questions of profitability but also a broader array of factors that the author believes warrant careful consideration.

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**Q.3)** In this exercise, the objective is to identify the statement that, if proven false, would lend credence to the author's argument. The focus should be on Option B, which claims that renewable energies have little or no environmental impact. If this statement were to be negated, it would assert that renewable energies do indeed have a significant environmental impact. This is precisely the point that the author is making throughout the passage, cautioning readers about the potential harmful impacts of renewable energy. Therefore, the correct choice here is **Option B**, as its falsification would directly support the author's central argument.

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**Q.4)** In determining the correct answer, it's important to closely examine the final sentence of the passage. The sentence states, "For financial growth to be sustained and expanded by the renewable sector, production and trade in renewable energy technologies will need to be highly concentrated, and large asset management firms will likely drive those developments." The text does not make any mention that a detailed study of the negative impacts of renewable energy is a precondition for its financial viability. Therefore, **Option 4** is not supported by the passage and is incorrect. The passage focuses on the concentration of production and the role of large asset management firms in driving developments for financial growth, but it does not state that scrutinizing the negative impacts is necessary for financial sustainability.

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**Q.5)** In the concluding paragraph of the passage, the author points out that certain authoritative viewpoints argue for a biological foundation for aggressive behavior. These perspectives assert that humans have evolved with an unusually low level of neural restraint when it comes to aggressive impulses. Contrary to this, the first option mistakenly attributes the neural regulation of aggressive behavior to testosterone, which is not what the passage states. Therefore, this option can be identified as factually incorrect based on the information provided in the text.

The option that suggests the role of testosterone in neural regulation is not supported by the passage, making it the incorrect choice. The passage specifically emphasizes that the biological basis for aggression lies in abnormally low neural inhibition of aggressive impulses, not in the neural regulation of testosterone.

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**Q.6)** The correct inference, denoted by Option A, is well-supported by the final sentences of the passage's opening paragraph. On the other hand, the remaining options venture outside the scope of the text and therefore cannot be substantiated. Option A is the only choice that aligns closely with the information presented in the passage, making it the accurate answer. The other options diverge from the subject matter, adding elements that were not discussed, and hence, are not pertinent to the issue at hand. Therefore, **Option A** stands as the clear and justified choice, in line with the content and focus of the passage.

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**Q.7) Option B** misrepresents the focus of the sentence in the passage, which is not centered on the reliability of the information obtained but rather on the inherent aggression involved in the action. Hence, it's a distorted interpretation of the original point. **Option C** ventures beyond the context provided in the passage, as it introduces a situation about the enemy's refusal to reveal information, a topic not discussed in the source material. Therefore, this option is out of scope and incorrect.

**Option D** is similarly flawed because it makes a claim about the "most effective method" to extract information, another subject that the passage does not delve into. It incorrectly introduces an evaluative element that was not present in the original text.

**Option A**, in contrast, accurately encapsulates the core message of the sentence in question. It reflects the idea that sometimes the aggressor does not aim to cause pain for its own sake, but rather views it as a means to achieve some utilitarian end. This option aligns perfectly with the intent and content of the passage, making it the correct choice.

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**Q.8) Option C** significantly misrepresents the focus of the passage. The original text discusses Freud's identification of the death instinct, but it does not venture into the realm of moderating or managing the resulting aggression. Therefore, Option C erroneously introduces an aspect of moderation and control over the death instinct, which is not a point made in the passage. Thus, this option is out of context and incorrect, as it introduces a theme that the original text does not address.

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**Q.9)** The passage delves into the concept that the act of creating music, or "musicking," is an intrinsic and universal component of the human experience, deeply rooted in both our sociocultural and biological history. The author argues that this capacity for musicking is innate within humans, closely connected to other inherent abilities such as language skills and the capability for symbol-making. While acknowledging that various cultures express and nurture musical abilities in distinct ways, the author remains firm in the stance that these musical capacities are universally present to some degree across all human societies. Moreover, the author traces the origins of music-making back to a minimum of 50,000 years ago, proposing that it likely evolved gradually over an even more extended timeframe. It's also highlighted that the emergence of music required the utilization of multiple cognitive faculties, rendering its understanding a complex, multi-threaded exploration. In this context, Option C most comprehensively captures all the essential keywords and themes articulated in the passage.

Contrastingly, the other options fall short in representing the full scope of the passage's central points. Option A, for example, incorporates some pertinent keywords, but fails to include other crucial terms like 'humans' and 'modern humanity,' which are central to the passage's argument. Similarly, Option B mentions 'humans' and 'capacities,' but it doesn't encapsulate other critical concepts like 'musicking' and 'symbol-making,' both of which are essential for a comprehensive understanding of the passage's content. Lastly, Option D does reference 'humans' and 'the emergence of music,' but omits significant terms such as 'musicking' and 'linguistic capacities,' thereby not covering the complete thematic landscape of the passage.

Therefore, in aligning with the comprehensive and multifaceted argument made in the passage, Option C emerges as the most accurate choice.

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**Q.10)** In the given context, the author's core message is that while the assertion "humans today make music" might be followed by a variety of qualifications or considerations, it remains a fundamentally true statement. The author posits that nearly all humans have some level of musical ability and that the capacity to create music is an essential part of what it means to be human. The author encourages the reader to accept this basic statement without becoming mired in potential qualifications and detailed considerations that could accompany it, urging them to recognize its foundational truth. Option C effectively encapsulates this notion.

Option A: [Incorrect] The term "trail after" in this setting doesn't necessarily suggest that the basic statement is succeeded by a long list of qualifying remarks and caveats. Rather, it indicates that something follows something else sequentially. Here, the author acknowledges that several qualifications and considerations might follow the statement that "humans today make music," but doesn't suggest that this straightforward statement is weighed down by an exhaustive list of clarifications and caveats.

Option B: [Incorrect] The term "bald statement" doesn't inherently suggest that the statement is so straightforward that it requires no further qualifications for interpretation. It means that the statement is presented in an unadorned, straightforward manner. In this scenario, the author argues that the declaration "humans today make music" is offered plainly and without embellishment but doesn't imply that this statement stands independently without any need for further qualifications or considerations.

Option D: [Incorrect] The phrase "give free reign to" doesn't accurately represent the author's objective in this context. The author isn't advocating for an unrestricted or uncontrolled approach to musical expression. Instead, the focus is on encouraging readers to consider the basic statement that "humans today make music" without getting entangled in potential qualifications and other additional considerations.

Therefore, given the alignment with the author's central argument, Option C stands out as the most appropriate choice.

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**Q.11)** Option A: [Incorrect] This option makes an overly broad claim by implying that all humans are musicians or possess the capability for musicking. While the passage does acknowledge that the act of making music is a universal human experience and that the ability to create music is innate to humans, it does not go as far as to declare that every human is a musician or capable of musicking. Therefore, this choice does not accurately reflect the nuances presented in the passage.

Option B: [Incorrect] While the passage does indeed indicate that musicking serves as a form of human expression, it does not provide any evidence or argument to support the statement that "musicking is not language-like." Because this specific claim is not substantiated in the passage, this option must be ruled out.

Option C: [Correct] The passage specifically states, "if we look back 20,000 years, a small portion of this long period, we reach the lives of humans whose musical capacities were probably little different from our own." This makes it clear that humans from 20,000 years ago likely had musical capacities very similar to modern humans. Therefore, this choice accurately encapsulates a key point from the passage.

Option D: [Incorrect] The passage does not assert that all musical ability resides in the intersection between linguistic capacity and music production. On the contrary, it states, "most of these capacities overlap with nonmusical ones, though a few may be distinct and dedicated to musical perception and production." This indicates that there are certain capacities that are uniquely designed for musical perception and production, rather than overlapping with linguistic or other nonmusical abilities.

Consequently, in light of these evaluations, Option C emerges as the correct choice, faithfully representing the content of the passage.

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**Q.12)** Option A: [Incorrect] This option introduces the topic of human survival as related to musical capacities, which is not a theme explored or even mentioned in the passage. The discussion in the passage centers around the universality and innateness of musicking in human experience, not its importance or lack thereof for survival. Consequently, even if Option A were accurate, it doesn't engage with the author's main point that humans inherently possess the capacity for musicking. Hence, it does not serve to weaken the author's argument.

Option B: [Incorrect] While this option discusses the cognitive and psychological origins of musicking as potentially unconscious, it doesn't negate the author's claim that the capability for musicking is a universal human trait. The author posits that these capabilities are innate, whether conscious or unconscious. Therefore, this point does not actually undermine the author's principal argument about the universal nature of musicking among humans.

Option C: [Incorrect] This option suggests that musicking is a much older form of expression than language or symbol-making because it is neither language-like nor symbol-like. Even if this were accurate, it doesn't refute the author's main argument. The author, in fact, posits that musicking can be traced back to at least 50,000 years ago, making it a relatively recent phenomenon in evolutionary terms. Thus, even if musicking were an older form of expression, this wouldn't conflict with the author's principal claim about its universality.

Option D: [Correct] This option presents a serious challenge to the author's argument by asserting that musical capacities are primarily socio-cultural. If this statement is true, it directly contradicts the author's contention that the capacity for musicking is an innate and universal aspect of human experience. The author argues that musicking has both sociocultural and biological roots. Should musical capacities turn out to be mainly socio-cultural, it would imply that they are shaped more by social and cultural factors rather than being an inherent, universal human trait. This would significantly weaken the author's primary argument that all humans are inherently capable of musicking.

In summary, Option D stands out as the correct choice for effectively challenging the author's main claim about the universality of the capacity for musicking in humans.

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**Q.13)** The correct option is the **second option**. **Explanation:** In the context of the sentence,

"eight-cylinder engines" are being described, and the word needed to complete the sentence should convey that these engines are something that use a great amount of petrol. **"Devices"** is a suitable term to describe machines or mechanisms like engines.

Conveyances: This term typically refers to vehicles used for transportation, such as cars or modes of transport.

Instruments: These typically refer to tools or devices used for a specific purpose, such as musical instruments or measurement tools.

Apparatus: It generally refers to a complex set of equipment or machinery used for a particular purpose, and while it could technically refer to engines.

So the sentence would be: Eight-cylinder engines are **devices** that use a great amount of petrol.

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**Q.14)** The correct option is the **fourth option**.

**Explanation:** The sentence is describing a specific man who is standing in a corner, and this man is identified as a plainclothes policeman. Therefore, the definite article **"the"** is used to specify and identify this particular man.

Some: This word does not convey the specificity needed in this context. "Some man" is more general and doesn't specify a particular individual.

Any: "Any man" is also a more general reference and does not specify a particular individual in the corner.

A: "A man" would refer to any man in general, not a specific one standing in the corner.

So the sentence would be: **The** man standing in that corner is a policeman in plain clothes.

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**Q.15)** The correct option is the **first option**.

**Explanation:** The sentence is structured as an example of inversion, where the subject and auxiliary verb are inverted for emphasis. In this case, "have I" is used to emphasise the

unusual or surprising nature of the statement. It is a grammatically correct way to say that the speaker has never met such a beautiful girl.

I have: This is not the correct word order in the inverted structure required by the sentence.

I had: This is in the past tense and does not convey the same meaning as the original sentence.

Did I: While this is in the correct word order for inversion, it is not the appropriate choice in this context because "did" is followed by the first form of the verb.

So the sentence would be: Never **have I** met any girl so beautiful.

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**Q.16)** The correct option is the **fourth option**.

**Explanation:** This is the most suitable word in the context of the sentence. "**Cordial**" means friendly, warm, and sincere in a polite way. It accurately describes a positive and amicable relationship between the Indian Prime Minister and the U.S. President.

Excellent: While "excellent" generally means very good or outstanding, it may not accurately describe the specific nature of the relationship between the Indian Prime Minister and the U.S. President.

Smooth: It implies that the relationship is without difficulties or obstacles, but it doesn't necessarily convey the sense of friendliness or warmth that "cordial" does.

Informed: It suggests that both parties have knowledge or information about each other, but it doesn't convey the idea of a friendly or amicable relationship.

So the sentence would be: The relationship between the Indian PM and the U.S. President is perfectly **cordial**.

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**Q.17)** The correct option is the **first option**.

**Explanation:** This is the most appropriate word in the context of the sentence. To be "**alerted**" means to be notified or informed about something, in this case, being informed and prepared to control floods.

Warned: While "warned" can also be used in a similar context to convey the idea of being informed or cautioned about something, it may not be as specific to the readiness aspect as "alerted" is in this sentence.

Awakened: It means to be roused from sleep or a state of rest, which does not fit the context of being prepared for flood control.

Wanted: It means desired or required, but it does not convey the idea of being informed or prepared to control floods in this context.

So the sentence would be: The army has been **alerted** to be ready to control the floods.

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**Q.18)** The correct option is the **fourth option**.

**Explanation:** This is the correct and traditional way to express that we feel fine in English. It is widely accepted and used in both formal and informal contexts.

**"All right"** is considered standard English and is the most appropriate choice in this sentence.

Alright: This option is an informal variation of "all right". While it is widely used in casual conversation and writing, it may not be considered entirely grammatically correct in formal or academic writing. However, it is still a common way to express feeling fine or okay.

All collect: This phrase is not a standard or idiomatic way to express that you feel fine. It does not convey the intended meaning of the sentence.

All good: This option is an informal and colloquial way to indicate that you feel fine or that everything is okay. It is commonly used in casual conversation and is understood in informal settings.

So the sentence would be: The traditional way of saying that you feel fine is to say that you are **all right**.

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**Q.19)** The correct option is the **fourth option "triggered"**.

**"Triggered"** in this context means that the earthquake made the mudslides happen on the city's edges, and it fits perfectly in the sentence.

The meanings of the other options are as follows:

- **"Tempered"** means to modify something to achieve the desired result.
- **"Tampered"** means to interfere with something to manipulate it.
- **"Erupted"** means to burst violently, usually associated with a volcano and not an earthquake.

Therefore, the correct sentence is "The quake also **triggered** mudslides on the outskirts of the city."

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**Q.20) The** correct sentence is “It said many positive measures had been introduced since then to ensure that young people were protected. Hence, option (b) is the correct answer.

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**Q.21) The** correct sentence is “There are a multitude of coaches, back-up coaches and tactical and technical thinkers spending their lives trying to change rugby for the better.” Hence, the option (a) is the correct answer.

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**Q.22) The** correct sentence is “In doing so they found that, just as in forests on land, there were distinct choruses at different times of the day.” Hence, the option (e) is the correct answer.

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**Q.23) The** correct sentence is “The amount of sleep our bodies and minds need may be different to the amount of sleep we think we ought to have.” Hence, the option (a) is the correct answer.

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**Q.24) Compliment’** is followed by preposition ‘on’.

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**Q.25)** The entire passage is based on the impacts of the revelation made by Snowden. So the highest priority will be for similar impacts that have been described towards the end of the passage.

Option C is such an impact. Hence this has to be the answer.

Option A is also an impact. But this is on a broad scale. This has to happen as a further step of the immediate impacts.

Option B is not speaking about the impact.

Option D is also not an impact on an immediate basis.

Moreover, options B and D are not backed up with proper premises.

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**Q.26)** The idea is based on the simple concept of arrangement of the options. The sequential order based on the priority gives the correct option.

At the end of the passage, we have got the idea that the very next line will be based on the Channel U. Whenever we begin a description about something we start with the basics-year of commencement. Hence it can be plainly concluded that the immediate sentence after the passage would be option A.

Option B is about the activity of Channel U. This comes only after giving the introduction to channel U.

Option C speaks about the post-Channel U era. This is something that comes immediately before citing the advantage of Channel U. Hence we can simply say that this follows only after the introductory sentence.

Option D shows the progress and hence it definitely cannot precede channel U's introductory statement.

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**Q.27)** We can see that Mr. Grayling has been dropping in names to avert the blame that he is bound to face.

Option A perfectly fits in as Mr. Grayling has got another name to drop in. The idea of dropping in names was earlier found in the last line of the passage.

Option B, C and D are irrelevant as there are no supporting premises.

Option B and D speak about the minister and his ministry. We are unaware of its role and the things happening there. Hence we avoid these two.

Option C speaks about the loss caused to the industry. We are completely unaware of the financial transactions as per the information given in the passage. Hence we are free to avoid option C too.

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**Q.28)** As soon as we notice option A, we can spot the idea that the gifts are accompanied by some notes. Here, option A can perfectly fit in as the right answer.

Option B is an after effect. This can come later in the passage, but not before the note (option A).

Option C speaks of other gifts that we are unaware of. Hence, this is just an assumption.

Option D more or less, looks like the last line of the passage. Hence, it can be a conclusion, but definitely after the note (option A).

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**Q.29) (a)** The completed sentence would be: "Influencers have to label their promotional posts in order to bring about transparency and safeguard the interests of the customers."

Explanation: "Influencers" is fitting as it refers to individuals who have the potential to impact the opinions and behaviors of their audience. "promotional" aligns with the context, indicating

that the posts are meant for promotion or advertisement. "safeguard" is suitable as it conveys the idea of protecting or ensuring the interests of customers. The other options do not fit the context as well: Option 2 suggests "Distributors" and "multiply," which do not match the context of influencers labeling their posts for transparency. Option 3 includes "Promoters" and "incite," which may not convey the intended meaning of ensuring transparency and protecting customer interests. Option 4 mentions "Advertisers" and "commercials," which may not accurately represent the influencer context where personal branding and promotional posts are common. Additionally, "capture" does not align with the intended meaning of safeguarding interests.

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**Q.30 (b)** The completed sentence would be: "Working from home requires that you may have to put your private life on the screen. Some people find this very disconcerting as they like to keep their work and home lives separate." Explanation: "private" fits the context, indicating one's personal or private life. "screen" is suitable as it suggests the display or sharing of one's private life on a digital screen, aligning with the concept of working from home. "disconcerting" accurately captures the sentiment of some people finding the situation uncomfortable or disturbing. The other options do not fit the context as well: Option 1 includes "entire," "camera," and "complicated," which do not align with the idea of putting private life on a screen. Option 2 mentions "actual," "video," and "uncomfortable," which may not convey the sense of sharing private life while working from home. Option 4 introduces "family," "microscope," and "disturbing," which may not accurately represent the concept of sharing one's private life on a screen while working from home.

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**Q.31 (a)** The completed sentence would be: "In its early stages, dementia is often indistinguishable from normal aging, in which the older brain may naturally begin to show signs of cognitive impairment. Neither dementia nor cognitive aging is currently reversible, though they may be slowed through diet, exercise, and keeping the mind agile with social and intellectual activity." Explanation: "indistinguishable" is fitting as it suggests that dementia and normal aging may be difficult to tell apart, especially in their early stages. "reversible" is appropriate, indicating that neither dementia nor cognitive aging can currently be completely reversed. The other options do not fit the context as well: Option 1 includes "distinguishable" and "permanent," which may not accurately convey the idea that dementia and normal aging can be challenging to distinguish in their early stages. Option 3 mentions "irreversible" and "manageable," which is not accurate because the sentence implies that dementia and cognitive aging may be slowed but not completely managed or reversed. Option 4 introduces "differentiated" and "visible," which may not convey the intended meaning regarding the difficulty in distinguishing between dementia and normal aging.

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**Q.32 (a)** The completed sentence would be: "The culture of the 21st century—on an increasingly global scale—is oriented around the practical principles of utility, effectiveness,

and impact. Things are good to the extent that they are instrumental, with instrumentality usually defined as the capacity to produce money or things. The worth of anything — an idea, an activity, an artwork, a relationship with another person — is determined pragmatically." Explanation: "global" is fitting as it describes the scale of the 21st-century culture."relationship" is suitable as it aligns with the context of determining the worth of anything."pragmatically" accurately captures the idea that the assessment of worth is based on practical considerations of utility, effectiveness, and impact. The other options do not fit the context as well: Option 1 includes "conspicuous," "dialogue," and "diligently," which do not align with the theme of utility, effectiveness, and impact. Option 2 mentions "nominal," "dinner," and "meaningfully," which may not convey the intended meaning of determining the worth of things in a practical and utilitarian manner. Option 3 introduces "ordinal," "conversation," and "imaginatively," which does not align with the practical principles emphasized in the paragraph.

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**Q.33) (b)** The completed sentence would be: "The human resource chief said that the company will not compromise on investing in people and has prioritised spending on employee needs in order to reassure them and provide them with a sense of stability and certainty." Explanation: "compromise" fits the context, indicating that the company will not give up or weaken its commitment to investing in people. "prioritised" is suitable as it indicates that spending on employee needs has been given high importance. "reassure" accurately conveys the idea of providing employees with a sense of stability and certainty. The other options do not fit the context as well: Option 1 includes "delay," "assured," and "empower," which do not align with the theme of the company's commitment to investing in people. Option 2 mentions "debate," "assured," and "confront," which does not accurately represent the positive and proactive approach described in the sentence. Option 3 introduces "prioritise," "compromised," and "include," which may not convey the intended meaning of unwavering commitment and prioritization of employee needs.

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**Q.34) (a)** The completed sentence would be: "In the alleyways of old Cairo, in its cafes, warehouses, and barbershops, framed portraits of Egyptian icons are ubiquitous. Kings, presidents, religious and political figures are all immortalized on fading walls, held up as symbols of a glorious past." Explanation: "ubiquitous" accurately conveys the idea that framed portraits of Egyptian icons are present everywhere in the mentioned locations. "immortalised" fits the context, indicating that these portraits serve as enduring representations, preserved and celebrated over time. The other options do not fit the context as well: Option 1 includes "substantial" and "dispersed," which may not accurately convey the idea of portraits being present everywhere. Option 2 mentions "rare" and "abundant," which do not align with the notion of ubiquitousness described in the sentence. Option 3 introduces "fashionable" and "confounded," which do not fit the context of framed portraits of Egyptian icons in historical settings.

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**Q.35) (a)** The correct spelling and usage in this context should be "chord" instead of "cord." A "chord" refers to a group of musical notes played together, while a "cord" typically refers to a thin flexible string or rope. Therefore, option 4 contains an inappropriate usage of the word.

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**Q.36) (b)** In this context, the word "ring" is used incorrectly. The correct word in this context is "wring." The sentence should read, "They were all soaking wet, and their mother told them to wring their clothes first and then put them out to dry." "Wring" means to squeeze or twist something, especially wet clothes, to remove excess liquid. On the other hand, "ring" is unrelated to the action of squeezing or twisting clothes.

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**Q.37) (d)** In this context, the word "climatic" is used incorrectly. The correct word should be "climactic." The sentence should read, "The climactic moment of the match was when the captain got caught behind the wicket." "Climactic" refers to the most intense or exciting moment in a sequence of events, while "climatic" pertains to the weather or climate conditions. The sentence is describing a significant moment in a cricket match, making "climactic" the appropriate choice.

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**Q.38) (a)** In this context, the word "tied" is used incorrectly. The correct word should be "tide." The sentence should read, "It was a full moon night, and the tide was high, but he went boating and, unfortunately, he drowned." "Tide" refers to the rise and fall of sea levels caused by the gravitational forces of the moon and the sun. "Tied" is not the appropriate term in this context.

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**Q.39) (c)** In this context, the word "farther" is used incorrectly. The correct word should be "further." The sentence should read, "If you need to further your career, you should avoid all kinds of distractions." "Further" is used to indicate additional progress or advancement, while "farther" is typically used to measure physical distance.

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**Q.40) (d)** In this context, the word "grave" is used incorrectly. The correct word should be "grieve." The sentence should read, "The pet dog could not come to terms with his master's death and went to grieve for him, even refusing to eat for several days." "Grieve" is the

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correct term in this context, meaning to feel intense sorrow or sadness, especially in response to a death. "Grave" refers to a place of burial.

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**Q.41)** The **second option** is the correct choice.

First, we introduce the subject in the sentence **(C)**, which is the Aestheticism movement. Then we give some supporting information in sentence **(A)** that the movement began in reaction to the industrial age. Then we talk about the chronology of events in sentences **(D)** and **(B)** respectively.

The correct order is as follows:

- **(C)** Aestheticism was a European art movement that centred on the doctrine that art exists for the sake of its beauty alone.
  - **(A)** The movement began in reaction to the ugliness of the industrial age.
  - **(D)** Its philosophical foundations were laid in the 18th century by Immanuel Kant.
  - **(B)** This idea was amplified by JW von Goethe, JL Tieck, and others in Germany.
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**Q.42)** The **first option** is the correct choice.

- **(B)** An old man won a beautiful clock. The old man did not want the clock, so the shopkeeper took it back and paid 15 rupees to the old man.
- **(A)** Another boy tried his luck and won a comb, a fountain pen, a wristwatch, and a table lamp one after the other in the many chances that he played.
- **(D)** He sold all the items to the shopkeeper and went away happily. Rasheed also wanted to play and try his luck.
- **(C)** Bhaiya encouraged him, but Rasheed was not lucky when he tried his luck. He won only cheap items like pencils and an ink bottle, and soon he lost all his money.

Therefore, the correct order is **BADC**.

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**Q.43)** The **first option** is the correct answer.

This arrangement creates a narrative story in which the person first learns about the impending snowstorm, takes proactive measures to ensure her safety, and then reflects on the importance of having a backup plan in case of emergencies, which was reinforced by the inspiring instruction.

The correct order is:

- (A) The most essential thing I learned from 'Ready Now' was the need to have a backup plan in case of an emergency, she stated.
  - (D) When I heard about the impending snowstorm, I emailed all of my caregivers to see who lived nearby and would be accessible.
  - (C) I made sure I had a generator, wheelchair batteries, and at least a week's worth of food, water, and prescription medication.
  - (B) The instruction, according to Nickola, was inspiring and confirmed her capacity to live effectively with a disability.
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**Q.44)** Here, the first sentence is option 3 as it is giving an introduction of how the theory came under pressure. The words 'Early on' in statement 1 show that, it will be the first reason for the theory coming under pressure and the fact that statement 2 has 'and', it shows that it will be the last reason and thus statement 4 will be the second reason making 3142 as the correct order.

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**Q.45)** Statement 2 is the opening statement as it gives the context to the whole discussion. It is showing how the violence in Charlottesville has impacted Britain. The uncomfortable discussions mentioned in 2 are followed by 1. The link for 4 and 3 is noun pronoun usage. 4 mentions the name of a person and 3 mentions he, referring to the editor. Therefore, the correct order is 2143.

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