



# Verbal Reasoning - III

Complete Course on General Aptitude for GATE 2023/2024

Saurabh Thakur • Lesson 16 • Nov 1, 2022

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# COMPLETE COURSE ON

General Aptitude for  
**GATE 2023/ 24**

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- LC + }

4 8

## Logical Connectives.

→ ⊥

Logical

Truthfulness

(X)

factual

Truthfulness.

if

the

Sun rises in the West

then the moon rises in the south.

if

if

## Q. Simple Statements



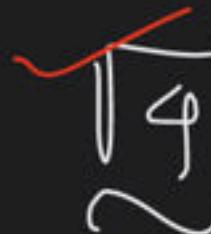
The sun rises in the west.



The moon rises in the south.



It is rainy.



I will go to my friend's house.

3. Compound statements.

Either it is raining or I will go to  
my friend's house.

## Takeaways

1.



2.



Connectives | Connections | Logical  
Connectives

either - or

If, then.

Negation  $\Rightarrow$  False

NOT

NOTE:

$\neg \perp \rightarrow \top$

$\neg \top \rightarrow \perp$

$\neg \perp \rightarrow \top$

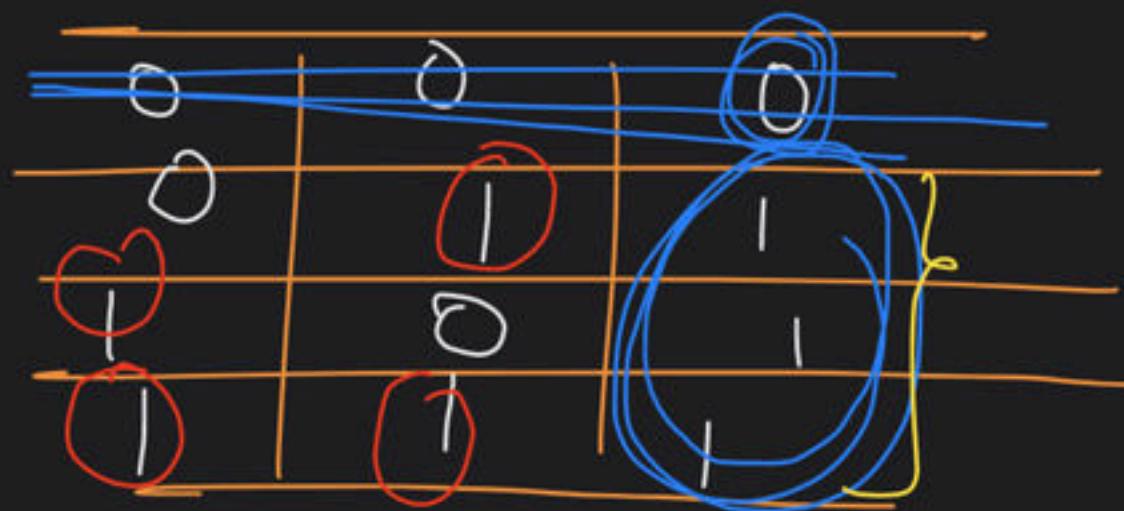
1. Either I am dead or I am alive.

I either P or q.

q [OR]

P q [TT]

1. P - True or, I am dead



2. q - True, or I am alive

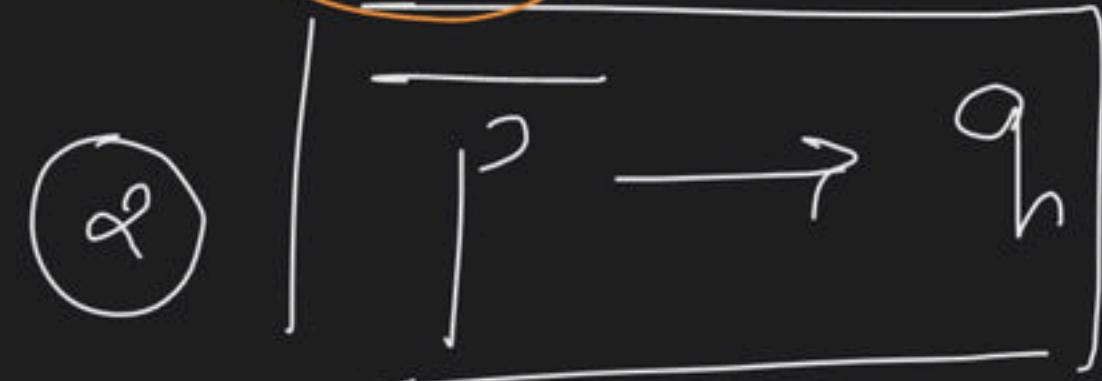
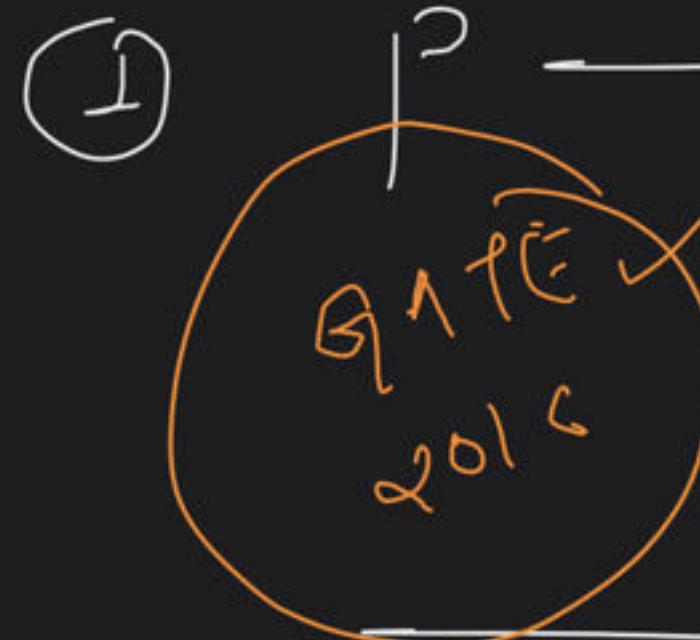
3. P and q - True

I am dead &  
I am alive.

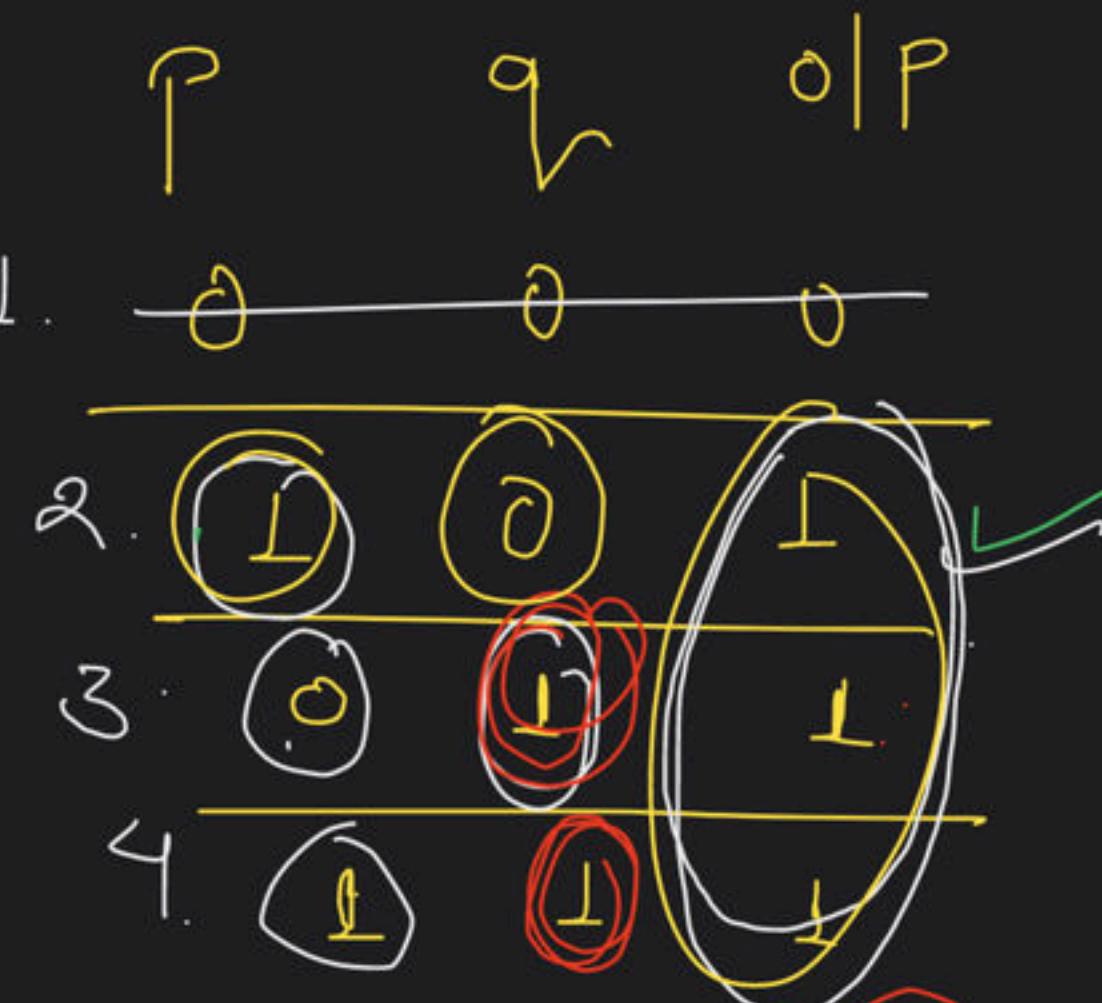
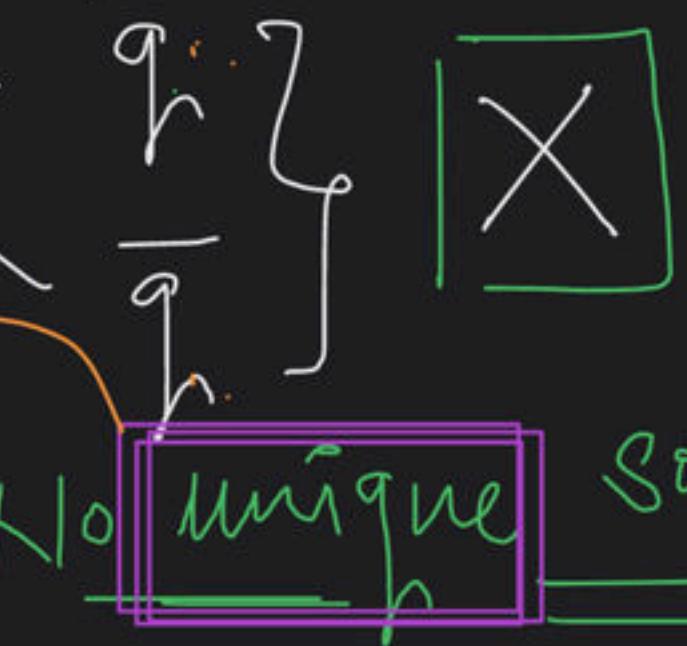
T - True  
0 - False  
- False

## Case study.

Either  $P$  or  $q_h$



3.



Either p or q.

Summary.

$$\overline{P} \rightarrow q$$

$$\overline{q} \rightarrow P$$



# LOGICAL CONNECTIVES



Each question below consists of a main statement followed by four numbered statements. From the numbered statements, select the one that logically follows the main statement



01

---

If movie is superhit, then I watch it.

$q$

$P$

$$\frac{P \rightarrow q}{\bar{q} \rightarrow \bar{P}}$$

- (A) I watched a movie means it is a superhit.
- (B) The movie is superhit, hence I do not watch it.
- (C) I did not watch a movie, though it was superhit.
- (D) I did not watch a movie implies that the movie was not superhit.

$$\frac{\bar{q} \rightarrow \bar{P}}{P}$$

$\bar{q}$



02

If = whenever

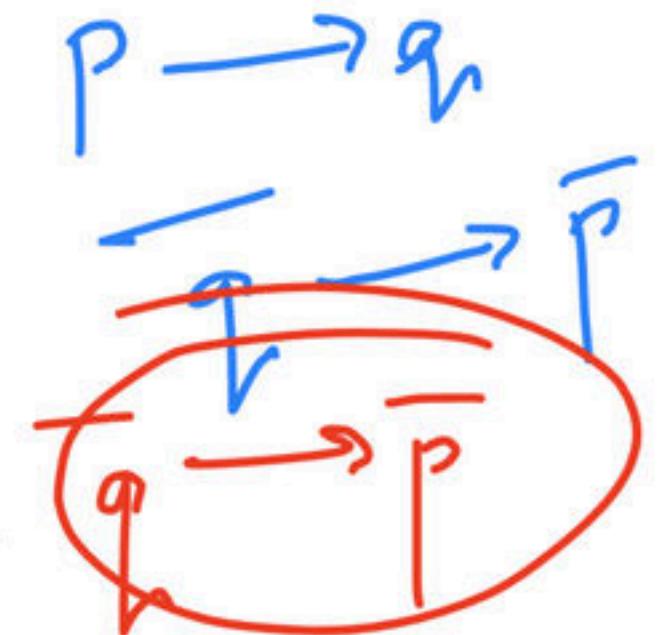
$P$

Whenever it is cold, I wear a jacket.

$q$

$\neg h$

- (A) It is cold implies I am wearing a jacket.
- (B) I did not wear a jacket implies it was not cold.
- (C) It is cold but I did not wear the jacket.
- (D) Both (A) and (B)



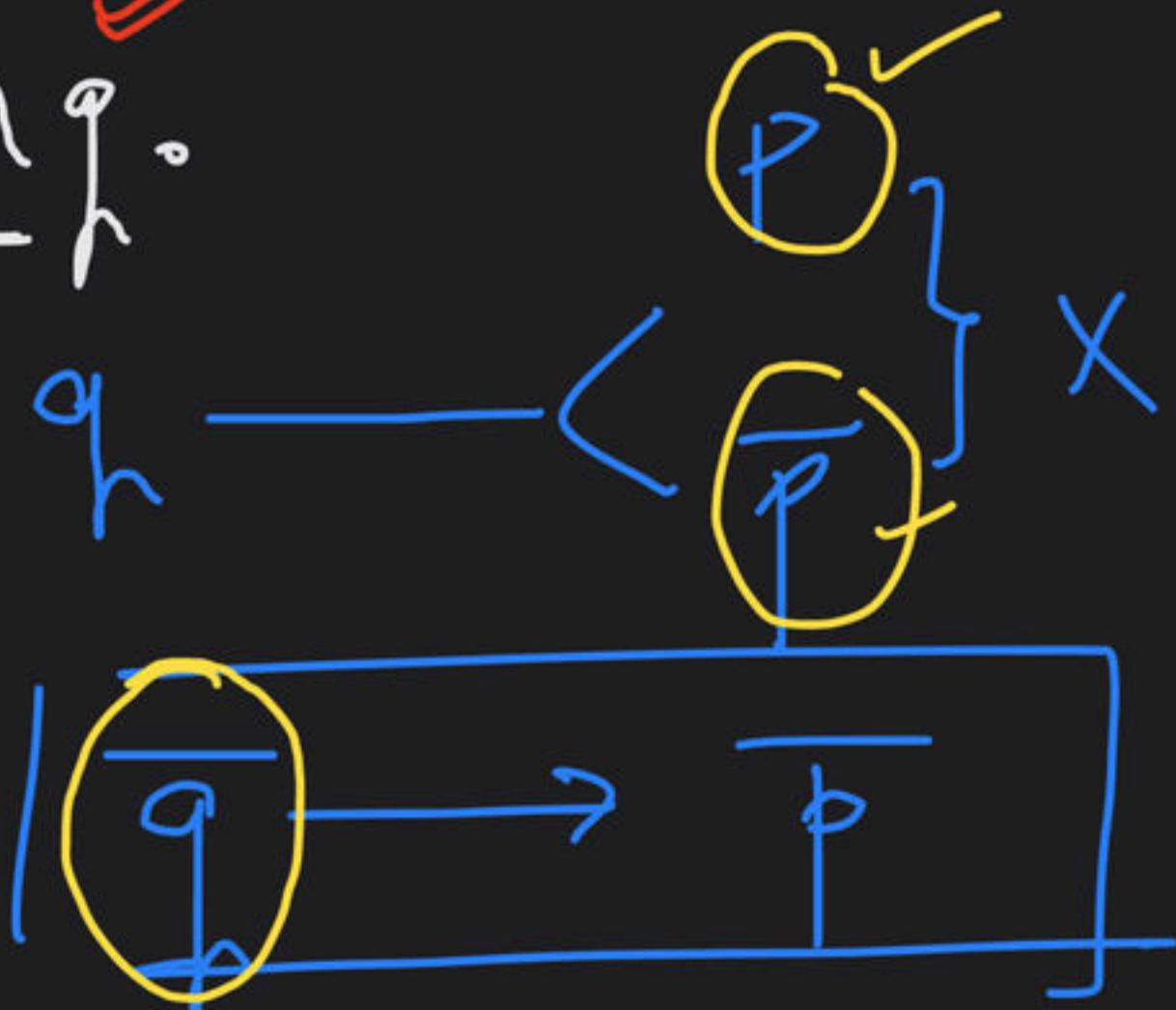
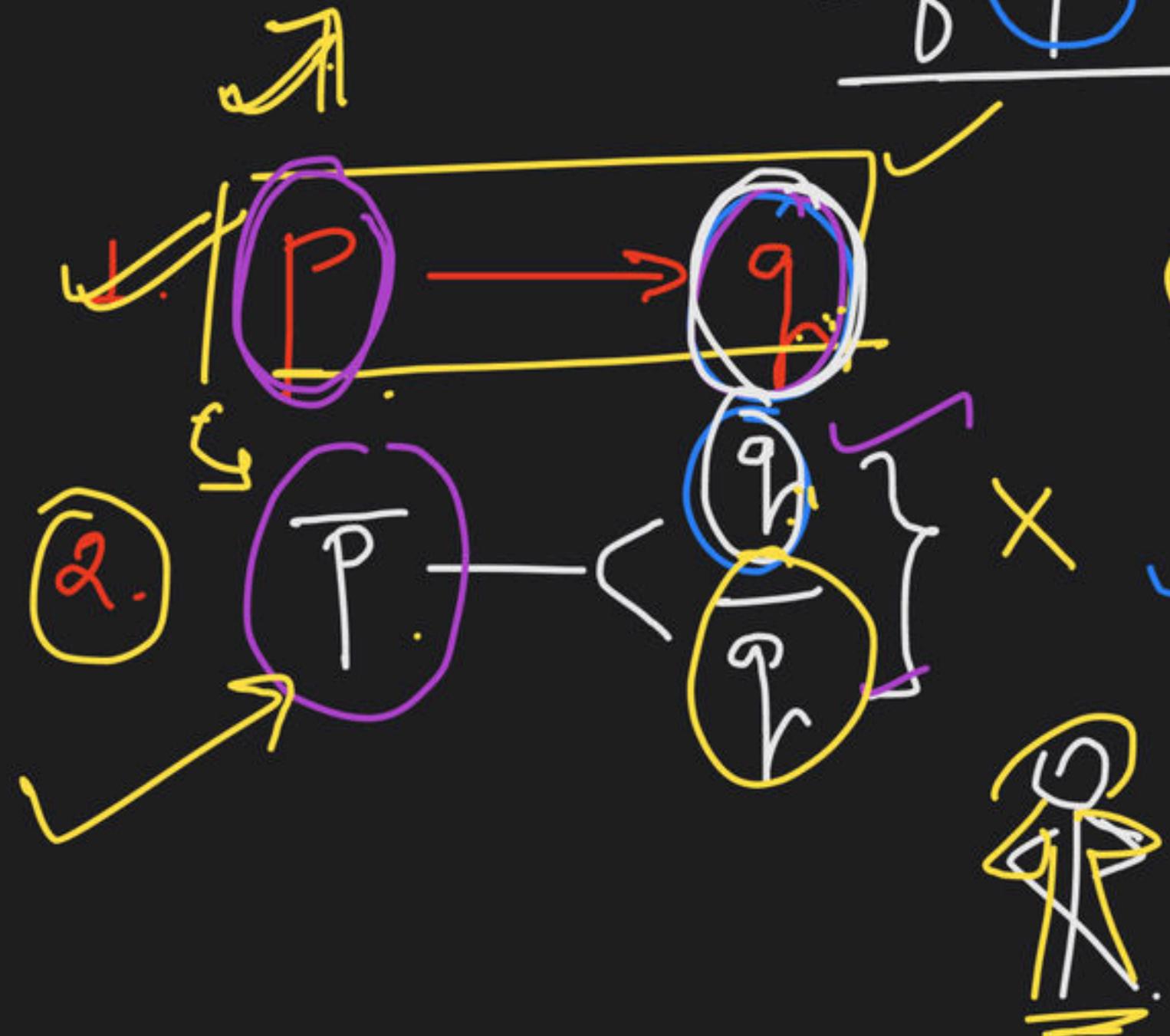


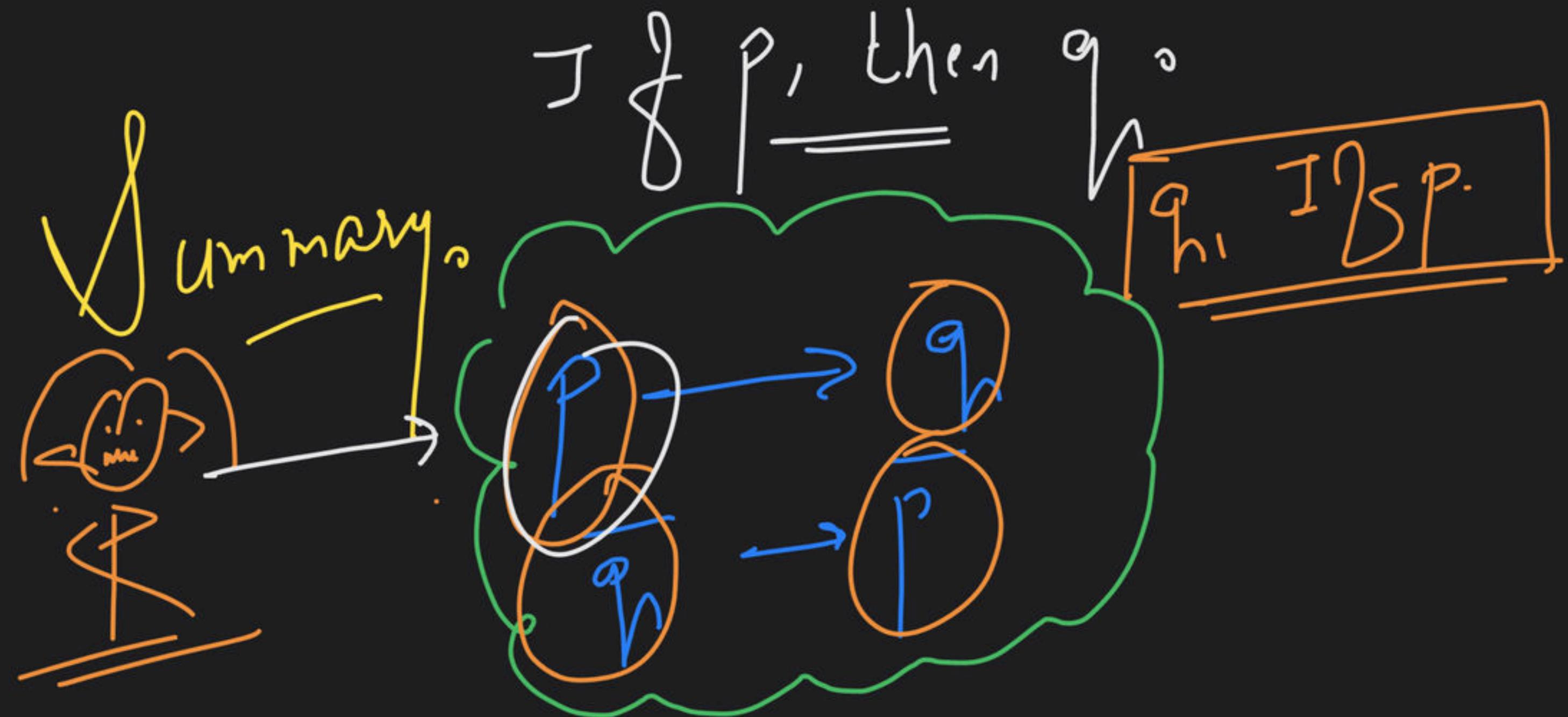
03

---

& If, then.

If  $P$ , then  $q$ .



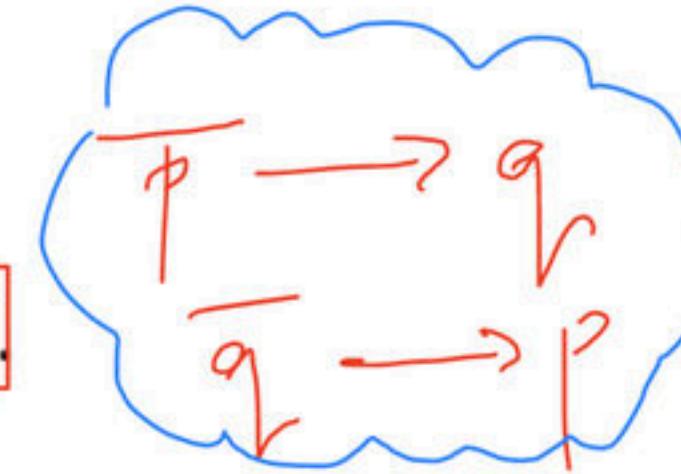


$P$

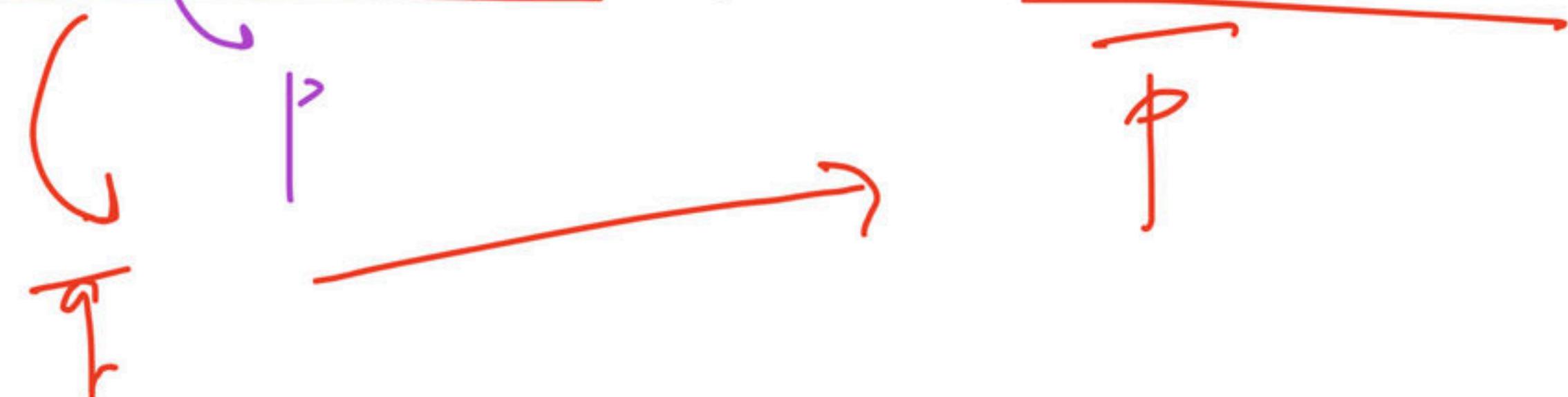
Either  $\boxed{\text{Shaheen cooks}}$  or  $\boxed{\text{Salim brings the food parcel.}}$

$\neg P \rightarrow q$

$\neg q \rightarrow P$



- (A)  $\boxed{\text{Shaheen cooks}}$  means salim will not bring the food parcel.
- (B)  $\boxed{\text{Salim did not bring the food parcel}}$  hence  $\boxed{\text{Shaheen cooked.}}$
- (C)  $\boxed{\text{Shaheen is cooking}}$  hence Salim has brought the food parcel
- (D)  $\boxed{\text{Salim did not bring food parcel}}$  implies that  $\boxed{\text{Shaheen did not cook.}}$





04

---



Only if Raj does not come, then Geetika will come to the party.

- (A) Raj came hence Geetika will also come to the party.
- (B) Geetika will not come to the party hence Raj will come.
- (C) Geetika has come to the party means Raj is not coming.
- (D) Both (1) and (3)

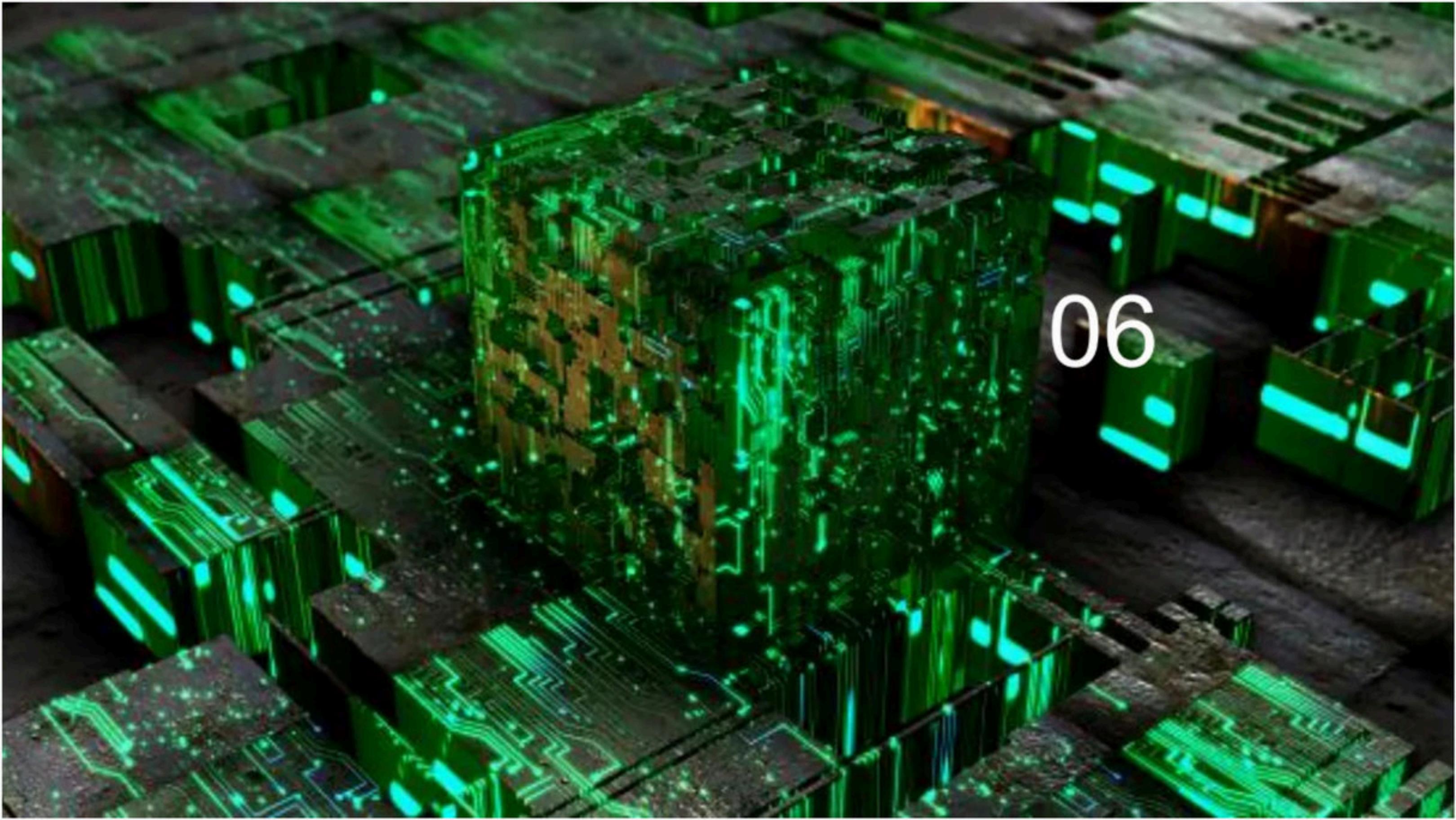


05



Unless I have money, I cannot enjoy my weekend.

- (A) I have money, so I can enjoy my weekend.
- (B) I can enjoy my weekend means I have money
- (C) I do not have money but I can enjoy my weekend
- (D) None



06



If I can swim, then I can clear the exam.

- (A) I can swim hence I can clear the exam.
- (B) I cannot clear the exam implies I cannot swim.
- (C) I can swim hence I cannot clear the exam.
- (D) Both (1) and (2)

A close-up photograph of three young green plants growing from dark brown soil. The plants have thin, light green stems and small, broad leaves. Each leaf has a single, large, clear water droplet resting on it. The background is a soft-focus green.

07



India will talk, only if the terrorists are handed over.

- (A) The terrorists are handed over, hence India will talk
- (B) India will not talk implies that the terrorists have not been handed over.
- (C) India will talk though the terrorists are not handed over.
- (D) India will talk implies the terrorists are handed over.

A wide-angle photograph of a coastal scene at sunset. The sky is filled with horizontal clouds, transitioning from deep blue to vibrant orange and yellow near the horizon. The ocean is a bright turquoise color, with white-capped waves crashing against the rocky shore in the foreground. In the middle ground, two prominent rock formations stand in the water. A small boat is visible near the right one. The overall atmosphere is serene and beautiful.

08

Whenever there is demand, there will be supply

(A) There is supply hence there is demand.

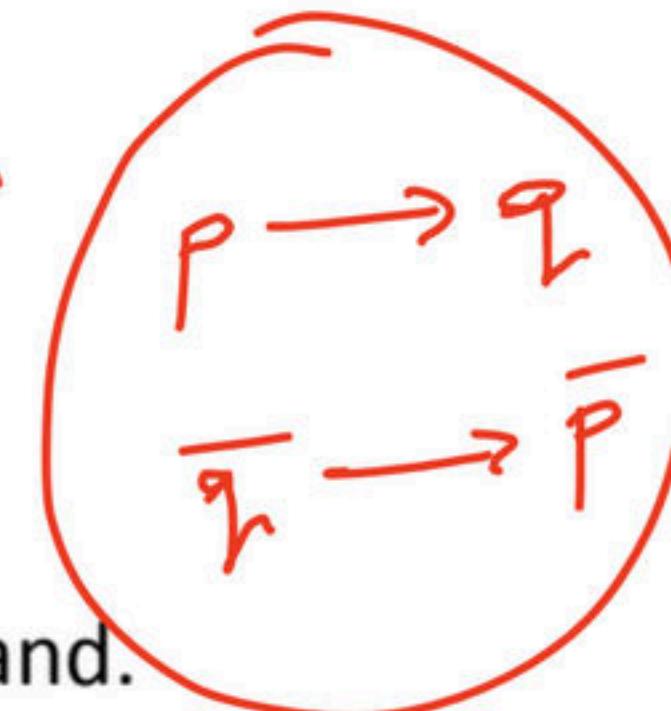
(B) There is demand, hence there will be supply.

(C) There is no supply, implies that there is no demand.

(D) Both (1) and (2)

$$\bar{q} \rightarrow \bar{p}$$

$$p \rightarrow q$$





09

Suhasita purchases either a cooler or a refrigerator

$P$   
 $\bar{C} = \bar{P}$

$q_r$

$q_r^-$

- (A) Suhasita is not purchasing a cooler implies she is purchasing a refrigerator.  
(B) Suhasita is not purchasing a refrigerator implies she is purchasing a cooler.  
(C) Suhasita is purchasing a refrigerator implies she will not purchase a cooler.  
(D) Both (A) and (B)

$$\begin{array}{c} \bar{P} \rightarrow q_r \\ \bar{C} \rightarrow R \end{array} \quad \mid \quad \begin{array}{c} \bar{q}_r \rightarrow P \\ \bar{R} \rightarrow C \end{array}$$

$$\bar{q} \rightarrow P$$

$$q_r \rightarrow X$$



10



I will not have enemies, unless I fight.

- (A) I fight implies I will have enemies.
- (B) I do not have enemies, if I do not fight.
- (C) I do not fight implies I will not have enemies.
- (D) Both (3) and (4)



In each question, there is a main statement followed by four statements A, B, C and D. From the choices, choose the pair in which the first statement implies the second statement and the two are logically consistent with the main statement.

A wide-angle photograph of a coastal landscape at night. The foreground is dominated by dark, rugged rock formations. In the middle ground, a small, dark rock island sits in the calm sea. The sky above is a deep purple and blue, filled with numerous stars. A bright, colorful arc of the Milky Way galaxy stretches across the upper right quadrant of the frame.

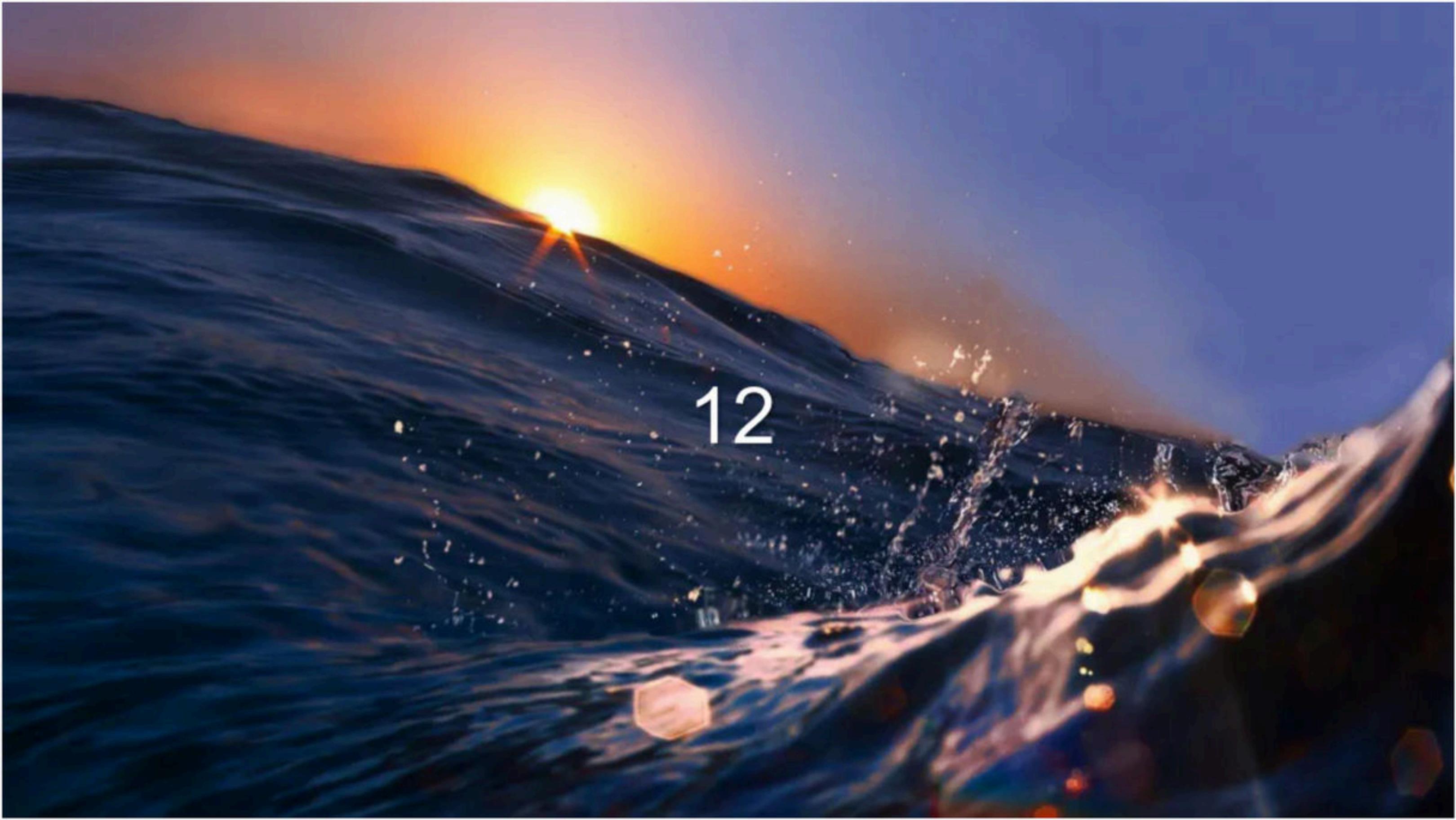
11



Teachers can teach, only if students are well mannered.

- (a) Teachers can teach.
- (b) Students are not well mannered.
- (c) Teachers cannot teach.
- (d) Students are well mannered.

- |        |        |
|--------|--------|
| (A) AB | (B) BC |
| (C) DA | (D) CD |



12

P

Prajakta is healthy, whenever she is happy.

- (a) Prajakta is not happy
- (b) Prajakta is happy.
- (c) Prajakta is healthy.
- (d) Prajakta is not healthy.

(A) CB

(C) DA

(B) BC

(D) BC and DA



$$P \rightarrow q$$

$$H \rightarrow \text{Healthy}$$

$$\neg q \rightarrow P$$

$$\neg H \rightarrow \text{Hpy}$$

NOTE:

AND.

$P \text{ AND } q$

1

$$\frac{\overline{P \text{ OR } q}}{P \cup q} \Rightarrow \frac{\overline{P \text{ AND } q}}{\overline{P} \cap \overline{q}}$$

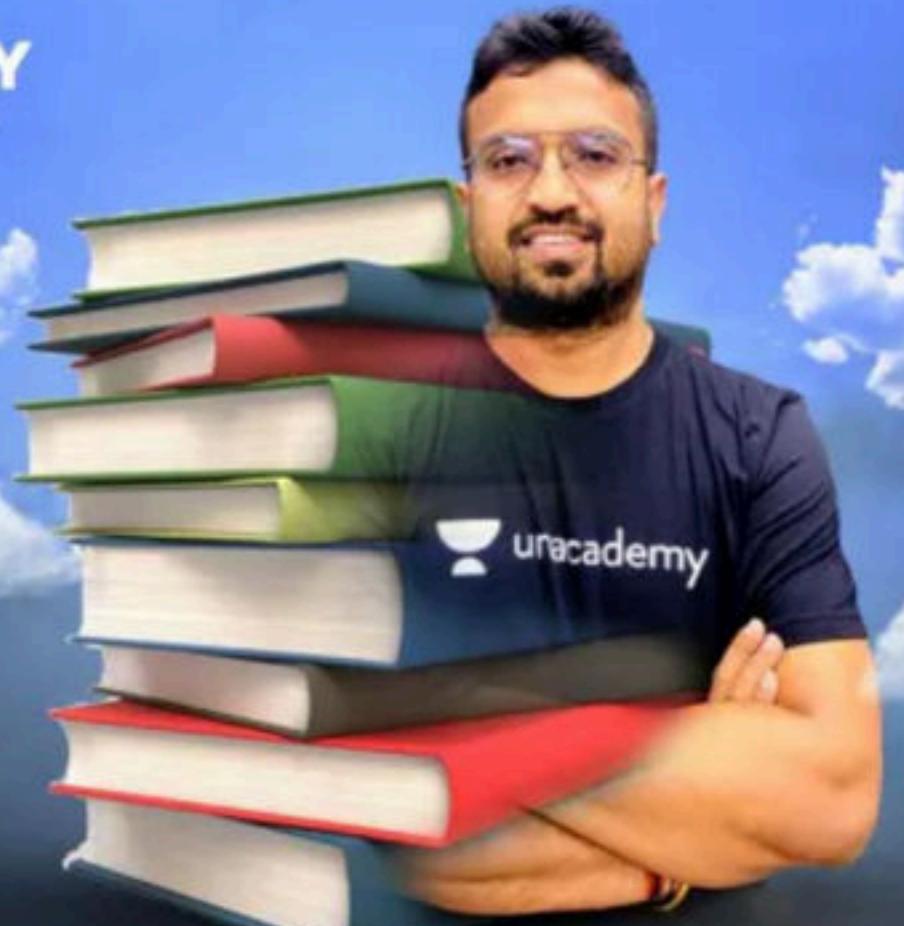
2

$$\frac{\overline{P \text{ AND } q}}{P \text{ AND } q} \Rightarrow \frac{\overline{P} \text{ OR } \overline{q}}{\overline{P} \cup \overline{q}}$$

$P$	$q$	$O P$
0	0	0
0	1	0
1	0	0

Diagram illustrating the truth table for the OR operation ( $O|P$ ). A red oval encloses the first two columns (P and q), and a blue oval encloses the last column (O|P). Blue checkmarks are placed under the first two rows where O|P is 0.

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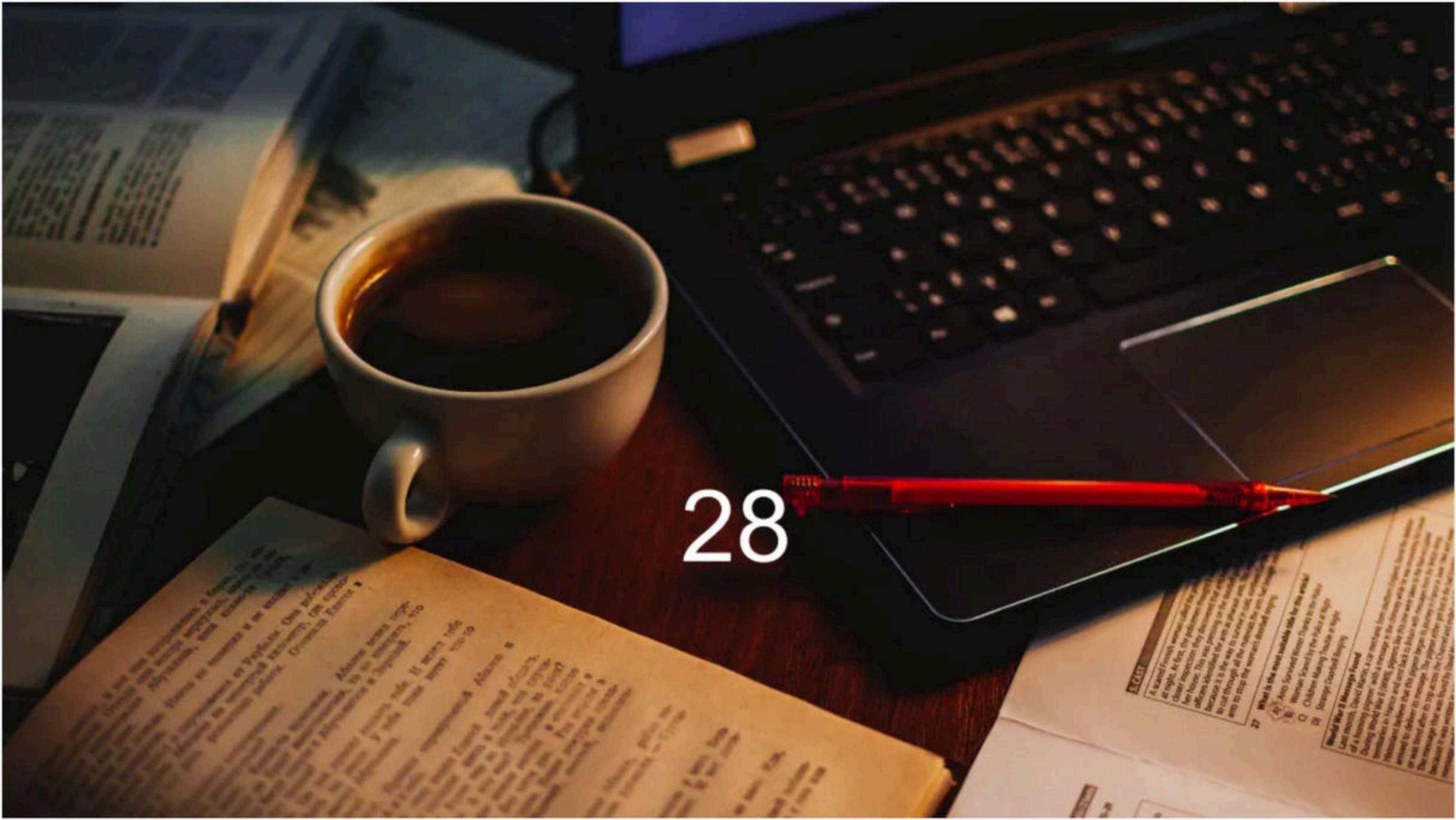
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# Miscellaneous

28



FACT

A hidden French woman is caught by German inspectors at night. At first, the police believe she is a spy, but her house is empty. They release her. This woman is a Resistance member who is putting on the house because it is the way to the Americans' secret hideout through the forest. At the same time, the Germans are trying to trap the Americans through traps.

27 What is the most probable title for this article?

- A) A German woman finds a German spy.
- B) German Society by the River is being destroyed.
- C) Strange Drowned Bodies are found.

World War II Memory Found  
Last month, David Martin, a history professor, wrote a message from someone living in France during World War II. Professor Martin is the chairman of the History department at the University of North Carolina at Chapel Hill. Professor Martin's message begins to answer his question about what happened to the people who were in France during the war. Professor Martin's message ends with a message from a man named Charles and his wife, who were living in France during the war. Professor Martin's message ends with a message from a man named Charles and his wife, who were living in France during the war.



Find the odd one from the following group:

W,E,K,O      I,Q,W,A

F, N,T,X      N,V,B,D

(A) W,E,K,O

(B) I,Q,W,A

(C) F, N,T,X

(D) N,V,B,D

**[GATE 2014 : IIT Kharagpur (EC Set-1, ME Set-1)]**



29



Find the odd one in the following group

Q,W,Z,B      B,H,K,M  
W,C,G,J      M,S,V,X

- (A) Q, W, Z, B      (B) B, H, K, M  
(C) W, C, G, J      (D) M, S, V, X

[GATE 2014 : IIT Kharagpur  
(EC Set-2, ME Set-2)]



30

If ROAD is written as URDG, then SWAN should be written as:

- (A) VXDQ
- (B) VZDQ
- (C) VZDP
- (D) UXDQ

[GATE 2015 : IIT Kanpur (CE Set - 1, CSE Set - 3)]

31





Pick the odd one out in the following : 13, 23, 33, 43, 53

- (A) 23                          (B) 33
- (C) 43                            (D) 53

**[GATE 2016 : IISc Bangalore (EE Set - 2)]**

A landscape photograph featuring a large, leafy tree standing prominently in a field. The sky above is filled with dark, heavy clouds, through which bright sunbeams and rays of light pierce, creating a dramatic and ethereal atmosphere. The horizon shows a line of trees and a clear, yellowish ground level.

32



Which number does not belong in the series below :

2, 5, 10, 17, 26, 37, 50, 64

- (A) 17                      (B) 37
- (C) 64                      (D) 26

**[GATE 2014 : IIT Kharagpur (EE Set - 3, CSE Set - 3)]**



33



The number that least fits this set: (324, 441, 97 and 64) is \_\_\_\_\_.

- (A) 324
- (B) 441
- (C) 97
- (D) 64

[GATE 2016 : IISc Bangalore (IN)]

A wide-angle photograph of a coastal mountain range. In the foreground, a lush green field with a small road curves along the water's edge. The middle ground features a deep fjord with small islands and a white boat. The background is dominated by towering, rugged mountains with patches of snow and dense green vegetation. The sky is a vibrant blue with wispy white clouds.

34

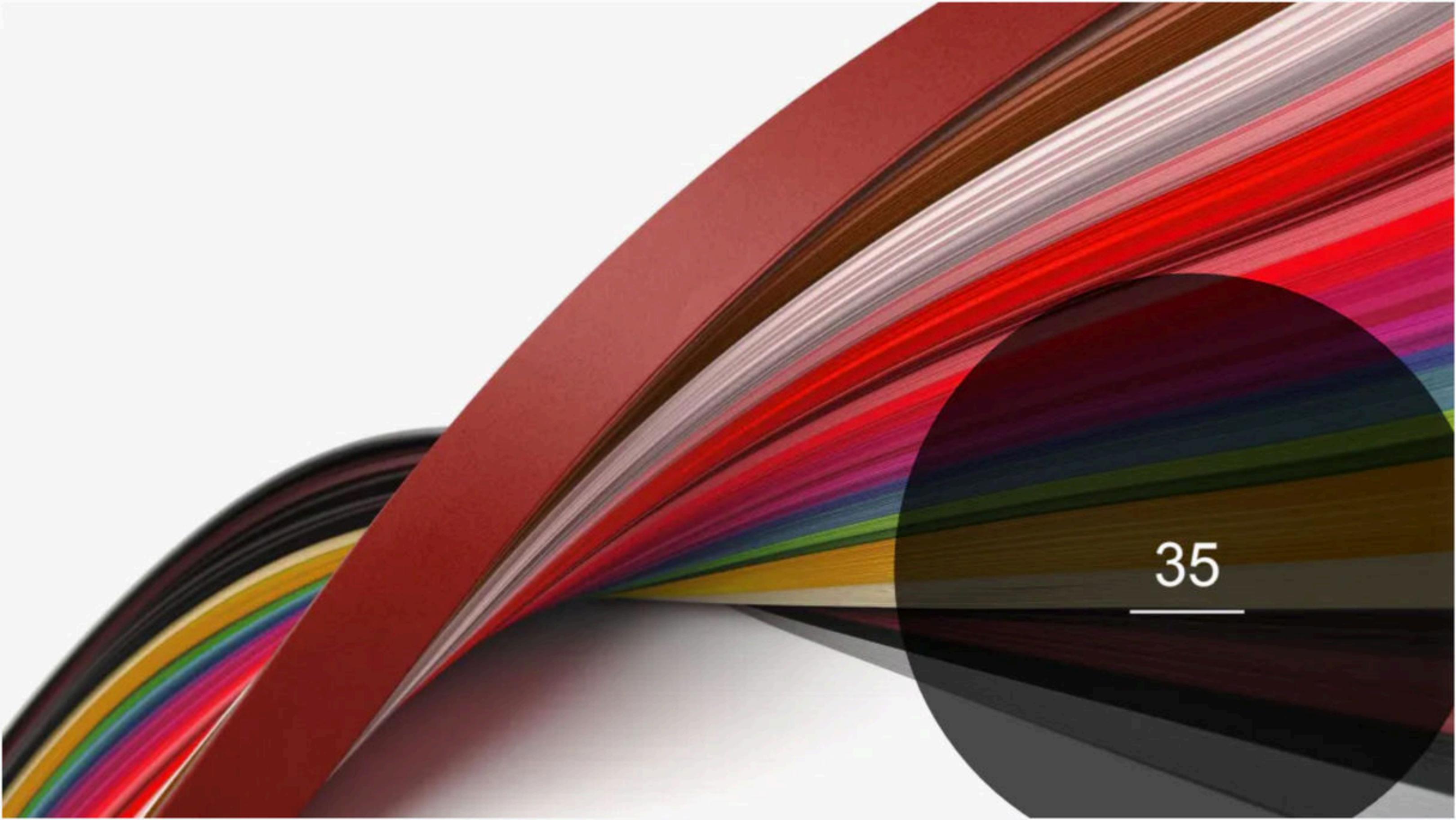


Find the missing group of letters in the following series :

BC, FGH, LMNO, \_\_\_\_\_.

- (A) UVWXY      (B) TUVWX
- (C) STUVW      (D) RSTUV

**[GATE 2018 : IIT Guwahati (ME Set – 2)]**



35



Fill in the missing number in the series :

2   3   6   15   \_\_\_\_\_   157.5   630.

[GATE 2014 : IIT Kharagpur (EC Set - 2, ME Set - 2)]

A landscape scene featuring a large, dark blue planet or moon on the left, partially illuminated by a thin white ring. In the foreground, there are dark, rugged mountains. The sky is a gradient from deep blue to bright yellow, suggesting a sunrise or sunset. A small, smaller celestial body is visible in the upper left corner.

36



Find the missing sequence in the letter series below:

A, CD, GHI, ?, UVWXYZ

- |          |          |
|----------|----------|
| (A) LMN  | (B) MNO  |
| (C) MNOP | (D) NOPQ |

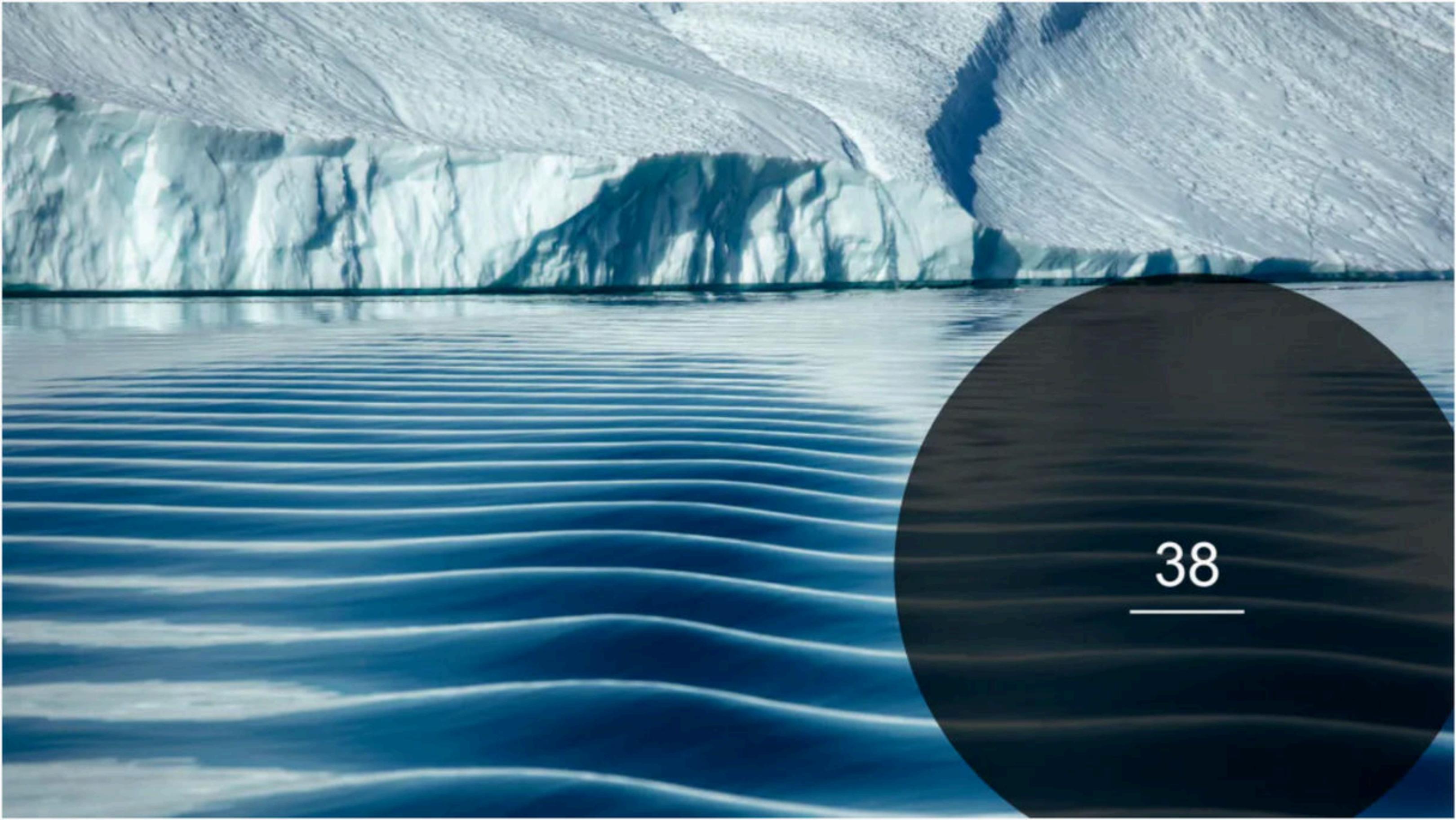
**[GATE 2015 : IIT Kanpur (EC Set - 3, ME Set - 2)]**

37

Find the next term in the sequence: 7G, 11K, 13M,  
\_\_\_\_\_.

- (A) 15Q
- (B) 17Q
- (C) 15P
- (D) 17P

[GATE 2014 : IIT Kharagpur (EC Set - 3, ME Set - 3)]



38

---

Find the next term in the sequence: 13M, 17Q, 19S,  
\_\_\_\_\_.

- (A) 21W
- (B) 21V
- (C) 23W
- (D) 23V

[GATE 2014 : IIT Kharagpur  
(EC Set - 4, ME Set - 4)]



39



What is the next number in the series :

12    35    81    173    357 \_\_\_\_\_

[GATE 2014 : IIT Kharagpur  
(EC Set - 1, ME Set - 1)]

The background of the image shows a clear blue sky with several large, white, cumulus-like clouds. A bright, overexposed sun is positioned in the upper left quadrant, casting a soft glow and creating lens flare effects.

40

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The next term in the series 81, 54,  
36, 24 ... is \_\_\_\_\_

[GATE 2014 : IIT Kharagpur  
(EC Set - 3, ME Set - 3)]



41



Given the sequence of terms, AD CG FK JP, the next term is

- (A) OV
- (B) OW
- (C) PV
- (D) PW

[GATE 2012 : IIT Delhi (ME, CE, CSE)]



42



If ROAD is written as URDG, then SWAN should be written as:

- (A) VXDQ    (B) VZDQ
- (C) VZDP    (D) UXDQ

[GATE 2015 : IIT Kanpur  
(CE Set - 1, CSE Set - 3)]



43



In a certain code, AMCF is written as EQGJ and NKUF is written as ROYJ. How will DHLP be written in that code?

- (A) RSTN     (B) TLPH
- (C) HLPT     (D) XSVR

[GATE 2018 : IIT Guwahati (EE Set – 1)]

44





The missing number m the given sequence 343, 1331,  
\_\_\_\_\_, 4913 is

- (A) 4096                      (B) 2744
- (C) 2197                      (D) 3375

[GATE 2019 : IIT Madras (EE)]



45



M has a son Q and a daughter R. He has no other children. E is the mother of P and daughter-in-law of M. How is P related to M?

- (A) P is the son-in-law of M.
- (B) P is the grandchild of M.
- (C) P is the daughter-in law of M.
- (D) P is the grandfather of M.

[GATE 2016 : IISc Bangalore (IN)]

46





If the number  $715 \blacksquare 423$  is divisible by 3 ( $\blacksquare$  denotes the missing digit in the thousandths place), then the smallest whole number in the place of  $\blacksquare$  is \_\_\_\_\_.

- A. 0
- B. 2
- C. 5
- D. 6

[GATE 2018 : IIT Guwahati (EC Set – 1)]



47



What is the value of  $1 + \frac{1}{4} + \frac{1}{16} + \frac{1}{64} + \frac{1}{256} + \dots$ ?

- (A) 2
- (B)  $\frac{7}{4}$
- (C)  $\frac{3}{2}$
- (D)  $\frac{4}{3}$

[GATE 2018 : IIT Guwahati (EC Set – 1)]



48

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There are eight bags of rice looking alike, seven of which have equal weight and one is slightly heavier. The weighing balance is of unlimited capacity. Using this balance, the minimum number of weighing required to identify the heavier bag is

- (A) 2
- (B) 3
- (C) 4
- (D) 8

[GATE 2012 : IIT Delhi (EC, EE)]



49



If the list of letters, P,R,S,T,U is an arithmetic sequence, which of the following are also in arithmetic sequence?

- I.  $2P, 2R, 2S, 2T, 2U$
- II.  $P-3, R-3, S-3, T-3, U-3$
- III.  $P^2, R^2, S^2, T^2, U^2$

- (A) I only
- (B) I and II
- (C) II and III
- (D) I and III

[GATE 2015 : IIT Kanpur  
(EE Set - 2, CSE Set - 2)]



50

The value of  $\sqrt{12 + \sqrt{12 + \sqrt{12 + \dots}}}$  is

- (A) 3.464
- (B) 3.932
- (C) 4.000
- (D) 4.444

[GATE 2014 : IIT Kharagpur  
(EE Set - 2, CSE Set - 2)]



51



What will be the maximum sum of 44, 42, 40, ..... ?

- (A) 502
- (B) 504
- (C) 506
- (D) 500

[GATE 2013 : IIT Bombay (ME, CSE)]

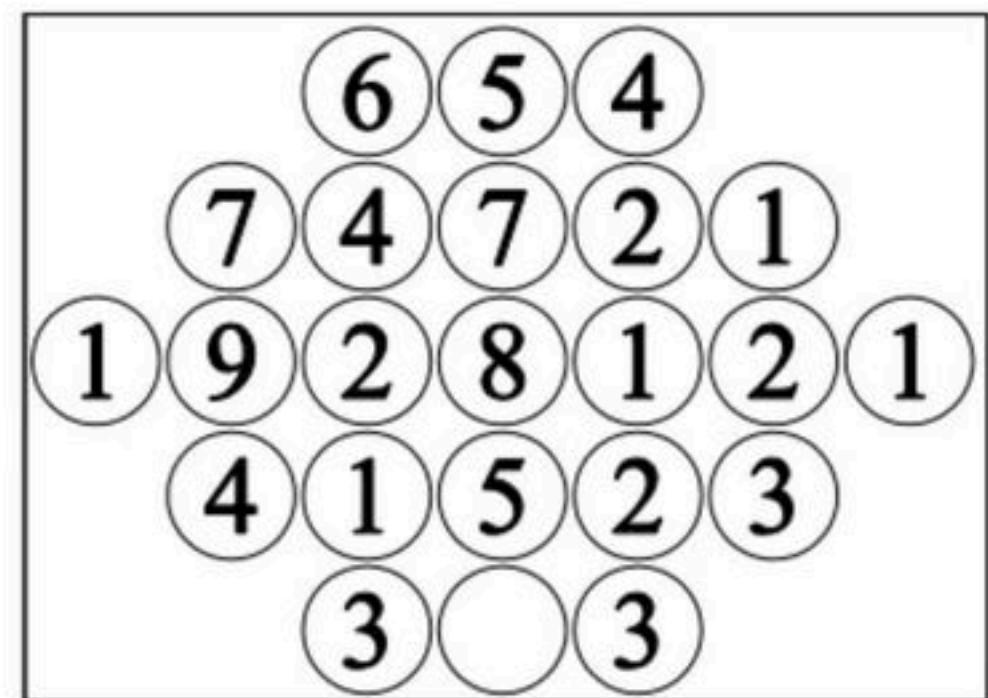


52

---



Fill in the missing value



[GATE 2015 : IIT Kanpur (EC Set - 1)]





Find the sum of the expression

$$\frac{1}{\sqrt{1+\sqrt{2}}} + \frac{1}{\sqrt{2+\sqrt{3}}} + \frac{1}{\sqrt{3+\sqrt{4+\dots}}} + \frac{1}{\sqrt{80+\sqrt{81}}}$$

- (A) 7
- (B) 8
- (C) 9
- (D) 10

[GATE 2013 : IIT Bombay (ME, CSE)]

54

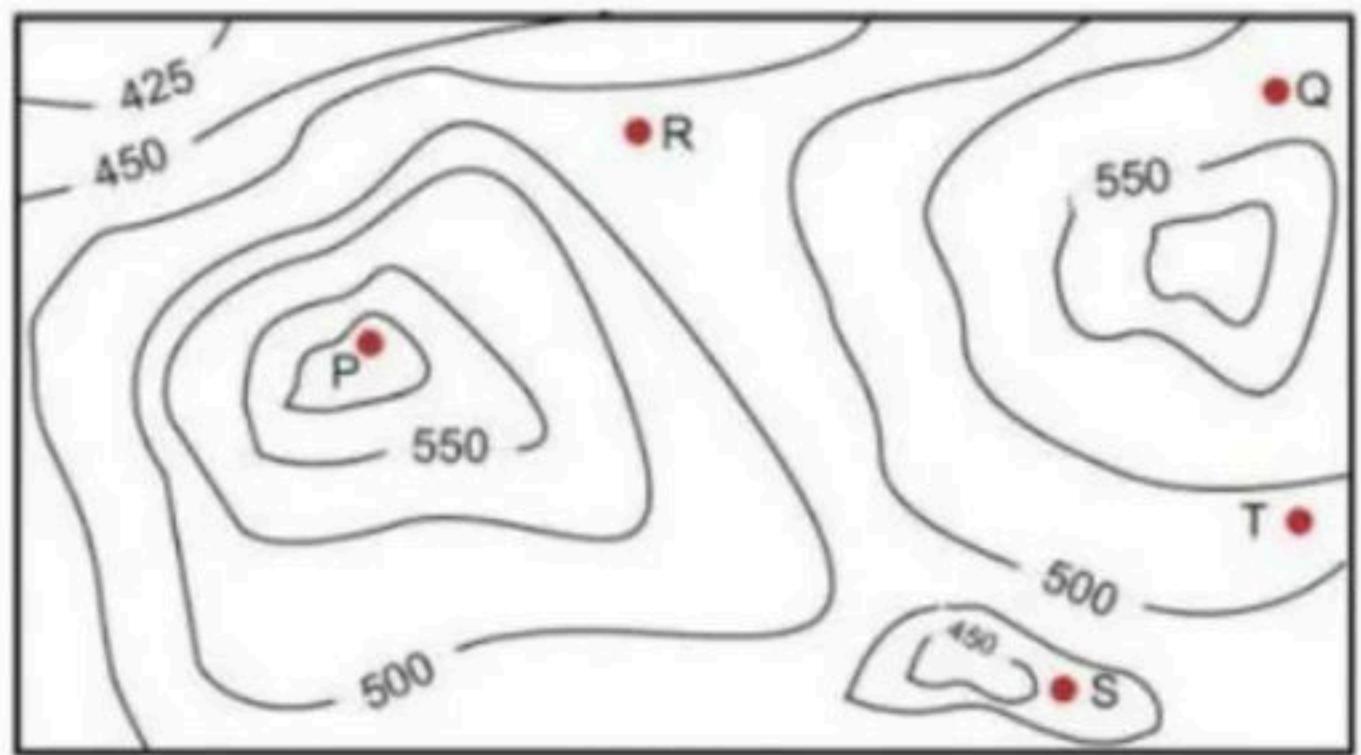
What is the sum of the series:

$$\frac{1}{(1 \times 2)} + \frac{1}{(2 \times 3)} + \frac{1}{(3 \times 4)} + \dots + \frac{1}{(100 \times 101)}$$

- (A) Ignored
- (B) Appreciated
- (C) Twisted
- (D) Returned

55

A contour line joins locations having the same height above the mean sea level. The following is a contour plot of a geographical region. Contour lines are shown at 25 m intervals in this plot. If in a flood, the water level rises to 525 m, which of the villages  $P, Q, R, S, T$  get submerged?



- A.  $P, Q$
- B.  $P, Q, T$
- C.  $R, S, T$
- D.  $Q, R, S$

[GATE 2017 : IIT Roorkee (EE, CS Set – 1)]

56

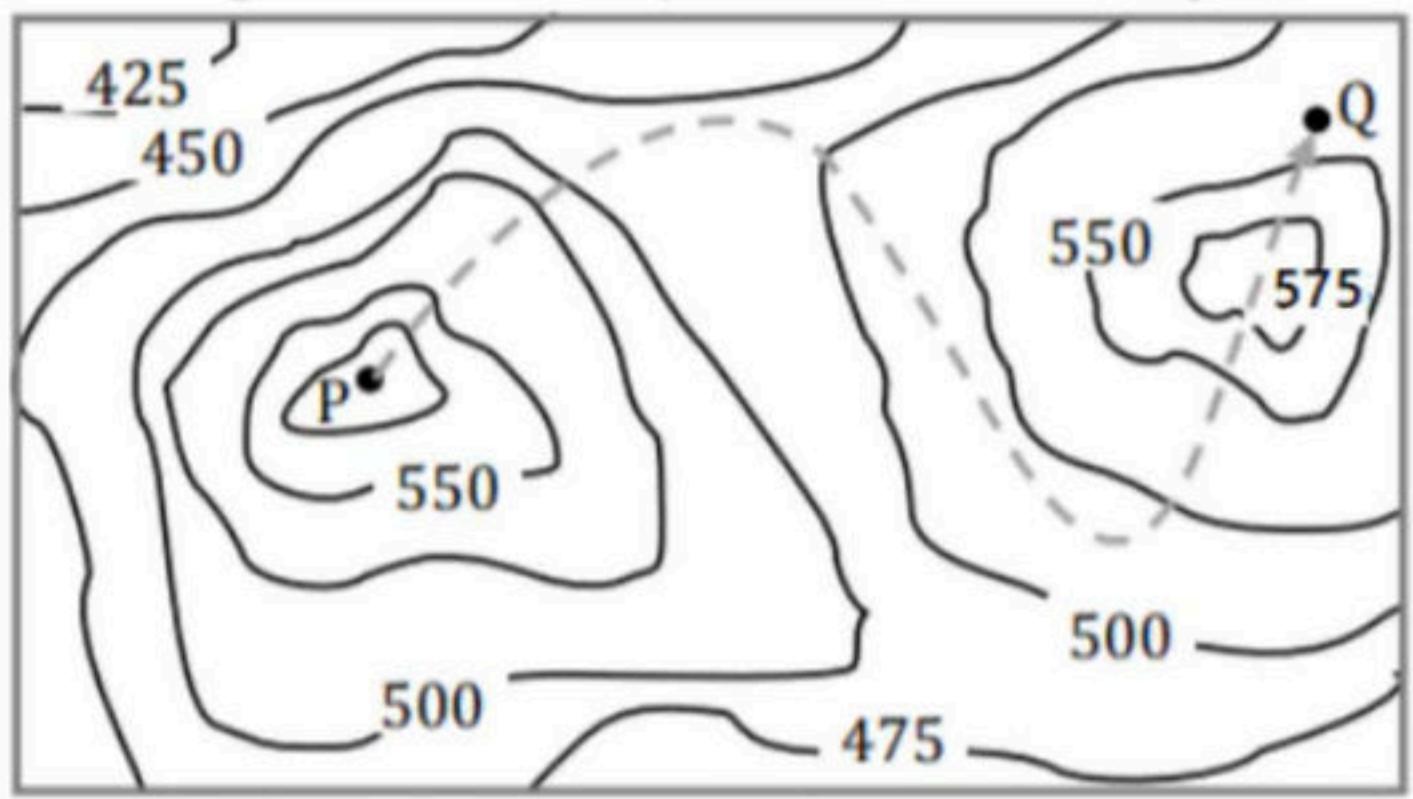
Saturday 14th November 1893

Spent morning at home  
and then went to town  
to buy a watch  
then a walk in the  
forest as it was a fine day  
and then home again  
Spent evening at home  
and then a walk  
in the forest

Tuesday 17th November

Spent morning at home  
and then a walk in the  
forest as it was a fine day  
and then home again  
Spent evening at home  
and then a walk  
in the forest

A contour line joins locations having the same height above the mean sea level. The following is a contour plot of a geographical region. Contour lines are shown at 25 m intervals in this plot.



The path from  $P$  to  $Q$  is best described by

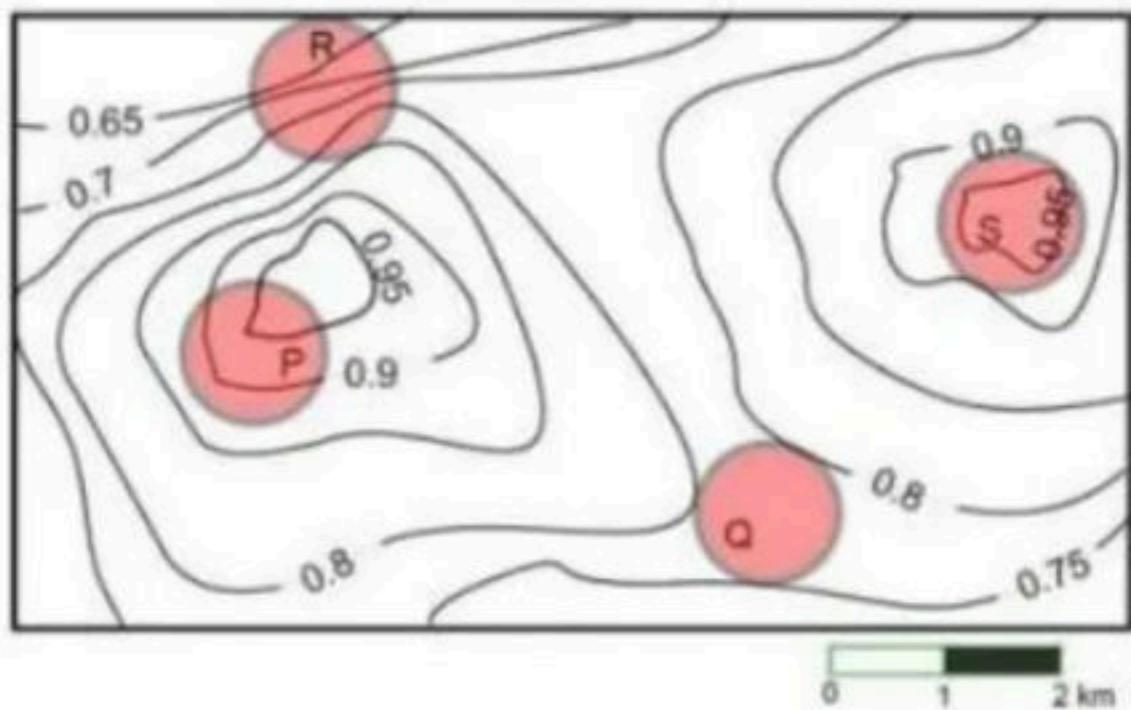
- A. Up-Down-Up-Down
- B. Down-Up-Down-Up
- C. Down-Up-Down
- D. Up-Down-Up

**[GATE 2017 : IIT Roorkee (EC, BT, PI Set – 1)]**



An air pressure contour line joins locations in a region having the same atmospheric pressure. The following is an air pressure contour plot of a geographical region. Contour lines are shown at 0.05 bar intervals in this plot.

If the possibility of a thunderstorm is given by how fast air pressure rises or drops over a region, which of the following regions is most likely to have a thunderstorm?



- A. P
- B. Q
- C. R
- D. S

[GATE 2017 : IIT Roorkee (EE, CS Set – 2)]

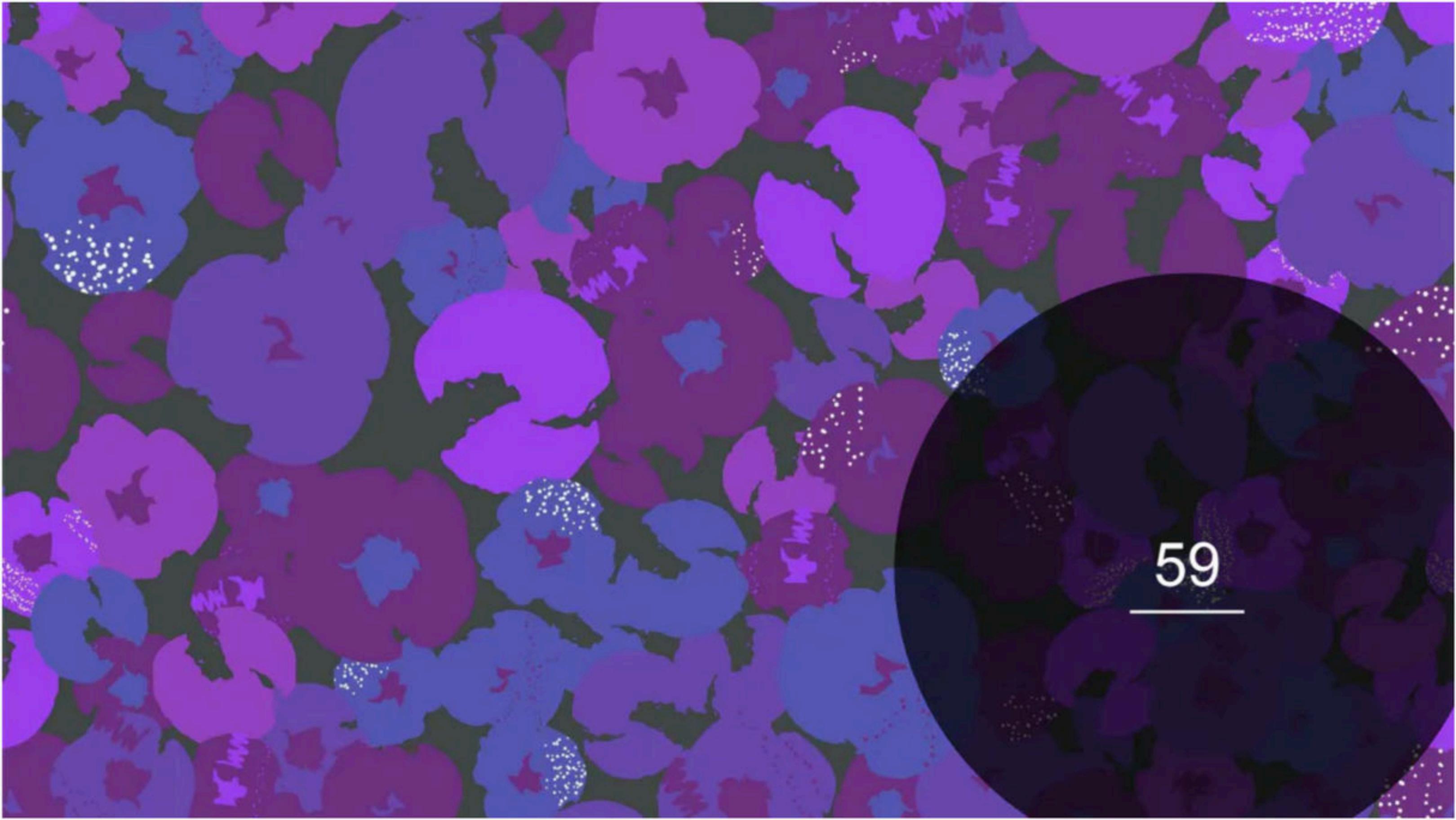


A photograph of a dense forest. The foreground is covered with fallen brown and orange autumn leaves. Several tall, thin trees stand in the middle ground, their trunks dark and silhouetted against a bright, hazy sky. Sunlight filters through the canopy, creating a dappled light effect on the forest floor. In the bottom left corner, there is a small white rectangular watermark with the text "www.RethinkIt.com".

58



Find the sum of the series :  $\frac{1}{3} + \frac{2}{3^2} + \frac{3}{3^3} + \frac{4}{3^4} + \dots \infty$



59



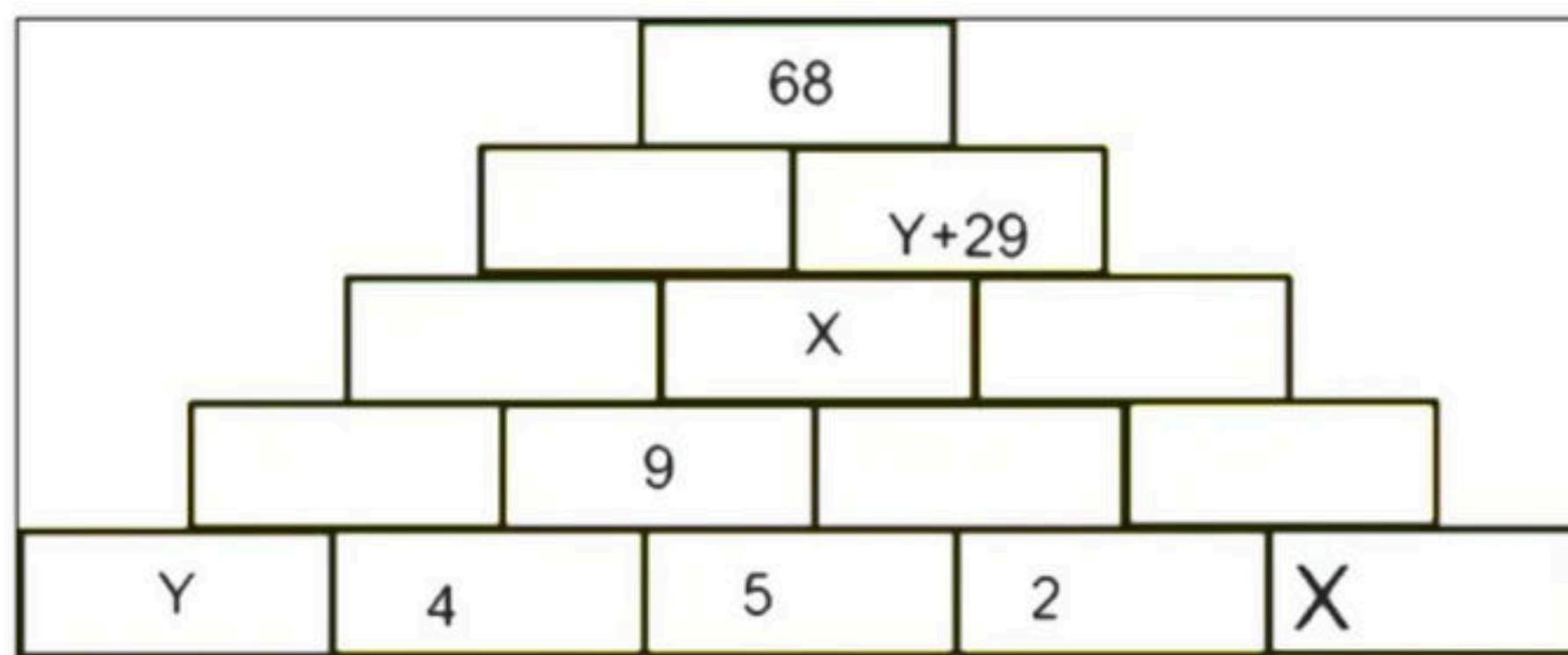
Find the sum of the series :  $\frac{1}{3} + \frac{4}{3^2} + \frac{9}{3^3} + \frac{16}{3^4} + \dots \infty$



60

In the figure, number in any cell is obtained by adding two numbers in the cells directly below it. For example, 9 in the second row is obtained by adding the two numbers 4 and 5 directly below it. The value of  $X - Y$  is

- (A) 2
- (B) 3
- (C) 4
- (D) 5





61



Saira, Mumtaz and Zeenat have a ball, a pen and a pencil, and each girl has just one object in hand.

Among the following statements, only one is true and the other two are false

- I. Saira has a ball.
- II. Mumtaz does not have the ball.
- III. Zeenat does not have the pen.

Who has the ball?

- |            |                          |
|------------|--------------------------|
| (A) Saira  | (B) Mumtaz               |
| (C) Zeenat | (D) Cannot be determined |



62



## TEES AND ELS

Of Annette, Bernice, and Cynthia:

- A. Each belongs either to the Tee family whose members always tell the truth or to the E1 family whose members always lie.
- B. Annette says “Either I belong or Bernice belongs to a different family from the other two.”

Whose family do you know the name of?



63

On 19th September 2007 somebody stole a mobile phone from an electronics shop.

The police arrested five suspects Vivek, Kartik Rajat, Pranav and Ritam. They gave their statements to the police officer. Given below is a summary of their statements:

Kartik : It was not Vivek, it was Ritam.

Ritam : It was not Pranav. It was not Vivek.

Pranav : It was Vivek. It was not Kartik.

Rajat : It was Pranav. It was Ritam.

Vivek : It was Rajat. It was not Kartik.

It was known that each suspect told exactly one lie. Who stole the mobile phone?

(A) Kartik      (B) Ritam      (C) Pranav

(D) Rajat      (E) Vivek





64



There are three boxes. One contains apples, another contains oranges and the last one contains both apples and oranges. All three are known to be incorrectly labelled. If you are permitted to open just one box and then pull out and inspect only one fruit, which box would you open to determine the contents of all three boxes?

- (A) The box labelled 'Apples'
- (B) The box labelled 'Apples and Oranges'
- (C) The box labelled 'Oranges'
- (D) Cannot be determined

[GATE 2017 : IIT Roorkee (EE, CS Set – 2)]



65

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## AFTER - DINNER DRINK :

Abigail , Bridget and Claudia often eat dinner out :



Who do you know always orders the same drink after dinner ?



66

P, Q and R talk about S's car collection. P states that S has at least 3 cars. Q believes that S has less than 3 cars. R indicates that to his knowledge, S has at least one car. Only one of P, Q and R is right. The number of cars owned by S is



67

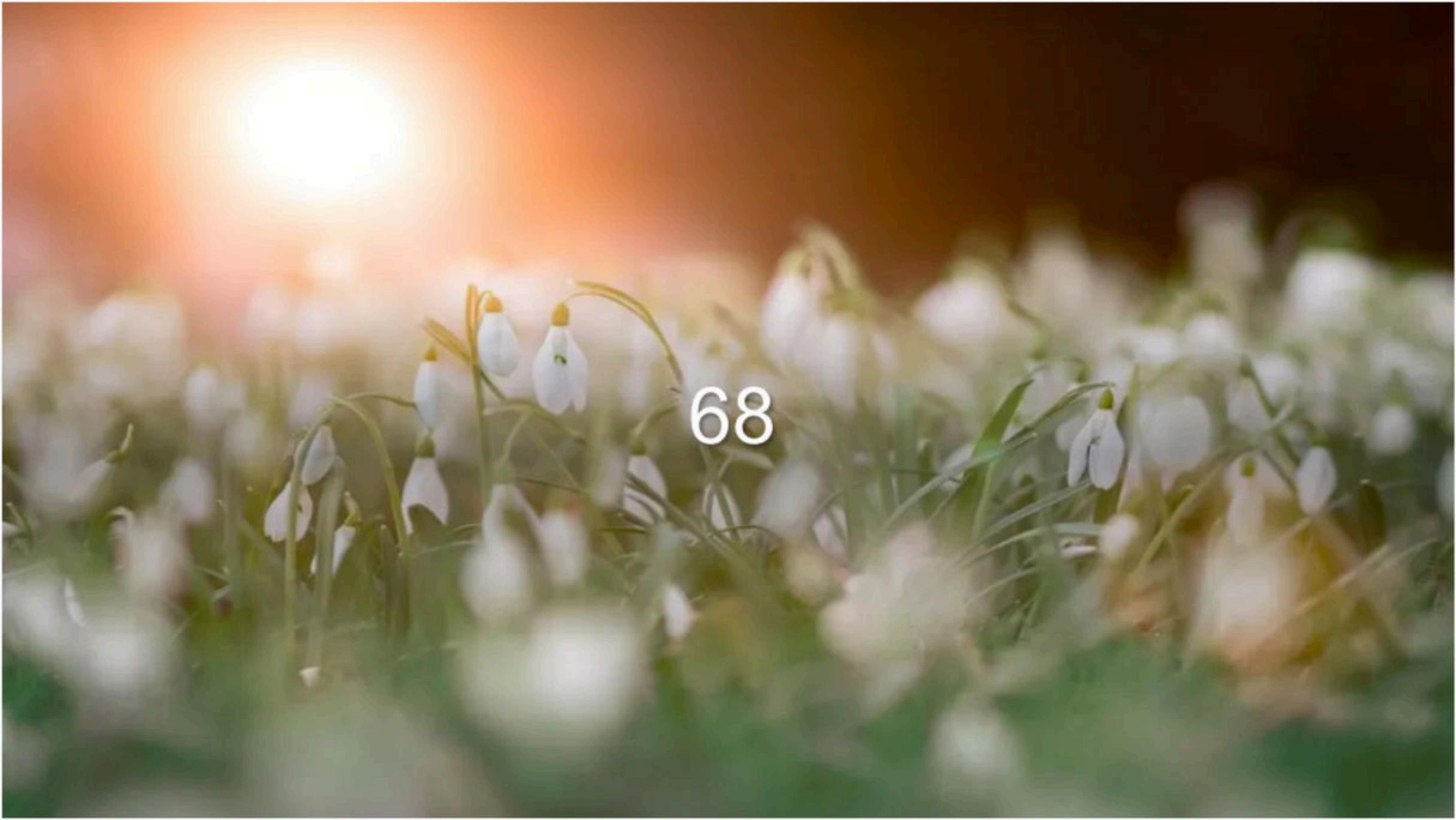


## THE TENNIS PLAYERS :

Zita , her brother , her daughter and her son are tennis players. As a game of doubles is about to begin :

- A. Zita's brother is directly across the net from her daughter.
- B. Her son is diagonally across the net from the worst player's sibling.
- C. The best player and the worst player are on the same side of the net.

Who is the best player?

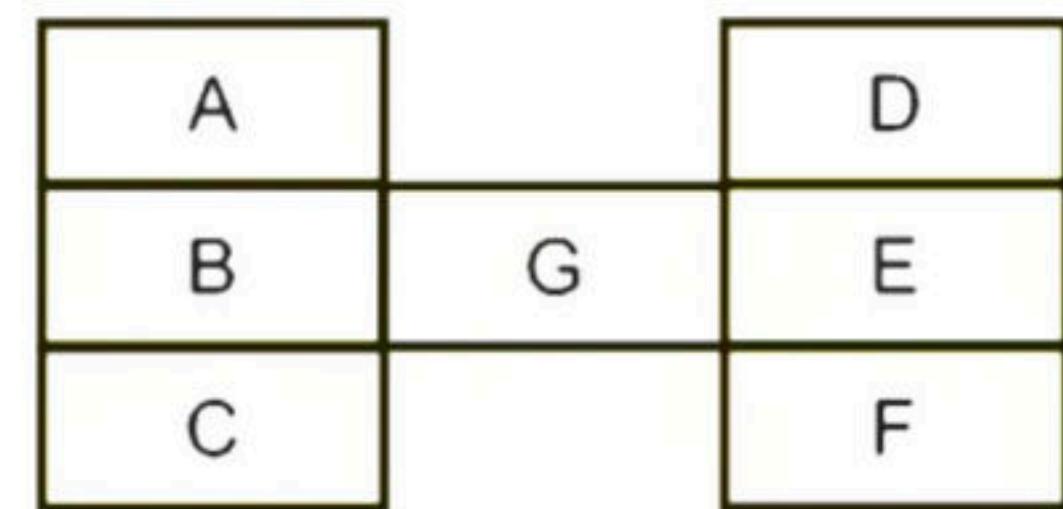
A close-up photograph of a field of snowdrop flowers. The flowers are white with a distinct yellow center, hanging downwards. They are set against a backdrop of green grass and a blurred, warm-toned sunset or sunrise sky. The lighting is soft, creating a peaceful atmosphere.

68

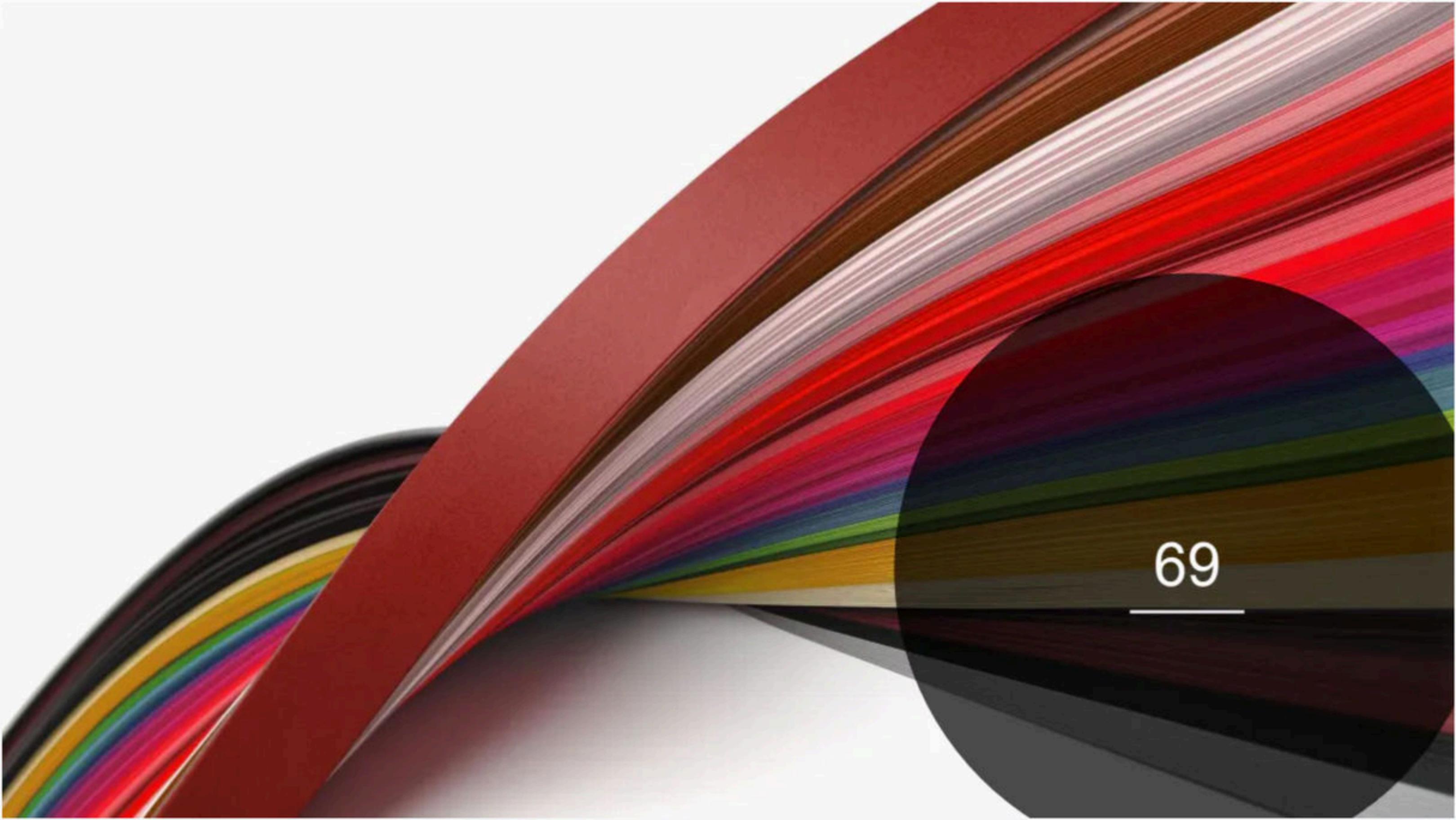


Each of the letters arranged as below represents a unique integer from 1 to 9. The letters are positioned in the figure such that  $A + C$  and  $D + E$  are equal. Which integer among the following choices cannot be represented by the letters A, B, C, D, E, F and G?

- (A) 4
- (B) 5
- (C) 6
- (D) 9



[GATE 2018 : IIT Guwahati (CE Set – 1)]



69



## RELATIONS :

Lee , Dale and Terry are related to each other.

- A. Among the three are Lee's legal Spouse , Dale's sibling and Terry's Sister-in-law.
- B. Lee's legal spouse and Dale's sibling are of the same sex.

Who do you know is married man?



A close-up photograph of a field of violets. In the foreground, several violets are in sharp focus, showing their characteristic purple upper petals and yellow lower petals with dark veins. Behind them, more violets and some larger, dried, brown leaves are visible. The background is a soft-focus blend of various colors, suggesting a natural, outdoor setting. In the bottom right corner, there is a white scale bar with the number "70" written on it.

70

P looks at Q while Q looks at R. P is married, R is not. The number of pairs of people in which a married person is looking at an unmarried person is

- (A) 0
- (B) 1
- (C) 2
- (D) Cannot be determined

[GATE 2017 : IIT Roorkee (ME Set – 2)]

71





## EQUAL PRODUCTS :

A	D
B	E
C	F
	G

Each of the seven digits from 0,1,2,3,4,5,6,7,8 and 9 is :

- A. Represented by a different letter in the figure.
- B. Positioned in the figure above so that  $A \times B \times C$ ,  $B \times G \times E$  and  $D \times E \times F$  are equal.

Which digit does G represent ?



72

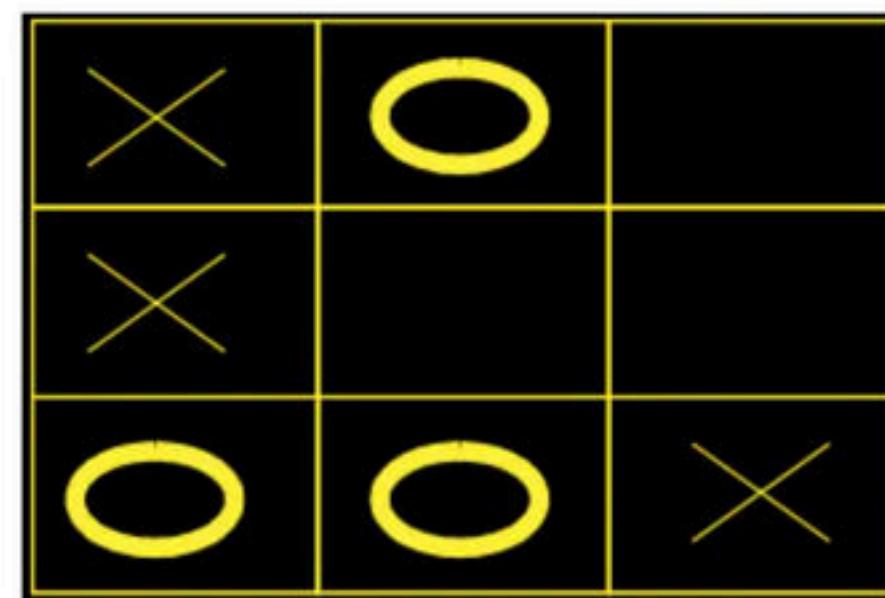


## X AND O

The game of Tic-tac-toe is played in a large square divided into nine small squares.

1. Each of two players in turn places his or her mark – usually X or O – in a small square.
2. The player who first gets three marks in a horizontal, vertical, or diagonal line wins.
3. A player will always place his or her mark in a line that already contains
  - (a) two of his or her own marks or (b) two of his/her opponent's marks – giving ]
    - (a) priority over
    - (b) only the last mark to be placed in the game shown above is not given.

Which mark – X or O – wins the game?



73





## THE GUARDS

Art, Bob, Cab and Ida are guards in a museum.

- A. Each of Art, Bob, and Cab stands guard on exactly four days every week.
- B. Exactly two persons stand guard together every day.
- C. No person stands guard three days in a row.
- D. Here is a partial listing that shows when they stands guard every week:  
Who does not guard with Ida?

Sun	Art	Bob
Mon	Cab	?
Tue	Ida	?
Wed	Art	?
Thurs	Bob	?
Fri	Cab	?
Sat	Ida	?

74



Each of the letters in the figure below represents a unique integer from 1 to 9. The letters are positioned in the figure such that each of  $A + B + C$  and  $E + F + G$  is equal to 13. Which integers does E represent?

- (A) 1
- (B) 4
- (C) 6
- (D) 7

$A$	$B$	$C$	
	$D$		
$E$	$F$	$G$	
	$H$		
	$K$		

[GATE 2018 : IIT Guwahati (CE Set – 2)]



75



### THE JUDGE'S WIFE :

Edwin is a judge and a numerologist. He is married to a woman whose name :

- A. Has a “ product ” that is the same as that for JUDGE.; using the correspondence of letters and numbers above , this product is  $10 \times 21 \times 4 \times 7 \times 5$ .
- B. Has no letter in common with JUDGE.(To find a woman whose name satisfied the conditions above in relation to EDWIN would have been impossible.)
- C. Has no third letter of the alphabet because 3 is his unlucky number.
- D. Has its letter in alphabetical order when the first letter and the second letter are interchanged.

What is the name of the judge's wife ?

A	1	O	15
B	2	P	16
C	3	Q	17
D	4	R	18
E	5	S	19
F	6	T	20
G	7	U	21
H	8	V	22
I	9	W	23
J	10	X	24
K	11	Y	25
L	12	Z	26
M	13		
N	14		



76



## AFTER – DINNER DRINK :

Abigail , Bridget and Claudia often eat dinner out :

- A. Each orders either coffee or tea after dinner.
- B. If Abigail orders coffee, then Bridget orders the drink that Claudia order.
- C. If Bridget orders coffee, then Abigail orders the drink that Claudia doesn't order.
- D. If Claudia orders tea, then Abigail orders the drink that Bridget orders.

Who do you know always orders the same drink after dinner ?





The sum of the digits of a two-digit number is 12. If the new number formed by reversing the digits is greater than the original number by 54, find the original number.

- (A) 39
- (B) 57
- (C) 66
- (D) 93

[GATE 2016 : IISc Bangalore (CE Set - 2)]

78





Ratan, Anil, Pinku and Gaurav are brothers of Rakhi, Sangeeta, Pooja and Saroj, not necessarily in that order. Each boy has one sister and the names of brothers and sisters do not begin with the same letter. Pinku and Gaurav are not Saroj's or Sangeeta's brothers. Saroj is not Ratan's sister.

Pooja's brother is

- (A) Ratan
- (B) Anil
- (C) Pinku
- (D) Gaurav
- (E) Cannot be determined



79



Ratan, Anil, Pinku and Gaurav are brothers of Rakhi, Sangeeta, Pooja and Saroj, not necessarily in that order. Each boy has one sister and the names of brothers and sisters do not begin with the same letter. Pinku and Gaurav are not Saroj's or Sangeeta's brothers. Saroj is not Ratan's sister.

Which of the following are brother and sister?

- (A) Ratan and Pooja
- (B) Anil and Saroj
- (C) Pinku and Sangeeta
- (D) Gaurav and Rakhi
- (E) Gaurav and Pooja

An aerial photograph of a coastal scene. The top half shows a sandy beach with dark, irregular footprints leading into the ocean. The water is a vibrant blue, with white foam and spray from breaking waves along the shore. In the bottom left corner, there is a large, semi-transparent white number '80'.

80

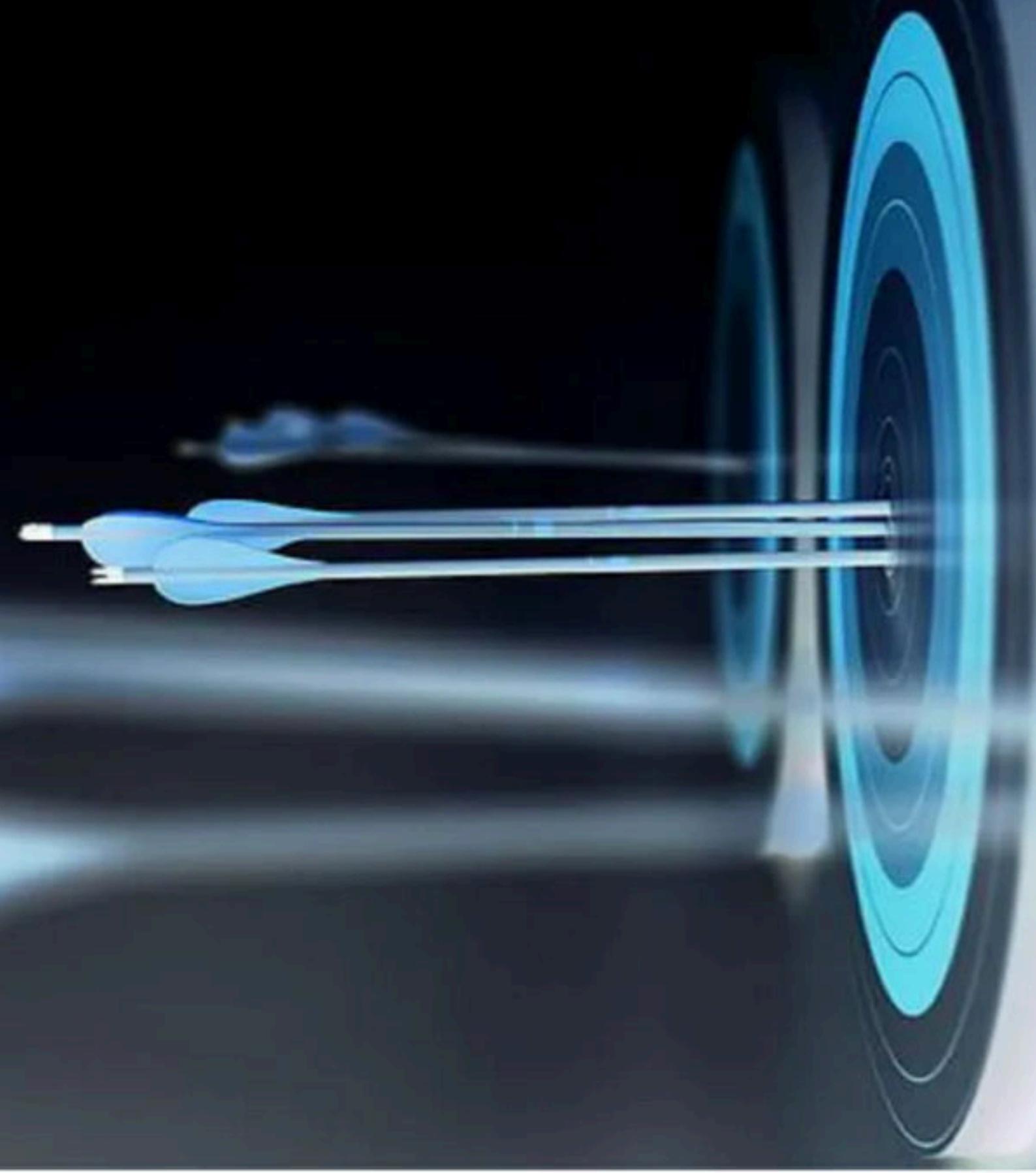


Each of P, Q, R, S, W, X, Y and Z has been married at most once. X and Y married and have two children P and Q, Z is grandfather of the daughter 'S' of P. Further Z and W married and are parents of R. Which one of the following must necessarily be FALSE?

- (A) X is the mother in law to R
- (B) P and R are not married to each other
- (C) P is son of X and Y
- (D) Q cannot be married to R

[GATE 2017 : IIT Roorkee (EC Set – 2)]

81





Rahul, Murali, Srinivas and Arul are seated around a square table. Rahul is sitting to the left of Murali, Srinivas is sitting to the right of Arul. Which of the following pairs are seated opposite each other?

- (A) Rahul and Murali
- (B) Srinivas and Arul
- (C) Srinivas and Murali
- (D) Srinivas and Rahul

[GATE 2017 : IIT Roorkee (EE, CS Set – 1)]

82





## Questions 82 to 87

Read the given information carefully and answer the questions that follow.

Four persons A, B, C and D are camping at four campsites E, F, G and H, not necessarily in that order. The campsites are located on four different lakes I, J, K and L (not necessarily in that order) which are in four different states M, N, O and P (not necessarily in that order).

- I. B is camping on K.
- II. H is on J, which is in N.
- III. The person at I, a native of P, camps only in that state.
- IV. D is at F.
- V. A is camping in O

Where is B camping?

- (A) At E
- (B) In M
- (C) On L
- (D) At F
- (E) In P





83



## Questions 82 to 87

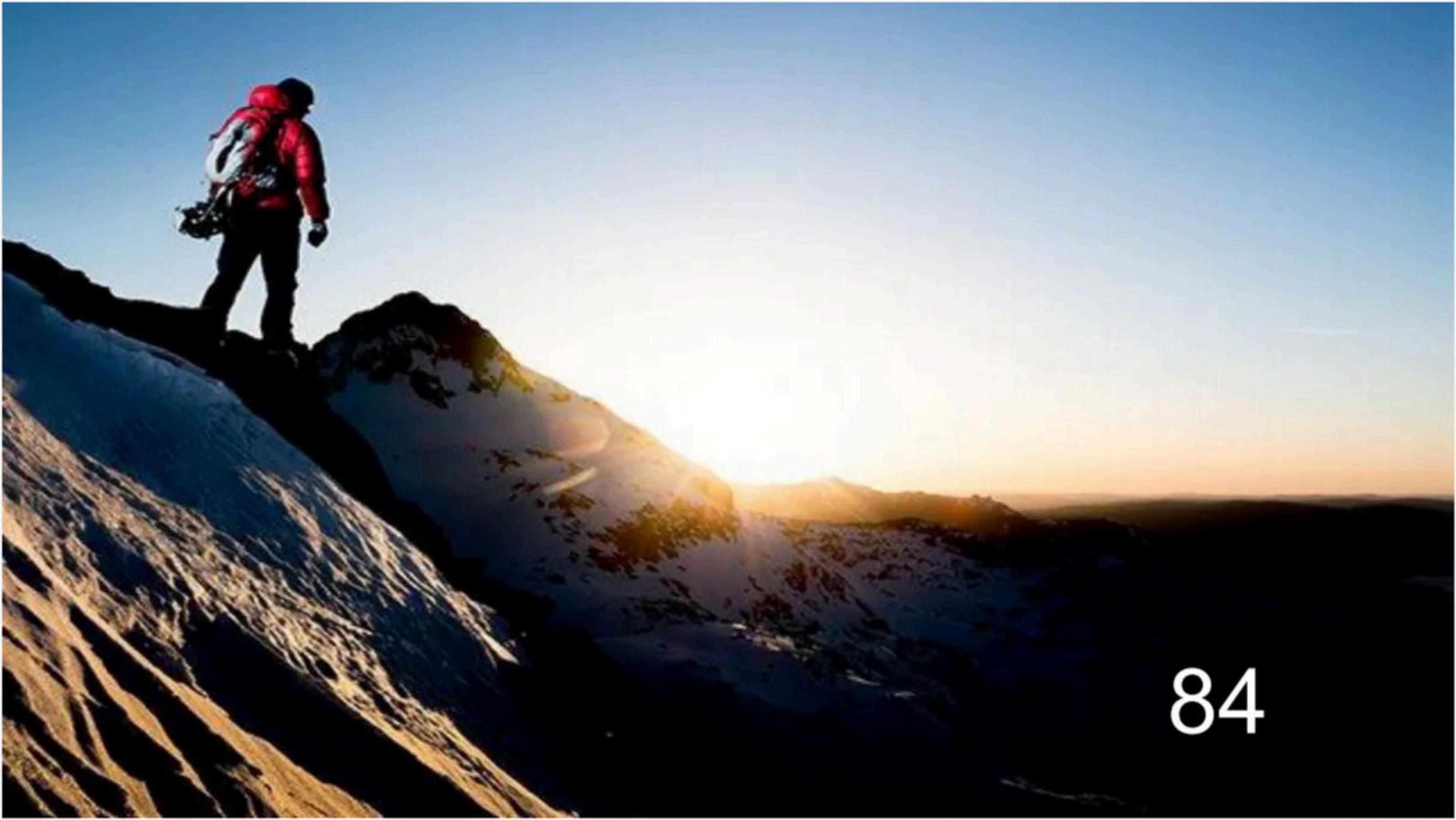
Read the given information carefully and answer the questions that follow.

Four persons A, B, C and D are camping at four campsites E, F, G and H, not necessarily in that order. The campsites are located on four different lakes I, J, K and L (not necessarily in that order) which are in four different states M, N, O and P (not necessarily in that order).

- I. B is camping on K.
- II. H is on J, which is in N.
- III. The person at I, a native of P, camps only in that state.
- IV. D is at F.
- V. A is camping in O

I is where

- (A) F is located
- (B) A is camping
- (C) the campsite in which O is located
- (D) the campsite G is located
- (E) None of these



84



## Questions 82 to 87

Read the given information carefully and answer the questions that follow.

Four persons A, B, C and D are camping at four campsites E, F, G and H, not necessarily in that order. The campsites are located on four different lakes I, J, K and L (not necessarily in that order) which are in four different states M, N, O and P (not necessarily in that order).

- I. B is camping on K.
- II. H is on J, which is in N.
- III. The person at I, a native of P, camps only in that state.
- IV. D is at F.
- V. A is camping in O



On the basis of the information given, it is possible to deduce that

- I. A is not at H
- II. C is in P
- III. D is not at E

- (A) I only
- (B) II only
- (C) III only
- (D) I and III only
- (E) II and III only

A photograph of several silhouetted figures holding hands in a circle against a vibrant sunset or sunrise sky. The figures are mostly orange and yellow against the blue and orange background. A thick purple horizontal bar is positioned across the top left of the image.

85



## Questions 82 to 87

Read the given information carefully and answer the questions that follow.

Four persons A, B, C and D are camping at four campsites E, F, G and H, not necessarily in that order. The campsites are located on four different lakes I, J, K and L (not necessarily in that order) which are in four different states M, N, O and P (not necessarily in that order).

- I. B is camping on K.
- II. H is on J, which is in N.
- III. The person at I, a native of P, camps only in that state.
- IV. D is at F.
- V. A is camping in O



Is where

- I. L is located
- II. F is located

- (A) I only
- (B) II only
- (C) I and II both
- (D) I or II but not both
- (E) None of these



86



## Questions 82 to 87

Read the given information carefully and answer the questions that follow.

Four persons A, B, C and D are camping at four campsites E, F, G and H, not necessarily in that order. The campsites are located on four different lakes I, J, K and L (not necessarily in that order) which are in four different states M, N, O and P (not necessarily in that order).

- I. B is camping on K.
- II. H is on J, which is in N.
- III. The person at I, a native of P, camps only in that state.
- IV. D is at F.
- V. A is camping in O

Which of the following is true of L?

- (A) C is camping there
- (B) D is camping there
- (C) It is in M
- (D) A is camping there
- (E) None of these



A silhouette of a hiker with a backpack and trekking poles stands on a rocky outcrop in the foreground, looking towards a range of mountains at sunset. The sky is filled with warm orange, yellow, and red hues, with darker clouds in the background.

87



## Questions 82 to 87

Read the given information carefully and answer the questions that follow.

Four persons A, B, C and D are camping at four campsites E, F, G and H, not necessarily in that order. The campsites are located on four different lakes I, J, K and L (not necessarily in that order) which are in four different states M, N, O and P (not necessarily in that order).

- I. B is camping on K.
- II. H is on J, which is in N.
- III. The person at I, a native of P, camps only in that state.
- IV. D is at F.
- V. A is camping in O



Which of the following cannot be determined on the basis of the information given?

- (A) Which state is K in?
- (B) Who is camping at E?
- (C) Which campsite is in P?
- (D) Who is camping in N?
- (E) None of these



88

---



The head of a newly formed government desires to appoint five of the six selected members P,Q, R, S, T and U to portfolios of Home, Power, Defense, Telecom, and Finance. U does not want any portfolio if S gets one of the five. Rants either Home or Finance or no portfolio says that if S gets either Power or Telecom, then she must get the other one. T insists on a portfolio if P gets one.

Which is the valid distribution of portfolios?

- (A) P-Home, Q-Power, R-Defense, S-Telecom, T-Finance
- (B) R-Home, S-Power, P-Defense, Q-Telecom, T-Finance
- (C) P-Home, Q-Power, T-Defense, S-Telecom, U-Finance
- (D) Q-Home, U-Power, T-Defense, R-Telecom, P-Finance

[GATE 2015 : IIT Kanpur (CE Set - 1, CSE Set - 3)]



89



There are five buildings called V, W, X, Y and Z in a row (not necessarily in that order). V is to the West of W, Z is to the East of X and the West of V, W is to the West of Y. Which is the building in the middle?

- (A) V
- (B) W
- (C) X
- (D) Y

[GATE 2017 : IIT Roorkee (EE, CS Set – 2)]

Directions for questions 90 and 91 : Read the following information and answer the questions that follow.

ABCABC is a six – digit number. (Therefore, both the As, both the Bs and both the Cs are the same.) C is an even digit.



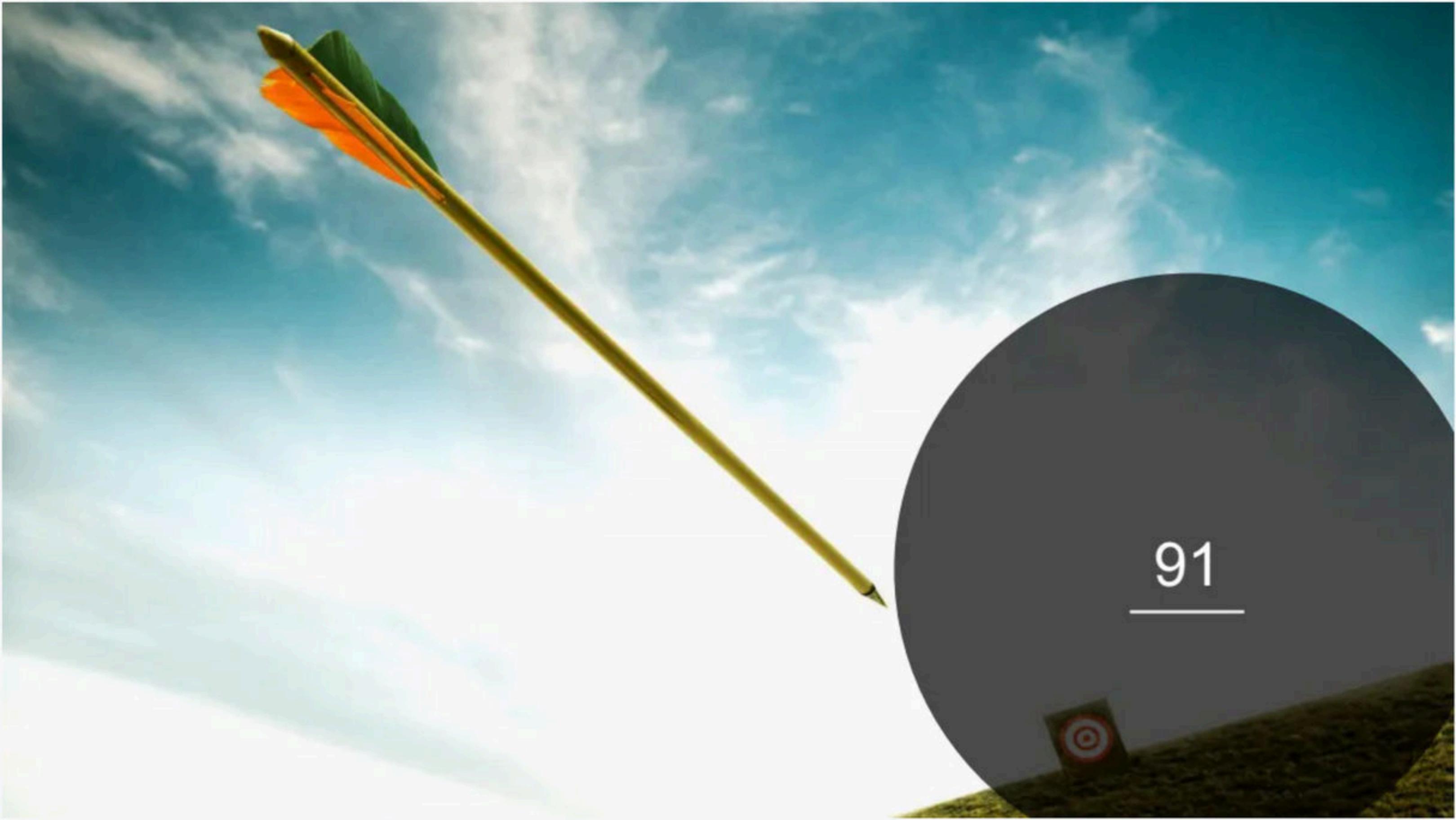
90



ABCABC is a six – digit number. (Therefore, both the As, both the Bs and both the Cs are the same.) C is an even digit.

Is ABCABC divisible by 14?

- (A) Yes
- (B) No
- (C) Divisible if A is even
- (D) divisible if B is even
- (E) None of these



91

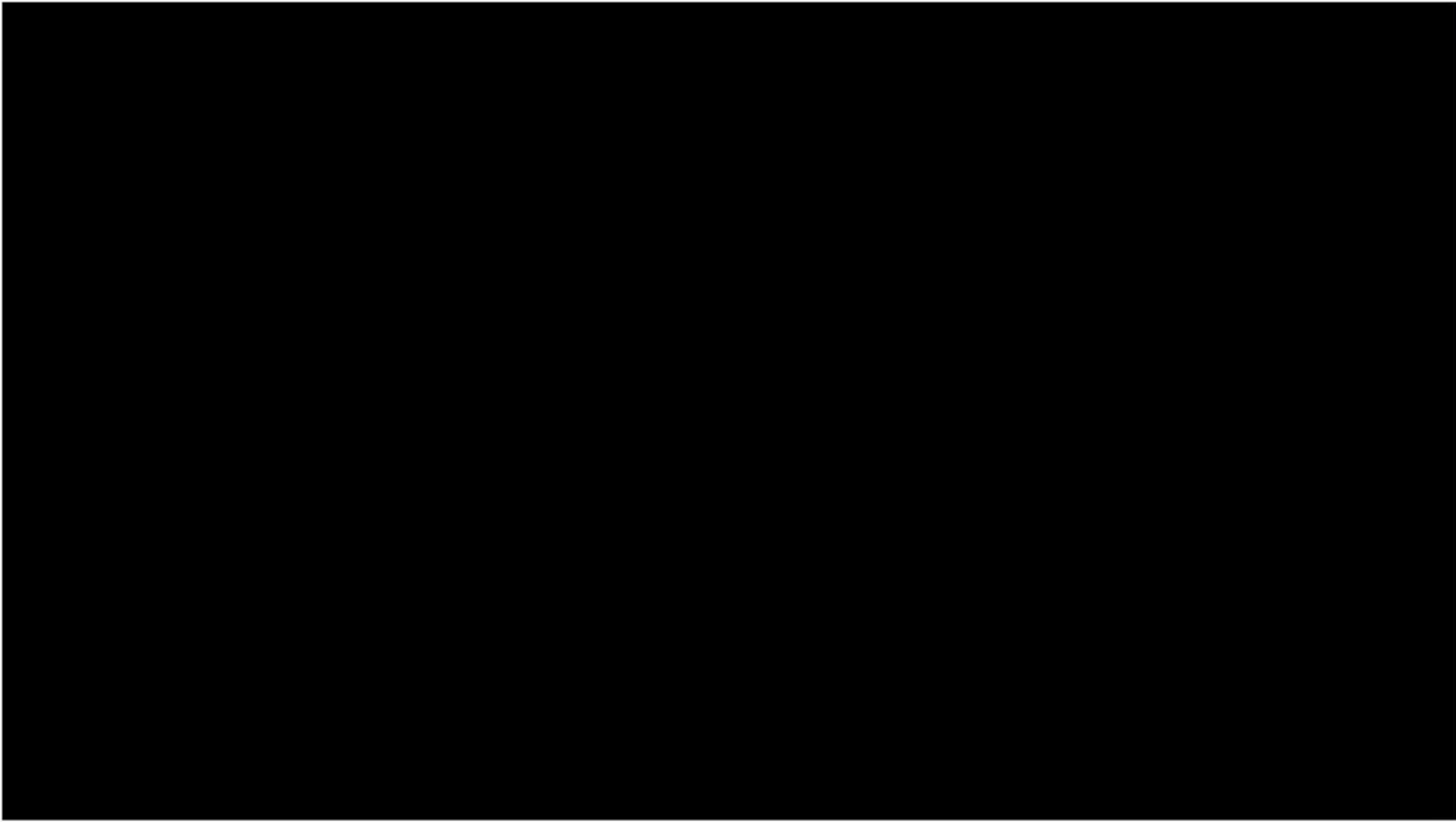
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ABCABC is a six – digit number. (Therefore, both the As, both the Bs and both the Cs are the same.) C is an even digit.

Is ABCABC divisible by 13?

- (A) Yes
- (B) No
- (C) Divisible if  $A = 2$
- (D) Divisible if  $B = 5$
- (E) None of these





# GATE 2019 - 01



01

---



They have come a long way in \_\_\_\_\_ trust among the users.

- (A) created
- (B) creating
- (C) creation
- (D) create



02

The CEO's decision to quit was as shocking to the Board as it was to\_\_\_\_\_.

- (A) myself
- (B) me
- (C) I
- (D) my



03



The lecture was attended by quite \_\_\_\_\_ students, so the hall was not very \_\_\_\_\_.

- (A) few, quite
- (B) a few, quite
- (C) few, quiet
- (D) a few, quiet



04

---

If  $E = 10$ ;  $J = 20$ ;  $O = 30$ ; and  $T = 40$ , what will be  $P + E + S + T$  ?

- (A) 82
- (B) 164
- (C) 120
- (D) 51



05

On a horizontal ground, the base of straight ladder is 6m away from the base of a vertical pole. The ladder makes an angle of  $45^\circ$  to the horizontal. If the ladder is resting at a point located at one-fifth of the height of the pole from the bottom, the height of the pole is \_\_\_\_\_ meter.

A close-up photograph of three young green plants, likely seedlings, growing out of dark brown soil. The plants have thin, light green stems and broad, rounded leaves. Each leaf is adorned with a single, clear water droplet. The background is a soft, out-of-focus green, creating a natural and fresh atmosphere.

06



R Q, R, S and T are related and belong to the same family. P is the brother of S. Q is the wife of P. R and T are the children of the siblings P and S respectively. Which one of the following statements is necessarily FALSE?

- (A) S is the sister-in-law of Q
- (B) S is the aunt of T
- (C) S is the aunt of R
- (D) S is the brother of P



07



A square has sides 5cm smaller than the sides of a second square. The area of the larger square is four times the area of the smaller square. The side of the larger square is \_\_\_\_\_ cm.

- (A) 15.10
- (B) 18.50
- (C) 10.00
- (D) 8.50



08

---



In a sports academy of 300 people, 105 play only cricket, 70 play only hockey, 50 play only football, 25 play both cricket and hockey, 15 play both hockey and football and 30 play both cricket and football. The rest of them play all three sports. What is percentage of people who play at least two sports?

- (A) 23.30
- (B) 50.00
- (C) 28.00
- (D) 25.00



09

---



The increasing interest in tribal characters might be a mere coincidence, but the timing is of interest. None of this, though, is to say that the tribal hero has arrived in Hindi cinema, or that the new crop of characters represents the acceptance of the tribal character in the industry. The films and characters are too few to be described as a pattern.  
Who does the word 'arrived' mean in the paragraph above?

- (A) reached a terminus
- (B) came to a conclusion
- (C) attained a status
- (D) went to a place



10



The new cotton technology, Bollgard-II, with herbicide tolerant traits has developed into a thriving business in India. However, the commercial use of this technology is not legal in India. Notwithstanding that, reports indicate that the herbicide tolerant Bt cotton had been purchased by farmers at an average of Rs 200 more than the control price of ordinary cotton, and planted in 15% of the cotton growing area in the 2017 Kharif season.

Which one of the following statements can be inferred from the given passage?

- (A) Farmers want to access the new technology for experimental purposes
- (B) Farmers want to access the new technology if India benefits from it
- (C) Farmers want to access the new technology by paying high price
- (D) Farmers want to access the new technology even if it is not legal



# GATE 2019 - 02

A close-up photograph of a cluster of white and pink plumeria flowers. The flowers have five petals each, with a distinct yellow center. They are surrounded by large, green, serrated leaves. A red, ribbed vine or stem is visible in the background. The lighting is bright, highlighting the textures of the leaves and the delicate petals.

01

Daytime temperature in Delhi can \_\_\_\_ 40°C

- (A) Peak
- (B) reach
- (C) get
- (D) stand



02



The growth rate of ABC Motors in 2017 was the same \_\_\_\_\_ XYZ Motors in 2016 .

- (A) As those of
- (B) As that off
- (C) As that of
- (D) As off

A wide-angle, nighttime photograph of a city skyline, likely New York City, viewed from across a river. A bridge spans the water in the foreground. The city lights reflect off the water's surface, creating a vibrant, multi-colored glow. The skyline is filled with numerous skyscrapers of various heights and architectural styles, all illuminated against the dark night sky.

03



Suresh wanted to lay a new carpet in his new mansion with an area of  $70 \times 55$  sq. mts. However an area of 550 sq. mts had to be left out for flower pots. If the cost of carpet is Rs. 50 per sq. mts, how much money (in Rs.) will be spent by Suresh for the carpet now?

- (A) Rs. 1,65,000
- (B) Rs. 1,92,500
- (C) Rs. 1,27,500
- (D) Rs. 2,75,000



04



A retaining wall with measurements  $30\text{ m} \times 12\text{ m} \times 6\text{ m}$  was constructed with bricks of dimensions  $8\text{ cm} \times 6\text{ cm} \times 6\text{ cm}$ . If 60% of the wall consists of bricks, total no of bricks used for the construction is \_\_\_\_\_ lakhs.

- (A) 45
- (B) 30
- (C) 40
- (D) 75

05



Hima Das was \_\_\_\_\_ only Indian athlete to win \_\_\_\_\_ gold for India.

- (A) the, many
- (B) an, the
- (C) an, a
- (D) the, a

06





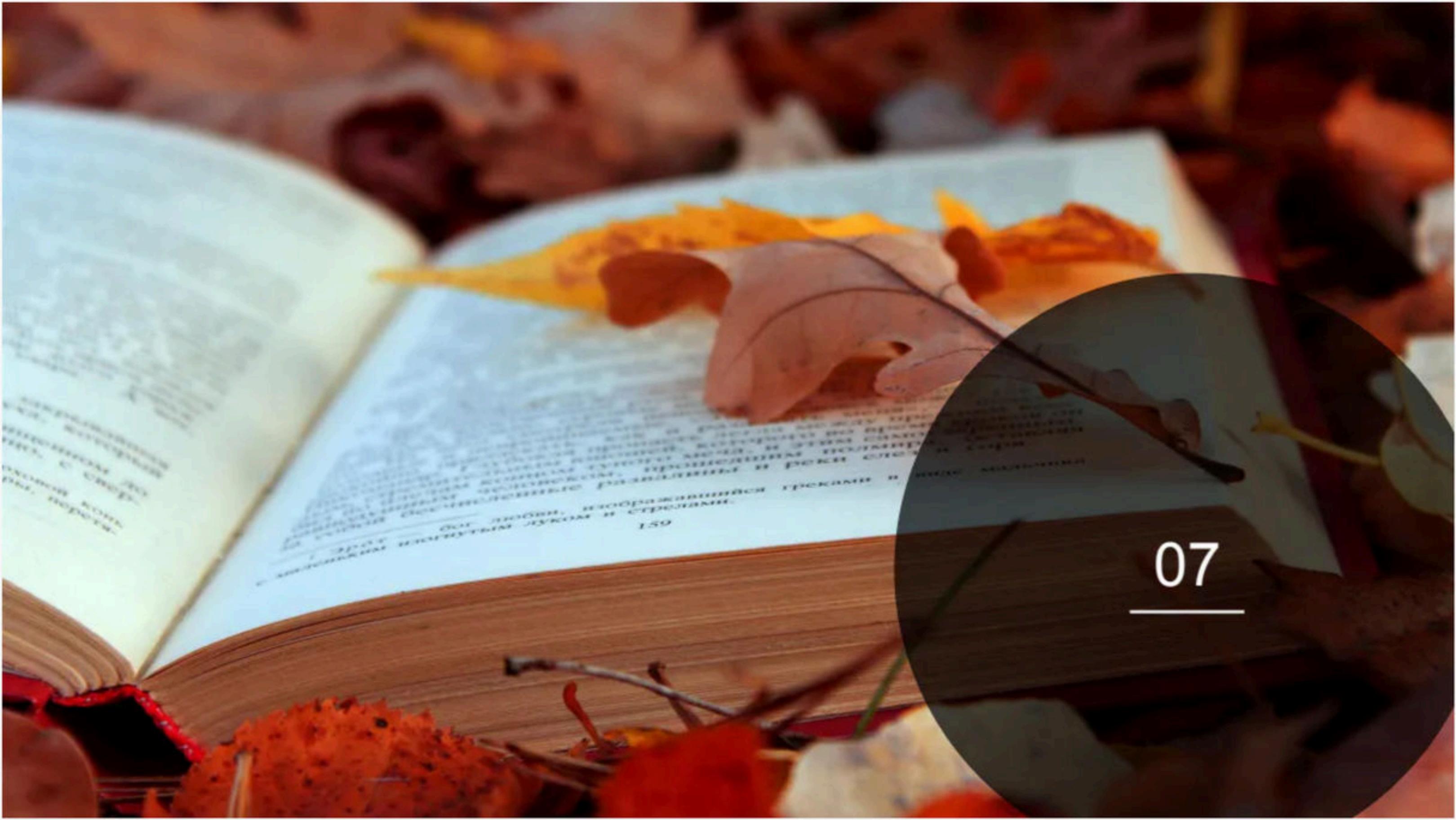
Population of state X increased by  $x\%$  and the population of state Y increased by  $y\%$  from 2001 to 2011. Assume that  $x$  is greater than  $y$ . Let  $P$  be the ratio of the population of state X to state Y in a given year. The percentage increase in  $P$  from 2001 to 2011 is \_\_\_\_\_

(A)  $x - y$

(B)  $\frac{100(x-y)}{100+x}$

(C)  $\frac{100(x-y)}{100+y}$

(D)  $\frac{x}{y}$



07



The Newspaper report that over 500 hectares of tribal land spread across 28 tribal settlements in Mohinitampuram forest division have already been "alienated". A top forest official said, "First the tribals are duped out of their land holdings. Second, the families thus rendered landless are often forced to encroach further into the forests".

On the basis of the information available in the paragraph, \_\_\_\_\_is/are responsible for duping the tribals.

- (A) The newspaper
- (B) Landless families
- (C) forest officials
- (D) it cannot be inferred who

A stack of glowing books with a butterfly and cherry blossoms.

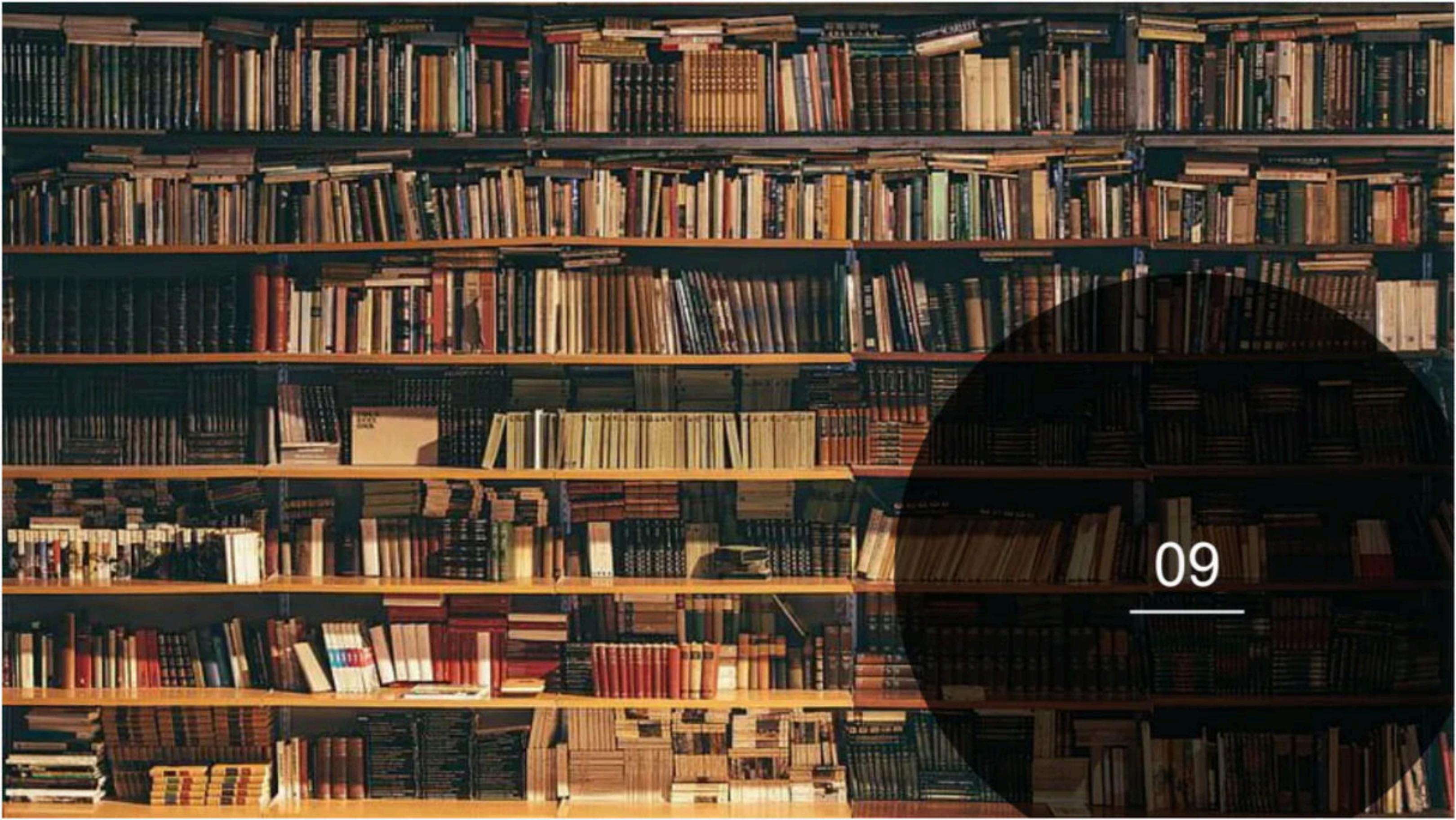
08



An oil tank can be filled by pipe X in 5 hours and pipe Y in 4 hours, each pump working on its own. When the oil tank is full and the drainage hole is open, the oil is drained in 20 hours. If initially the tank was empty and someone started the two pumps together but left the drainage hole open, how many hours will it take for the tank to be filled? (Assume that the rate of drainage is independent of the head)

- (A) 2.50
- (B) 1.50
- (C) 2.00
- (D) 4.00

IIT, Madras GATE 2019

A photograph showing a massive, multi-story wall of bookshelves packed with books. The shelves are made of light-colored wood and are set against a dark, textured background. The books vary greatly in size, color, and binding style, creating a rich, textured pattern across the entire image.

09

---



Mohan, the manager, wants his four workers to work in pairs. No paper should work for more than 5 hours. Ram and John have worked together for 5 hours. Krishna and Amir have worked as a team for 2 hours. Krishna does not want to work with Ram. Whom should Mohan allot to work with John if he wants all the workers to continue working?

- (A) Amir
- (B) Krishna
- (C) Ram
- (D) None of the three



10



"Popular Hindi fiction, despite - or perhaps because of - its wide reach, often does not appear in our cinema. As ideals that viewers are meant to look up to rather than identify with, Hindi film protagonists usually read books of aspirational value: textbooks, English books, or high value literature". Which one of the following CANNOT be inferred from the paragraph above?

- (A) Textbooks, English books or high literature have aspirational value, but not popular Hindi fiction
- (B) People do not look up to writers of textbooks, English book or high value literature
- (C) Though popular Hindi fiction was widely read, it often does not appear in the movies
- (D) Protagonists in Hindi movies, being ideals for viewers, read only books of aspirational value.



# GATE 2020 - 01

01





It is a common criticism that most of the academicians live in their \_\_\_\_\_. So, they are not aware of the real-life challenges.

- (A) Ivory towers
- (B) Homes
- (C) Glass palaces
- (D) Big flats



02



His hunger for reading is insatiable. He reads indiscriminately. He is most certainly a/an \_\_\_\_\_ reader.

- (A) all-round
- (B) voracious
- (C) wise
- (D) precocious



03

---



Select the word that fits the analogy Fuse : Fusion :: Use : .....

- (A) User
- (B) Uses
- (C) Usage
- (D) Uision

04





If 0, 1, 2, ..... 7, 8, 9 are coded as 0, P, Q, ..... V, W, X, then 45 will be coded as

- (A) TS
- (B) SS
- (C) ST
- (D) SU



05



The sum of two positive numbers is 100. After subtracting 5 from each number, the product of the resulting numbers is 0. One of the original numbers is.

- (A) 95
- (B) 85
- (C) 80
- (D) 90

A photograph of a sunset or sunrise over a dark, hilly landscape. The sky is a deep blue at the top, transitioning into a vibrant orange and red near the horizon. A large, bright orange sun is visible on the left side. In the center, there is a prominent, colorful cloud formation with shades of pink, purple, and blue. The foreground is dark and indistinct.

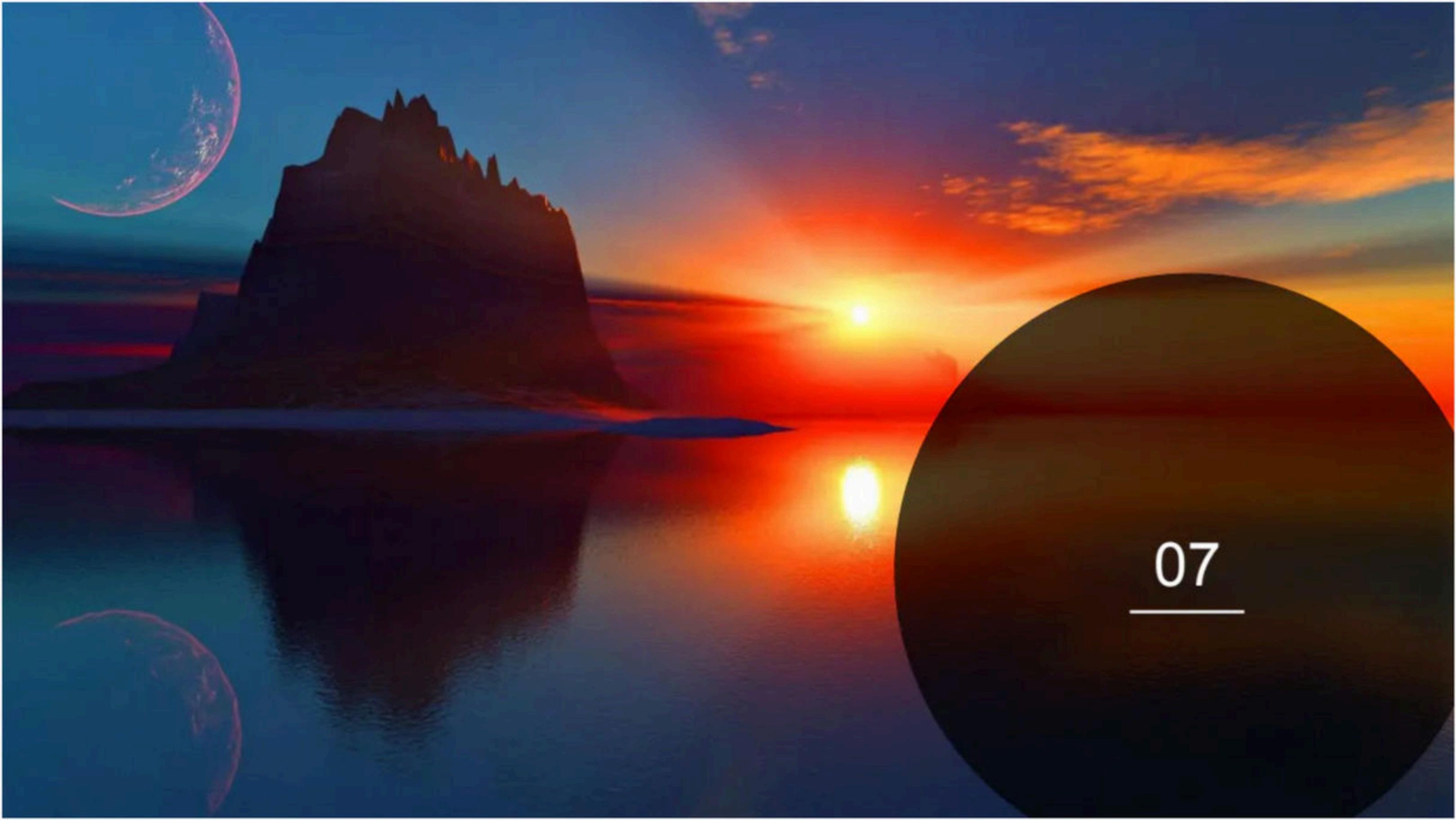
06



The American psychologist Howard Gardner expounds that human intelligence can be sub categorised into multiple kinds, in such a way that individuals differ with respect to their relative competence in each kind. Based on this theory, modern educationists insist on prescribing multi-dimensional curriculum and evaluation parameters that enable development and assessment of multiple intelligences.

Which of the following statements can be inferred from the given text?

- (A) Howard Gardner insists that the teaching curriculum and evaluation needs to be multi-dimensional.
- (B) Modern educationists want to develop and assess the theory of multiple intelligences.
- (C) Modem educationists insist that the teaching curriculum and evaluation needs to be multi-dimensional.
- (D) Howard Gardner wants to develop and assess the theory of multiple intelligences.



07

---



Five friends P, Q, R, S and T went camping. At night, they had to sleep in a row inside the tent. P, Q and T refused to sleep next to R since he snored loudly. P and S wanted to avoid Q as he usually hugged people in sleep.  
Assuming everyone was satisfied with the sleeping arrangements, what is the order in which they slept?

- (A) RSPTQ
- (B) SPRTQ
- (C) QTSPR
- (D) QRSPT



08



Insert seven numbers between 2 and 34, such that the resulting sequence including 2 and 34 is an arithmetic progression. The sum of these inserted seven numbers is.

- (A) 124
- (B) 130
- (C) 120
- (D) 126



09

The unit's place in  $26591749^{110016}$  is

- (A) 6
- (B) 1
- (C) 3
- (D) 9

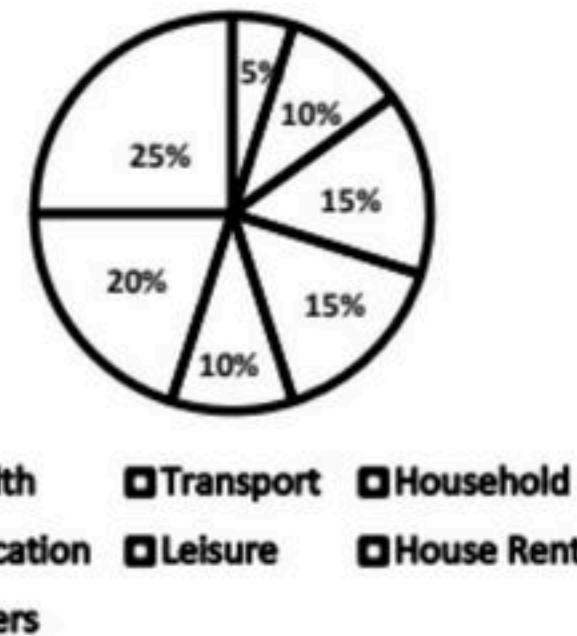
A wide-angle photograph of a coastal landscape at night. The foreground is dominated by dark, rugged rock formations. In the middle ground, a small, isolated rock island sits in the calm, dark blue ocean. The sky above is a deep navy, filled with numerous stars of varying brightness. A prominent, colorful nebula or galaxy, with hues of orange, yellow, and purple, stretches across the upper right portion of the frame, partially obscured by the starlight.

10



The total expenditure of a family, on different activities in a month, is shown in the pie-chart. The extra money spent on education as compared to transport (in percent) is

- (A) 50
- (B) 100
- (C) 33.3
- (D) 55





# GATE 2020 - 02

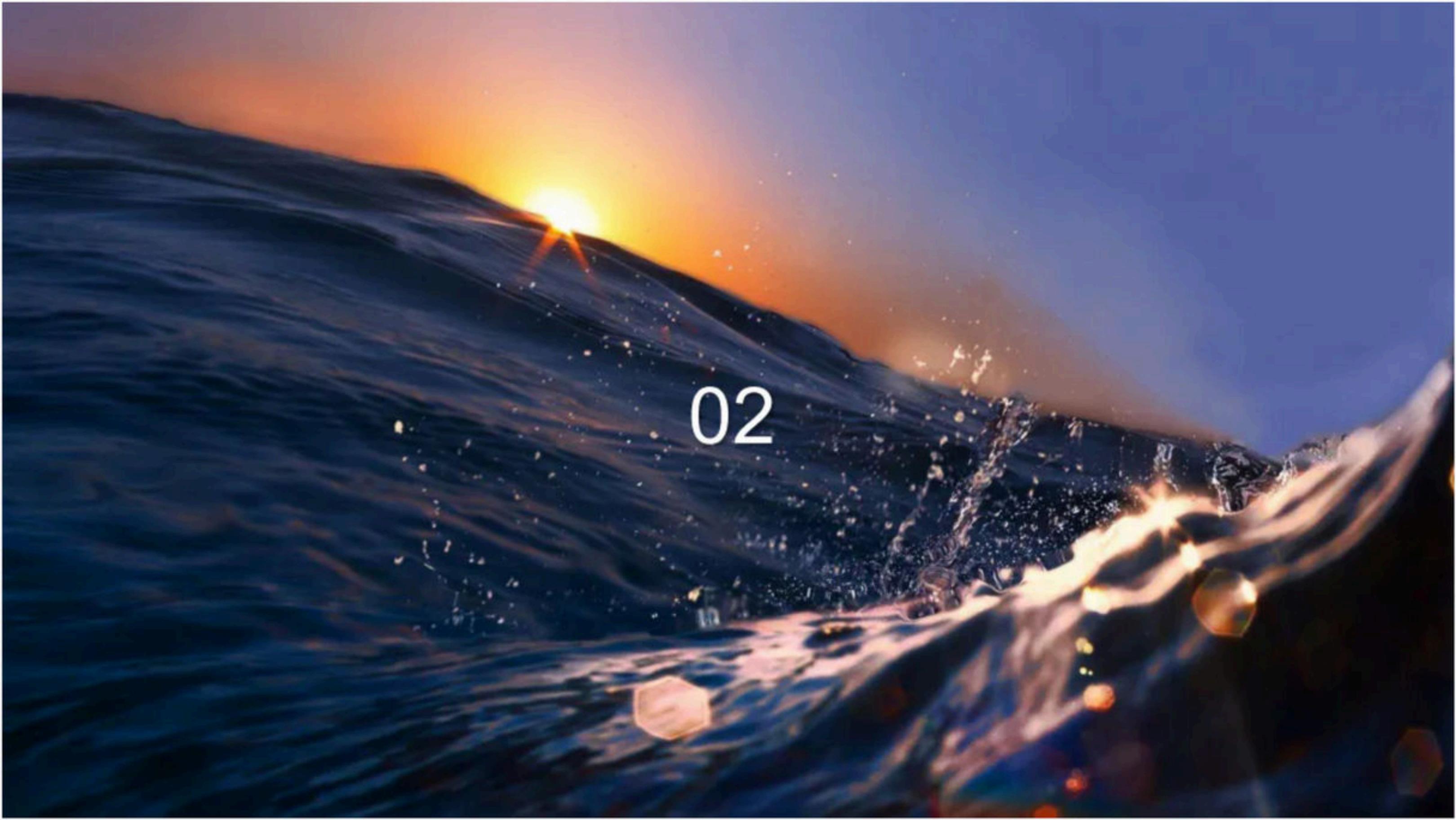


01



Rescue teams deployed \_\_\_\_ disaster hit areas combat \_\_\_\_ a lot of difficulties to save the people.

- (A) with, with
- (B) in, with
- (C) with, at
- (D) to, to



02



Select the most appropriate word that can replace the underlined word without changing the meaning of the sentence: Now-a-days, most children have a tendency to belittle the legitimate concerns of their parents.

- (A) Disparage
- (B) Begrudge
- (C) Reduce
- (D) Applaud



03



Select the word that fits the analogy : Partial : Impartial :: Popular : \_\_\_\_\_

- (A) Dispopular
- (B) Impopular
- (C) Unpopular
- (D) Mispopular

04



Customer  
Management  
Standard  
Development  
Consultancy  
Business  
Outsourcing

Innovation  
Branding  
Solution  
Marketing  
Analysis  
Ideas  
Success  
Management

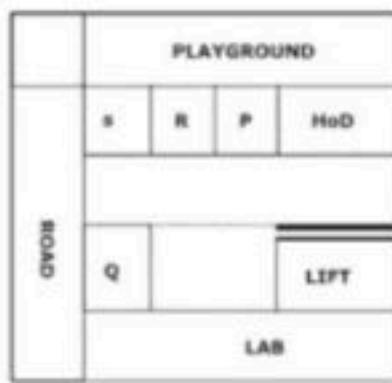
Solution



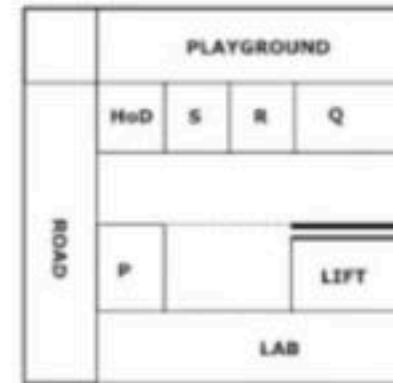
Success  
Business



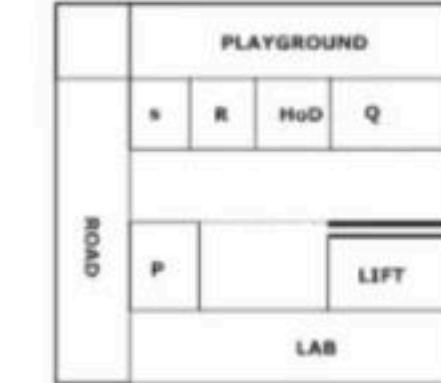
After the inauguration of the new building, the Head of the Department (HoD) collated faculty preferences for office space. P wanted a room adjacent to the lab. Q wanted to be close to the lift. R wanted a view of the playground and S wanted a corner office. Assuming everyone was satisfied, which among the following shows a possible allocation?



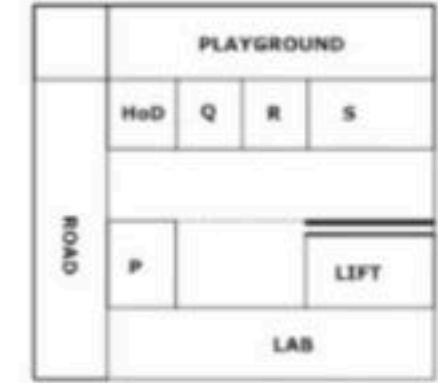
(A)



(B)

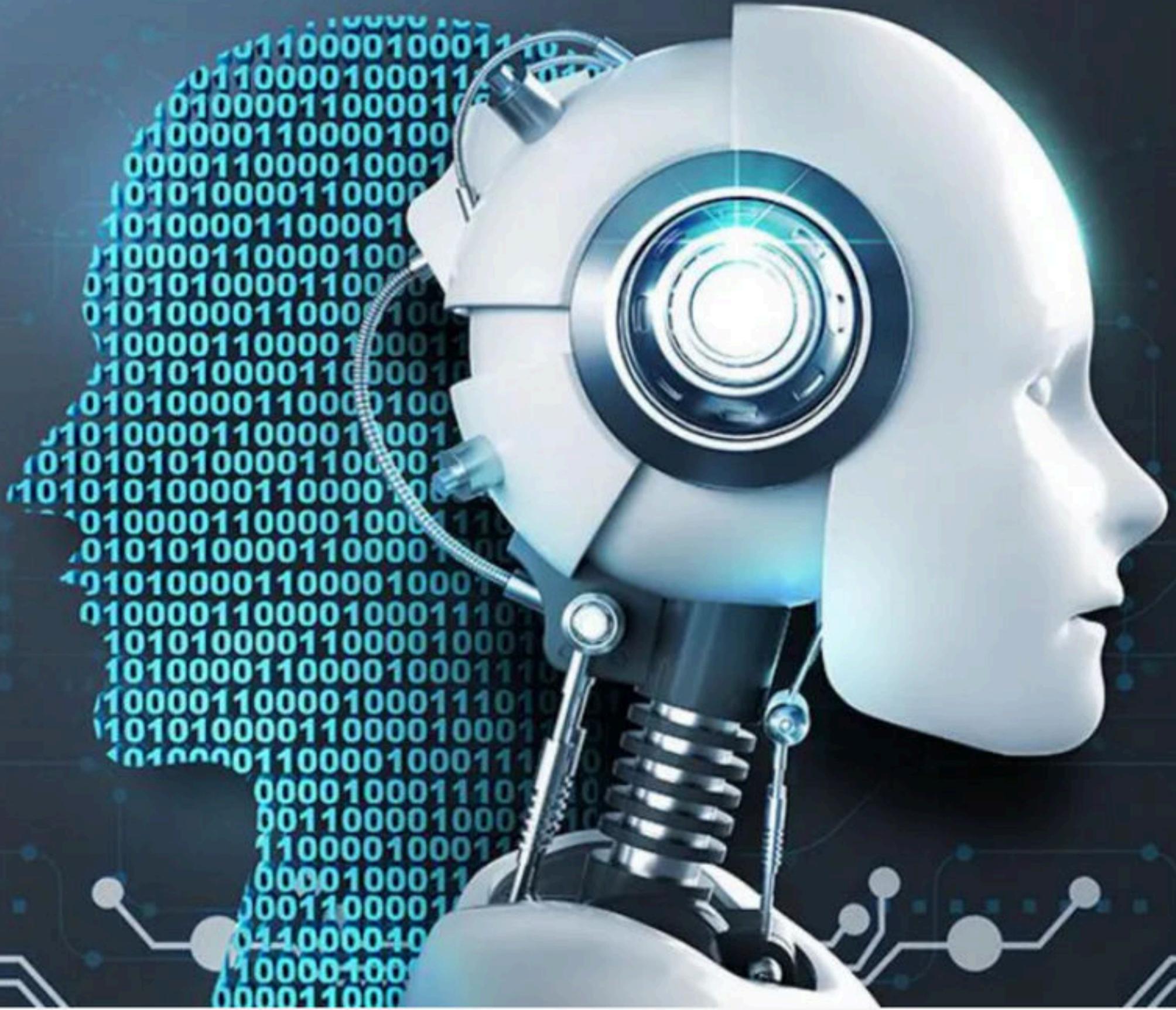


(C)



(D)

05



If  $f(x) = x^2$  for each  $x \in (-\infty, \infty)$ , then  $\frac{f(f(f(x)))}{f(x)}$  is equal to \_\_\_\_.

- (A)  $(f(x))^4$
- (B)  $(f(x))^2$
- (C)  $(f(x))^3$
- (D)  $f(x)$

06





Nominal interest rate is defined as the amount paid by the borrower to the lender for using the borrowed amount for a specific period of time. Real interest rate calculated on the basis of actual value (inflation-adjusted), is approximately equal to the difference between nominal rate and expected rate of inflation in the economy.

Which of the following assertions is best supported by the above information?

- (A) Under low inflation, real interest rate is low and borrowers get benefited.
- (B) Under high inflation, real interest rate is low and lenders get benefited.
- (C) Under high inflation, real interest rate is low and borrowers get benefited.
- (D) Under low inflation, real interest rate is high and borrowers get benefited.



07



For the year 2019, which of the previous year's calendar can be used?

- (A) 2013
- (B) 2014
- (C) 2012
- (D) 2011



08



The ratio of 'the sum of the odd positive integers from 1 to 100' to 'the sum of the even positive integers from 150 to 200' is \_\_\_\_\_

- (A) 45 : 95
- (B) 1 : 2
- (C) 50 : 91
- (D) 1 : 1



09



In a school of 1000 students, 300 students play chess and 600 students play football. If 50 students play both chess and football, the number of students who play neither is \_\_\_\_.

- (A) 150
- (B) 200
- (C) 100
- (D) 50

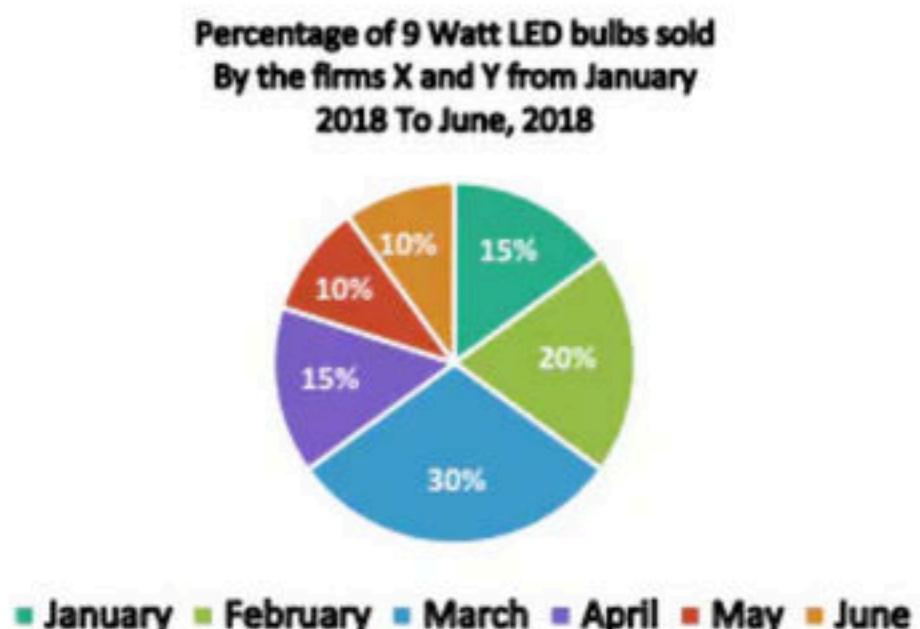
An aerial photograph of the New York City skyline during sunset. The Hudson River is visible on the left, with several boats on the water. The city's skyscrapers are illuminated against a pink and orange sky. In the foreground, the One World Trade Center is prominent, featuring its spire and a large circular inset image showing a close-up of the building's facade.

10



The monthly distribution of 9 Watt LED bulbs sold by two firms X and Y from January to June 2018 is shown in the piechart and the corresponding table. If the total number of LED bulbs sold by two firms during April-June 2018 is 50000, then the number of LED bulbs sold by the firm Y during April-June 2018 is \_\_\_\_.

- (A) 8750
- (B) 8250
- (C) 9750
- (D) 11250



Month	Ratio of LED bulbs sold by two firms (X : Y)
January	7 : 8
February	2 : 3
March	2 : 1
April	3 : 2
May	1 : 4
June	9 : 11



# GATE 2021 - 01



01



Getting to the top is \_\_\_\_\_ than staying on top.

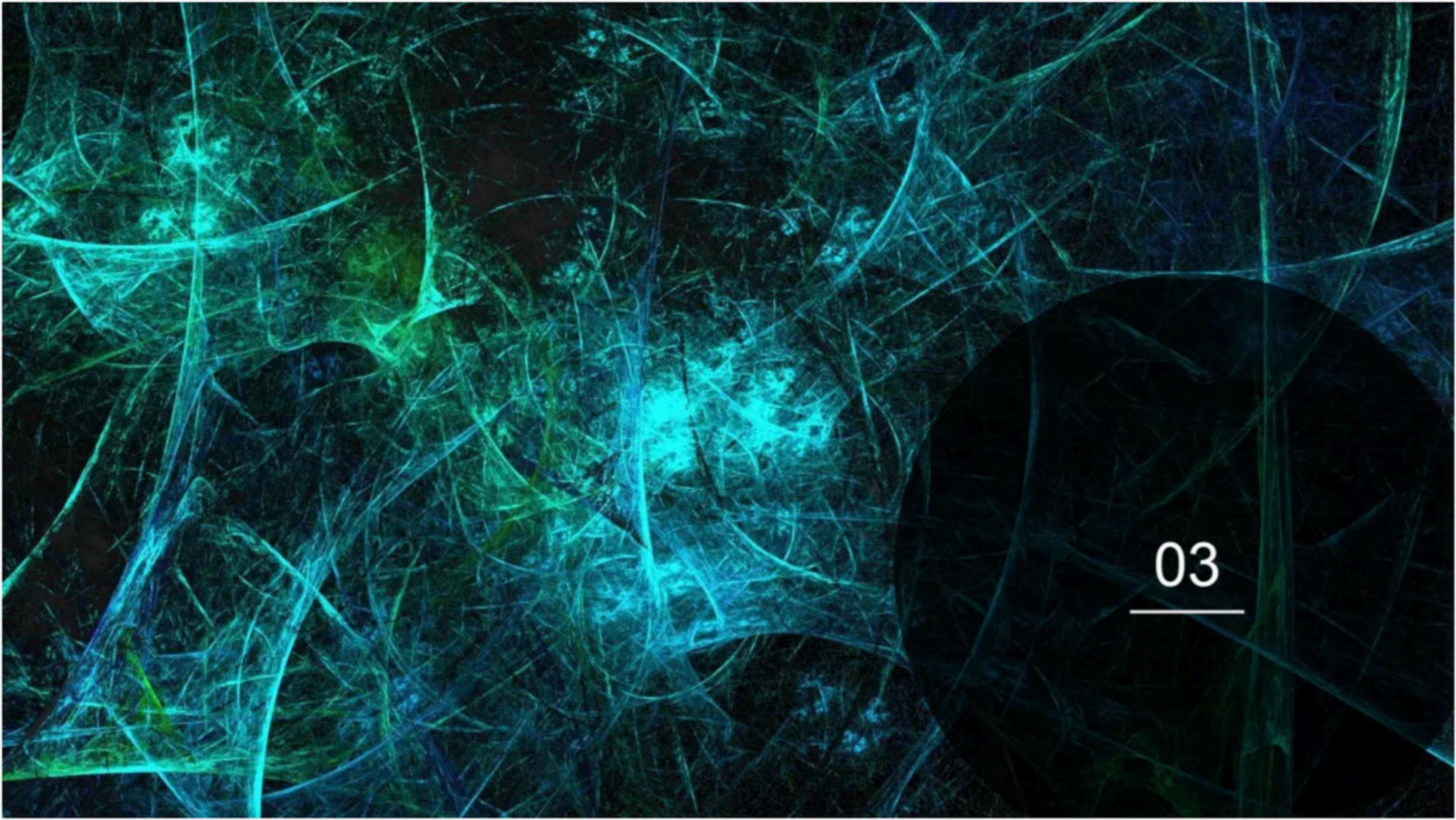
- (A) easier
- (B) more easier
- (C) easiest
- (D) much easier

# wings of knowledge.

Love is like a friendship caught on fire. In the beginning, love is very pretty, often hot and fierce. As the flame grows older, our hearts grow tired and unpredictable, and it's fading. As love grows older, our love becomes as coals, deep-burning and unpredictable. Love is like a friendship caught on fire. In the beginning, love is very pretty, often hot and fierce, but still only left, as time goes by, our hearts mature and it's fading. As love grows older, our hearts mature and it's fading. As love grows older, our hearts mature and it's fading. As love grows older, our hearts mature and it's fading.

$\oplus$  and  $\odot$  are two operators on number p and q such that  
 $p \oplus q = \frac{p^2+q^2}{pq}$  and  $p \odot q = \frac{p^2}{q}$ ; If  $x \oplus y = 2 \odot 2$ , then  $x =$

- (A) y
- (B)  $3y/2$
- (C)  $2y$
- (D)  $y/2$



03



Consider two rectangular sheets, Sheet M and Sheet N of dimensions 6 cm x 4 cm each.

Folding operation 1: The sheet is folded into half by joining the short edges of the current shape.

Folding operation 2: The sheet is folded into half by joining the long edges of the current shape.

Folding operation 1 is carried out on Sheet M three times.

Folding operation 2 is carried out on Sheet N three times.

The ratio of perimeters of the final folded shape of Sheet N to the final folded shape of Sheet M is \_\_\_\_.

(A) 5 : 13

(C) 7 : 5

(B) 13 : 7

(B) 3 : 2

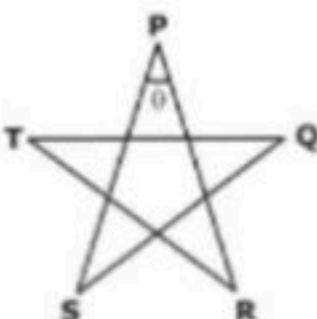
04





Five line segments of equal lengths, PR, PS, QS, QT and RT are used to form a star as shown in the figure above.  
The value of  $\theta$ , in degrees, is

- (A) 45
- (B) 72
- (C) 36
- (D) 108





05



In a company, 35% of the employees drink coffee, 40% of the employees drink tea and 10% of the employees drink both tea and coffee. What % of employees drink neither tea nor coffee?

- (A) 35
- (B) 25
- (C) 40
- (D) 15



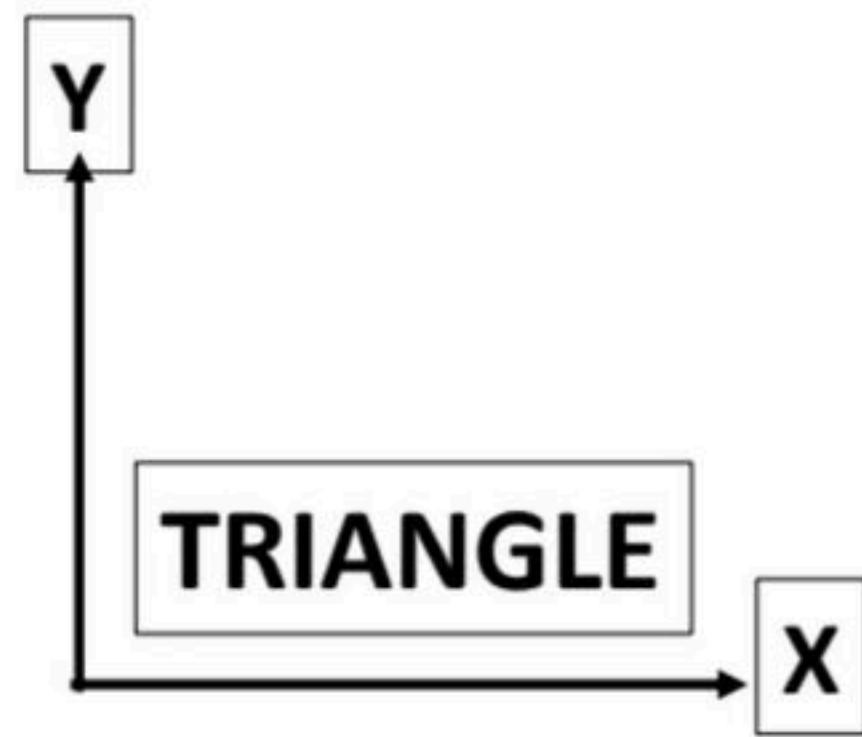
06

A function,  $\lambda$ , is defined by  $\lambda(p, q) = \begin{cases} (p - q)^2, & \text{if } p \geq q \\ p + q, & \text{if } p < q \end{cases}$

The value of the expression  $\frac{\lambda(-(-3+2), (-2+3))}{(-(-2+1))}$  is:

- (A) 16
- (B) -1
- (C)  $16/3$
- (D) 0

07



- |     |          |
|-----|----------|
| (A) | TRIANGLE |
| (B) | LEGNIAET |
| (C) | ELEGNIAT |
| (D) | TRIANGLE |

A still life photograph featuring a large antique book with worn, yellowed pages, a pocket watch with a dark dial and a small seconds sub-dial, and a large, ornate key with a decorative head. The objects are arranged on a dark, textured surface against a warm, mottled background.

08

A

B

$$\overline{A \vee B} \Rightarrow \overline{A} \wedge \overline{B}$$

Statement: Either P marries Q or X marries Y.

Among the options below, the logical NEGATION of the above statement is:

- (A) Neither P marries Q nor X marries Y.  
(B) X does not marry Y and P marries Q.  
(C) P marries Q and X marries Y.  
(D) P does not marry Q and X marries Y.

1. Either  $P$  or  $\bar{q}_h$   
 $P \rightarrow q_h$
2.  $P$  otherwise  
 $\bar{q}_h \rightarrow P$
3. A: unless  $P, q_h$   
B:  $q_h$  unless  $P$

1

If  $p$ , then  $q_h$

$$\begin{array}{c} p \rightarrow q_h \\ \hline \hline \\ q_h \rightarrow p \end{array}$$

2

is whenever  $p$ , then  $q_h$

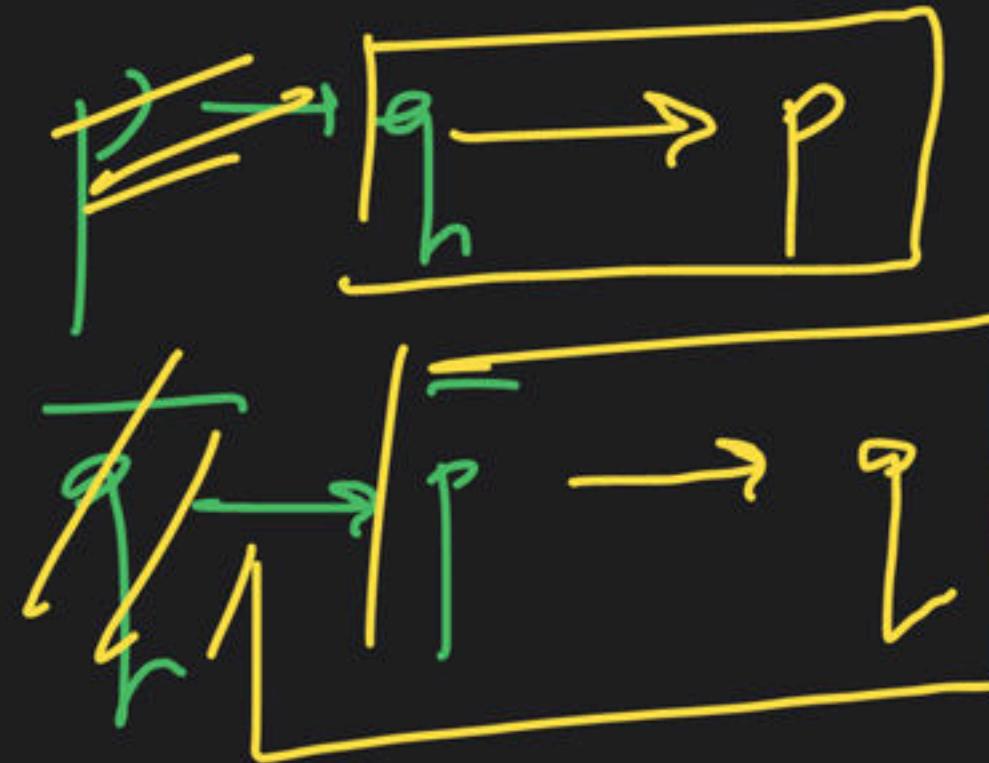
$q_h$ , whenever  $p$ .

$$\hline \hline$$

If  $p$ , then  $q_h \rightarrow$



Only If  $p$ , then  $q_h$ .





09



Four persons P, Q, R and S are to be seated in a row, all facing the same direction, but not necessarily in the same order. P and R cannot sit adjacent to each other. S should be seated to the right of Q. The number of distinct seating arrangements possible is:

- (A) 6
- (B) 8
- (C) 4
- (D) 2





Humans have the ability to construct worlds entirely in their minds, which don't exist in the physical world. So far as we know, no other species possesses this ability. This skill is so important that we have different words to refer to its different flavors, such as imagination, invention, and innovation. Based on the above passage, which one of the following 1 s TRUE?

- (A) We do not know of any species other than humans who possess the ability to construct mental worlds.
- (B) Imagination, invention, and innovation are unrelated to the ability to construct mental worlds.
- (C) The terms imagination, invention and innovation refer to unrelated skills.
- (D) No species possess the ability to construct worlds in their minds.



# GATE 2021 - 02

TRAINING

BUSINESS  
VALUE

EMPLOYEE  
RECRUITMENT

EMPLOYEE

SUCCESS

STRATEGIC  
OBJECTIVES

REWARDING  
01





- (i) Arun and Aparna are here
- (ii) Arun and Aparna is here
- (iii) Aruns families is here
- (iv) Aruns family is here

Which of the above sentences are grammatically CORRECT?

- (A) (iii) and (iv)
- (B) (ii) and (iv)
- (C) (i) and (ii)
- (D) (i) and (iv)



02



$\oplus$  and  $\odot$  are two operators on numbers  $p$  and  $q$  such that  $p \odot q = p - q$ , and  $p \oplus q = p \times q$

Then,  $(9 \odot (6 \oplus 7)) \odot (7 \oplus (6 \odot 5)) =$

- (A) 40
- (B) -40
- (C) -26
- (D) -33

A medium shot of a man in a dark suit and tie sitting at a light-colored wooden table. He is playing with several wooden blocks. A small wooden figure stands on top of a stack of blocks. The man's hands are visible; one hand rests on the table, and the other holds a long, thin wooden block. The background is dark.

03



The mirror image of the above text about the X-axis is

(A)

PHYΛΓXIS

(B)

бHΛΓXIS

(C)

SIXΛΓYHP

(D)

бHΛΓYHS

04





In an equilateral triangle PQR, side PQ is divided into four equal parts, side QR is divided into six equal parts and side PR is divided into eight equal parts. The length of each subdivided part in cm is an integer.

The minimum area of the triangle PQR possible, in  $cm^2$ , is

- (A) 24
- (B) 18
- (C)  $144\sqrt{3}$
- (D)  $48\sqrt{3}$

05





Two identical cube shaped dice each with faces numbered 1 to 6 are rolled simultaneously. The probability that an even number is rolled out on each dice is :

- (A)  $\frac{1}{36}$
- (B)  $\frac{1}{12}$
- (C)  $\frac{1}{4}$
- (D)  $\frac{1}{8}$

06





The author said, "Musicians rehearse before their concerts. Actors rehearse their roles before the opening of a new play. On the other hand, I find it strange that many public speakers think they can just walk on to the stage and start speaking. In my opinion, it is no less important for public speakers to rehearse their talks."

Based on the above passage, which one of the following is TRUE?

- (A) The author is of the opinion that rehearsing is important for musicians, actors and public speakers.
- (B) The author is of the opinion that rehearsal is more important for actors than musicians.
- (C) The author is of the opinion that rehearsing is more important only for musicians than public speakers.
- (D) The author is of the opinion that rehearsing is less important for public speakers than for musicians and actors.



07

---



In the figure shown above, PQRS is a square. The shaded portion is formed by the intersection of sectors of circles with radius equal to the side of the square and centers at S and Q.

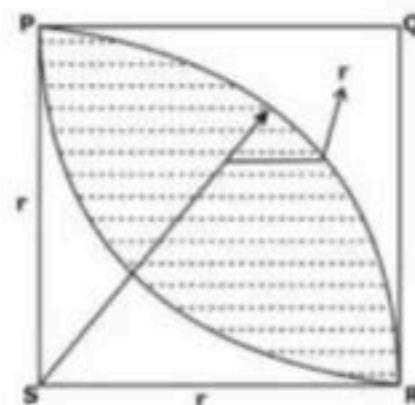
The probability that any point picked randomly within the square falls in the shaded area is \_\_\_\_\_.

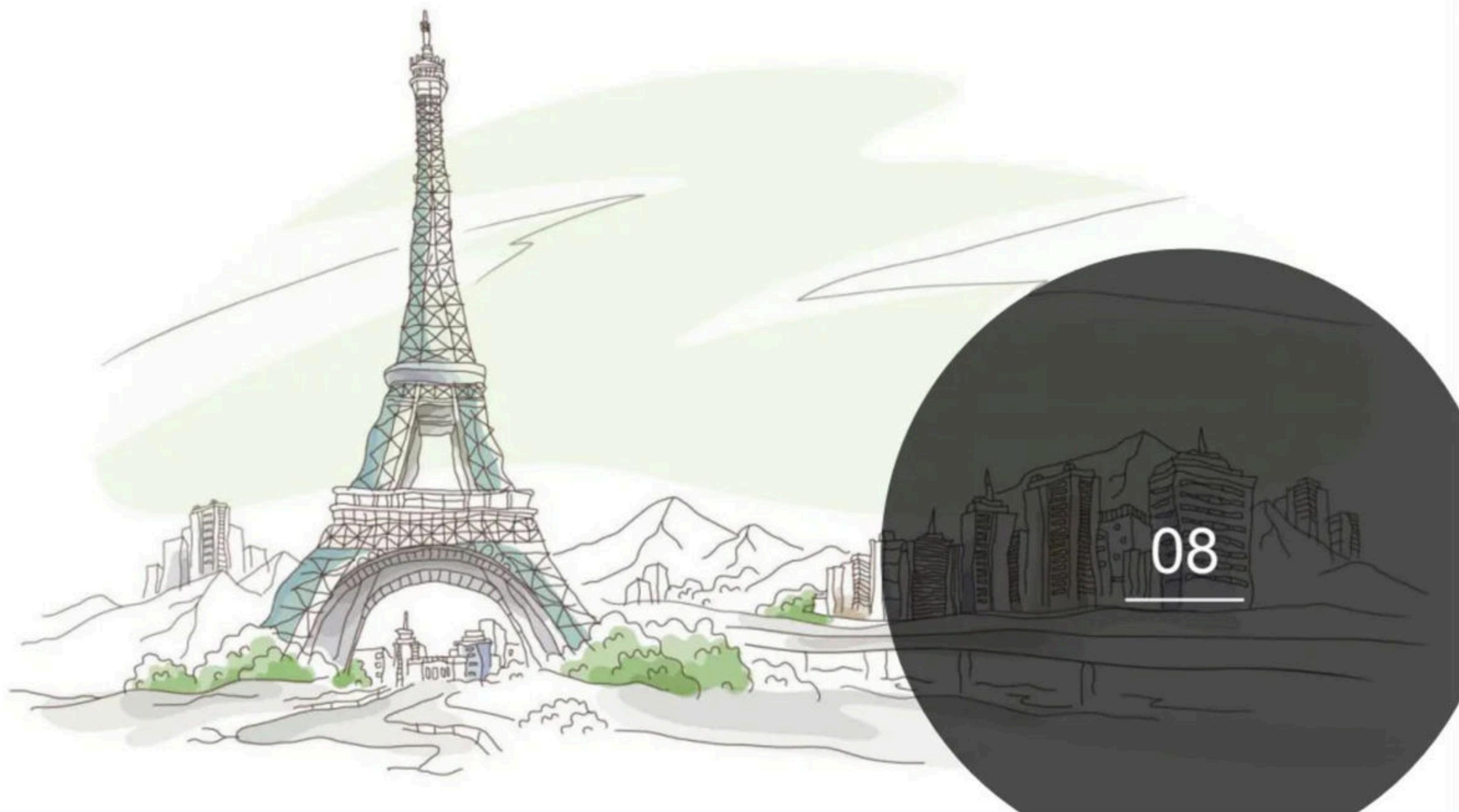
(A)  $4 - \frac{\pi}{2}$

(B)  $\frac{\pi}{2} - 1$

(C)  $\frac{\pi}{4}$

(D)  $\frac{1}{2}$







Four persons F > Q, R and S are to be seated in a row. R should not be seated at the second position from the left end of the row. The number of distinct seating arrangements possible is:

- (A) 6
- (B) 18
- (C) 24
- (D) 9





On a planar field, you travelled 3 units East from a point O. Next you travelled 4 units South to arrive at point P. Then you travelled from P in the North-East direction such that you arrive at a point that is 6 units East of point P. Next, you travelled in the North-West direction, so that you arrive at point Q that is 8 units North of point P. The distance of point Q to point O, in the same units, should be \_\_\_\_ .

- (A) 4
- (B) 5
- (C) 3
- (D) 6



10



- 1) Some football players play cricket.
- 2) All cricket players play hockey.

Among the options given below, the statement that logically follows from the two statements 1 and 2 above, is :

- (A) All hockey players play football.
- (B) All football players play hockey.
- (C) Some football players play hockey.
- (D) No football player plays hockey.



# GATE 2022 (ME Set-1) Mechanical Engineering

A landscape photograph of a coastal area at sunset. In the foreground, dark silhouettes of rocks or low hills are visible against the bright horizon. The sky is a vibrant gradient of orange, yellow, and blue. A large, semi-transparent circular overlay covers the right side of the image. Inside this circle, the number "01" is displayed in white, with a thin horizontal line underneath it.

01



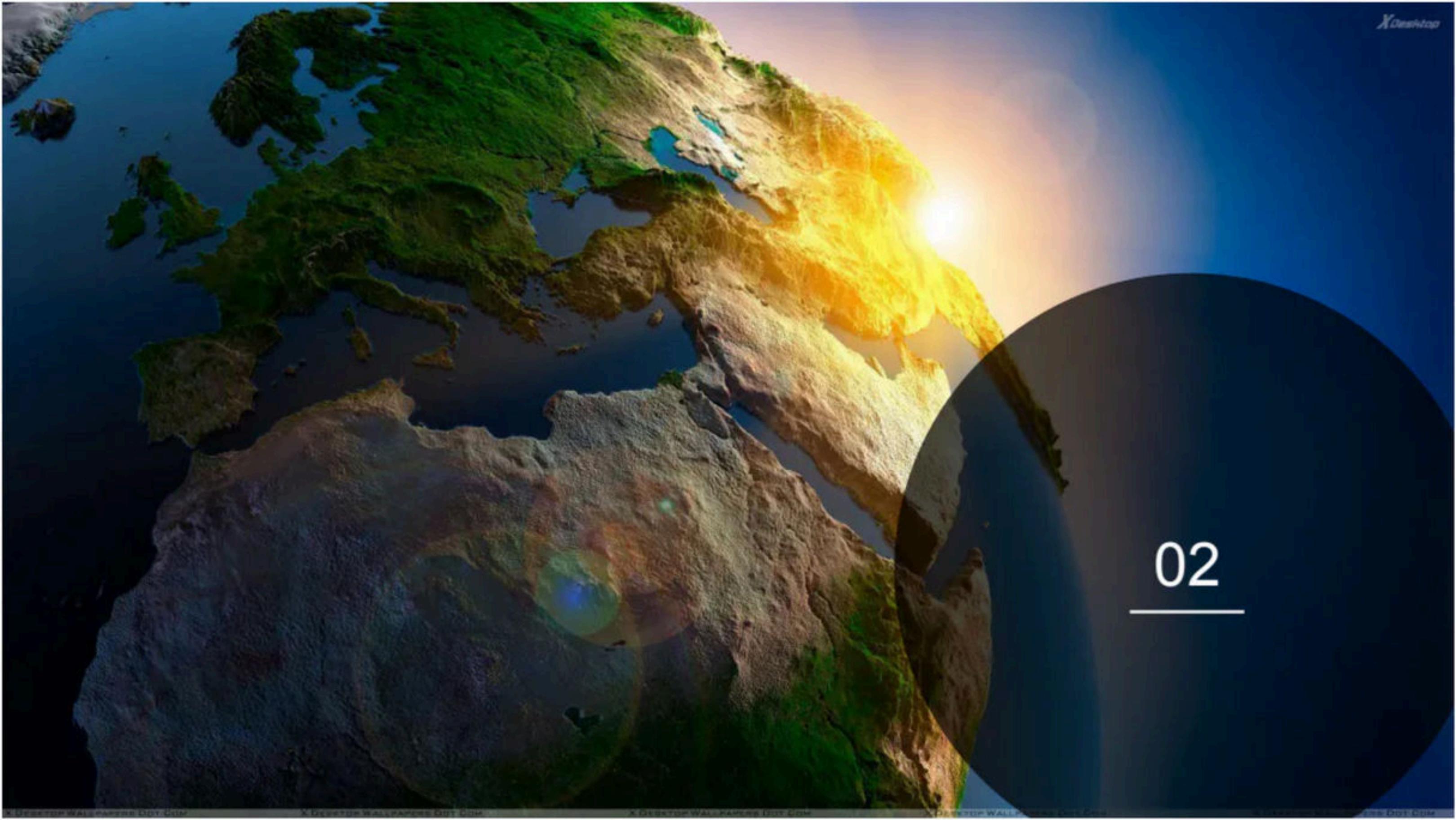
Q. After playing \_\_\_\_\_ hours of tennis, I am feeling \_\_\_\_\_ tired to walk back.

(A) too / too

(B) too / two

(C) two / two

(D) two / too



02



Q

The average of the monthly salaries of M, N and S is ₹ 4000. The average of the monthly salaries of N, S and P is ₹ 5000. The monthly salary of P is ₹ 6000.

What is the monthly salary of M as a percentage of the monthly salary of P?

- (A) 50%
- (B) 75%
- (C) 100%
- (D) 125%



03

---

Q.

A person travelled 80 km in 6 hours. If the person travelled the first part with a uniform speed of 10 kmph and the remaining part with a uniform speed of 18 kmph.

What percentage of the total distance is travelled at a uniform speed of 10 kmph?

- (A) 28.25
- (B) 37.25
- (C) 43.75
- (D) 50.00





04

Q

Four girls P, Q, R and S are studying languages in a University. P is learning French and Dutch. Q is learning Chinese and Japanese. R is learning Spanish and French. S is learning Dutch and Japanese.

Given that: French is easier than Dutch; Chinese is harder than Japanese; Dutch is easier than Japanese, and Spanish is easier than French.

Based on the above information, which girl is learning the most difficult pair of languages?

(A) P

(B) Q

(C) R

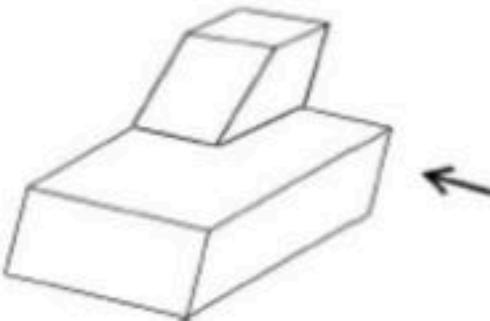
(D) S



05

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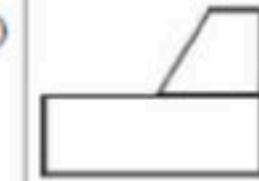
Q.



A block with a trapezoidal cross-section is placed over a block with rectangular cross section as shown above.

Which one of the following is the correct drawing of the view of the 3D object as viewed in the direction indicated by an arrow in the above figure?

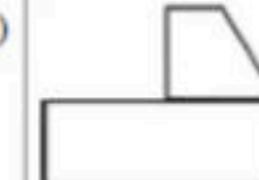
(A)



(B)



(C)



(D)



A wide-angle photograph of a winter landscape at sunset. The sky is filled with vibrant orange, yellow, and pink clouds. In the foreground, a snow-covered slope leads towards a dense forest of evergreen trees heavily laden with snow. The scene is bathed in the warm light of the setting sun, which is visible on the left horizon. Distant snow-capped mountains are visible through the haze.

06

Q.

Humans are naturally compassionate and honest. In a study using strategically placed wallets that appear “lost”, it was found that wallets with money are more likely to be returned than wallets without money. Similarly, wallets that had a key and money are more likely to be returned than wallets with the same amount of money alone. This suggests that the primary reason for this behavior is compassion and empathy.

Which one of the following is the CORRECT logical inference based on the information in the above passage?

- (A) Wallets with a key are more likely to be returned because people do not care about money
- (B) Wallets with a key are more likely to be returned because people relate to suffering of others
- (C) Wallets used in experiments are more likely to be returned than wallets that are really lost
- (D) Money is always more important than keys



07

Q.

A rhombus is formed by joining the midpoints of the sides of a unit square.

What is the diameter of the largest circle that can be inscribed within the rhombus?

(A)  $\frac{1}{\sqrt{2}}$

(B)  $\frac{1}{2\sqrt{2}}$

(C)  $\sqrt{2}$

(D)  $2\sqrt{2}$

-GOAL-



08



Q.

An equilateral triangle, a square and a circle have equal areas.

What is the ratio of the perimeters of the equilateral triangle to square to circle?

(A)  $3\sqrt{3} : 2 : \sqrt{\pi}$

(B)  $\sqrt{(3\sqrt{3})} : 2 : \sqrt{\pi}$

(C)  $\sqrt{(3\sqrt{3})} : 4 : 2\sqrt{\pi}$

(D)  $\sqrt{(3\sqrt{3})} : 2 : 2\sqrt{\pi}$



09

Q

Given below are three conclusions drawn based on the following three statements.

Statement 1: All teachers are professors.

Statement 2: No professor is a male.

Statement 3: Some males are engineers.

Conclusion I: No engineer is a professor.

Conclusion II: Some engineers are professors.

Conclusion III: No male is a teacher.

Which one of the following options can be logically inferred?

(A) Only conclusion III is correct

(B) Only conclusion I and conclusion II are correct

(C) Only conclusion II and conclusion III are correct

(D) Only conclusion I and conclusion III are correct



A close-up, low-angle shot of a white and black soccer ball hitting the white mesh of a goal net. The ball is positioned in the lower right corner of the frame. The background is a bright, out-of-focus field of tall, golden-yellow grass. The lighting creates strong highlights on the ball and the net, emphasizing the impact. In the bottom right corner of the ball, there is a dark circular area with the number "10" printed in white.

10

Q.

In a 12-hour clock that runs correctly, how many times do the second, minute, and hour hands of the clock coincide, in a 12-hour duration from 3 PM in a day to 3 AM the next day?

(A) 11

(B) 12

(C) 144

(D) 2





# GATE 2022 (ME Set-2) Mechanical Engineering

SUCCESS

01



Q.

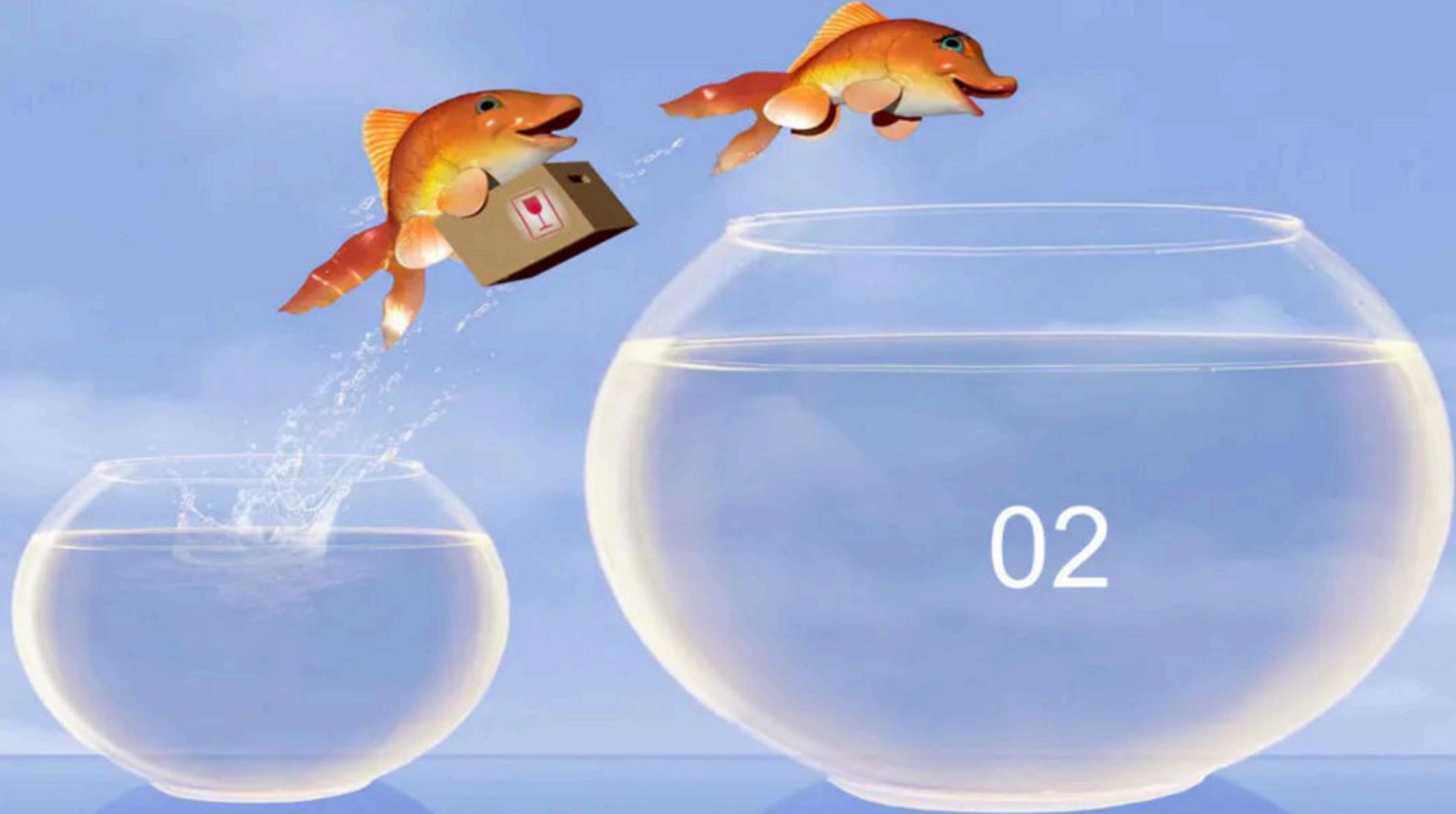
Writing too many things on the \_\_\_\_\_ while teaching could make the students get \_\_\_\_\_.

(A) bored / board

(B) board / bored

(C) board / board

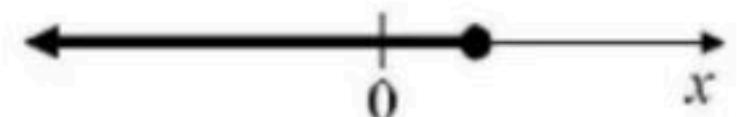
(D) bored / bored



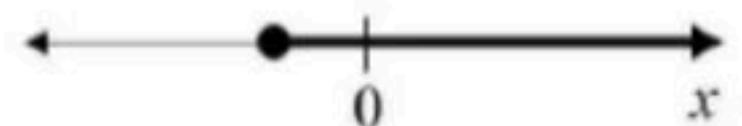
Q.

Which one of the following is a representation (not to scale and in bold) of all values of  $x$  satisfying the inequality  $2 - 5x \leq -\frac{6x-5}{3}$  on the real number line?

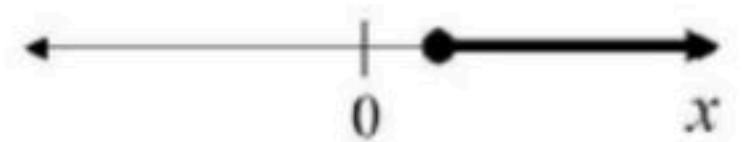
(A)



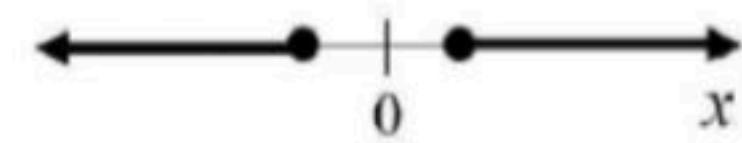
(B)



(C)



(D)



A landscape photograph of a snowy forest at night. The foreground is covered in snow, with tracks visible. Several tall, dark evergreen trees stand in the mid-ground. In the background, more trees and distant hills are visible under a dark, star-filled sky.

03

Q.

If  $f(x) = 2 \ln(\sqrt{e^x})$ , what is the area bounded by  $f(x)$  for the interval  $[0, 2]$  on the  $x$ -axis?

(A)  $\frac{1}{2}$

(B) 1

(C) 2

(D) 4

04



Q.

A person was born on the fifth Monday of February in a particular year.

Which one of the following statements is correct based on the above information?

(A) The 2<sup>nd</sup> February of that year is a Tuesday

(B) There will be five Sundays in the month of February in that year

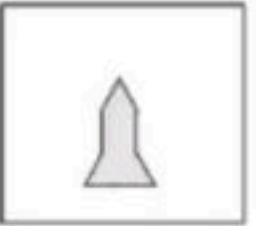
(C) The 1<sup>st</sup> February of that year is a Sunday

(D) All Mondays of February in that year have even dates

A photograph of a long wooden pier extending into a body of water at sunset. The sky is filled with warm orange and yellow hues. In the background, a city skyline with several tall buildings is visible across the water. The pier's railing is prominent in the foreground, leading the eye towards the horizon.

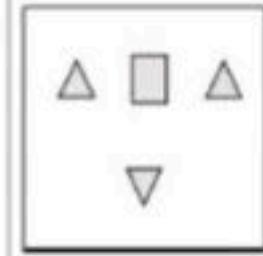
05

Q.

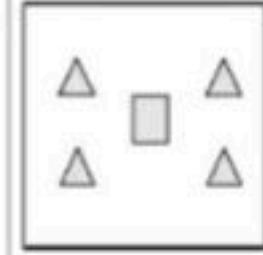


Which one of the groups given below can be assembled to get the shape that is shown above using each piece only once without overlapping with each other?  
(rotation and translation operations may be used).

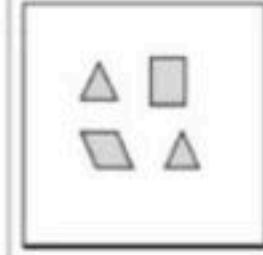
(A)



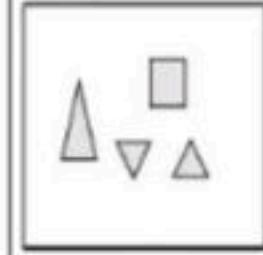
(B)



(C)



(D)



06



Q.

Fish belonging to species S in the deep sea have skins that are extremely black (ultra-black skin). This helps them not only to avoid predators but also sneakily attack their prey. However, having this extra layer of black pigment results in lower collagen on their skin, making their skin more fragile.

Which one of the following is the CORRECT logical inference based on the information in the above passage?

- (A) Having ultra-black skin is only advantageous to species S
- (B) Species S with lower collagen in their skin are at an advantage because it helps them avoid predators
- (C) Having ultra-black skin has both advantages and disadvantages to species S
- (D) Having ultra-black skin is only disadvantageous to species S but advantageous only to their predators



07



Q.

For the past  $m$  days, the average daily production at a company was 100 units per day.

If today's production of 180 units changes the average to 110 units per day, what is the value of  $m$ ?

- (A) 18
- (B) 10
- (C) 7
- (D) 5



08



Q

Consider the following functions for non-zero positive integers,  $p$  and  $q$ .

$$f(p, q) = \underbrace{p \times p \times p \times \dots \times p}_{q \text{ terms}} = p^q; \quad f(p, 1) = p$$

$$g(p, q) = p^{p p p p \dots} \text{ (up to } q \text{ terms)}; \quad g(p, 1) = p$$

Which one of the following options is correct based on the above?

(A)  $f(2,2) = g(2,2)$

(B)  $f(g(2,2), 2) < f(2, g(2,2))$

(C)  $g(2,1) \neq f(2,1)$

(D)  $f(3,2) > g(3,2)$



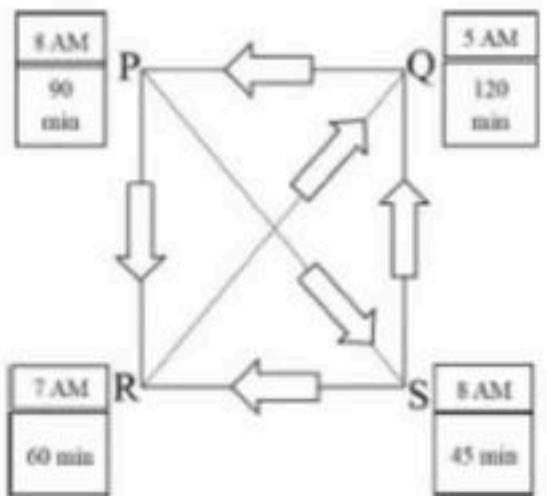
A landscape photograph capturing a serene autumn scene. In the foreground, a vibrant field of tall grasses in shades of yellow, orange, and red stretches across the frame. A single, rustic wooden bench with a dark green cushion sits in the middle ground, positioned facing a dense forest. The trees are heavily laden with fall foliage, displaying rich hues of red, orange, and yellow. The lighting suggests a bright, possibly overcast day, with sunlight filtering through the canopy. The overall atmosphere is peaceful and evocative of the season.

09

Q.

Four cities P, Q, R and S are connected through one-way routes as shown in the figure. The travel time between any two connected cities is one hour. The boxes beside each city name describe the starting time of first train of the day and their frequency of operation. For example, from city P, the first trains of the day start at 8 AM with a frequency of 90 minutes to each of R and S. A person does not spend additional time at any city other than the waiting time for the next connecting train.

If the person starts from R at 7 AM and is required to visit S and return to R, what is the minimum time required?



- (A) 6 hours 30 minutes
- (B) 3 hours 45 minutes
- (C) 4 hours 30 minutes
- (D) 5 hours 15 minutes

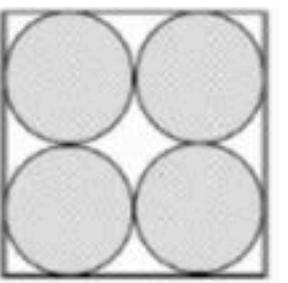
10



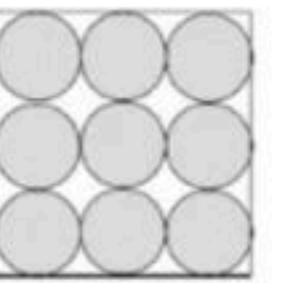
Q.

Equal sized circular regions are shaded in a square sheet of paper of 1 cm side length. Two cases, case M and case N, are considered as shown in the figures below. In the case M, four circles are shaded in the square sheet and in the case N, nine circles are shaded in the square sheet as shown.

What is the ratio of the areas of unshaded regions of case M to that of case N?



case M



case N

- (A) 2 : 3
- (B) 1 : 1
- (C) 3 : 2
- (D) 2 : 1



# GATE 2022 (CE Set - 01) Civil Engineering

A photograph of an open book lying flat. The left page is dark and mostly blank, while the right page features a vibrant, detailed illustration of a lush green landscape with rolling hills, a winding path, and a small white bird in flight. The book is resting on a light-colored wooden surface.

01

The movie was funny and I.....

A could help laughing

B couldn't help laughed

C couldn't help laughing

D could helped laughed

A photograph of a sunset or sunrise. In the foreground, the dark silhouettes of two people are visible, facing away from the camera towards the horizon. The sky is a vibrant orange and yellow, with wispy clouds. In the distance, there are silhouettes of trees and possibly some small structures or animals. A bright white circle, likely the sun, is positioned between the two figures.

02

$$x:y:z = \frac{1}{2} : \frac{1}{3} : \frac{1}{4}$$

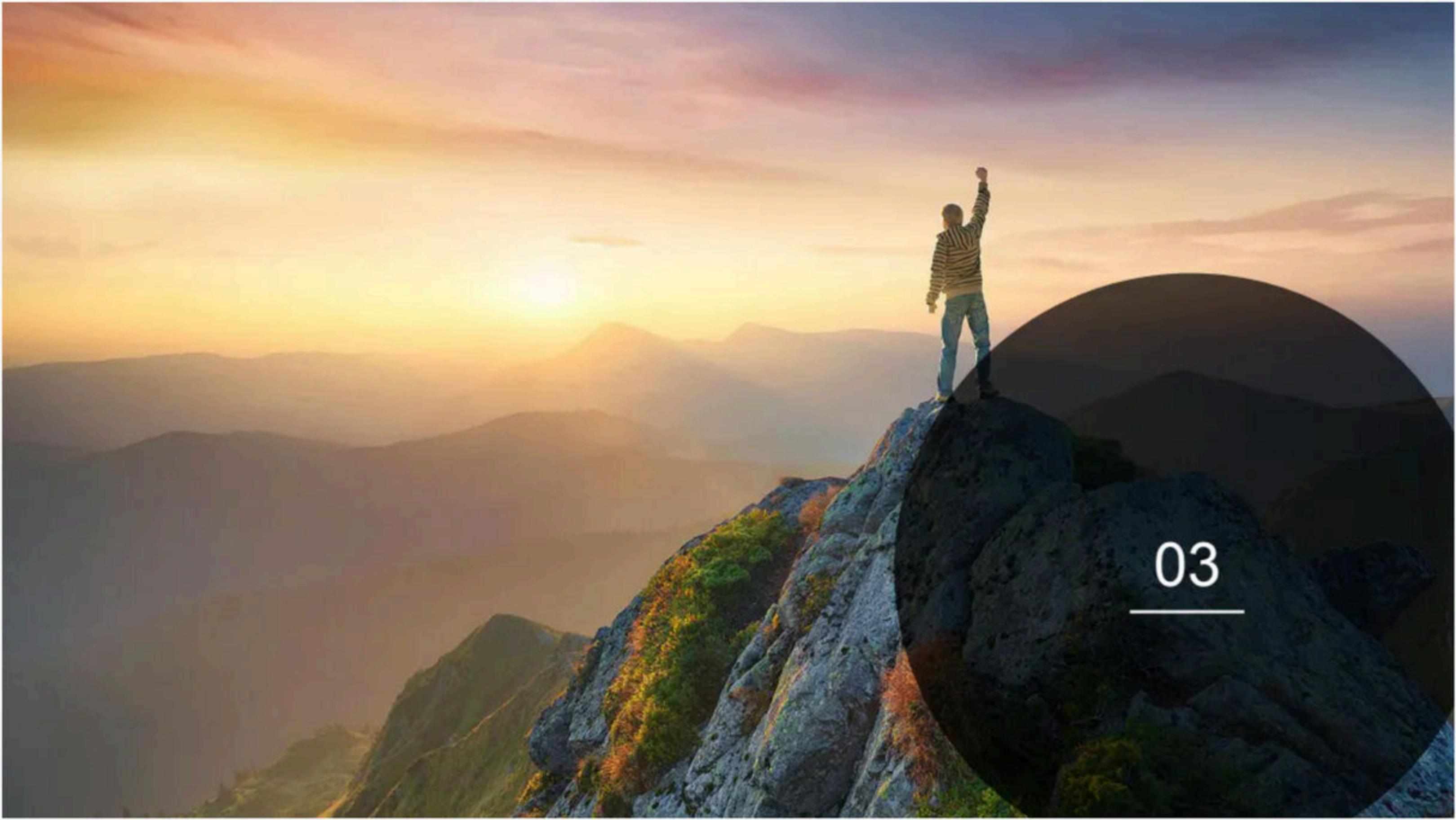
What is the value of  $\frac{x+z-y}{y}$ ?

A 0.75

B 1.25

C 2.25

D 3.25



03

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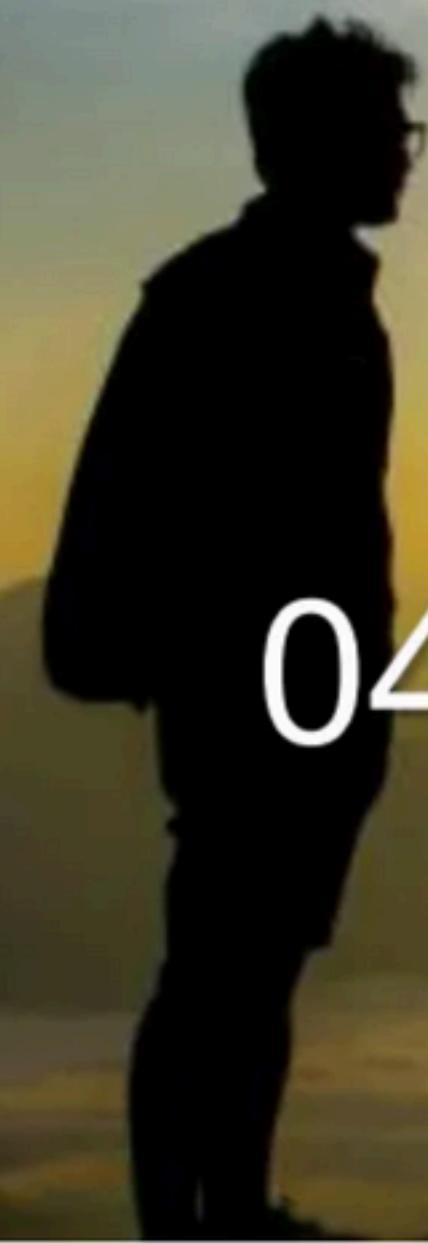
Both the numerator and the denominator of  $\frac{3}{4}$  are increased by a positive integer,  $x$ , and those of  $\frac{15}{17}$  are decreased by the same integer. This operation results in the same value for both the fractions. What is the value of  $x$ ?

A 1

B 2

C 3

D 4



04

A survey of 450 students about their subjects of interest resulted in the following outcome:

- 150 students are interested in Mathematics.
- 200 students are interested in Physics.
- 175 students are interested in Chemistry.
- 50 students are interested in Mathematics and Physics.
- 60 students are interested in Physics and Chemistry.
- 40 students are interested in Mathematics and Chemistry.
- 30 students are interested in Mathematics, Physics and Chemistry.
- Remaining students are interested in Humanities.

Based on the above information, the number of students interested in Humanities is

A 10

B 30

C 40

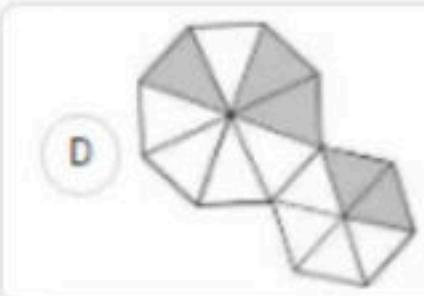
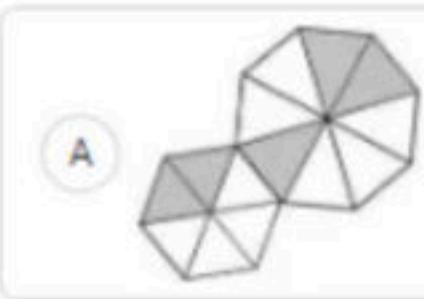
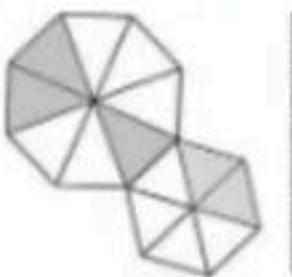
D 45



05



For the picture shown above, which one of the following is the correct picture representing reflection with respect to the mirror shown as the dotted line?



06



In the last few years, several new shopping malls were opened in the city. The total number of visitors in the malls is impressive. However, the total revenue generated through sales in the shops in these malls is generally low.

Which one of the following is the CORRECT logical inference based on the information in the above passage?

- A Fewer people are visiting the malls but spending more
- B More people are visiting the malls but not spending enough
- C More people are visiting the malls and spending more
- D Fewer people are visiting the malls and not spending enough



07

In a partnership business the monthly investment by three friends for the first six months is in the ratio 3: 4: 5 . After six months, they had to increase their monthly investments by 10%, 15% and 20%, respectively, of their initial monthly investment. The new investment ratio was kept constant for the next six months.

What is the ratio of their shares in the total profit (in the same order) at the end of the year such that the share is proportional to their individual total investment over the year?

A 22 : 23 : 24

B 22 : 33 : 50

C 33 : 46 : 60

D 63 : 86 : 110

A massive iceberg floats in a body of water under a dramatic, cloudy sky. The iceberg is a light blue color and has a jagged, rocky top. The sky is filled with dark, fluffy clouds, and there are some orange and yellow hues near the horizon, suggesting either sunrise or sunset.

08

Consider the following equations of straight lines:

Line L1:  $2x - 3y = 5$

Line L2:  $3x + 2y = 8$

Line L3:  $4x - 6y = 5$

Line L4:  $6x - 9y = 6$

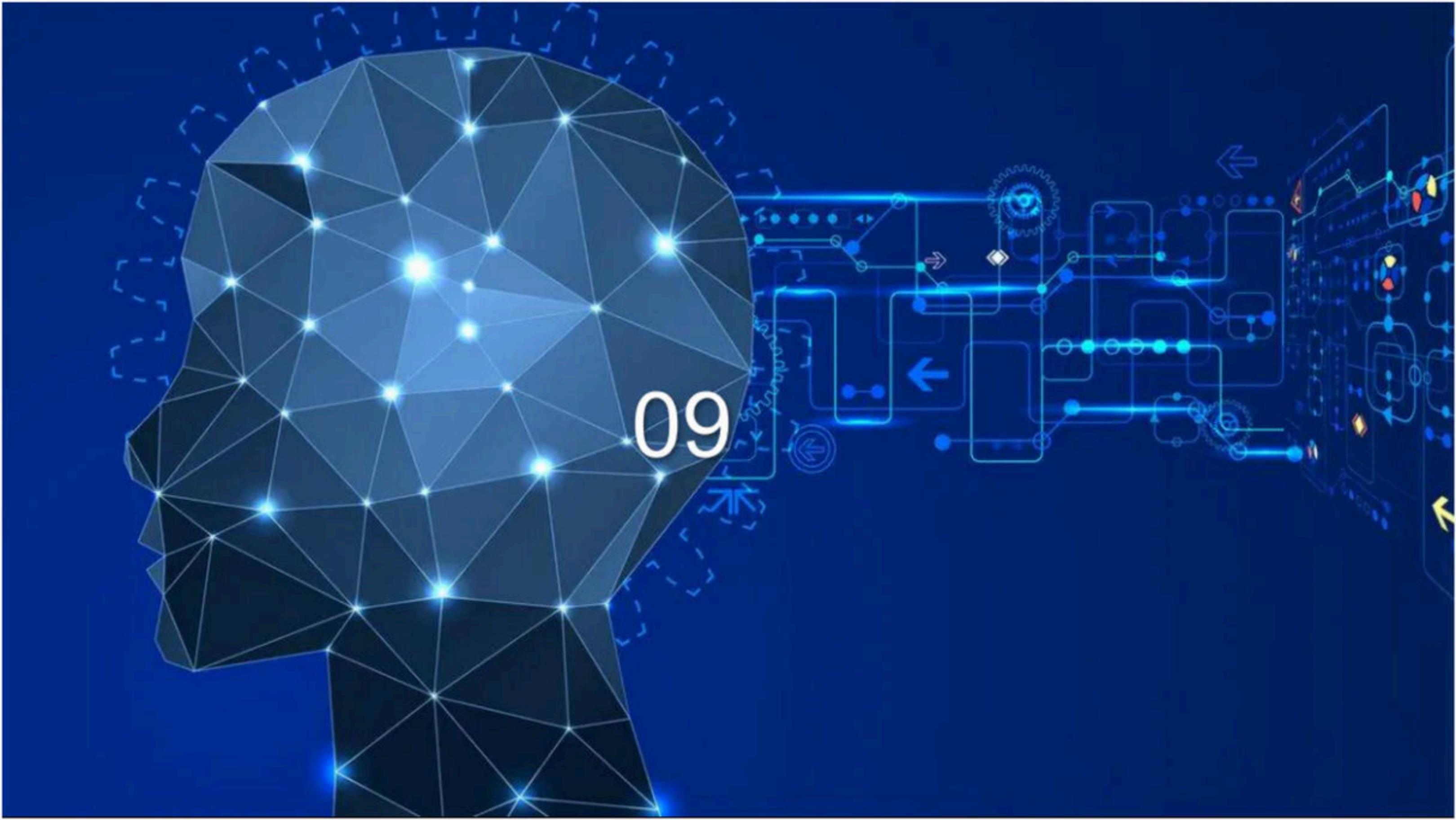
Which one among the following is the correct statement?

A L1 is parallel to L2 and L1 is perpendicular to L3

B L2 is parallel to L4 and L2 is perpendicular to L1

C L3 is perpendicular to L4 and L3 is parallel to L2

D L4 is perpendicular to L2 and L4 is parallel to L3



09



Given below are two statements and four conclusions drawn based on the statements.

Statement 1: Some soaps are clean.

Statement 2: All clean objects are wet.

Conclusion I: Some clean objects are soaps.

Conclusion II: No clean object is a soap.

Conclusion III: Some wet objects are soaps.

Conclusion IV: All wet objects are soaps.

Which one of the following options can be logically inferred?

A Only conclusion I is correct

B Either conclusion I or conclusion II is correct

C Either conclusion III or conclusion IV is correct

D Only conclusion I and conclusion III are correct

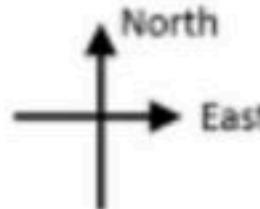


10

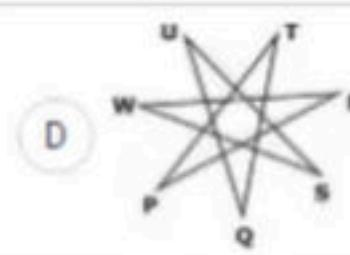
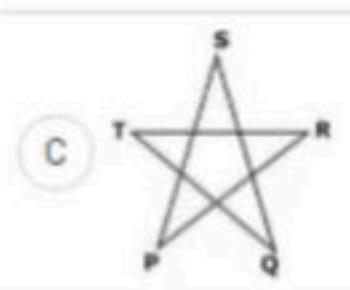
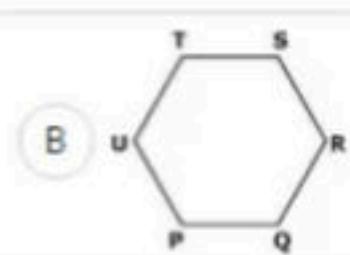
An ant walks in a straight line on a plane leaving behind a trace of its movement. The initial position of the ant is at point P facing east.

The ant first turns  $72^\circ$  anticlockwise at P, and then does the following two steps in sequence exactly FIVE times before halting.

1. moves forward for 10 cm.
2. turns  $144^\circ$  clockwise.



The pattern made by the trace left behind by the ant is





# GATE 2022 (CE Set-02) Civil Engineering

A close-up photograph of a person's hands writing in a notebook with a pencil. The person is wearing a white shirt. The background is blurred, showing what appears to be a classroom or office setting.

01

Q.

You should \_\_\_\_\_ when to say \_\_\_\_\_.

(A) no / no

(B) no / know

(C) know / know

(D) know / no

A photograph of a person's silhouette against a vibrant orange sunset. The person is in a seated or kneeling position, with their arms raised and hands open, as if reaching for the sun. The background is a bright, warm sky.

02

Q. Two straight lines pass through the origin  $(x_0, y_0) = (0,0)$ . One of them passes through the point  $(x_1, y_1) = (1,3)$  and the other passes through the point  $(x_2, y_2) = (1,2)$ .

What is the area enclosed between the straight lines in the interval  $[0, 1]$  on the  $x$ -axis?

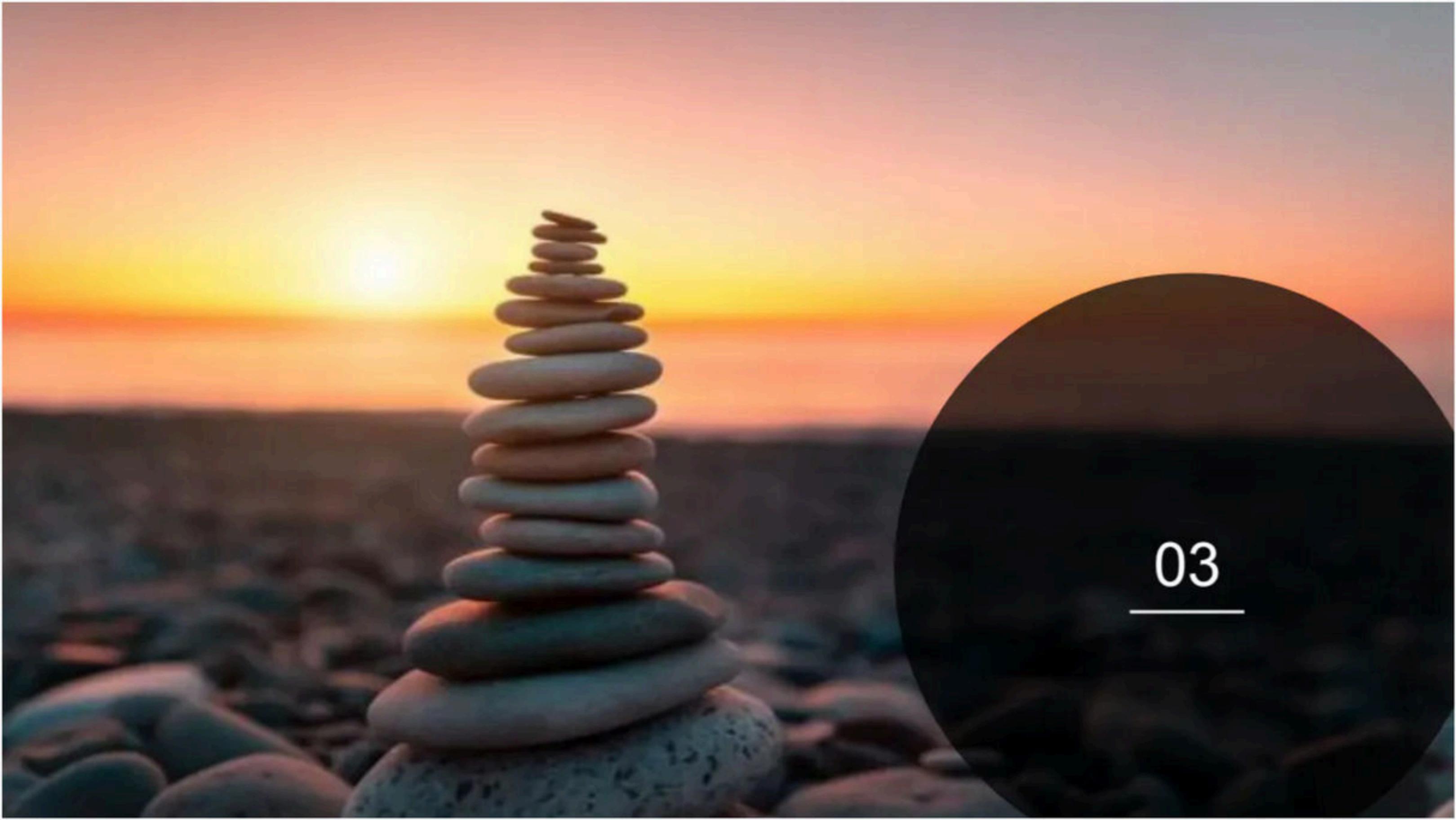
(A) 0.5

(B) 1.0

(C) 1.5

(D) 2.0



A photograph of a stack of smooth, light-colored stones, possibly sea glass or polished pebbles, arranged in a spiral pattern on a dark, sandy surface. The background shows a warm sunset or sunrise over a body of water. The lighting creates a soft glow and highlights the texture of the stones.

03

---

Q.

If

$$p : q = 1 : 2$$

$$q : r = 4 : 3$$

$$r : s = 4 : 5$$

and  $u$  is 50% more than  $s$ , what is the ratio  $p : u$ ?

(A)  $2 : 15$

(B)  $16 : 15$

(C)  $1:5$

(D)  $16:45$



04

---

Q.

Given the statements:

- P is the sister of Q.
- Q is the husband of R.
- R is the mother of S.
- T is the husband of P.

Based on the above information, T is \_\_\_\_\_ of S.

- (A) the grandfather
- (B) an uncle
- (C) the father
- (D) a brother



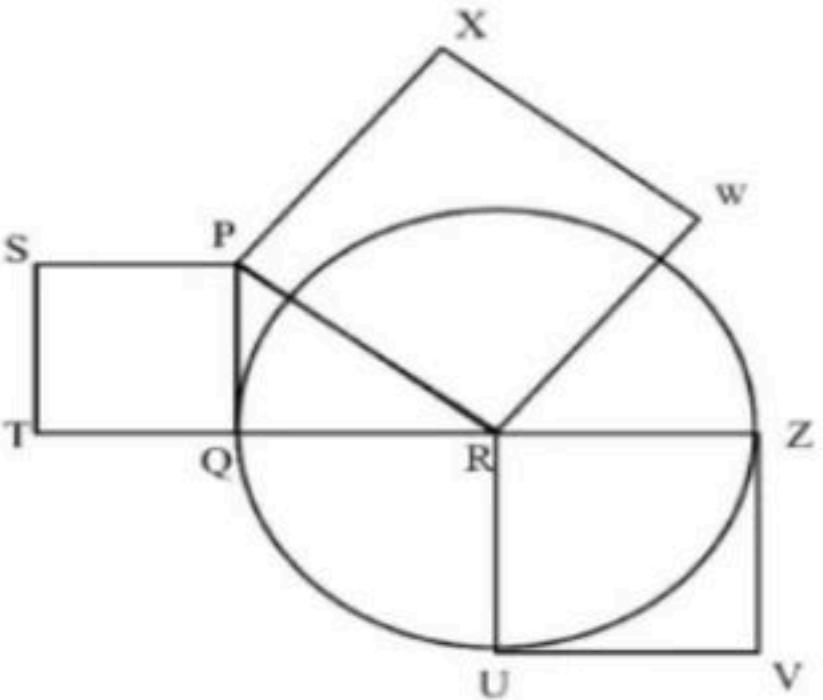


05

---

Q

In the following diagram, the point R is the center of the circle. The lines PQ and ZV are tangential to the circle. The relation among the areas of the squares, PXWR, RUVZ and SPQT is



- (A) Area of SPQT = Area of RUVZ = Area of PXWR
- (B) Area of SPQT = Area of PXWR – Area of RUVZ
- (C) Area of PXWR = Area of SPQT – Area of RUVZ
- (D) Area of PXWR = Area of RUVZ – Area of SPQT



06

---

Q

Healthy eating is a critical component of healthy aging. When should one start eating healthy? It turns out that it is never too early. For example, babies who start eating healthy in the first year are more likely to have better overall health as they get older.

Which one of the following is the CORRECT logical inference based on the information in the above passage?

- (A) Healthy eating is important for those with good health conditions, but not for others
- (B) Eating healthy can be started at any age, earlier the better
- (C) Eating healthy and better overall health are more correlated at a young age, but not older age
- (D) Healthy eating is more important for adults than kids





07

---

Q.

P invested ₹ 5000 per month for 6 months of a year and Q invested ₹  $x$  per month for 8 months of the year in a partnership business. The profit is shared in proportion to the total investment made in that year.

If at the end of that investment year, Q receives  $\frac{4}{9}$  of the total profit, what is the value of  $x$  (in ₹)?

- (A) 2500
- (B) 3000
- (C) 4687
- (D) 8437

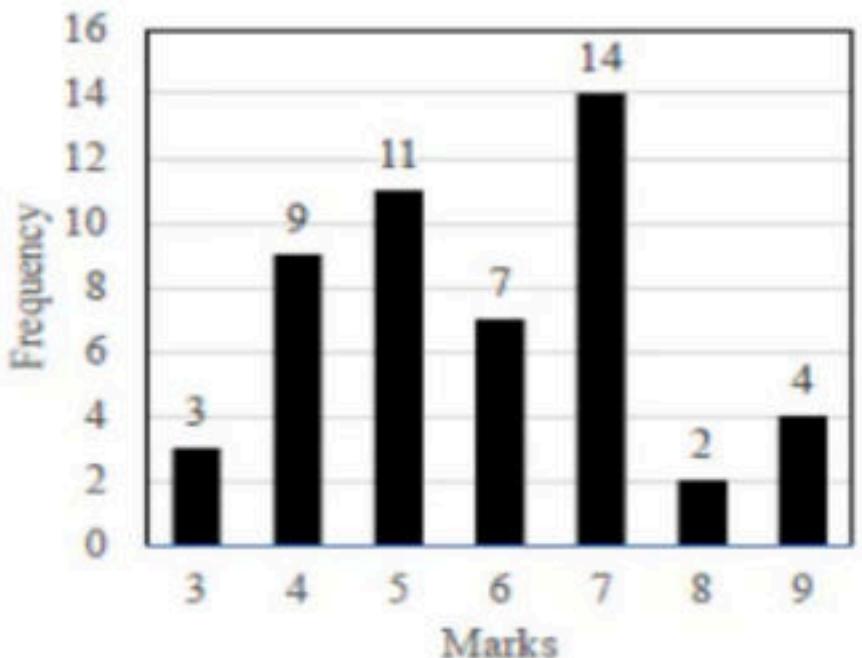




08

---

Q.



The above frequency chart shows the frequency distribution of marks obtained by a set of students in an exam.

From the data presented above, which one of the following is CORRECT?

- (A) mean > mode > median
- (B) mode > median > mean
- (C) mode > mean > median
- (D) median > mode > mean



09

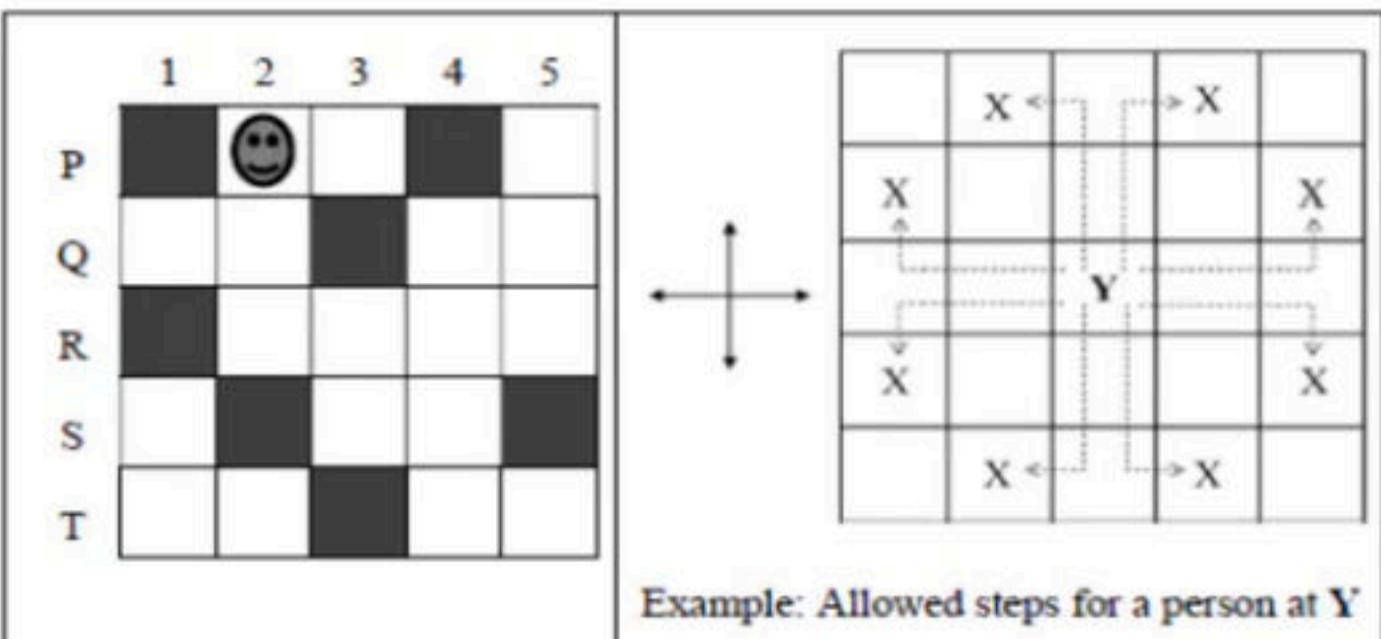
Q.

In the square grid shown on the left, a person standing at P2 position is required to move to P5 position.

The only movement allowed for a step involves, "two moves along one direction followed by one move in a perpendicular direction". The permissible directions for movement are shown as dotted arrows in the right.

For example, a person at a given position **Y** can move only to the positions marked **X** on the right.

Without occupying any of the shaded squares at the end of each step, the minimum number of steps required to go from P2 to P5 is



(A) 4

(B) 5

(C) 6

(D) 7



10

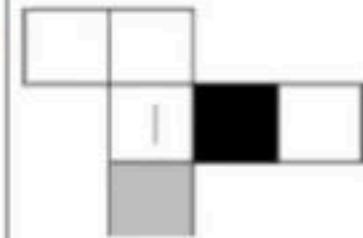
Q



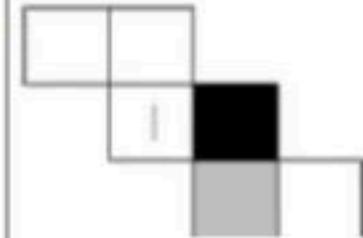
Consider a cube made by folding a single sheet of paper of appropriate shape. The interior faces of the cube are all blank. However, the exterior faces that are not visible in the above view may not be blank.

Which one of the following represents a possible unfolding of the cube?

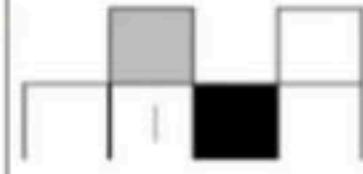
(A)



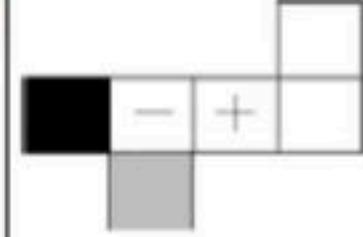
(B)



(C)



(D)





# GATE 2022 Computer Science and Information Technology (CS)

A wide-angle photograph of a tropical island. In the foreground, the dark hull of a large boat cuts across the frame from the right. The middle ground shows a shoreline with several traditional wooden boats (canoes) beached among palm trees. In the background, a range of dark, forested hills or mountains rises against a sky filled with white and grey clouds.

01

---



Q.	The _____ is too high for it to be considered _____.
(A)	fair / fare
(B)	faer / fair
(C)	fare / fare
(D)	fare / fair

A traditional stone windmill with four white blades stands in a green field under a bright blue sky with scattered white clouds.

02

Q.

A function  $y(x)$  is defined in the interval  $[0, 1]$  on the  $x$ -axis as

$$y(x) = \begin{cases} 2 & \text{if } 0 \leq x < \frac{1}{3} \\ 3 & \text{if } \frac{1}{3} \leq x < \frac{3}{4} \\ 1 & \text{if } \frac{3}{4} \leq x \leq 1 \end{cases}$$

Which one of the following is the area under the curve for the interval  $[0, 1]$  on the  $x$ -axis?

(A)  $\frac{5}{6}$

(B)  $\frac{6}{5}$

(C)  $\frac{13}{6}$

(D)  $\frac{6}{13}$



03

Q.

Let  $r$  be a root of the equation  $x^2 + 2x + 6 = 0$ .

Then the value of the expression  $(r + 2)(r + 3)(r + 4)(r + 5)$  is

(A) 51

(B) -51

(C) 126

(D) -126

A dramatic coastal scene under a dark, stormy sky. In the center, a bright, vertical beam of light emanates from a lighthouse situated on a rocky outcrop. To the right, a large, white-tipped wave breaks on the shore. A single lightning bolt strikes the water near the base of the lighthouse. The foreground shows wet, reflective rocks and sand.

04

Q.

Given below are four statements.

Statement 1: All students are inquisitive.

Statement 2: Some students are inquisitive.

Statement 3: No student is inquisitive.

Statement 4: Some students are not inquisitive.

From the given four statements, find the two statements that **CANNOT BE TRUE** simultaneously, assuming that there is at least one student in the class.

(A) Statement 1 and Statement 3

(B) Statement 1 and Statement 2

(C) Statement 2 and Statement 4

(D) Statement 3 and Statement 4

A wide-angle photograph of a dark, choppy sea under a heavy, grey sky. In the distance, a range of mountains is visible, their peaks partially obscured by clouds.

05

Q.

A palindrome is a word that reads the same forwards and backwards. In a game of words, a player has the following two plates painted with letters.



From the additional plates given in the options, which one of the combinations of additional plates would allow the player to construct a five-letter palindrome. The player should use all the five plates exactly once. The plates can be rotated in their plane.

(A)



(B)



(C)



(D)



A scenic coastal landscape at sunset. The sky is filled with warm, orange and yellow hues, transitioning into cooler blues and purples. A lighthouse stands prominently on a grassy cliff overlooking a dark blue sea. In the foreground, a sandy beach meets the water, with waves crashing onto the shore. The scene is framed by several tall evergreen trees on the right side.

06

Q.

Some people believe that “what gets measured, improves”. Some others believe that “what gets measured, gets gamed”. One possible reason for the difference in the beliefs is the work culture in organizations. In organizations with good work culture, metrics help improve outcomes. However, the same metrics are counterproductive in organizations with poor work culture.

Which one of the following is the CORRECT logical inference based on the information in the above passage?

- (A) Metrics are useful in organizations with poor work culture
- (B) Metrics are useful in organizations with good work culture
- (C) Metrics are always counterproductive in organizations with good work culture
- (D) Metrics are never useful in organizations with good work culture





07

Q.

In a recently conducted national entrance test, boys constituted 65% of those who appeared for the test. Girls constituted the remaining candidates and they accounted for 60% of the qualified candidates.

Which one of the following is the correct logical inference based on the information provided in the above passage?

- (A) Equal number of boys and girls qualified
- (B) Equal number of boys and girls appeared for the test
- (C) The number of boys who appeared for the test is less than the number of girls who appeared
- (D) The number of boys who qualified the test is less than the number of girls who qualified



08

---

Q.

A box contains five balls of same size and shape. Three of them are green coloured balls and two of them are orange coloured balls. Balls are drawn from the box one at a time. If a green ball is drawn, it is not replaced. If an orange ball is drawn, it is replaced with another orange ball.

First ball is drawn. What is the probability of getting an orange ball in the next draw?

(A)  $\frac{1}{2}$

(B)  $\frac{8}{25}$

(C)  $\frac{19}{50}$

(D)  $\frac{23}{50}$



A photograph of a paved road curving along a coastline. The road is dark grey with white dashed lines. To the left is a sandy beach, and to the right is the ocean under a sky filled with large, white and grey clouds.

**Success  
Ahead**

09

Q.

The corners and mid-points of the sides of a triangle are named using the distinct letters P, Q, R, S, T and U, but not necessarily in the same order. Consider the following statements:

- The line joining P and R is parallel to the line joining Q and S.
- P is placed on the side opposite to the corner T.
- S and U cannot be placed on the same side.

Which one of the following statements is correct based on the above information?

(A) P cannot be placed at a corner

(B) S cannot be placed at a corner

(C) U cannot be placed at a mid-point

(D) R cannot be placed at a corner

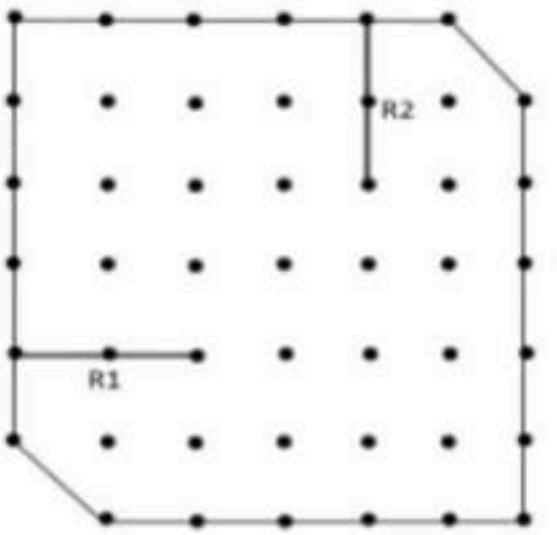


10

Q.10

A plot of land must be divided between four families. They want their individual plots to be similar in shape, not necessarily equal in area. The land has equally spaced poles, marked as dots in the below figure. Two ropes, R1 and R2, are already present and cannot be moved.

What is the least number of **additional** straight ropes needed to create the desired plots? A single rope can pass through three poles that are aligned in a straight line.



- (A) 2
- (B) 4
- (C) 5
- (D) 3



# GATE 2022 Electrical Engineering (EE)



**Success  
Ahead**

01



Q.	As you grow older, an injury to your _____ may take longer to _____.
(A)	heel / heel
(B)	heal / heel
(C)	heal / heal
(D)	heel / heal





02

Q.	<p>In a 500 m race, P and Q have speeds in the ratio of 3 : 4. Q starts the race when P has already covered 140 m.</p> <p>What is the distance between P and Q (in m) when P wins the race?</p>
(A)	20
(B)	40
(C)	60
(D)	140



03

Q.

Three bells P, Q, and R are rung periodically in a school. P is rung every 20 minutes; Q is rung every 30 minutes and R is rung every 50 minutes.

If all the three bells are rung at 12:00 PM, when will the three bells ring together again the next time?

- (A) 5:00 PM
- (B) 5:30 PM
- (C) 6:00 PM
- (D) 6:30 PM



04



Q.

Given below are two statements and four conclusions drawn based on the statements.

Statement 1: Some bottles are cups.

Statement 2: All cups are knives.

Conclusion I: Some bottles are knives.

Conclusion II: Some knives are cups.

Conclusion III: All cups are bottles.

Conclusion IV: All knives are cups.

Which one of the following options can be logically inferred?

(A) Only conclusion I and conclusion II are correct

(B) Only conclusion II and conclusion III are correct

(C) Only conclusion II and conclusion IV are correct

(D) Only conclusion III and conclusion IV are correct

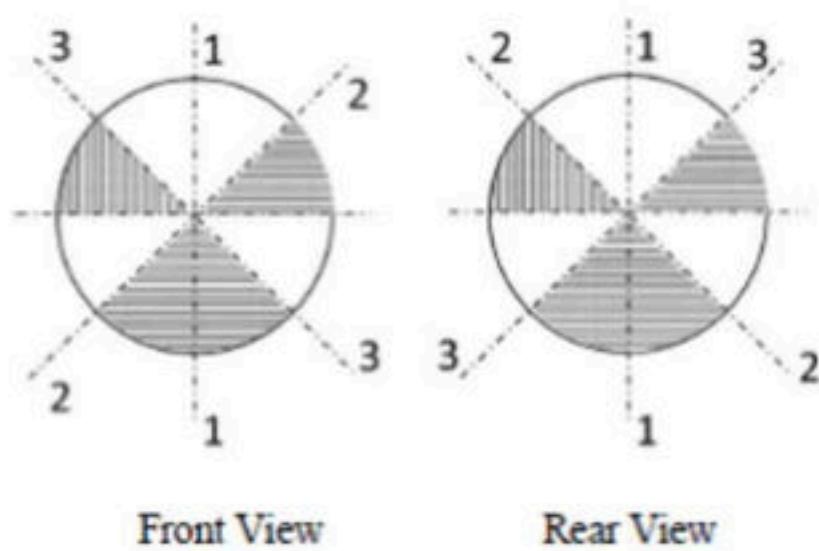
05



Q.

The figure below shows the front and rear view of a disc, which is shaded with identical patterns. The disc is flipped once with respect to any one of the fixed axes 1-1, 2-2 or 3-3 chosen uniformly at random.

What is the probability that the disc **DOES NOT** retain the same front and rear views after the flipping operation?



(A) 0

(B)  $\frac{1}{3}$ (C)  $\frac{2}{3}$ 

(D) 1



06

Q.

Altruism is the human concern for the wellbeing of others. Altruism has been shown to be motivated more by social bonding, familiarity and identification of belongingness to a group. The notion that altruism may be attributed to empathy or guilt has now been rejected.

Which one of the following is the CORRECT logical inference based on the information in the above passage?

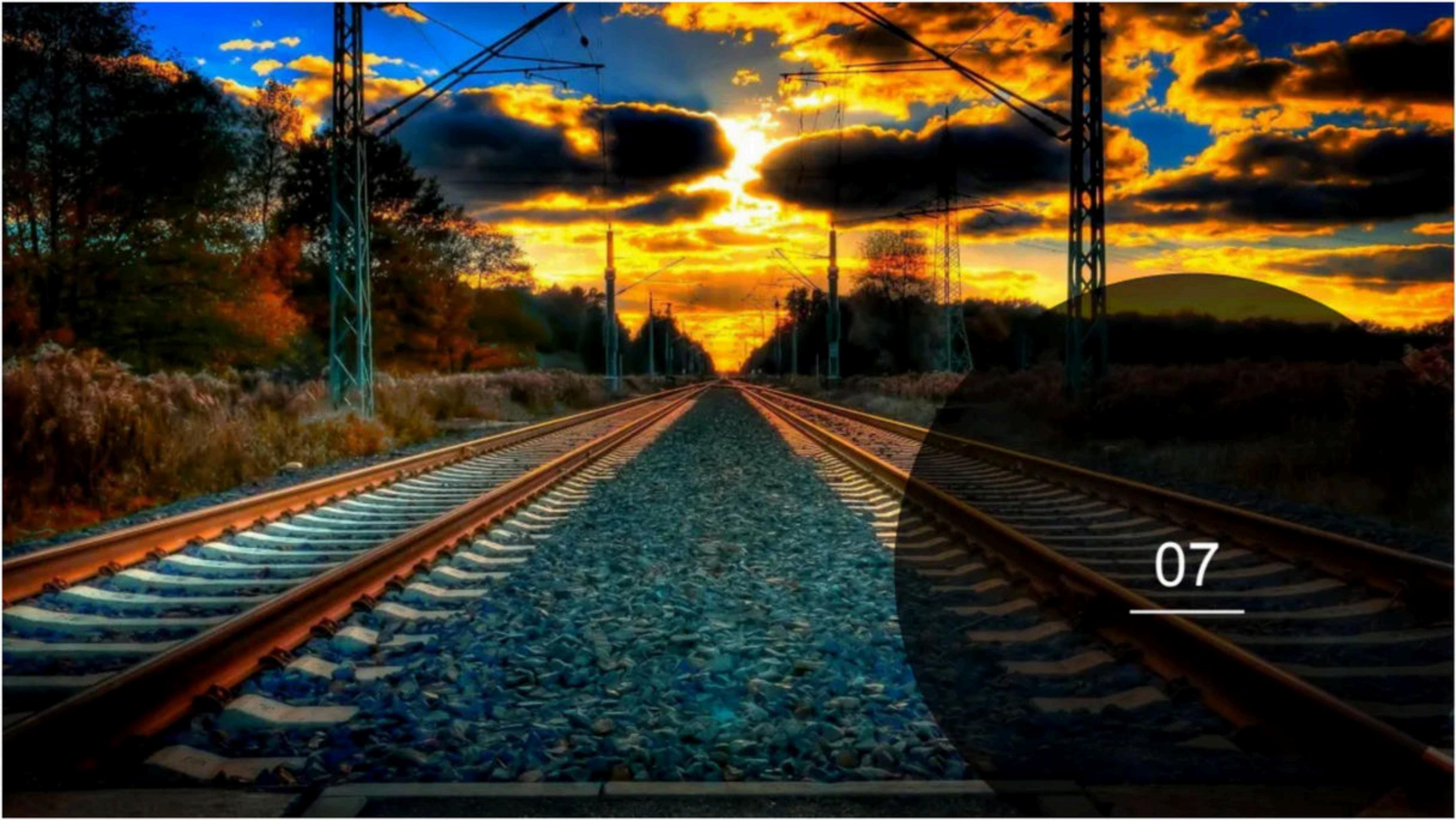
(A) Humans engage in altruism due to guilt but not empathy

(B) Humans engage in altruism due to empathy but not guilt

(C) Humans engage in altruism due to group identification but not empathy

(D) Humans engage in altruism due to empathy but not familiarity



A photograph of a railway track at sunset. The sky is filled with large, billowing clouds illuminated from behind by the setting sun, creating a warm orange and yellow glow. The railway tracks run straight into the distance, flanked by green trees and bushes on the left and some utility poles and wires on the right. The overall atmosphere is peaceful and scenic.

07

Q:

There are two identical dice with a single letter on each of the faces. The following six letters: Q, R, S, T, U, and V, one on each of the faces. Any of the six outcomes are equally likely.

The two dice are thrown once independently at random.

What is the probability that the outcomes on the dice were composed only of any combination of the following possible outcomes: Q, U and V?

(A)  $\frac{1}{4}$

(B)  $\frac{3}{4}$

(C)  $\frac{1}{6}$

(D)  $\frac{5}{36}$



08

Q.

The price of an item is 10% cheaper in an online store S compared to the price at another online store M. Store S charges ₹ 150 for delivery. There are no delivery charges for orders from the store M. A person bought the item from the store S and saved ₹ 100.

What is the price of the item at the online store S (in ₹) if there are no other charges than what is described above?

- (A) 2500
- (B) 2250
- (C) 1750
- (D) 1500



A photograph of a two-lane road at night, stretching from the foreground into the distance. The sky is filled with stars and a prominent, colorful nebula or galaxy. The horizon shows a bright orange glow, likely from city lights or a sunset. A white number '09' is overlaid in the bottom right corner.

09

Q.

The letters P, Q, R, S, T and U are to be placed one per vertex on a regular convex hexagon, but not necessarily in the same order.

Consider the following statements:

- The line segment joining R and S is longer than the line segment joining P and Q.
- The line segment joining R and S is perpendicular to the line segment joining P and Q.
- The line segment joining R and U is parallel to the line segment joining T and Q.

Based on the above statements, which one of the following options is CORRECT?

(A) The line segment joining R and T is parallel to the line segment joining Q and S

(B) The line segment joining T and Q is parallel to the line joining P and U

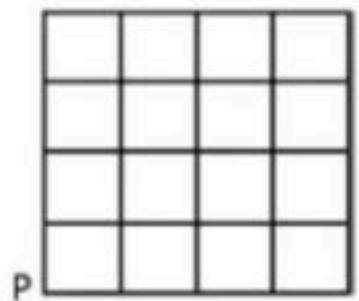
(C) The line segment joining R and P is perpendicular to the line segment joining U and Q

(D) The line segment joining Q and S is perpendicular to the line segment joining R and P



10

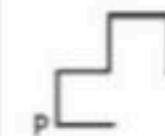
Q.



An ant is at the bottom-left corner of a grid (point P) as shown above. It aims to move to the top-right corner of the grid. The ant moves only along the lines marked in the grid such that the current distance to the top-right corner strictly decreases.

Which one of the following is a part of a possible trajectory of the ant during the movement?

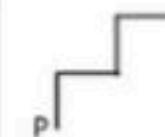
(A)



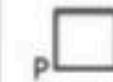
(B)



(C)



(D)





# GATE 2022 Metallurgical Engineering (MT)

01



Q.	Mr. X speaks _____ Japanese _____ Chinese.
(A)	neither / or
(B)	either / nor
(C)	neither / nor
(D)	also / but

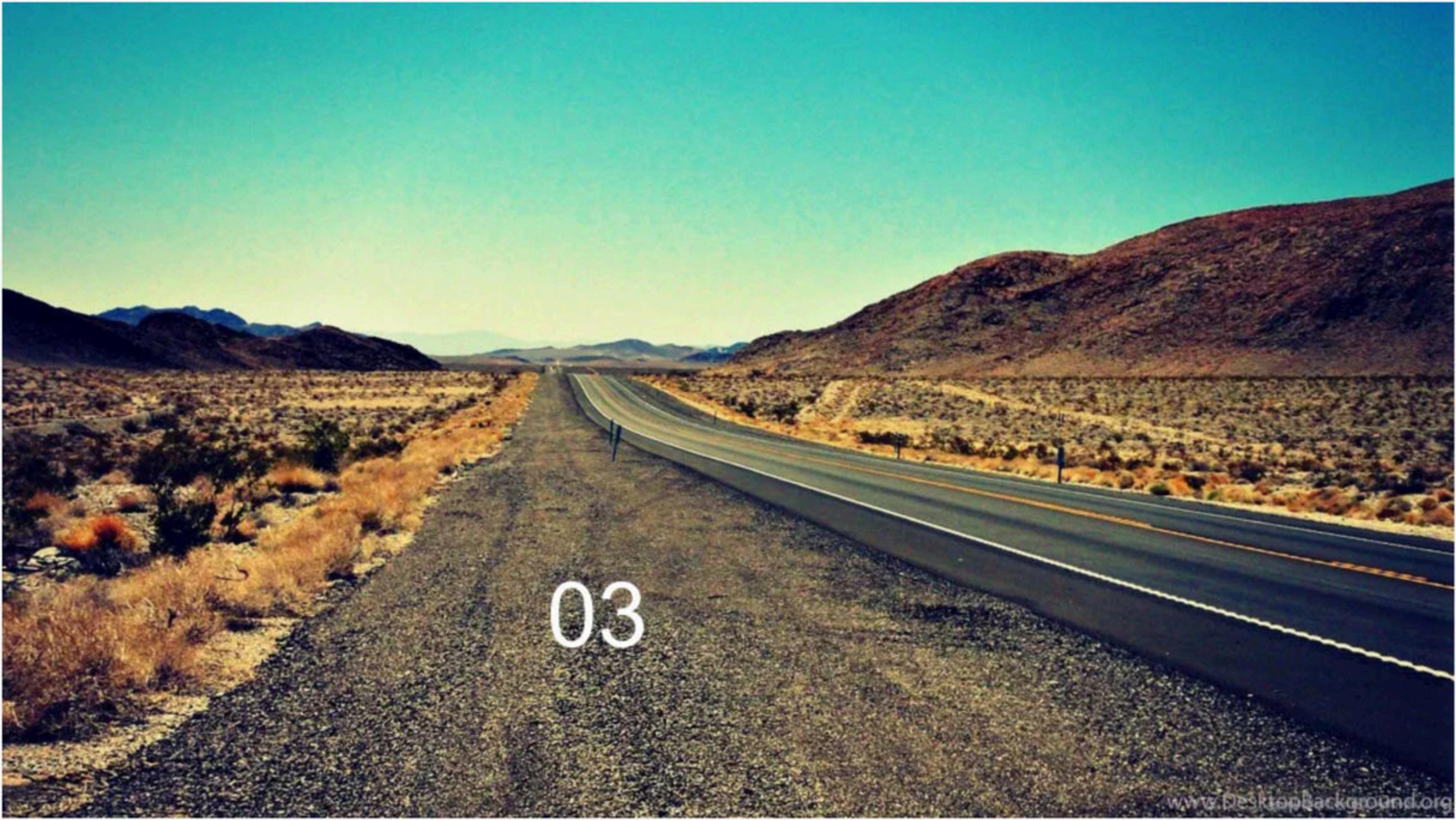


A scenic view of a tropical island from a wooden pier. The pier extends from the bottom center towards the horizon. The water is a vibrant turquoise color. In the background, there's a lush green island with several thatched-roof buildings, likely overwater bungalows. The sky is a clear blue with scattered white clouds.

02

Q.	<p>A sum of money is to be distributed among P, Q, R, and S in the proportion <math>5 : 2 : 4 : 3</math>, respectively.</p> <p>If R gets ₹ 1000 more than S, what is the share of Q (in ₹)?</p>
(A)	500
(B)	1000
(C)	1500
(D)	2000



A photograph of a long, straight highway stretching into the distance through a desert landscape under a clear blue sky. The highway is a two-lane road with a yellow center line and white shoulder lines. It curves slightly to the right as it disappears into the horizon. The surrounding terrain is dry and arid, with low-lying shrubs and bushes. In the background, there are several hills and mountains under a clear blue sky.

03

Q.

A trapezium has vertices marked as P, Q, R and S (in that order anticlockwise).

The side PQ is parallel to side SR.

Further, it is given that,  $PQ = 11$  cm,  $QR = 4$  cm,  $RS = 6$  cm and  $SP = 3$  cm.

What is the shortest distance between PQ and SR (in cm)?

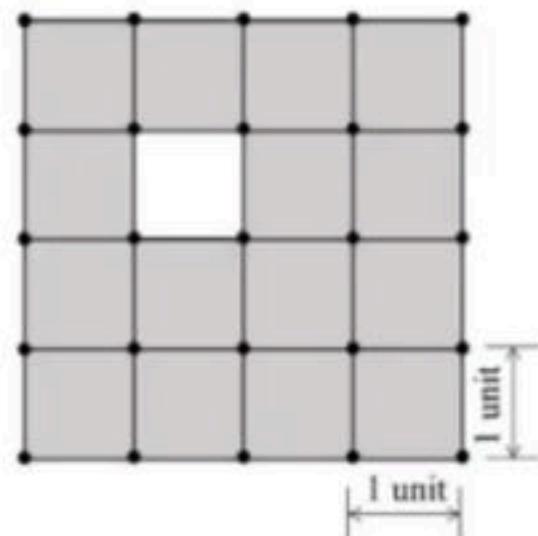
- (A) 1.80
- (B) 2.40
- (C) 4.20
- (D) 5.76

04



Q.

The figure shows a grid formed by a collection of unit squares. The unshaded unit square in the grid represents a hole.



What is the maximum number of squares without a "hole in the interior" that can be formed within the  $4 \times 4$  grid using the unit squares as building blocks?

- (A) 15
- (B) 20
- (C) 21
- (D) 26



05

Q.

An art gallery engages a security guard to ensure that the items displayed are protected. The diagram below represents the plan of the gallery where the boundary walls are opaque. The location the security guard posted is identified such that all the inner space (shaded region in the plan) of the gallery is within the line of sight of the security guard.

If the security guard does not move around the posted location and has a 360° view, which one of the following correctly represents the set of ALL possible locations among the locations P, Q, R and S, where the security guard can be posted to watch over the entire inner space of the gallery.



- |     |         |
|-----|---------|
| (A) | P and Q |
| (B) | Q       |
| (C) | Q and S |
| (D) | R and S |

06



Q.

Mosquitoes pose a threat to human health. Controlling mosquitoes using chemicals may have undesired consequences. In Florida, authorities have used genetically modified mosquitoes to control the overall mosquito population. It remains to be seen if this novel approach has unforeseen consequences.

Which one of the following is the correct logical inference based on the information in the above passage?

- (A) Using chemicals to kill mosquitoes is better than using genetically modified mosquitoes because genetic engineering is dangerous
- (B) Using genetically modified mosquitoes is better than using chemicals to kill mosquitoes because they do not have any side effects
- (C) Both using genetically modified mosquitoes and chemicals have undesired consequences and can be dangerous
- (D) Using chemicals to kill mosquitoes may have undesired consequences but it is not clear if using genetically modified mosquitoes has any negative consequence



07

*A Dreamy World*  
www.dreamyworld.com.br

Q.

Consider the following inequalities.

(i)  $2x - 1 > 7$

(ii)  $2x - 9 < 1$

Which one of the following expressions below satisfies the above two inequalities?

(A)  $x \leq -4$

(B)  $-4 < x \leq 4$

(C)  $4 < x < 5$

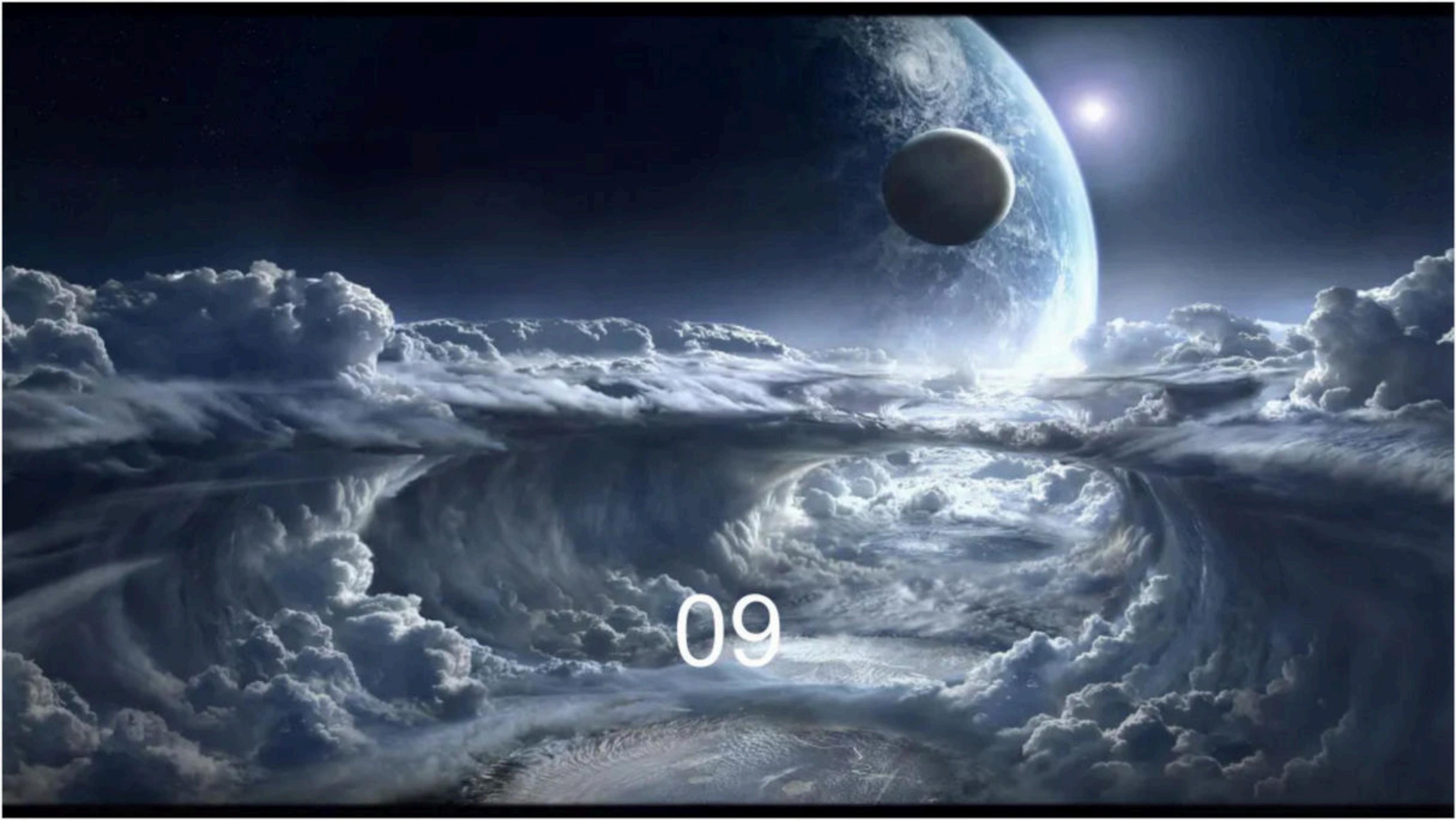
(D)  $x \geq 5$

A composite image featuring a city skyline at night, a large planet-like sphere in the sky, and a bright starburst effect.

08



Q.	<p>Four points <math>P(0, 1)</math>, <math>Q(0, -3)</math>, <math>R(-2, -1)</math>, and <math>S(2, -1)</math> represent the vertices of a quadrilateral.</p> <p>What is the area enclosed by the quadrilateral?</p>
(A) 4	
(B) $4\sqrt{2}$	
(C) 8	
(D) $8\sqrt{2}$	



09

Q.

In a class of five students P, Q, R, S and T, only one student is known to have copied in the exam. The disciplinary committee has investigated the situation and recorded the statements from the students as given below.

**Statement of P:** R has copied in the exam.

**Statement of Q:** S has copied in the exam.

**Statement of R:** P did not copy in the exam.

**Statement of S:** Only one of us is telling the truth.

**Statement of T:** R is telling the truth.

The investigating team had authentic information that S never lies.

Based on the information given above, the person who has copied in the exam is

(A) R

(B) P

(C) Q

(D) T

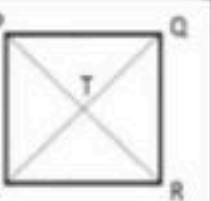


10



Q.10

Consider the following square with the four corners and the center marked as P, Q, R, S and T respectively.



Let X, Y and Z represent the following operations:

X: rotation of the square by 180 degree with respect to the S-Q axis.

Y: rotation of the square by 180 degree with respect to the P-R axis.

Z: rotation of the square by 90 degree clockwise with respect to the axis perpendicular, going into the screen and passing through the point T.

Consider the following three distinct sequences of operation (which are applied in the left to right order).

- (1) XYZZ
- (2) XY
- (3) ZZZZ

Which one of the following statements is correct as per the information provided above?

- (A) The sequence of operations (1) and (2) are equivalent
- (B) The sequence of operations (1) and (3) are equivalent
- (C) The sequence of operations (2) and (3) are equivalent
- (D) The sequence of operations (1), (2) and (3) are equivalent



# GATE 2022 Chemical Engineering- CH

A wide-angle photograph of a majestic mountain range. In the foreground, a large, dark rock formation juts out from the left side of the frame, partially submerged in a deep blue lake. The lake's surface is calm, reflecting the surrounding peaks. The middle ground is dominated by a range of mountains with sharp, rocky peaks. Some of these peaks are covered in patches of snow or ice. The sky above is filled with heavy, dark clouds, creating a dramatic contrast with the bright peaks. The overall scene is one of natural beauty and grandeur.

01

Q.	Inhaling the smoke from a burning _____ could _____ you quickly.
(A)	tire / tier
(B)	tire / tyre
(C)	tyre / tire
(D)	tyre / tier



A wide-angle photograph of a mountainous landscape. In the foreground, there is a large body of water with small whitecaps on the surface. On the left side, a steep, rocky mountain face is visible, showing various shades of brown and tan. The middle ground features a range of mountains with patches of snow or ice on their peaks. The sky is filled with heavy, grey clouds, creating a dramatic atmosphere.

02

Q.

A sphere of radius  $r$  cm is packed in a box of cubical shape.

What should be the minimum volume (in  $\text{cm}^3$ ) of the box that can enclose the sphere?

(A)  $\frac{r^3}{8}$

(B)  $r^3$

(C)  $2r^3$

(D)  $8r^3$

03



Q.

Pipes P and Q can fill a storage tank in full with water in 10 and 6 minutes, respectively. Pipe R draws the water out from the storage tank at a rate of 34 litres per minute. P, Q and R operate at a constant rate.

If it takes one hour to completely empty a full storage tank with all the pipes operating simultaneously, what is the capacity of the storage tank (in litres)?

- (A) 26.8
- (B) 60.0
- (C) 120.0
- (D) 127.5

04



Q.

Six persons P, Q, R, S, T and U are sitting around a circular table facing the center not necessarily in the same order. Consider the following statements:

- P sits next to S and T.
- Q sits diametrically opposite to P.
- The shortest distance between S and R is equal to the shortest distance between T and U.

Based on the above statements, Q is a neighbor of

(A) U and S

(B) R and T

(C) R and U

(D) P and S

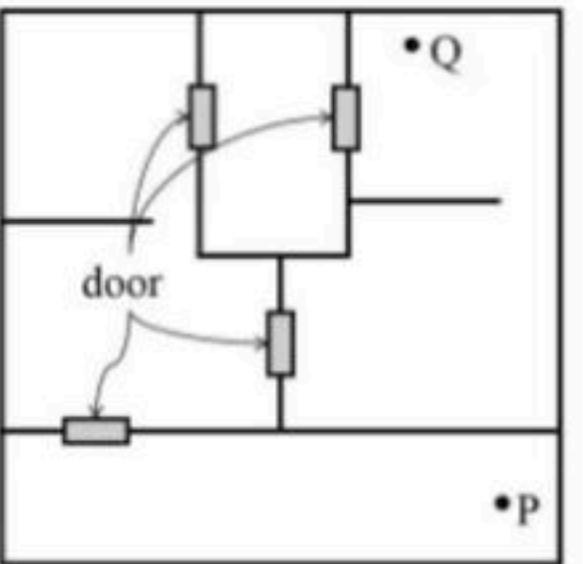
05



Q.5

A building has several rooms and doors as shown in the top view of the building given below. The doors are closed initially.

What is the minimum number of doors that need to be opened in order to go from the point P to the point Q?



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

A wide-angle photograph of a dark, choppy sea under a heavy, grey sky. In the distance, a range of mountains is visible against a lighter horizon. A bright, circular light source, resembling the moon or a very bright star, is positioned in the upper center of the frame.

06

Q.

Rice, a versatile and inexpensive source of carbohydrate, is a critical component of diet worldwide. Climate change, causing extreme weather, poses a threat to sustained availability of rice. Scientists are working on developing Green Super Rice (GSR), which is resilient under extreme weather conditions yet gives higher yields sustainably.

Which one of the following is the CORRECT logical inference based on the information given in the above passage?

- (A) GSR is an alternative to regular rice, but it grows only in an extreme weather
- (B) GSR may be used in future in response to adverse effects of climate change
- (C) GSR grows in an extreme weather, but the quantity of produce is lesser than regular rice
- (D) Regular rice will continue to provide good yields even in extreme weather





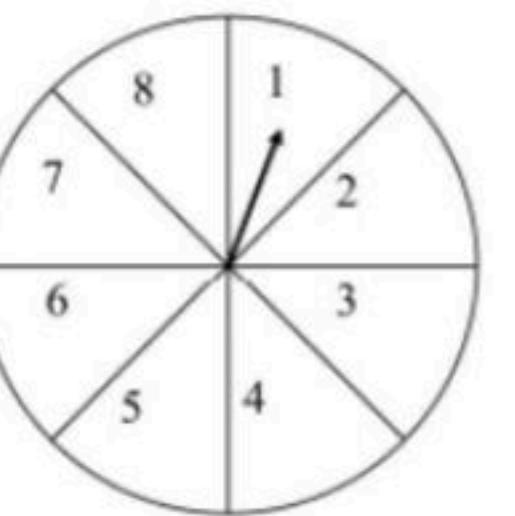
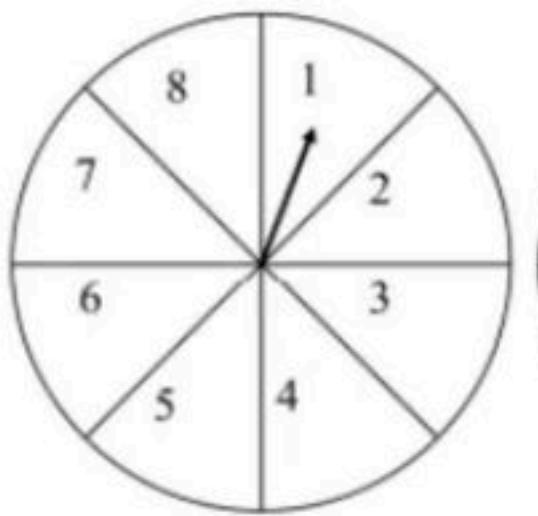
07

Q.

A game consists of spinning an arrow around a stationary disk as shown below. When the arrow comes to rest, there are eight equally likely outcomes. It could come to rest in any one of the sectors numbered 1, 2, 3, 4, 5, 6, 7 or 8 as shown.

Two such disks are used in a game where their arrows are independently spun.

What is the probability that the sum of the numbers on the resulting sectors upon spinning the two disks is equal to 8 after the arrows come to rest?



(A)  $\frac{1}{16}$

(B)  $\frac{5}{64}$

(C)  $\frac{3}{32}$

(D)  $\frac{7}{64}$

08



Q.

Consider the following inequalities.

(i)  $3p - q < 4$

(ii)  $3q - p < 12$

Which one of the following expressions below satisfies the above two inequalities?

(A)  $p + q < 8$

(B)  $p + q = 8$

(C)  $8 \leq p + q < 16$

(D)  $p + q \geq 16$

A panoramic view of a city skyline at night, likely New York City, viewed from across a body of water. The sky is filled with large, billowing clouds in shades of dark blue, light blue, and orange, suggesting either a sunset or sunrise. The city's lights reflect off the water in the foreground. Several prominent skyscrapers are visible, including one with a distinctive red and white striped pattern and another with a bright yellow glow.

09

Q.

Given below are three statements and four conclusions drawn based on the statements.

**Statement 1:** Some engineers are writers.

**Statement 2:** No writer is an actor.

**Statement 3:** All actors are engineers.

**Conclusion I:** Some writers are engineers.

**Conclusion II:** All engineers are actors.

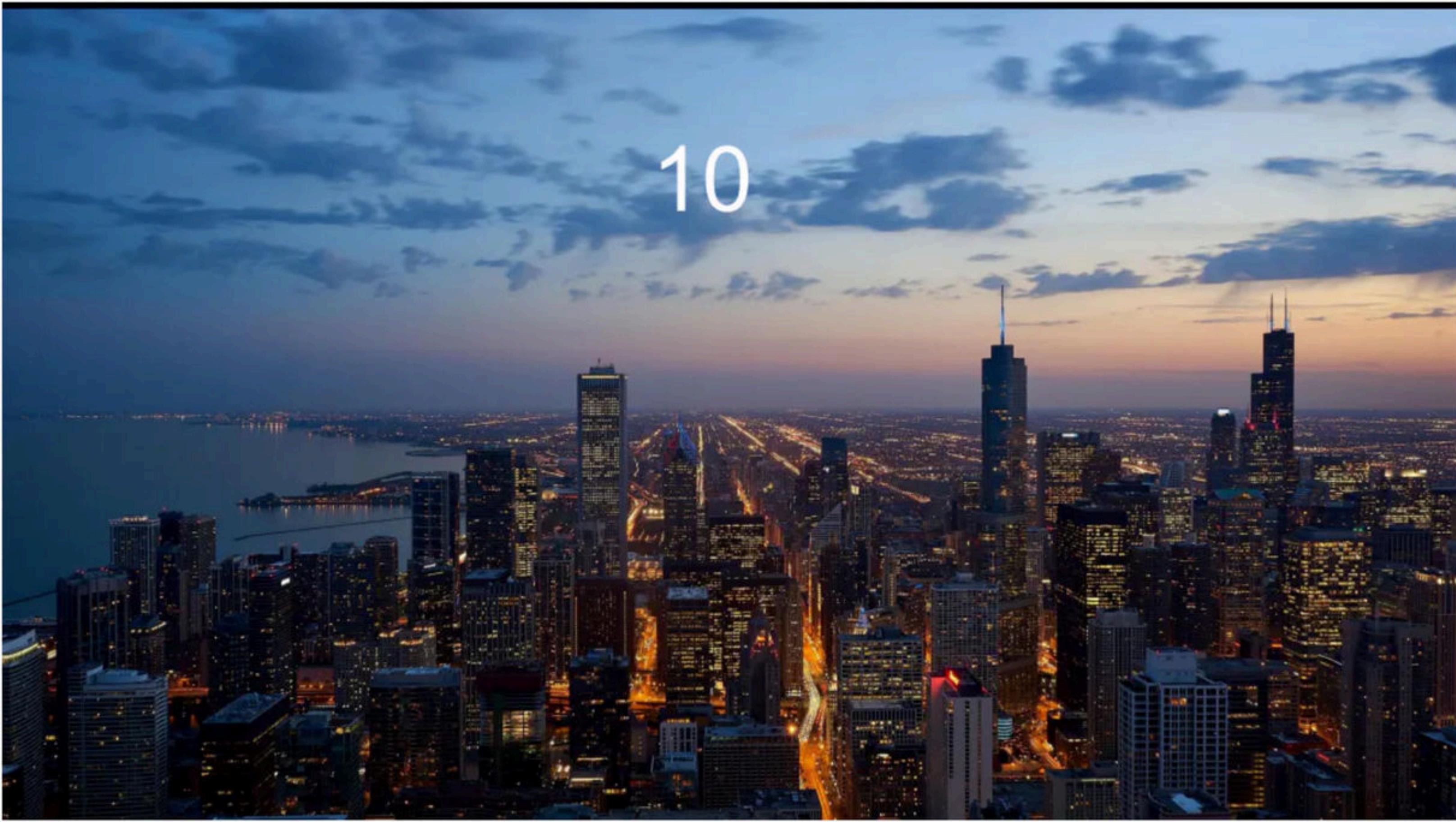
**Conclusion III:** No actor is a writer.

**Conclusion IV:** Some actors are writers.

Which one of the following options can be logically inferred?

- (A) Only conclusion I is correct
- (B) Only conclusion II and conclusion III are correct
- (C) Only conclusion I and conclusion III are correct
- (D) Either conclusion III or conclusion IV is correct

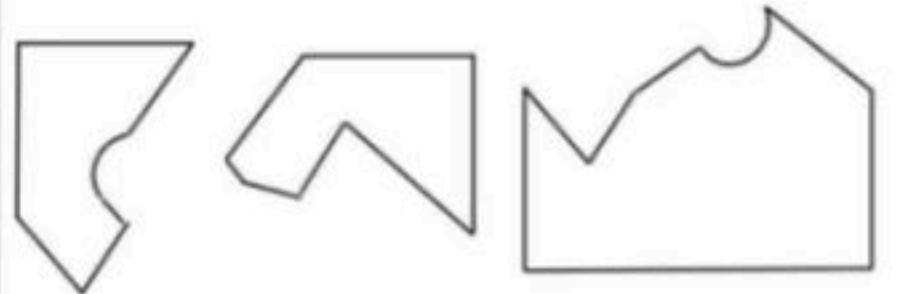
10



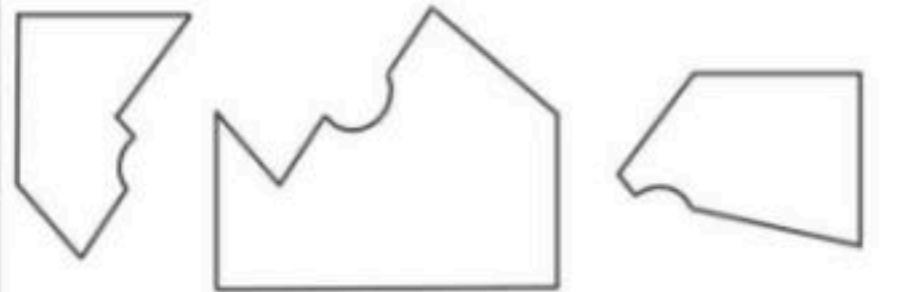
Q.

Which one of the following sets of pieces can be assembled to form a square with a single round hole near the center? Pieces cannot overlap.

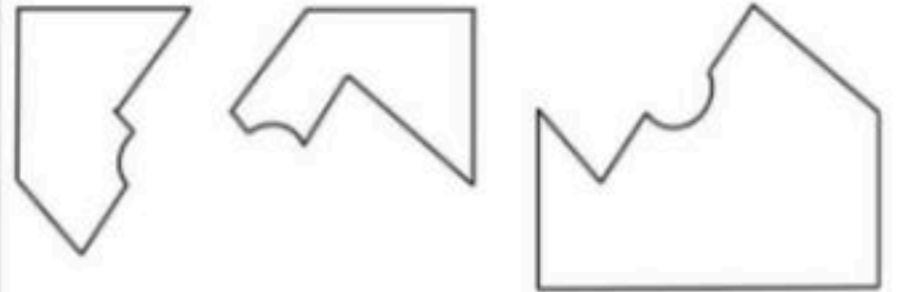
(A)



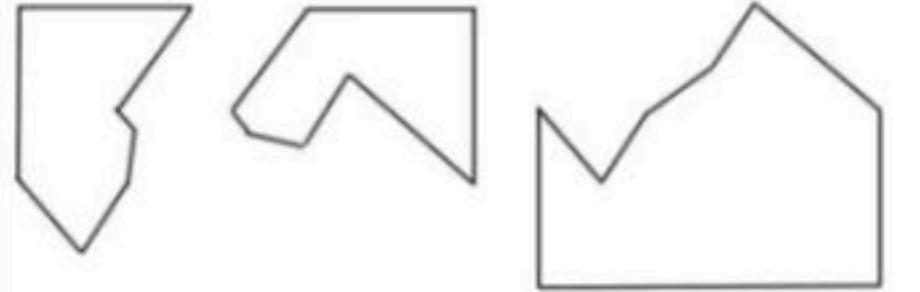
(B)



(C)



(D)





# GATE 2022 Electronics and Communications (EC)



01

---

Mr. X speaks \_\_\_\_\_ Japanese \_\_\_\_\_ Chinese.

A neither/or

B either/nor

C neither/nor

D also/but



02

---

A sum of money is to be distributed among P, Q, R, and S in the proportion 5 : 2 : 4 : 3, respectively. If R gets ₹ 1000 more than S, what is the share of Q (in ₹)?

A 500

B 1000

C 1500

D 2000



03

---



A trapezium has vertices marked as P, Q, R and S (in that order anticlockwise). The side PQ is parallel to side SR. Further, it is given that,  $PQ = 11$  cm,  $QR = 4$  cm,  $RS = 6$  cm and  $SP = 3$  cm. What is the shortest distance between PQ and SR (in cm)?

A 1.80

B 2.40

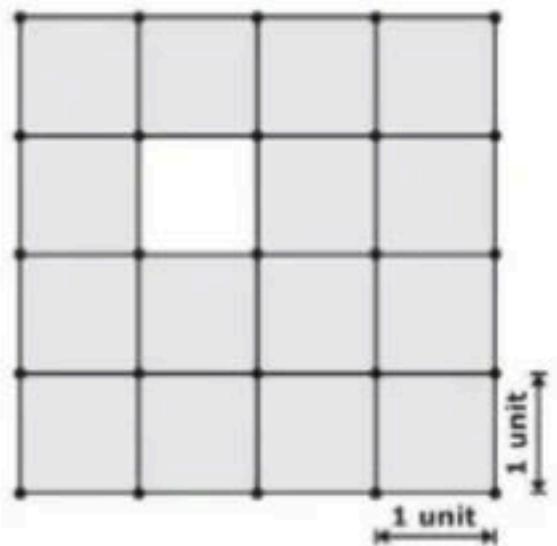
C 4.20

D 5.76



04

The figure shows a grid formed by a collection of unit squares. The unshaded unit square in the grid represents a hole.



What is the maximum number of squares without a "hole in the interior" that can be formed within the  $4 \times 4$  grid using the unit squares as building blocks?

A 15

B 20

C 21

D 26

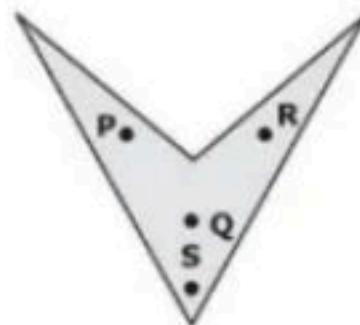
A photograph of a person's hand reaching upwards towards the horizon at sunset. The sun is partially visible between the fingers, casting a warm glow. The background is a calm body of water under a clear sky.

05

An art gallery engages a security guard to ensure that the items displayed are protected. The diagram below represents the plan of the gallery where the boundary walls are opaque. The location the security guard posted is identified such that all the inner space (shaded region in the plan) of the gallery is within the line of sight of the security guard.



If the security guard does not move around the posted location and has a  $360^\circ$  view, which one of the following correctly represents the set of ALL possible locations among the locations P, Q, R and S, where the security guard can be posted to watch over the entire inner space of the gallery.



- A P and Q
  - B Q
  - C Q and S
  - D R and S

A silhouette of a person standing next to a double-headed arrow sign against a sunset sky. The person is facing right, looking towards the horizon where mountains are visible.

06

Mosquitoes pose a threat to human health. Controlling mosquitoes using chemicals may have undesired consequences. In Florida, authorities have used genetically modified mosquitoes to control the overall mosquito population. It remains to be seen if this novel approach has unforeseen consequences.

Which one of the following is the correct logical inference based on the information in the above passage?

- A Using chemicals to kill mosquitoes is better than using genetically modified mosquitoes because genetic engineering is dangerous
- B Using genetically modified mosquitoes is better than using chemicals to kill mosquitoes because they do not have any side effects
- C Both using genetically modified mosquitoes and chemicals have undesired consequences and can be dangerous
- D Using chemicals to kill mosquitoes may have undesired consequences but it is not clear if using genetically modified mosquitoes has any negative consequence



07

Consider the following inequalities.

(i)  $2x - 1 > 7$

(ii)  $2x - 9 < 1$

Which one of the following expressions below satisfies the above two inequalities?

A  $x \leq -4$

B  $-4 < x \leq 4$

C  $4 < x < 4$

D  $x \geq 5$





08

---

Four points  $P(0, 1)$ ,  $Q(0, -3)$ ,  $R(-2, -1)$ , and  $S(2, -1)$  represent the vertices of a quadrilateral. What is the area enclosed by the quadrilateral?

A 4

B  $4\sqrt{2}$

C 8

D  $8\sqrt{2}$



A photograph of five hikers walking along a dark, rocky ridge against a vibrant sunset sky. The hikers are silhouetted against the orange and yellow hues of the setting sun. The sky above is a deep blue, transitioning through purple and pink towards the horizon.

09

In a class of five students P, Q, R, S and T, only one student is known to have copied in the exam. The disciplinary committee has investigated the situation and recorded the statements from the students as given below.

Statement of P: R has copied in the exam.

Statement of Q: S has copied in the exam.

Statement of R: P did not copy in the exam.

Statement of S: Only one of us is telling the truth.

Statement of T: R is telling the truth.

The investigating team had authentic information that S never lies.

Based on the information given above, the person who has copied in the exam is

A R

B P

C Q

D T

A wide-angle photograph of a coastal landscape at night. The foreground is dominated by dark, rugged rock formations jutting out into a body of water. In the middle ground, a small, isolated rock island stands in the distance. The sky above is a deep, dark blue, filled with numerous stars of varying brightness. A prominent, colorful nebula or galaxy cluster is visible on the right side, with hues of orange, yellow, and purple. The horizon line is low, separating the celestial scene from the terrestrial one below.

10

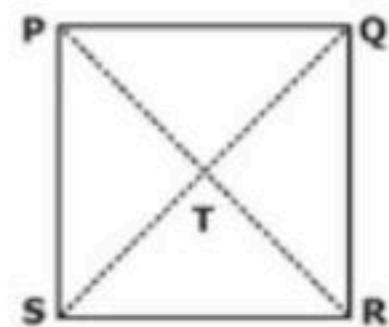
Consider the following square with the four corners and the center marked as P, Q, R, S and T respectively.

Let X, Y and Z represent the following operations:

X: rotation of the square by 180 degree with respect to the S-Q axis.

Y: rotation of the square by 180 degree with respect to the P-R axis.

Z: rotation of the square by 90 degree clockwise with respect to the axis perpendicular, going into the screen and passing through the point T.



Consider the following three distinct sequences of operation (which are applied in the left to right order).

(1) XYZZ

(2) XY

(3) ZZZZ



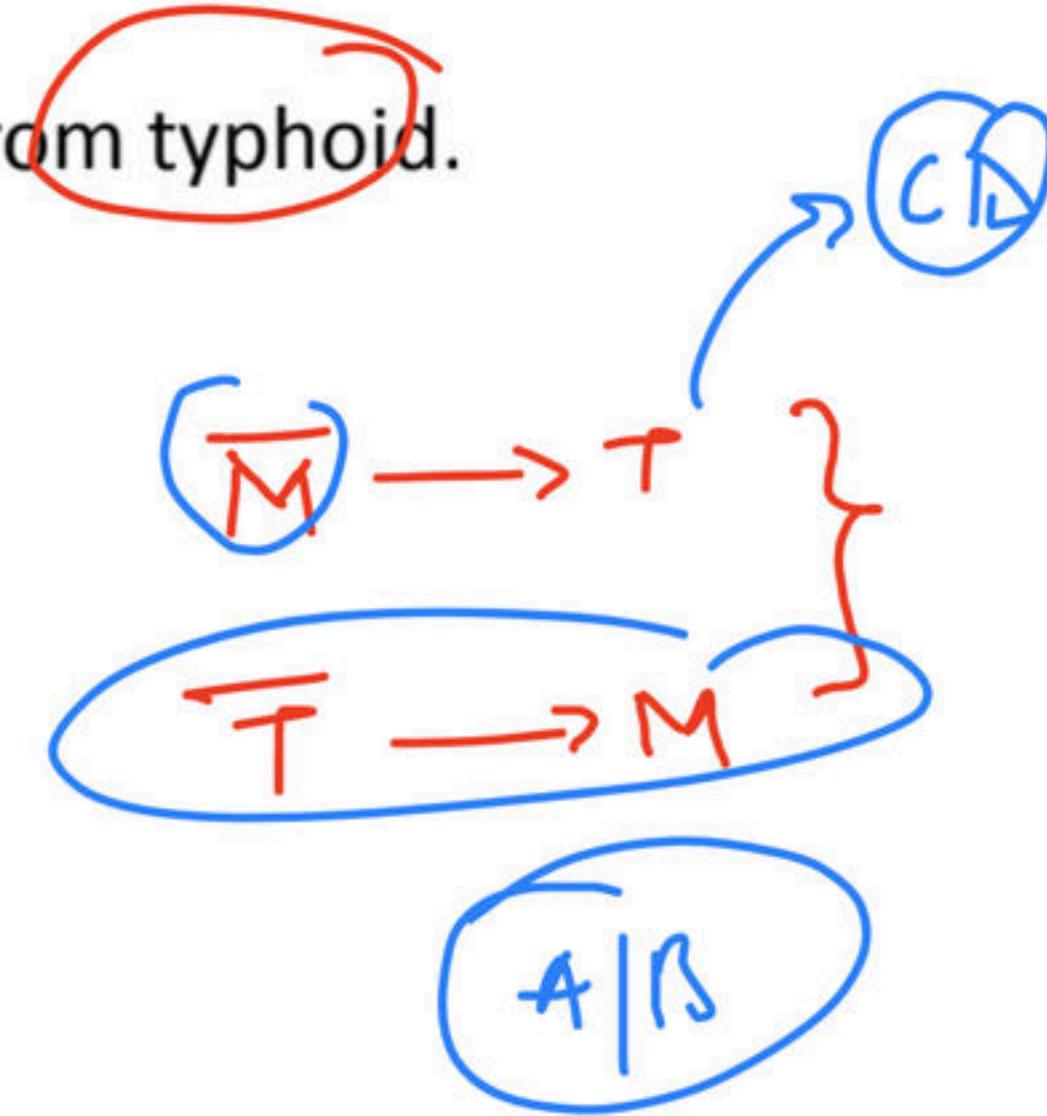
13

Rohit is suffering either from malaria or from typhoid.

- (a) Rohit is not suffering from typhoid.
- (b) Rohit is suffering from malaria.
- (c) Rohit is not suffering from malaria.
- (d) Rohit is suffering from typhoid.

~~(A) AB~~  
~~(C) BC~~

~~(B) AC~~  
~~(D) DC~~





14

---

Manjula works, unless she is married.

- (a) Manjula is not married
- (b) Manjula is married
- (c) Manjula works
- (d) Manjula does not work.

(A) CA

(C) BD and AC

(B) BD

(D) AC and DB



15

If It is not rainy





If tea is sweet, then Samarth cannot drink it.

- (a) Samarth can drink tea.
  - (b) Tea is not sweet.
  - (c) Samarth cannot drink tea.
  - (d) Tea is sweet.
- 
- (A) CB
  - (B) AB
  - (C) AB and BC
  - (D) AB and DC



16



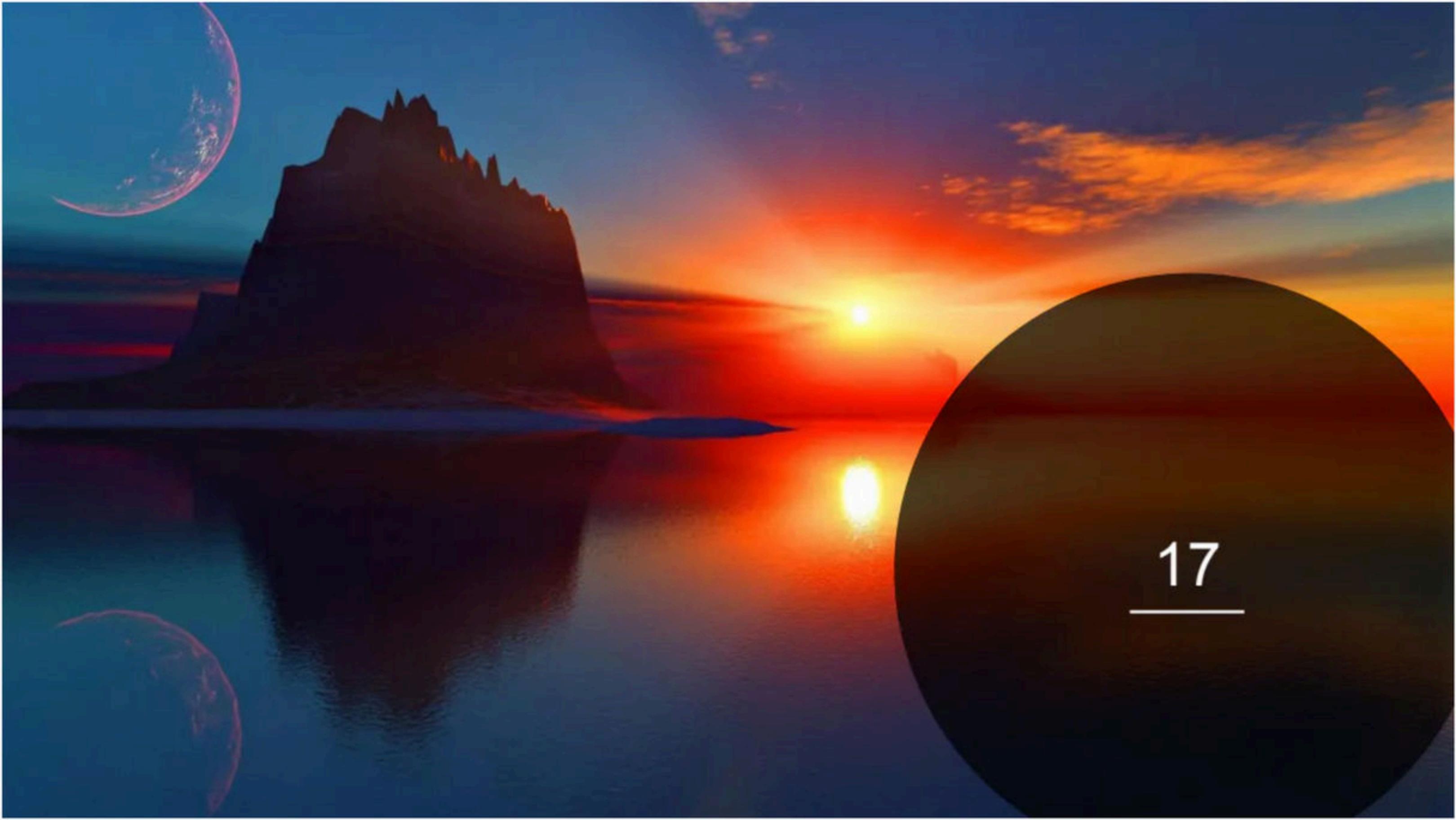
Nisha will do an MBA only if she gets admission into a good college.

- (a) Nisha will not do MBA.
  - (b) Nisha got admission into a good college.
  - (c) Nisha did not get admission into a good college.
  - (d) Nisha will do MBA.
- 
- (A) BD
  - (B) DB
  - (C) AC
  - (D) CD



## Directions for Questions 17 to 26

Each question below consists of a main statement followed by four numbered statements. From the numbered statements, select the one that logically follows the main statement.



17



If Ankita eats pastry, then it is a black forest or a pineapple.

- (A) Ankita eats pastry but it is not a pineapple, means it is a black forest.
- (B) Ankita eats pastry but it is not a black forest, means it is a pineapple.
- (C) The pastry is neither a pineapple nor a black forest, means Ankita does not eat the pastry.
- (D) All the above.



18



If you want to stay fit, then you must eat nutritious food and exercise.

- (A) You did not eat nutritious food, hence you cannot stay fit.
- (B) You did not exercise, implies you cannot stay fit
- (C) You ate nutritious food and exercised implies you have stayed fit
- (D) Both (1) and (2)





Yaseem plays cricket, only if he wears blue or white.

- (A) Yaseem plays cricket, implies he wears blue and white
- (B) Yaseem plays cricket but he does not wear blue hence he wears white.
- (C) Yaseem wears neither blue nor white implies he may play cricket.
- (D) None of these.

A landscape photograph of a starry night sky. The upper half of the image is filled with a dense field of stars of various brightness. A prominent, dark, curved shape, possibly a cloud or a shadow, cuts across the center of the frame from the left. At the bottom, there is a bright, horizontal band of light, likely from a city or town, which creates a sharp contrast with the dark sky above.

20



Sunil cannot meet his friends or his family, unless he has a job.

- (A) Sunil met his friend and his family implies he has a job
- (B) Sunil does not have a job and cannot meet his family hence he cannot meet his friends.
- (C) Sunil does not have a job but he met his family implies he cannot meet his friends.
- (D) Both (1) and (3)



21



Only if there is a sale, I will buy clothes or cosmetics.

- (A) I have bought clothes and cosmetics means there is a sale.
- (B) I have bought cosmetics hence there is a sale.
- (C) I have bought clothes hence there is a sale.
- (D) All the above

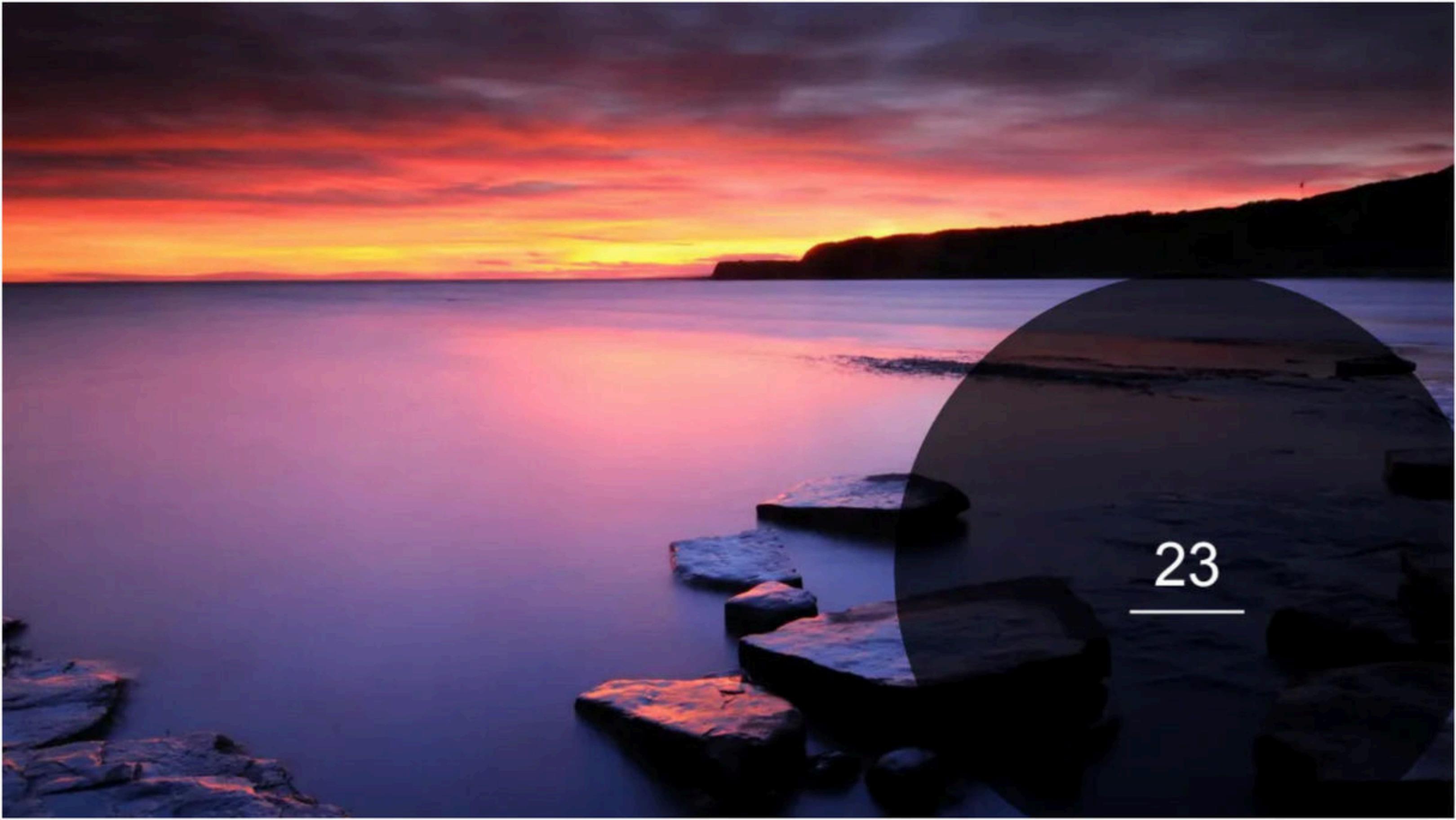
A wide-angle photograph of a night sky over a mountainous landscape. The sky is filled with stars, with a prominent, very bright star visible in the upper left quadrant. A small, thin white streak or object is also visible near the bottom left of the star. The mountains in the foreground and middle ground are dark and silhouetted against the bright sky. In the far distance, lights from a town or city are visible at the base of the mountains.

22



Unless you take medicines, you will not recover, and will not be able to walk.

- (A) You recovered means you have taken medicines.
- (B) You are not able to walk means you have not taken medicines.
- (C) You have not taken medicines hence you will not recover but you will be able to walk.
- (D) You have taken medicines, hence you will recover.

A wide-angle photograph of a coastal scene at sunset. The sky is filled with horizontal bands of orange, yellow, and pink, transitioning into darker blues and purples. In the foreground, dark, jagged rocks are silhouetted against the vibrant sky. A small, low-lying island or peninsula is visible in the distance across the calm water.

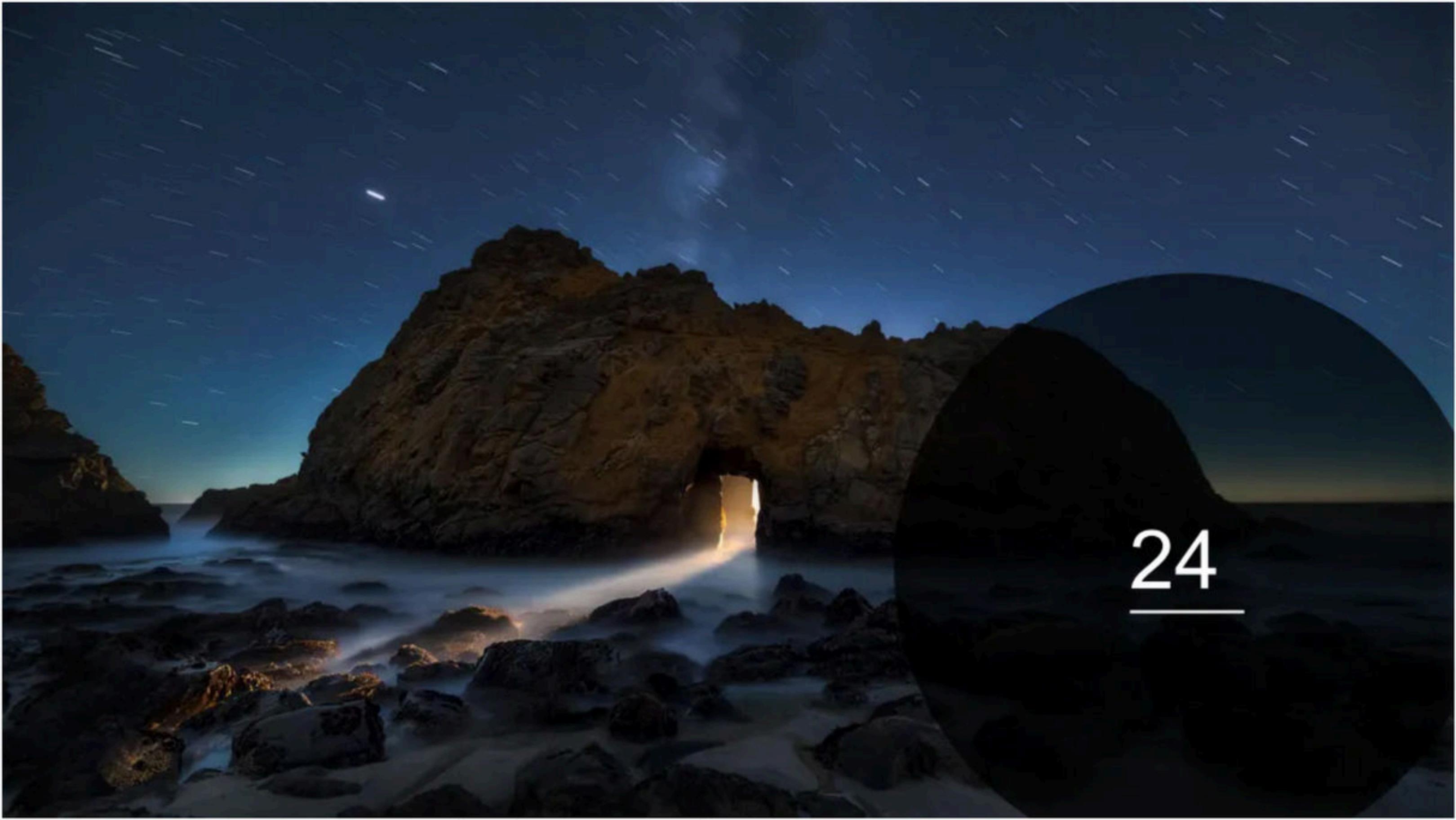
23

---



If Ganshyam goes to U.S.A, his mother or his brother will accompany him.

- (A) Ganshyam is going to U.S.A. but his brother is not accompanying him implies his mother will accompany him.
- (B) Neither Ganshyam's mother nor his brother is accompanying him means Ganshyam is not going to U.S.A.
- (C) Ghanshyam is not going to U.S.A., hence neither his mother nor his brother are accompanying him.
- (D) Both (1) and (2)



24

---



Whenever Preeti watches T.V., then she watches movies and sports.

- (A) Preeti is not watching sports implies she is watching T.V.
- (B) Preeti is not watching movies implies she is not watching T.V.
- (C) Preeti is neither watching movies nor sports hence she must be watching something else on T.V.
- (D) Both (1) and (2)



25

---



Sagar will marry Sheela, only if she is a graduate and a good cook.

- (A) Sheela is a good cook but not a graduate hence Sagar will not marry Sheela.
- (B) Sagar will marry Sheela since she is a good cook though she is not a graduate.
- (C) Sheela is a graduate and a good cook implies Sagar will marry Sheela.
- (D) (1), (3) and (4)



# SYLLOGISM



In each question a set of six statements is given, followed by four answer choices. Each of the answer choices has a combination of three statements from the given set of six statements. You are required to identify the answer choice in which the statements are logically related.

01



- A. All green is blue
  - B. All green is white
  - C. All green is black
  - D. All black is white
  - E. All blue is yellow
  - F. All blue is white
- 
- (A) ABF
  - (B) AEF
  - (C) CDB
  - (D) CBE





02

- A. Some communists are socialists
- B. All socialists are Leninists
- C. Some socialists are Leninists
- D. Marxists are not capitalists
- E. All leninists are communists
- F. All communists are socialists

(A) CEA  
(C) ABE

(B) CEF  
(D) BEF

03





Read the statements :

All women are entrepreneurs.

Some women are doctors

Which of the following conclusions can be logically inferred from the above statements?

- (A) All women are doctors
- (B) All doctors are entrepreneurs
- (C) All entrepreneurs are women
- (D) Some entrepreneurs are doctors

[GATE 2014 : IIT Kharagpur (ME Set - 1, EC Set - 1)]

# 04





Given below are two statements followed by two conclusions.  
Assuming these statements to be true, decide which one logically follows.

Statements : I. All film stars are playback singers. II.  
All film directors are film stars

Conclusions :

- I. All film directors are playback singers.
- II. Some film stars are film directors.

- (A) Only conclusion I follows
- (B) Only conclusion II follows
- (C) Neither conclusion I nor II follows
- (D) Both conclusions I and II follow

[GATE 2015 : IIT Kanpur (EC Set - 2, ME Set 1)]



A girl is swinging on a swing at sunset, looking up at a night sky filled with falling stars and a large ring.

05



Given below are two statements followed by two conclusions. Assuming these statements to be true, decide which one logically follows.

Statements : I. All film stars are playback singers. II.  
All film directors are film stars

Conclusions :

- I. All film directors are playback singers.
- II. Some film stars are film directors.

- (A) Only conclusion I follows
- (B) Only conclusion II follows
- (C) Neither conclusion I nor II follows
- (D) Both conclusions I and II follow

[GATE 2015 : IIT Kanpur (EC Set - 2, ME Set 1)]

06





Given below are two statements followed by two conclusions. Assuming these statements to be true, decide which one logically follows.

Statements : I. No manager is a leader.

II. All leaders are executives.

Conclusions : I. No manager is an executive

II. No executive is a manager.

(A) Only conclusion I follows.

(B) Only conclusion II follows.

(C) Neither conclusion I nor II follows.

(D) Both conclusions I and II follow.

[GATE 2015 : IIT Kanpur (ME Set - 3, IN)]

07



All hill-stations have a lake. Ooty has two lakes.

Which of the statement(s) below is/are logically valid and can be inferred from the above sentences?

- (i) Ooty is not a hill-station.
- (ii) No hill-station can have more than one lake.

- (A) (i) only
- (B) (ii) only
- (C) both (i) and (ii)
- (D) neither (i) nor (ii)

[GATE 2016 : IISc Bangalore (EE Set - 1, CSE Set - 2)]



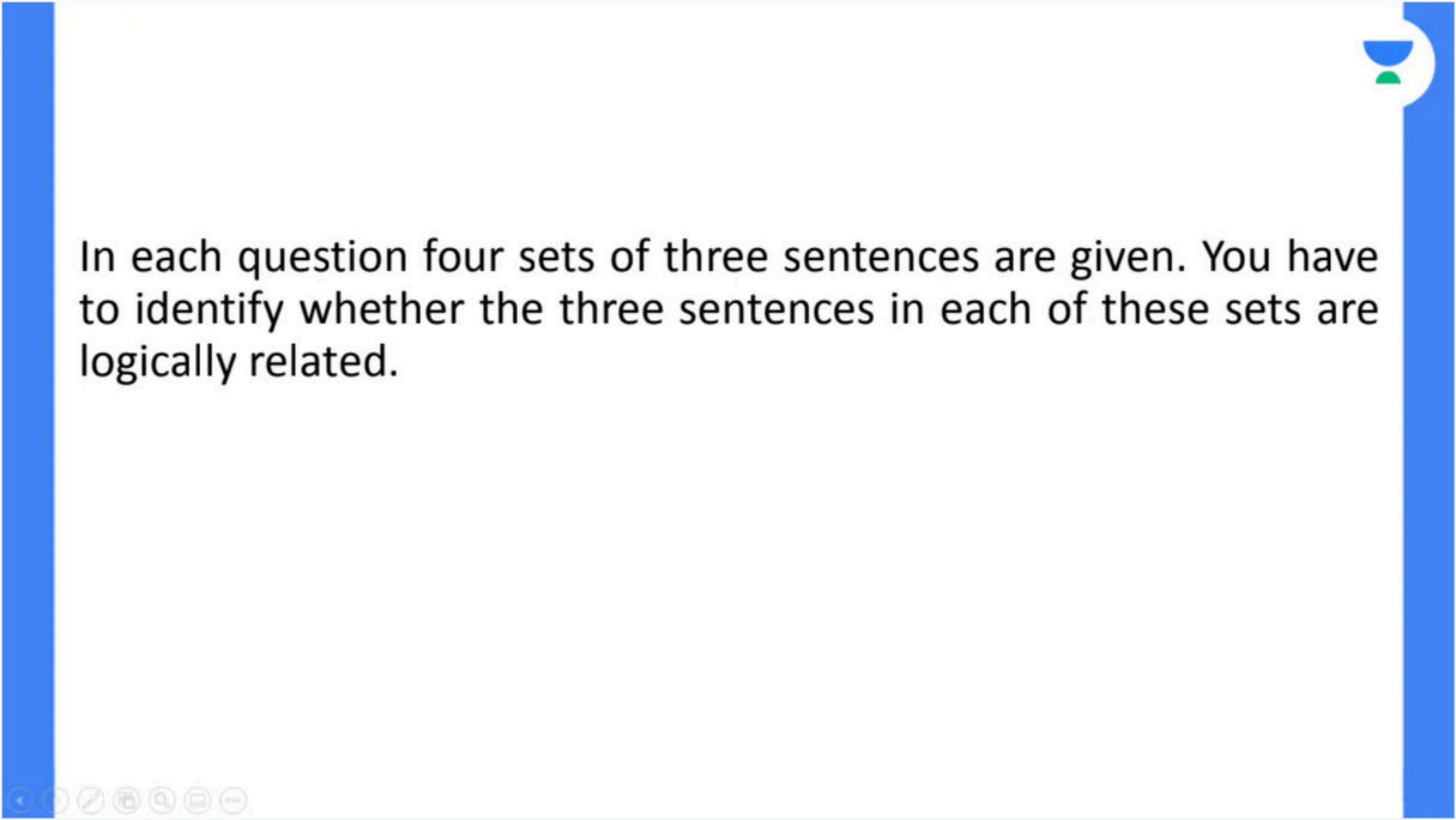
08



Some tables are shelves. Some shelves are chairs. All chairs are benches.  
Which of the following conclusions can be deduced from the preceding sentences?

- (i) At least one bench is a table
  - (ii) At least one shelf is a bench
  - (iii) At least one chair is a table
  - (iv) All benches are chairs
- 
- (A) Only (i)
  - (B) Only (ii)
  - (C) Only (ii) and (iii)
  - (D) Only (iv)

[GATE 2017 : IIT Roorkee (EC,BT,PI Set - 1)]



In each question four sets of three sentences are given. You have to identify whether the three sentences in each of these sets are logically related.

09



- A. All plant are moon. All moon are starts. All starts are plants.
- B. All men are thinkers. All poets are thinkers. All men write poetry.
- C. Orange is a seasonal fruit. Guava is a seasonal fruit. Orange are guavas.
- D. All tubes are handles. All cups are handles. Some cups may be tubes.

- (A) D
- (B) A and B
- (C) C and B
- (D) B



A photograph of a person standing in a dark, open landscape at night. The person is positioned in the center-right foreground, facing away from the viewer towards a bright, circular light source on the horizon. The sky above is filled with numerous stars of varying brightness. In the background, there are dark, silhouetted hills or mountains. The foreground is a dark, textured field.

10



All benches are beds. No bed is a bulb. Some bulbs are lamps.  
Which of the following can be inferred?

- (i) Some beds are lamps.
  - (ii) Some lamps are beds.
- 
- (A) Only i
  - (B) Only ii
  - (C) Both i and ii
  - (D) Neither i nor ii

**[GATE 2017 : IIT Roorkee (CE, CH, Set - 1)]**





Consider the following three statements

- (i) Some roses are red.
- (ii) All red flowers fade quickly.
- (iii) Some roses quickly fade quickly.

Which of the following statements can be logically inferred from the above statements?

- (A) If (i) true & (ii) false, then (ii) false
- (B) If (i) true & (ii) false, then (iii) true
- (C) If (i) & (ii) are true, then (iii) true
- (D) If (i) & (ii) false, then (iii) false

[GATE 2018 : IIT Guwahati (CE Set – 2)]

A close-up photograph of a person's hands writing in a small, open notebook with a yellow pen. The person is wearing a blue long-sleeved shirt. To the right of the notebook, a black electronic device with a grid of buttons, possibly a calculator or a small computer, sits on a dark surface. The background is blurred.

12



**Fact** : If it rains, then the field is wet.

Read the following statements :

- (i) It rains
- (ii) The field is not wet
- (iii) The field is wet
- (iv) It did not rain

Which one of the options given below is **NOT logically possible** based on the given fact?

- (A) If (iii), then (iv)
- (B) If (i), then (iii)
- (C) If (i), then (ii)
- (D) If (ii), then (iv)

**[GATE 2016 : IISc Bangalore (ME Set - 2)]**



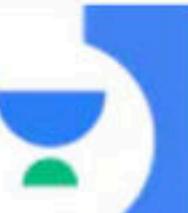
13



An award-winning study by a group of researchers suggests that men are as prone to buying on impulse as women but women feel more guilty about shopping. Which one of the following statements can be inferred from the given text?

- (A) All men and women indulge in buying on impulse.
- (B) Some men and women indulge in buying on impulse.
- (C) Few men and women indulge in buying on impulse
- (D) Many men and women indulge in buying on impulse

[GATE 2019 : IIT Madras]



# CRITICAL REASONING



01

---



According to Rakesh, Mr Sharma is in deep trouble. His elder daughter, returned home after a painful divorce. Unfortunately, his second daughter, of age 30 is still unmarried. Mr Sharma is getting old. He is already 65.

The assumption in Rakesh's conclusion is

- (A) Mr. Sharma is not fit to work now.
- (B) Mr. Sharma will pass away soon, as he is getting old.
- (C) Unmarried daughters are dangerous for their parents.
- (D) Unmarried or divorced daughter's bad fortune can pose problems for their elderly father.



02

---

An eight-year old Saudi Arabian girl who was married off by her father to a 58-year-old man has been told she cannot divorce her husband until she reaches puberty. Lawyer Abdu Jtili said the divorce petition was filed by the unnamed girl's divorced mother in August after the marriage contract was signed by her father and the groom. "The judge has dismissed the plea because she [the mother] does not have the right to file, and ordered that the plea should be filed by the girl herself

when she reaches puberty," lawyer Abdullah Jtili told the AFP news agency.

It can be inferred from the above paragraph that

- (A) Judges are cruel in Saudi Arabia.
- (B) The eight-year old girl is considered legally married.
- (C) In Saudi Arabia, women cannot file for a divorce.
- (D) Girls below puberty do not have marital rights in Saudi Arabia.





03

---



Indians have a bad habit of spitting in public places. Most of the walls in Government Buildings have turned red or become very dirty thanks to the constant spitting by betel-chewing Indians. But Jankidas, the manager of the public works department in Jhandewalan has come out with a novel idea. He has installed religious signs or painted religious pictures on the walls in the corridors leading to his department. He is sure that no Indian would spit on the corridor walls leading to his department.

It has been assumed by Jankidas that

- (A) The corridors leading to his department are dirty.
- (B) Indians fear the wrath of the Gods.
- (C) Indians do not eat betel near religious pictures.
- (D) Indians have regard for religion.



04

---



Jnana and Bhakti are two commonly adopted spiritual paths by spiritually inclined people. The Jnani considers Bhakti to be only a means to Moksha. Bhakti leads to purification of the mind. The purified mind becomes fit to listen to Jnana which in due course of time results in Moksha. The Bhakta on the other hand is not interested in Moksha. He feels that Bhakti is the means and also the goal.

It can be inferred from the above paragraph that

- (A) Jnanis and Bhaktas have an inherent dislike for each other.
- (B) Jnanis and Bhaktas both strive for a pure mind.
- (C) The Bhakta is idle most of the time as his means and goal are the same.
- (D) None of the above.



05



Computers were invented for performing only high-end useful computations. However, it is no understatement that they have taken over our world today. The internet, for example, is ubiquitous. Many believe that the internet itself is an unintended consequence of the original invention. With the advent of mobile computing on our phones, a whole new dimension is now enabled. One is left wondering if all these developments are good or, more importantly, required.

Which of the statement(s) below is/are logically valid and can be inferred from the above paragraph?

- (i) The author believes that computers are not good for us.
  - (ii) Mobile computers and the internet are both intended inventions
- 
- (A) (i) only
  - (B) (ii) only
  - (C) both (i) and (ii)
  - (D) neither (i) nor (ii)

[GATE 2016 : IISc Bangalore (EE Set - 1, CSE Set - 2)]

A photograph of a person's hand reaching upwards towards a bright sun setting over a body of water. The sky is a gradient from blue to orange. The hand is in sharp focus, while the background is blurred.

06



Nuendo is a studio software which is used by most of the recordists in San Hose, America. It allows one to record 25 tracks simultaneously. It is faster as compared to 'cubase' – the software which was used by the recordists earlier. Hence, nuendo should be used by recordists in India also.

The conclusion above would be strengthened if it was true that

- (A) Indians prefer 'cubase' as it does not demand high system requirements.
- (B) Lot of time is wasted in Indian studios due to inefficient software
- (C) Indian recordists record a maximum of 10 tracks at a time.
- (D) None of the Indian recordists have traveled to San Hose.

A silhouette photograph of a person standing outdoors at sunset or sunrise. The person is facing right, looking towards a range of mountains. To their left is a tall, thin signpost with two large, black, arrowheads pointing in opposite directions. The background is a warm, orange and yellow sky over rolling hills.

07 —



Geneticists say that are very close to confirming the genetic roots of psychiatric illnesses such as depression and schizophrenia, and consequently, that doctors will be able to eradicate these diseases through early identification and gene therapy.

On which of the following assumptions dose the statement above rely?

- (A) Strategies are now available for eliminating psychiatric illness.
- (B) Certain psychiatric illness have a genetic basis.
- (C) All human disease can be traced back to genes and how they are expressed.
- (D) In the future, genetics will become the only relevant field for identifying psychiatric illness.

[GATE 2014 : IIT Kharagpur (EE, Set – 1, CSE Set - 1)]



08



In Philosophy, there are no solved problems, there are only unsolved problems. Once a philosophical problem gets solved, then it goes outside philosophy to become either a part of some established knowledge system or becomes an independent discipline. The Philosopher's job ends when a problem is settled, and then there is no more philosophy in it.

A suitable conclusion from the above paragraph would be

- (A) Philosophy can exist only when a problem is unsolved.
- (B) Problems exist only in philosophy.
- (C) Philosophers are generally jobless and indifferent to the world of problems.
- (D) There are innumerable problems to be solved in this world.



09



Ann Trason, Scott Jurek, Matt Carpenter. These are the megastars of ultra-distance running, athletes who pound out not just marathons, but dozens of them back-to-back, over Rocky Mountain passes and across the scorching floor of Death Valley. If their names are unfamiliar, it's probably because this type of extreme running is almost universally seen as a fringe sport, the habit of the superhumanly fit, the masochistic, the slightly deranged.

Which of the following can be inferred from the above statement?

- (A) The ultra-marathoners are using their bodies for endurance running.
- (B) Being able to run for extended lengths of time is an adapted trait.
- (C) Extreme running is not for the normal run-of-the mill sportsperson.
- (D) Extreme sports people remain unknown because of the stress involved.

10





Wanted Temporary, Part-time persons for the post of Field Interviewer to conduct personal interviews to collect and collate economic data. Requirements: High School-pass, must be available for Day, Evening and Saturday work. Transportation paid, expenses reimbursed.

Which one of the following is the best inference from the above advertisement?

- (A) Gender-discriminatory
- (B) Xenophobic
- (C) Not designed to make the post attractive
- (D) Not gender-discriminatory

[GATE 2012 : IIT Delhi (EE, CSE, ME, CE)]

A wide-angle photograph of a coastal landscape at night. The foreground is dominated by dark, rugged rock formations jutting out into the ocean. The middle ground shows the calm sea under a dark blue sky. The upper portion of the image is filled with a dense field of stars, with a prominent, brightly lit spiral galaxy or star cluster visible on the right side, casting a warm glow onto the clouds below.

11



Consumers are using their mobile phones to download tens of millions of games, songs, ring tones and video programs. And they shell out money for these items, even as they resist paying for similar digital goodies online using their computers. It is a curious equation: pay for stuff on a tiny, low-resolution screen while getting some of the very same games and video free on a fancy wide-screen monitor.

If all of the statements in the passage are true each of the following must also be true EXCEPT :

- (A) Mobile phones are a status symbol for today's consumers.
- (B) The companies producing mobile content are thriving.
- (C) The users enjoy the availability of music download at their fingertips.
- (D) Stuff on computer seem to be easily available so why pay money.



12



Abhishek is elder to Savan, Savan is younger to Anshul. The correct relations is

- (A) Abhishek is elder to Anshul
- (B) Anshul is elder to Abhishek
- (C) Abhishek and Anshul are of same age
- (D) No conclusion can be drawn

**[GATE 2013 : IIT Bombay (CE)]**



13



In a group of four children, Som is younger to Riaz. Shiv is elder to Ansu. Ansu is youngest in the group. Which of the following statements is/are required to find the eldest child in the group?

Statements :

1. Shiv is younger to Riaz.
2. Shiv is elder to Som.

- (A) Statement 1 by itself determines the eldest child.
- (B) Statement 2 by itself determines the eldest child.
- (C) Statement 1 and 2 are both required to determine the eldest child.
- (D) Statement 1 and 2 are not sufficient to determine the eldest child.

[GATE 2014 : IIT Kharagpur (CE Set - 2, IN)]



14

---



Consider five people – Mita, Ganga, Rekha, Lakshmi and Sana. Ganga is taller than both Rekha and Lakshmi. Lakshmi is taller than Sana. Mita is taller than Ganga. Which of the following conclusions are true?



[GATE 2019 : IIT Madras (EE)]



15



Read the following paragraph and choose the correct statement. Climate change has reduced human security and threatened human well being. An ignored reality of human progress is that human security largely depends upon environmental security. But on the contrary, human progress seems contradictory to environmental security. To keep up both at the required level is a challenge to be addressed by one and all. One of the ways to curb the climate change may be suitable scientific innovations, while the other may be the Gandhian perspective on small scale progress with focus on sustainability.

- (A) Human progress and security are positively associated with environmental security.
- (B) Human progress is contradictory to environmental security.
- (C) Human security is contradictory to environmental security.
- (D) Human progress depends upon environmental security.



16

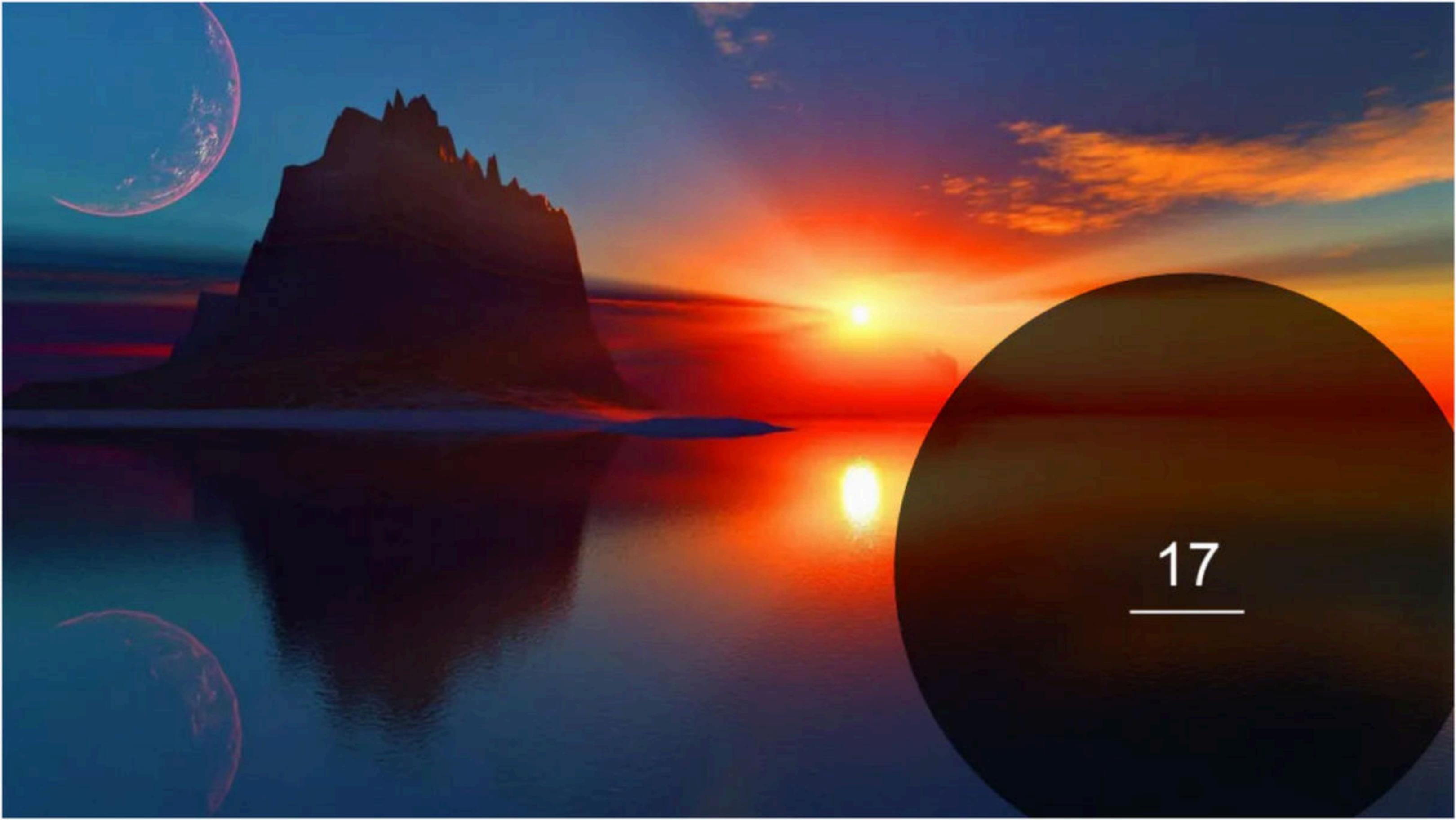


Choose the most appropriate phrase from the options given below to complete the following sentence.

India is a post-colonial country because

- (A) It was a former British colony
- (B) Indian Information Technology professionals have colonized the world
- (C) India does not follow any colonial practices
- (D) India has helped other countries gain freedom

[GATE 2014 : IIT Kharagpur (CSE Set - 2, EE Set - 2)]



17



Few school curricula include a unit on how to deal with bereavement and grief, and yet all students at some point in their lives suffer from losses through death and parting. Based on the above passage which topic would not be included in a unit on bereavement?

- (A) How to write a letter of condolence
- (B) What emotional stages are passed through in the healing process
- (C) What the leading causes of death are
- (D) How to give support to a grieving friend Choose the most appropriate word from the options given below to complete the following sentence:

**[GATE 2011 : IIT Madras (CSE, ME, CE)]**



18



One of the legacies of the Roman legions was discipline. IN the legions, military law prevailed and discipline was brutal. Discipline on the battlefield kept units obedient, intact and fighting, even when the odds and conditions were against them.

Which one of the following statements best sums up the meaning of the above passage?

- (A) Thorough regimentation was the main reason for the efficiency of the Roman legions even in adverse circumstances.
- (B) The legions were treated inhumanly as if the men were animals.
- (C) Discipline was the armies inheritance from their seniors.
- (D) The harsh discipline to which the legions were, subjected to led to the odds and conditions being against them.

**[GATE 2012 : IIT Delhi (EC, EE, IN)]**





The horse has played a little known but very important role in the field of medicine. Horses were injected with toxins of diseases until their blood built up immunities. Then a serum was made from their blood. Serums to fight with diphtheria and tetanus were developed this way. It can be inferred from the passage that horses were

- (A) Given immunity to diseases
- (B) Generally quite immune to diseases
- (C) Given medicines to fight toxins
- (D) Given diphtheria and tetanus serums

[GATE 2011 : IIT Madras (EC, EE)]

A landscape photograph of a starry night sky. The upper half of the image is filled with a dense field of stars of various brightness. A prominent, curved band of light, characteristic of the Milky Way, stretches across the center. In the lower portion of the image, a dark silhouette of land or mountains is visible against a bright, glowing horizon. The sky is a deep, dark blue-black.

20



Moving into a world of big data will require us to change our thinking about the merits of exactitude. To apply the conventional mindset of measurement to the digital, connected world of the twenty-first century is to miss a crucial point. As mentioned earlier, the obsession with exactness is an artefact of the information-deprived analog era. When data was sparse, every data point was critical, and thus great care was taken to avoid letting any point bias the analysis. From “BIG DATA” Viktor Mayer-Schonberger and Kenneth Cukier

The main point of the paragraph is:

- (A) The twenty-first century is a digital world
- (B) Big data is obsessed with exactness
- (C) Exactitude is not critical in dealing with big data
- (D) Sparse data leads to a bias in the analysis

**[GATE 2014 : IIT Kharagpur (CE Set - 2, IN)]**



21



The Palghat Gap (or Palakkad Gap), a region about 30 km wide in the southern part of the Western Ghats in India, is lower than the hilly terrain to its north and south. The exact reasons for the formation of this gap are not clear. It results in the neighboring regions of Tamil Nadu getting more rainfall from the South West monsoon and the neighboring regions of Kerala having higher summer temperatures. What can be inferred from this passage?

- (A) The Palghat gap is caused by high rainfall and high temperatures in southern Tamil Nadu and Kerala
- (B) The regions in Tamil Nadu and Kerala that are near the Palghat Gap are low lying
- (C) The low terrain of the Palghat Gap has a significant impact on weather patterns in neighbouring parts of Tamil Nadu and Kerala
- (D) Higher summer temperatures result in higher rainfall near the Palghat Gap area

**[GATE 2014 : IIT Kharagpur (CSE Set - 1, EE Set - 1)]**

A wide-angle photograph of a night sky over a mountainous landscape. The sky is filled with stars, with a prominent, very bright star visible in the upper left quadrant. A small, thin white streak or object is also visible near the bottom left of the star. The mountains in the foreground and middle ground are dark and silhouetted against the sky, with some snow or light-colored patches on their peaks. In the far distance, lights from a town or city are visible along a valley floor.

22

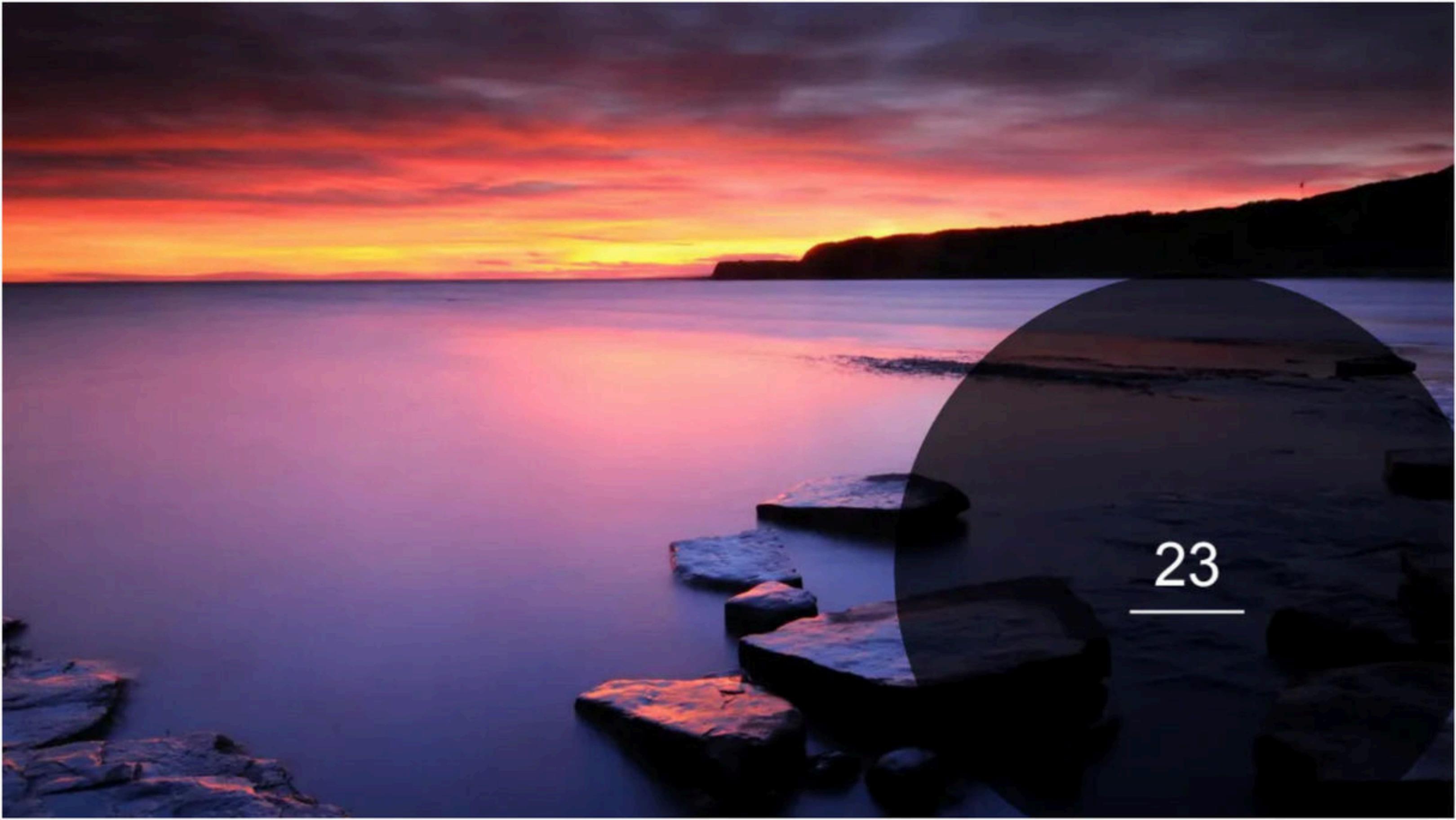


Statement: There were different streams of freedom movements in colonial India carried out by the moderates, liberals, radicals, socialists, and so on.

Which one of the following is the best inference from the above statement?

- (A) The emergence of nationalism in colonial India led to our Independence
- (B) Nationalism in India emerged in the context of colonialism
- (C) Nationalism in India is homogeneous
- (D) Nationalism in India is heterogeneous

**[GATE 2013 : IIT Bombay (EC, EE, IN)]**

A wide-angle photograph of a coastal scene at sunset. The sky is filled with horizontal bands of orange, yellow, and pink, transitioning into darker blues and purples. In the foreground, dark, jagged rocks are silhouetted against the bright horizon. A large, smooth, rounded rock sits prominently in the middle ground on the right side. The ocean water is visible between the rocks, reflecting the warm colors of the sky.

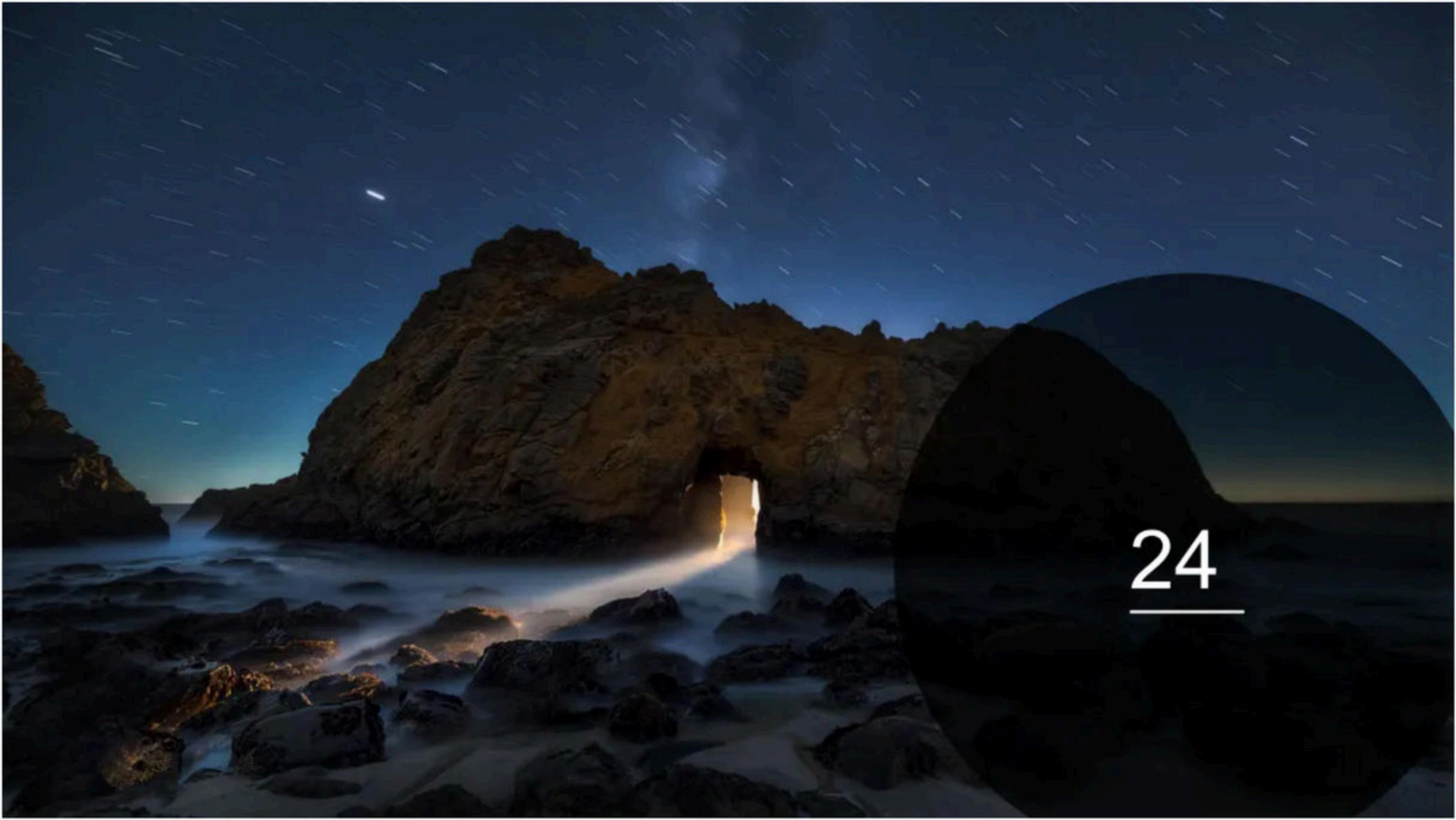
23



The old city of Koenigsberg, which had a German majority population before World War 2, is now called Kaliningrad. After the events of the war, Kaliningrad is now a Russian territory and has a predominantly Russian population. It is bordered by the Baltic Sea on the north and the countries of Poland to the south and west and Lithuania to the east respectively. Which of the statements below can be inferred from this passage?

- (A) Kaliningrad was historically Russian in its ethnic make up
- (B) Kaliningrad is a part of Russia despite it not being contiguous with the rest of Russia
- (C) Koenigsberg was renamed Kaliningrad, as that was its original Russian name
- (D) Poland and Lithuania are on the route from Kaliningrad to the rest of Russia

**[GATE 2014 : IIT Kharagpur (CSE Set - 2, EE Set - 2)]**



24

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Tanya is older than Eric. Cliff is older than Tanya. Eric is older than Cliff. If the first two statements are true, then the third statement is:

- (A) True
- (B) False
- (C) Uncertain
- (D) Data insufficient

[GATE 2015 : IIT Kanpur (ME Set - 3, IN)]



25

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Where the film Bombay loses out is where every commercial film congenitally goes awry - becoming too simplistic to address serious issues and failing to translate real life to reel.

Which of the following can be inferred from the above line?

- (A) The film's director aimed at recreating real life on the silver screen.
- (B) The film was too simplistic for the audience's taste.
- (C) The film was successful in spite of its shortcomings.
- (D) None of these

26





Bhaichung was observing the pattern of people entering and leaving a car service centre. There was a single window where customers were being served. He saw that people inevitable came out of the centre in the order that they went in. however, the time they spent inside seemed to vary a lot : some people came out in a matter of minutes while for others in took much longer.

From this, what can one conclude?

- (A) The centre operates on a first-come-firstserved basis, but with variable service times, depending on specific customer needs.
- (B) Customers were served in an arbitrary order, since they tool varying amounts of time for service completion in the centre.
- (C) Since some people came out within a few minutes of entering the centre, the system is likely to operate on a last-comefirstserved basis.
- (D) Entering the centre early ensured that one would have shorter service times and most people attempted to do this.

27





Rajan was not happy that Sajan decided to do the project on his own. On observing his unhappiness, Sajan explained to Rajan that he preferred to work independently.

Which one of the statements below is logically valid and can be inferred from the above sentences?

- (A) Rajan has decided to work only in a group.
- (B) Rajan and Sajan were formed into a group against their wishes.
- (C) Sajan had decided to give in to Rajan's request to work with him.
- (D) Rajan had believed that Sajan and he would be working together.

[GATE 2014 : IIT Kharagpur (CE Set - 1)]



28



Lamenting the gradual sidelining of the arts ill school curricula, a group of prominent artists wrote to the Chief Minister last year, asking him to allocate more funds to support arts education in schools. However, no such increase has been announced in this year's Budget. The artists expressed their deep anguish at their request not being approved, but many of them remain optimistic about funding in the future.

Which of the staternent(s) below is/are logically valid and can be inferred from the above statements?

- (i) The artists expected funding for the arts to increase this year
  - (ii) The Chief Minister was receptive to the idea of increasing funding for the arts
  - (iii) The Chief Minister is a prominent artist
  - (iv) Schools are giving less importance to arts education nowadays
- (A) (iii) and (iv)
  - (B) (i) and (iv)
  - (C) (i), (ii) and (iv)
  - (D) (i) and (iii)

A wide-angle photograph of a two-lane asphalt road curving through a dense forest of tall evergreen trees. The road is marked with a solid white line on each edge and a double yellow line in the center. In the distance, majestic mountains are silhouetted against a sky filled with large, billowing clouds colored in shades of orange, yellow, and pink from a setting sun. The overall atmosphere is serene and suggests a remote, natural landscape.

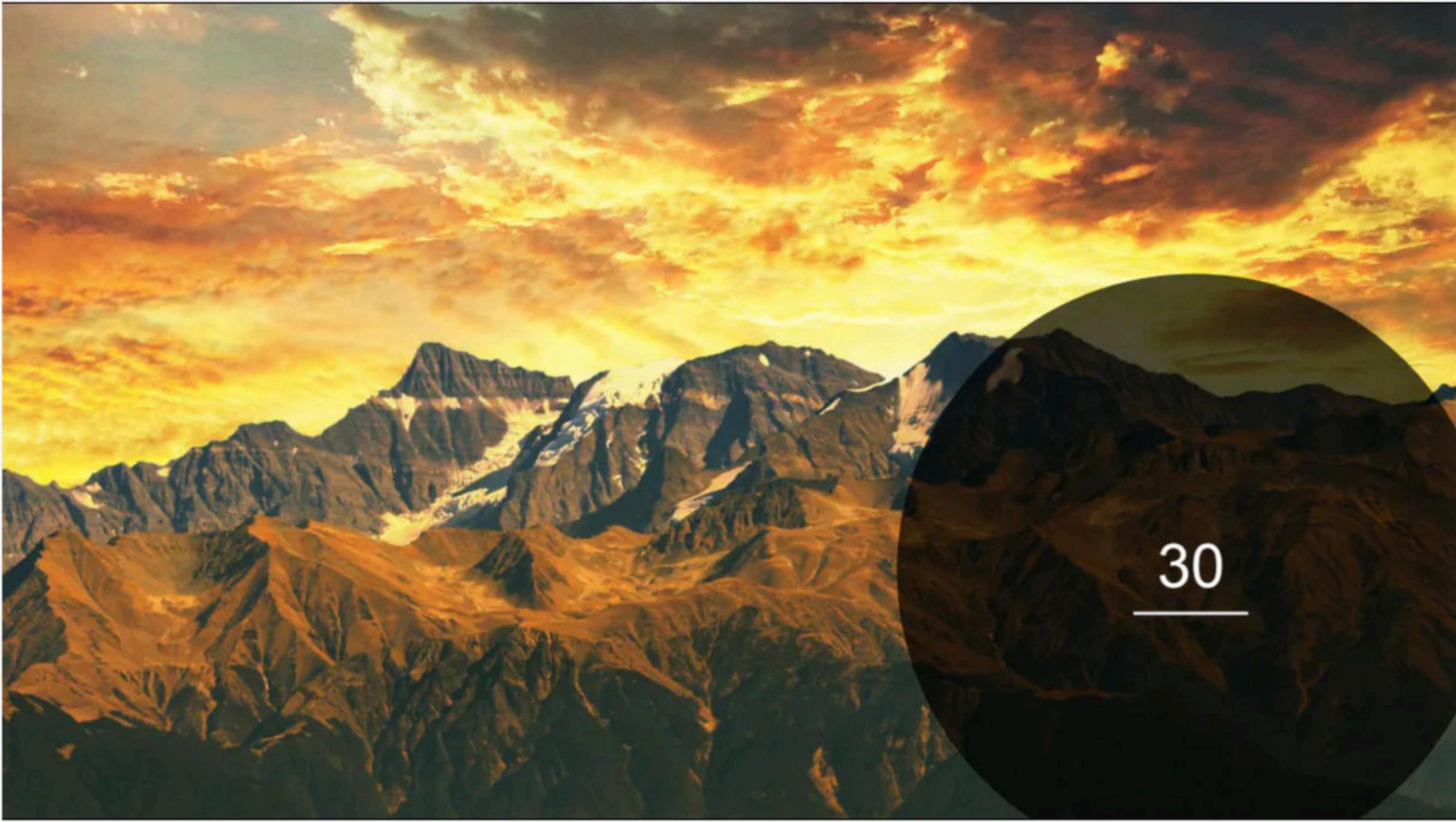
29



The number of people diagnosed with dengue fever (contracted from the bite of a mosquito) in north India is twice the number diagnosed last year. Municipal authorities have concluded that measures to control the mosquito population have failed in this region.

Which one of the following statements, if true, does not contradict this conclusion?

- (A) A high proportion of the affected population has returned from neighboring countries where dengue is prevalent
- (B) More cases of dengue are now reported because of an increase in the Municipal Office's administrative efficiency
- (C) Many more cases of dengue are being diagnosed this year since the introduction of a new and effective diagnostic test
- (D) The number of people with malarial fever (also contracted from mosquito bites) has increased this year



30



A poll of students appearing for masters in engineering indicated that 60% of the students believed that mechanical engineering is a profession unsuitable for women. A research study on women with masters or higher degrees in mechanical engineering found that 99% of such women were successful in their professions.

Which of the following can be logically inferred from the above paragraph?

- (A) Many students have misconceptions regarding various engineering disciplines.
- (B) Men with advanced degrees in mechanical engineering believe women are well suited to be mechanical engineers.
- (C) Mechanical engineering is a profession well suited for women with masters or higher degrees in mechanical engineering.
- (D) The number of women pursuing higher degrees in mechanical engineering is small.

**[GATE 2016 : IISc Bangalore (EE Set - 2)]**

31



LAST

- A United Front was formed at night. At first, the performance was poor, but after a few rehearsals, they became better. This was because they had nothing to do during the day, so they practised in the evenings. It is the way to success, so if you want to succeed, practise every day.
- What is the main message of this story?
- A) A man who has lost his job.
  - B) A man who has found a new job.
  - C) A man who has lost his job and found a new one.
  - D) A man who has found a new job.
- World War II Memorial Found
- During World War II, a car mechanic from Germany was captured by the Allies and sent to a concentration camp in France. After the war, he returned to his home town of Berlin, where he found a car that had been left behind. He decided to drive it back to Germany. On his journey, he stopped at a gas station and found a small plaque on the side of the road. The plaque read: "In memory of David Müller, a German soldier who died in the war".
- Last month, David Müller's family found the plaque and decided to keep it as a memento.



Humpty Dumpty sits on a wall every day while having lunch. The wall sometimes breaks. A person sitting on the wall falls if the wall breaks.

Which one of the statement below is logically valid and can be inferred from the above sentences?

- (A) Humpty Dumpty always falls while having lunch
- (B) Humpty Dumpty does not fall sometimes while having lunch
- (C) Humpty Dumpty never falls during dinner
- (D) When Humpty Dumpty does not sit on the wall, the wall does not break

[GATE 2015 : IIT Kanpur (EC Set - 1)]



32



“If you are looking for a history of India, or for an account of the rise and fall of the British Raj, or for the reason of the cleaving of the subcontinent into two mutually antagonistic parts and the effects this mutilation will have in the respective sections, and ultimately on Asia, you will not find it in these pages for though I have spent a lifetime in the country, I lived too near the seat of events, and was too intimately associated

Which of the following statement best reflects the author’s opinion?

- (A) An intimate association does not allow for the necessary perspective.
- (B) Matters are recorded with an impartial perspective.
- (C) An intimate association offers an impartial perspective.
- (D) Actors are typically associated with the impartial recording of matters.

**[GATE 2017 : IIT Roorkee (EC Set – 2)]**

33





“The hold of the nationalist imagination on our colonial past is such that anything inadequately or improperly nationalist is just not history”.

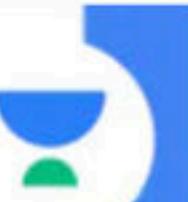
Which of the following statements best reflects the author’s opinion?

- (A) Nationalist are highly imaginative.
- (B) History is viewed through the filter of nationalism.
- (C) Our colonial past never happened.
- (D) Nationalism has to be adequately and properly imagined.

**[GATE 2017 : IIT Roorkee (EE, CS Set – 1)]**

34





Today we consider, Ashoka as a great ruler because of the copious evidence he left behind in the form of stone carved edicts. Historians tend to correlate greatness of a king at his time with the availability of evidence today.

Which of the following can be logically inferred from the above sentences?

- (A) Emperors who do not leave significant sculpted evidence are completely forgotten.
- (B) Ashoka produced stone-carved edicts to ensure that later historians will respect him.
- (C) Statues of kings are a reminder of their greatness.
- (D) A king's greatness, as we know him today, is interpreted by historians.

[GATE 2016 : IISc Bangalore (CE Set - 2)]

A landscape painting featuring a large, dark tree in the foreground, silhouetted against a bright, cloudy sky. Sunbeams stream through the clouds, illuminating the scene. The background shows a distant line of trees and a green field.

35



Most experts feel that in spite of possessing all the technical skills required to be a batsman of the highest order, he is unlikely to be so due to lack of requisite temperament. He was guilty of throwing away his wicket several times after working hard to lay a strong foundation. His critics pointed out that until he addressed this problem success at the highest level will continue to elude him.

Which of the statement (s) below is/are logically valid and can be inferred from the above passage?

- (i) He was already a successful batsman at the highest level
  - (ii) He has to improve his temperament in order to become a great batsman
  - (iii) He failed to make many of his good starts count
  - (iv) Improving his technical skills will guarantee success
- 
- (A) (iii) and (iv)
  - (B) (ii) and (iii)
  - (C) (i), (ii) and (iii)
  - (D) (ii) only

[GATE 2015 : IIT Kanpur (CE Set - 1, CSE Set - 3)]



36



By the beginning of the 20th century, several hypotheses were being proposed, suggesting a paradigm shift in our understanding of the universe. However, the clinching evidence was provided by experimental measurements of the position of a star which was directly behind our sun.

Which of the following inference(s) may be drawn from the above passage?

- (i) Our understanding of the universe changes based on the positions of stars
- (ii) Paradigm shifts usually occur at the beginning of centuries
- (iii) Stars are important objects in the universe
- (iv) Experimental evidence was important in confirming this paradigm shift

(A) (i), (ii) and (iv)

(C) (i) and (iv)

(B) (iii) only

(D) (iv) only

[GATE 2014 : IIT Kharagpur (CSE Set - 3, EE Set - 3)]

A wide-angle photograph of a coastal mountain range. In the foreground, there's a green field with a paved road curving through it. The middle ground shows a body of water with small islands and a town nestled among the hills. The background features towering, rugged mountains with patches of snow and green vegetation. The sky is a vibrant blue with scattered white clouds.

37



For submitting tax returns, all resident males with annual income below Rs 10 lakh should fill up Form P and all resident females with income below Rs 8 lakh should fill up Form All people with incomes above Rs 10 lakh should fill up Form R, except non residents with income above Rs 15 lakhs, who should fill up Form S. All others should fill Form T. An example of a person who should fill Form T is

- (A) A resident male with annual income Rs 9 lakh
- (B) A resident female with annual income Rs 9 lakh
- (C) A non-resident male with annual income Rs 16 lakh
- (D) A non-resident female with annual income Rs 16 lakh

A wide-angle photograph of a river flowing through a valley. The river is dark blue in the foreground and light blue in the distance. It is surrounded by lush green hills and mountains. The sky is filled with dramatic clouds colored in shades of orange, yellow, and purple, indicating a sunset or sunrise. The number '38' is overlaid in white text in the center-left area of the image.

38



A smart city integrates all modes of transport, uses clean energy and promotes sustainable use of resources. It also uses technology to ensure safety and security of the city, something which critics argue, will lead to a surveillance state.

Which of the following can be logically inferred from the above paragraph?

- (i) All smart cities encourage the formation of surveillance states.
- (ii) Surveillance is an integral part of a smart city.
- (iii) Sustainability and surveillance go hand in hand in a smart city.
- (iv) There is a perception that smart cities promote surveillance.

(A) (i) and (iv) only

(C) (iv) only

(B) (ii) and (iii) only

(D) (i) only

[GATE 2016 : IISc Bangalore (ME Set - 2)]