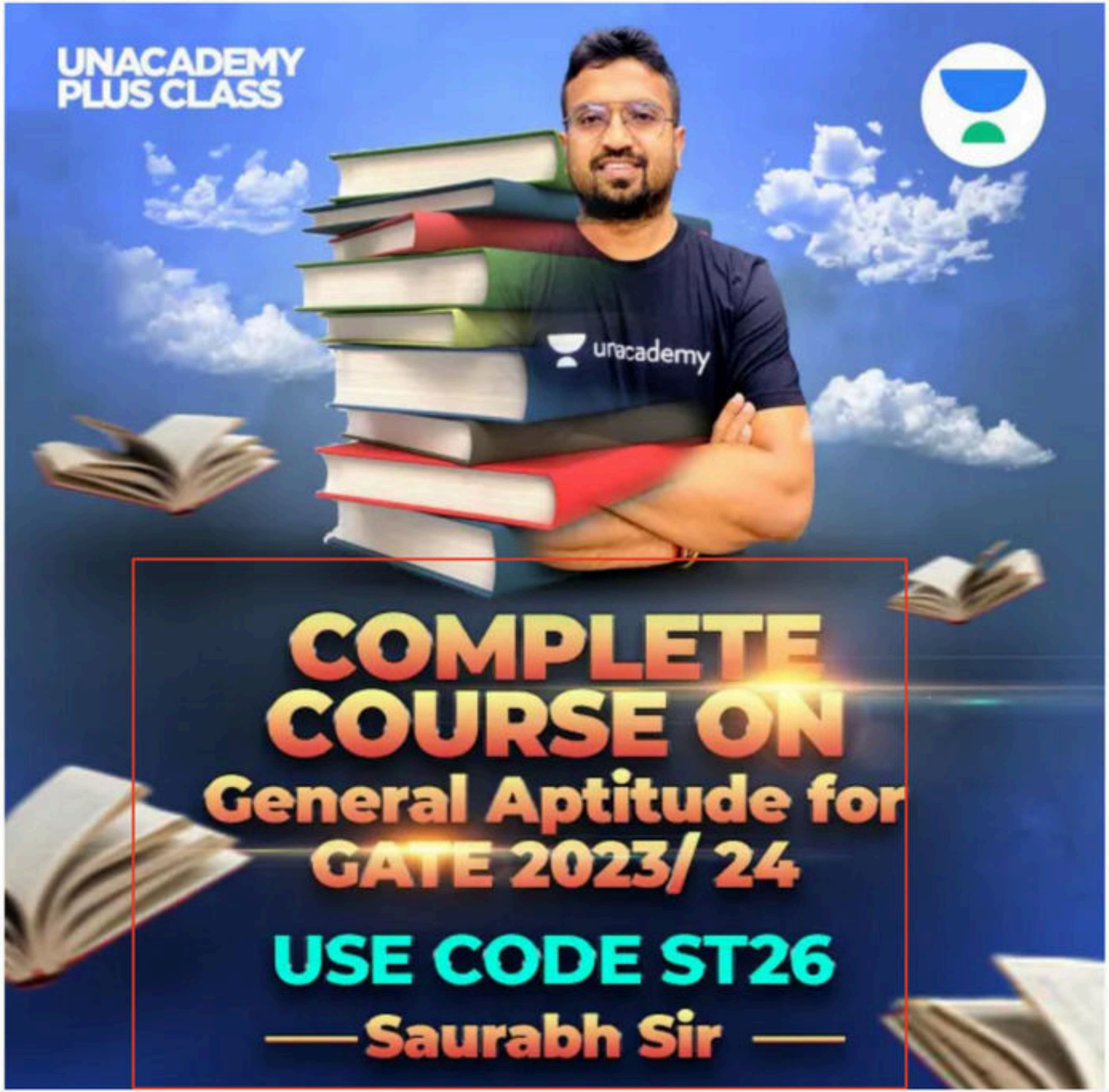
Doubt Clearing Session

Complete Course on General Aptitude for GATE 2023/2024

Saurabh Thakur • Lesson 11 • Oct 28, 2022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01

1 2 3 ⇒ O E O
2 3 4 ⇒ E O E

If P, Q and R are three consecutive integers, then which of the following is always true?

1 + 2 + 3 = E
2 + 3 + 4 = odd

(A) P + Q + R is always even.
(B) P + Q + R is always odd.
(C) P + 2Q + R is always even.
(D) P + 2Q + R is always odd.

1 + 2×2 + 3 = E

2 + 2×3 + 4 = E

ANS.- (C) The sum of two extreme numbers (whether both odd/even) and twice the 3rd number is always even. Therefore, their sum is always even.

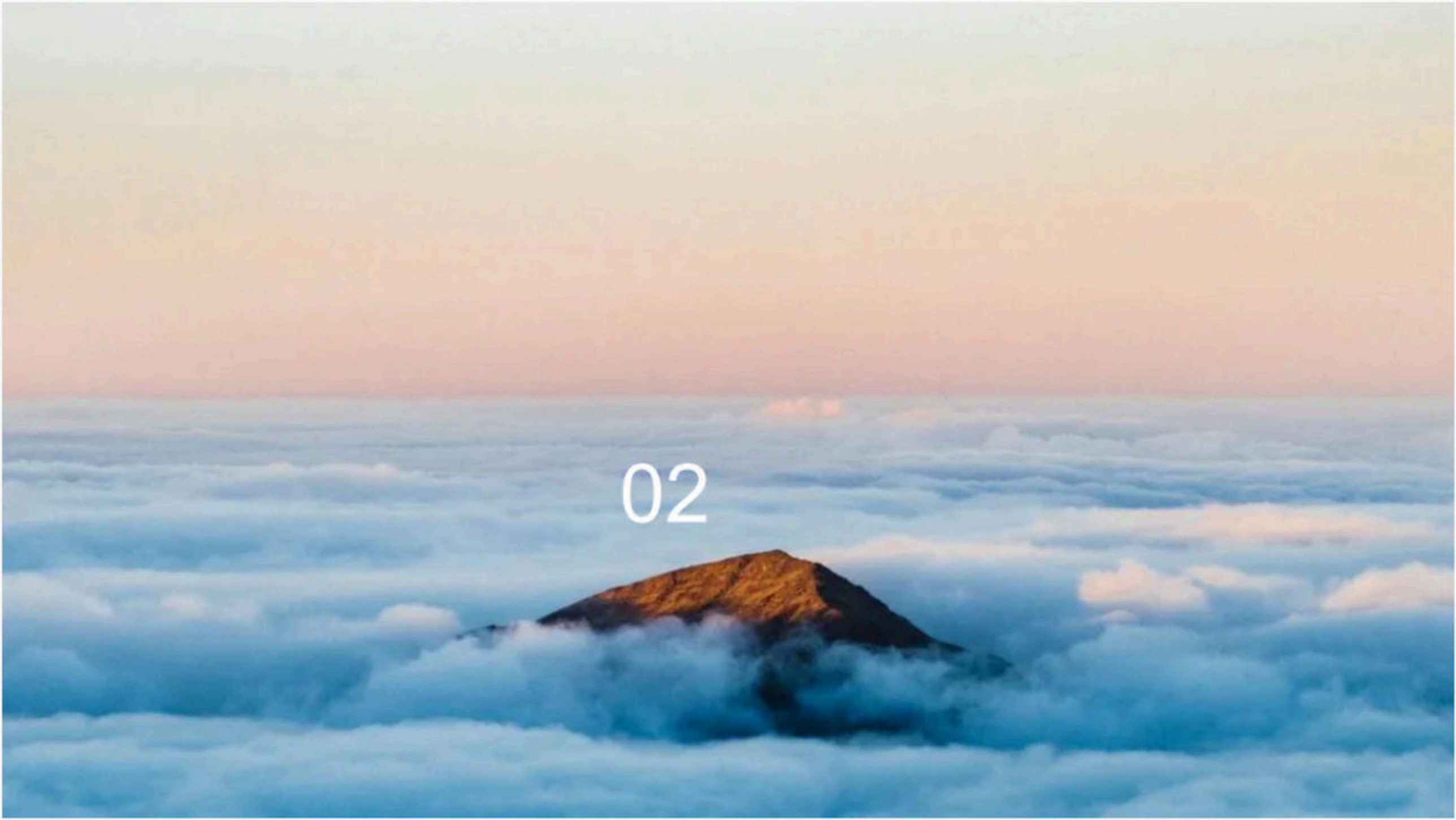
Alternative:

If P and R are odd and Q is even, then P + R is even and 2Q is even.

P + 2Q + R is even

If P and R is even and Q is odd, then P + R is even and 2Q is even.

P + 2Q + R is even.


02

By which of the following numbers must 34300 be multiplied in order to make it a perfect square?

(A) 7

(B) 5

(C) 6

(D) 14

$[7^3 \times (2^2 \times 5^2) \times 7]$

ANS.- (A) $34300 = 7 \times 7 \times 7 \times 5 \times 5 \times 2 \times 2 = 7^3 \times 5^2 \times 2^2$

To make 34300 a perfect square, multiply it by 7.

03

Find the last digit of $(100008)^{12500}$.

(A) 8 (B) 6

(C) 4 (D) 2

12500

8

(8^4) —

6

ANS.- (B) There will be a cycle of last digits, i.e. 8, 4, 2, 6,... and this cycle consists of 4 numbers.

To find the last digit, divide the required power by 4 and find the remainder.

The last digits corresponding to remainders 1, 2, 3 and 0 are 8, 4, 2 and 6, respectively.

So, when 12,500 is divided by 4, it gives 0 as the remainder. Therefore, the last digit required would be 6.

04

$1000 + 1000^{2} + \ldots + 1000\,000\,000$

Let $N = 10^3 + 10^4 + 10^5 + 10^6 + 10^7 + 10^8 + 10^9$. Find the sum of the digits of N.

(A) 12 (B) 9

(C) 8 (D) 7

$10^3(1 + 10^1 + 10^2 + \ldots + 10^6)$

1111111000

7

ANS.- (D) Since N is written as a sum of powers of 10; N can be written as 1111111000.

So, the sum of the digits is 7.

05

GATE

How many zeros are there at the end of the product 33 × 175 × 180 × 12 × 44 × 80 × 66?

(A) 2 (B) 4

(C) 6 (D) 6

2×5

$2 \times 5 - 2^2 \times 11$

$5^2 \times 7 \times 2 \times 5 \times$

2×5

TEST

0's

1. $\boxed{200!} \Rightarrow 40 + 8 + 1 = 49$

90! → 2

5's

2. 75! $\Rightarrow 15 + 3 = 18$

$\boxed{3}$

0's

$\boxed{10 = 2 \times 5}$

$$\boxed{5^2 \times 10!} = 2^5 \times 10!$$

$|0| \Rightarrow 2\text{'s} = 5 + 2 + 1 = 08$

$\Rightarrow 2^8 \times 5^4$

$0\text{'s} \Rightarrow 04$

$|0| \Rightarrow 5\text{'s} = 2$

$5^2 \times 10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1$

2×5

$$5^{10} \times \boxed{501}$$

5's = 10 + 2

= 12

$5^{\boxed{22}}$

2's

25 + 12 + 6 + 3 + 1

24

$$\begin{array}{r} 1000 \\ \times\ \boxed{1001} \\ \hline \end{array}$$

97's

5's = 20 + 4

= 24

5's ⇒ $\boxed{1024}$

$\boxed{21\text{'s}}$

50 + 25 + 12 + 6 + 3 + 1

97 97

ANS.- (B)

$33 = 3 \times 11$

$44 = 2^2 \times 11$

$175 = 5^2 \times 7$

$80 = 2^4 \times 5$

$180 = 5 \times 2^2 \times 3^2$

$66 = 2 \times 3 \times 11$

$12 = 2^2 \times 3$

Multiplying all, we get

$2^{11} \times 5^4 \times 3^5 \times 7 \times 11^3 = 10^4 \times 2^7 \times 3^5 \times 7 \times 11^3$

Look out for the number of tens, making total number of zeros.

Number of zeros = 4

06

Find the last digit of $(173)^{99}$.

3
3

(A) 9

(B) 7

(C) 1

(D) 3

ANS.- (B)

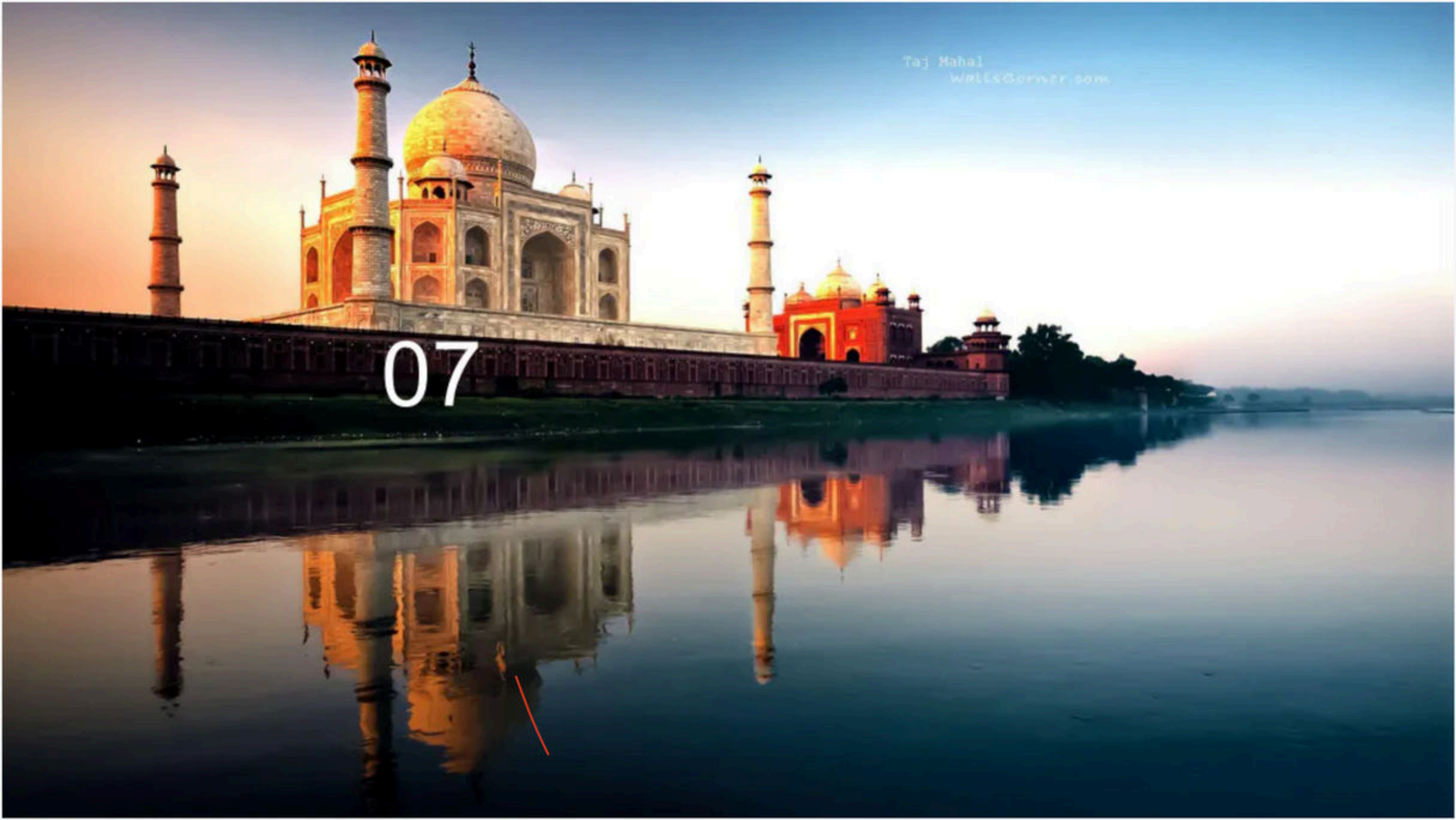
$3^1 = 3$, $3^2 = 9$, $3^3 = 27$, $3^4 = 81$ and $3^5 = 81 \times 3 = 243$.

Use the concept of power cycle (units digit repeats after the power of 4 and then after all powers that are multiples of 4).

Now, $99 = 24 \times 4 + 3$

Thus, 99 has 24 complete cycles of 4 and 3 is left as the remainder.

So, units digit of $(173)^{99}$ will be units digit of 3^3, which is 7.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07

power x

Find the units digit of 51 × 52 × 53 × ... × 59.

(A) 4 (B) 3

(C) 2 (D) 0

51 . 52 . 53 . . . 58 . 59

1 2 3 4 5 6 7 8 9

ANS.- (D)

This is a product of all the integers from 51 to 59. In this product, there is one 5 (at units place of 55) and at least one even number (at units place of 52, 54, 56 or 58). When 5 is multiplied with any even number, it always ends with 0. So, the units digit is 0.

08

What is the right most non-zero digit of $13780000^{13780000}$?

(A) 8 (B) 4

(C) 2 (D) 6

$3^1 \Rightarrow 3$

$(30)^1 = (3 \times 10)^1 \rightarrow 3$

$3^2 \Rightarrow 9$

$(30)^2 = 3^2 \times 10^2 = 9$

$3^3 = 27$

$(30)^3 = 3^3 \times 10^3 \quad 7$

$(30)^{10} = 3^{10} \times 10^{10} \quad 3^2$

9

$(30)^{100} \longrightarrow$

$(3 \times 10)^{100}$

0

$3^{15} \longrightarrow (3^{4})^{-}$

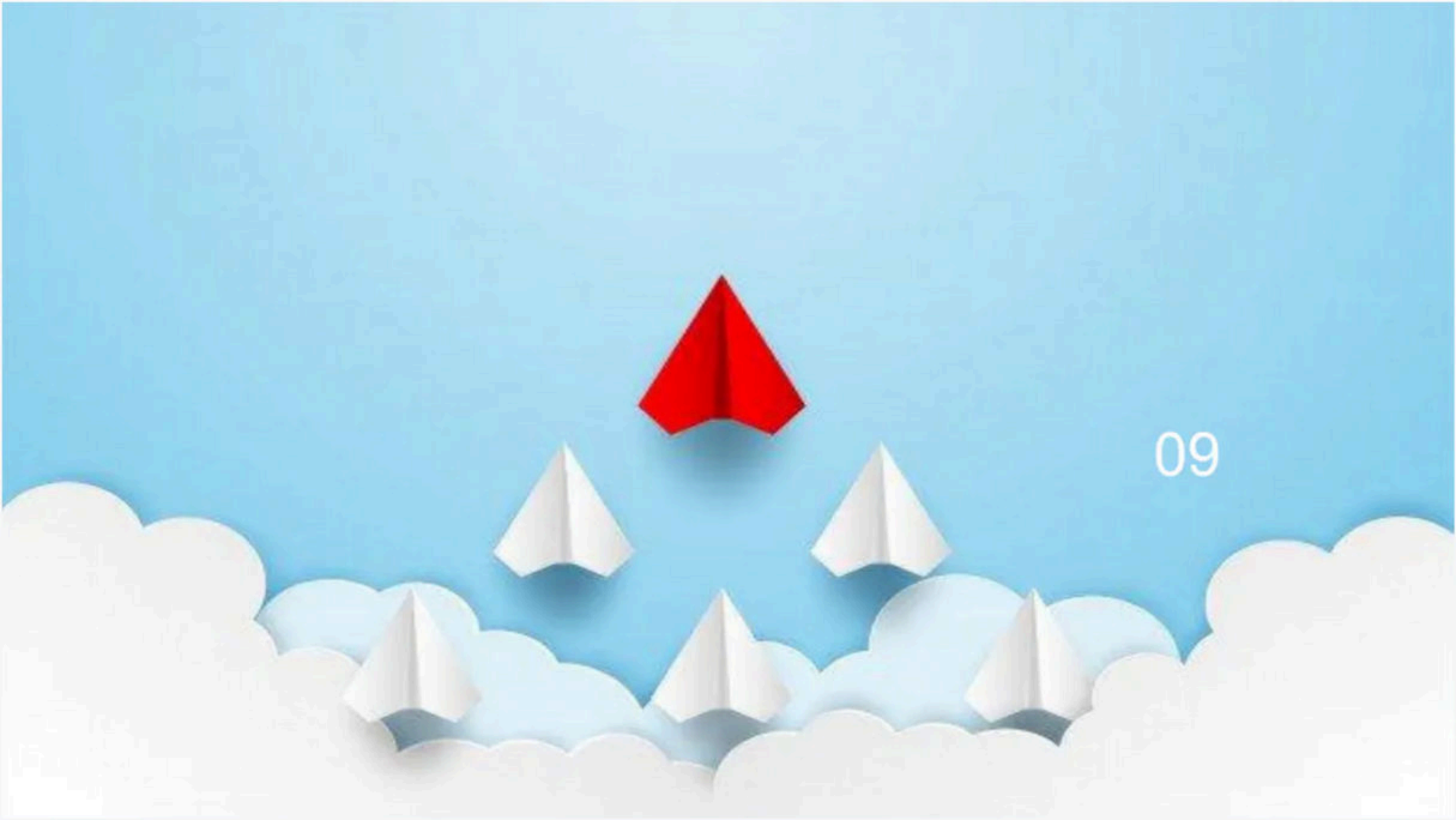
1

ANS.- (D) The required answer is nothing but the last digit of $8^{13780000}$.

We know that, the cyclicity of 8 is 4.

As 13780000 is divisible by 4 (cyclicity of 8).

That is, the last digit of $8^4 = 6$


09

How many factors of 1260 end with a zero?

(A) 6 (B) 8

(C) 10 (D) 12

(2×5)

1260

$(2 \times 5)\ (2^2 \times 3^2 \times 7)$

$2^4 \times 3^2 \times 5 \times 7$

$n = 3 \times 3 \times 2 \times 2 = 36$

$2^2 \times 3^2 \times 7^1$

$= 2 \times 3 \times 2$

$= 12$

$36 = \boxed{2^{2} \times 3^{2}}$

n

$2^{1} \times 3^{2} \Rightarrow 2 \times 3 = 6$

$2^{2} \times 3^{1} \Rightarrow 3 \times 2 = 6$

$3^{2} = 3$

$2^{2} = 3$

$\boxed{\div 2}$

$\boxed{\div 3}$

$\div 4$

$\div 9$

ANS.- (D)

$1260 = 4 \times 315$

$= 4 \times 5 \times 63$

$= 2^2 \times 3^2 \times 5 \times 7$

The factor has to end with a zero means it should have 2 and 5 necessarily.

So, if we take out 2 and 5, then we will have $2 \times 3^2 \times 7$.

The required answer is the number of factors of $2 \times 3^2 \times 7$.

$\Rightarrow (1 + 1)(2 + 1)(1 + 1)$

$= 12$

10

Find the last digit of the following expression.

$(15)^{256} + (19)^{138} + (32)^{97}$ => $5^{256} + 9^{\text{even}} + 2^{97}$

(A) 8 (B) 6

(C) 5 (D) 3

$5 + 1 + 2$

8

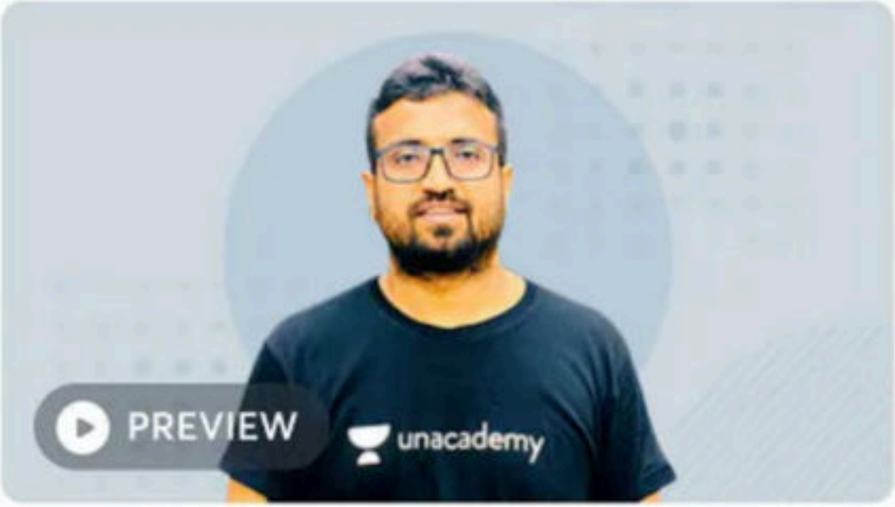
ANS.- (A)

Unit digit of $(15)^{256} = 5$.
As any number with 5 at the units place will always have a 5 at its units place, irrespective of the positive natural number power.

Now, $9^1 = 9$, $9^2 = 81$, $9^3 = 729$, $9^4 = 6561$
So, basically, a number with 9 at its units place raised to an even number, will have 1 at its units place and a number with 9 at its units place raised to an odd number, will have 9 at its units place.
Thus, the units digit of 19^{138} is a 1.

Now, $2^1 = 2$, $2^2 = 4$, $2^3 = 8$, $2^4 = 16$ and $2^5 = 32$
So, basically after every 4th power, the units digit repeats itself.
Now, $97 = 96 + 1 = 24 \times 4 + 1$
Thus, we have 24 sets of 4 and then 1 more.
So, the number should have 2 at the units place.

Thus, the digit at the units place is $5 + 1 + 2 = 8$
Hence, option 1 is correct.



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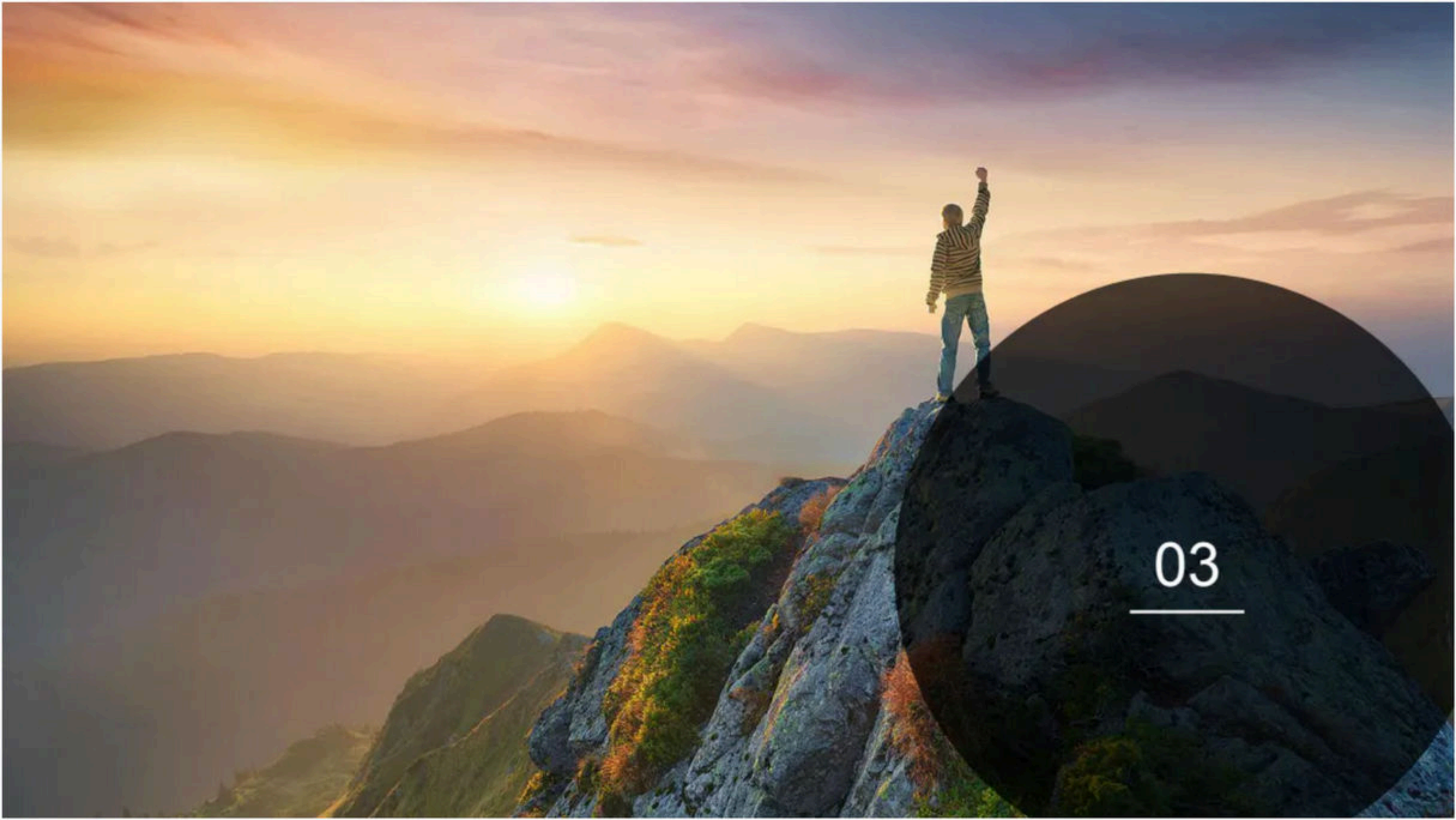
01

100!,150!, 250!

05

$$2^{23}, 2^{51}, 3^{59}, 4^{99}, 3^{171}, 7^{208}$$



03

$$12^{71}, 16^{51}, 21^{99}, 39^{235}, 17^{999}, 37^{897}, 127^{200899}$$

04

$$13^{666} \times 44^{777} \times 616^{333} \times 777^{444}, 8898^{222} \times 999^{555},$$

05

$$1^2 + 2^2 + 3^2 + \ldots\ldots\ldots\ldots\ldots + 99^2 + 100^2$$

06

$$1^1 + 2^2 + 3^3 + \ldots\ldots\ldots\ldots + 9^9 + 10^{10}$$

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07

The numeral in the units position of

$211^{870} + 146^{127} + 3^{424}$ is.....

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

08

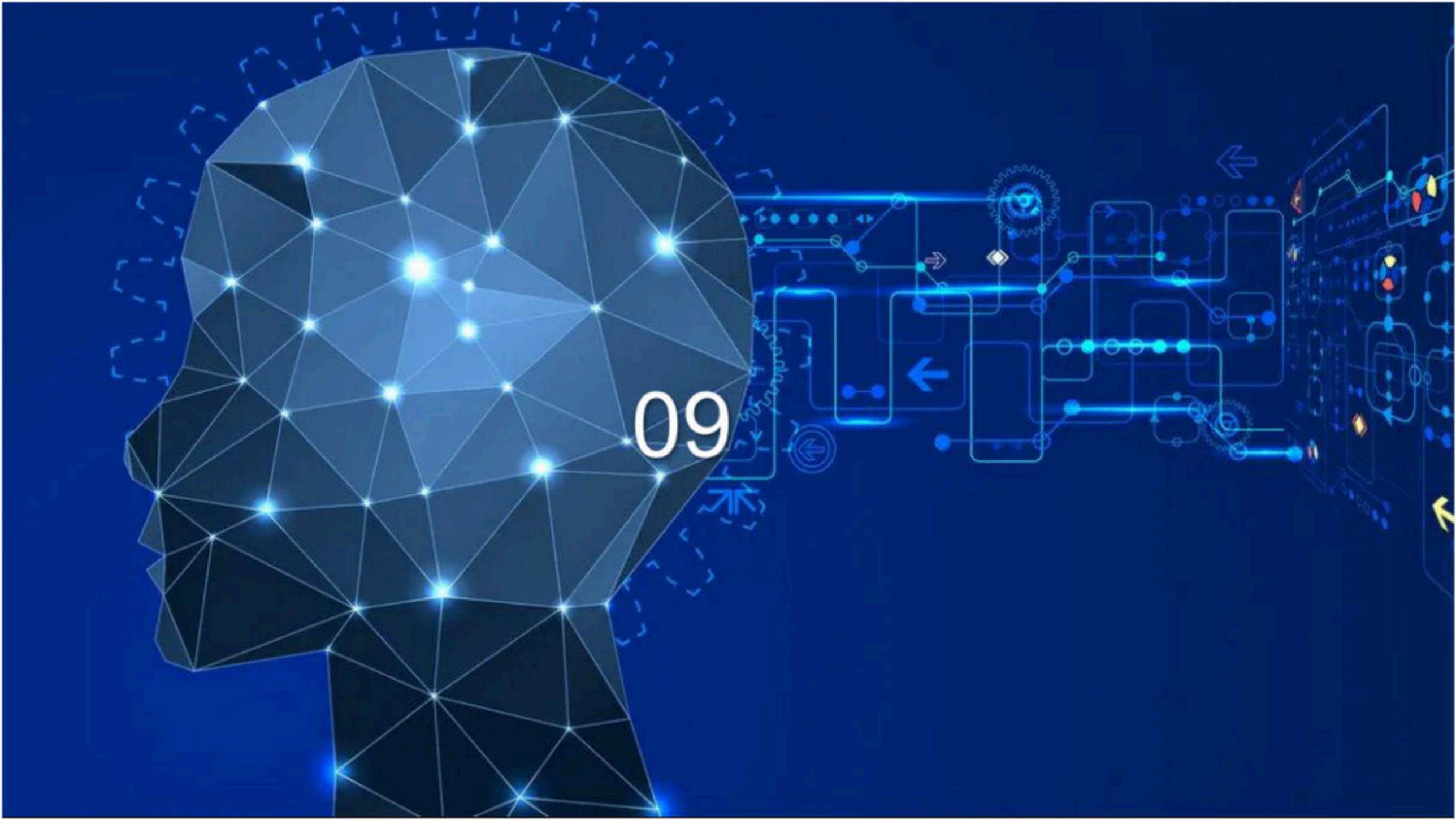
The last digit of

$(2171)^7 + (2172)^9 + (2173)^{11} + (2174)^{13}$ is

(A) 2 (B) 4

(C) 6 (D) 8

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


09

$$21^{23}, 31^{53}, 51^{93}$$

10

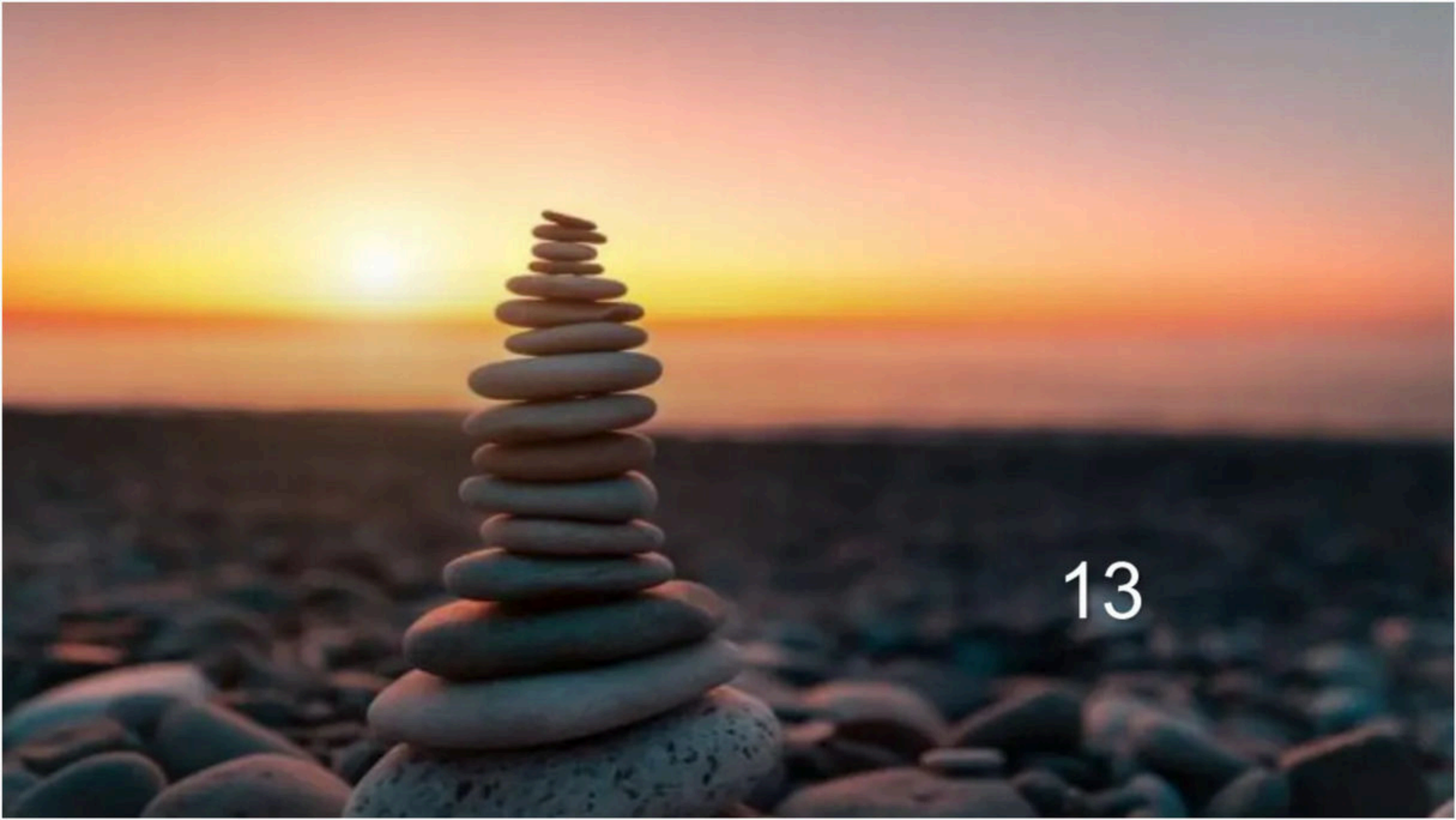
$3^{53}, 7^{53}, 9^{93}$

11

$$2^{53}, 4^{83}, 8^{93}$$

12

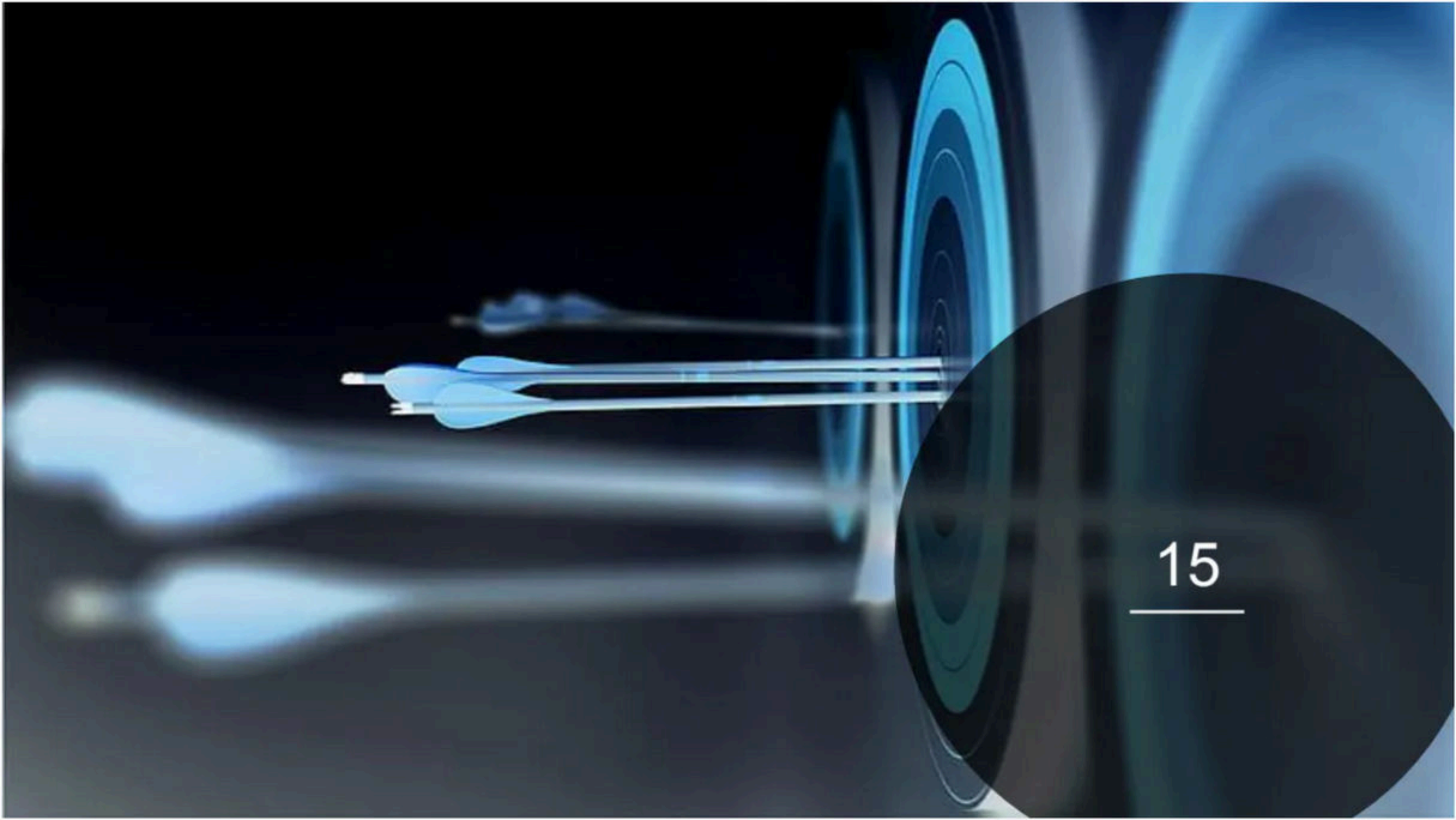
$$\frac{(123\ 1234)}{15}$$


13

$$(1218 \times 1220 \times 1222 \times 1224) \div 9$$

14

$$(1719 \times 1721 \times 1723 \times 1725 \times 1727) \div 18$$


15

The remainder when S is divided by 20 ,

where $S = 1! + 2! + 3! + 4! + 5! + 6! + \ldots\ldots\ldots + 19! + 20!$

16

887138392 6.

The rightmost non- zero digit of the number 30^{2720}.

$(3 \times 10)^{2720}$

$3^{2720} \times 10^{2720}$

$3^4 \rightarrow 1$

17

$$7^{77} \div 4$$

$$11^{88} \div 7$$

19

$$5^{123} \div 7$$

$$7^{84} \div 342$$

21

Find : Number of factors, Sum of factors and Product of factors of the following :

12, 24, 288.

22

How many factors of 12 are divisible by : 2, 3 , 4, 6 , 12.

23

How many factors of 24 are divisible by : 2, 3 , 4, 6 , 8.

24

Find the smallest number y such that : $y \times 162$ is a perfect cube.

(A) 24 (B) 27
(C) 32 (D) 36

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

25

If all the natural numbers starting from 1 are written side by side then find the :

25th, 50th, 100th, digit of the sequence.

26

In the above question find the remainder when the sequences are divided by : 2, 4,8,16 , 5 , 25 , 125 , 3 ,9

27

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)]

28

How many numbers less than 21 are co-primes to 21?

(A) 24 (B) 96
(C) 11 (D) 12

29

If a and b are integers and a - b is even, which of the following must always be even?

(A) ab

(B) $a^2 + b^2 + 1$

(C) $a^2 + b + 1$

(D) ab - b

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

30

Given that a and b are integers and $a + a^2 b^3$ is odd then, which one of the following statements is correct?

(A) a and b are both odd
(B) a and b are both even
(C) a is even and b is odd
(D) a is odd and b is eve

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

31

If x = - 0.5, then which of the following has the smallest value?

(A) $2^{1/x}$

(B) $\frac{1}{x}$

(C) $\frac{1}{x^2}$

(D) 2x

32

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

33

A number is as much greater than 75 as it is smaller than 117. The number is:

(A) 91 (B) 93
(C) 89 (D) 96

[GATE 2013 : IIT Bombay (CE)]

34

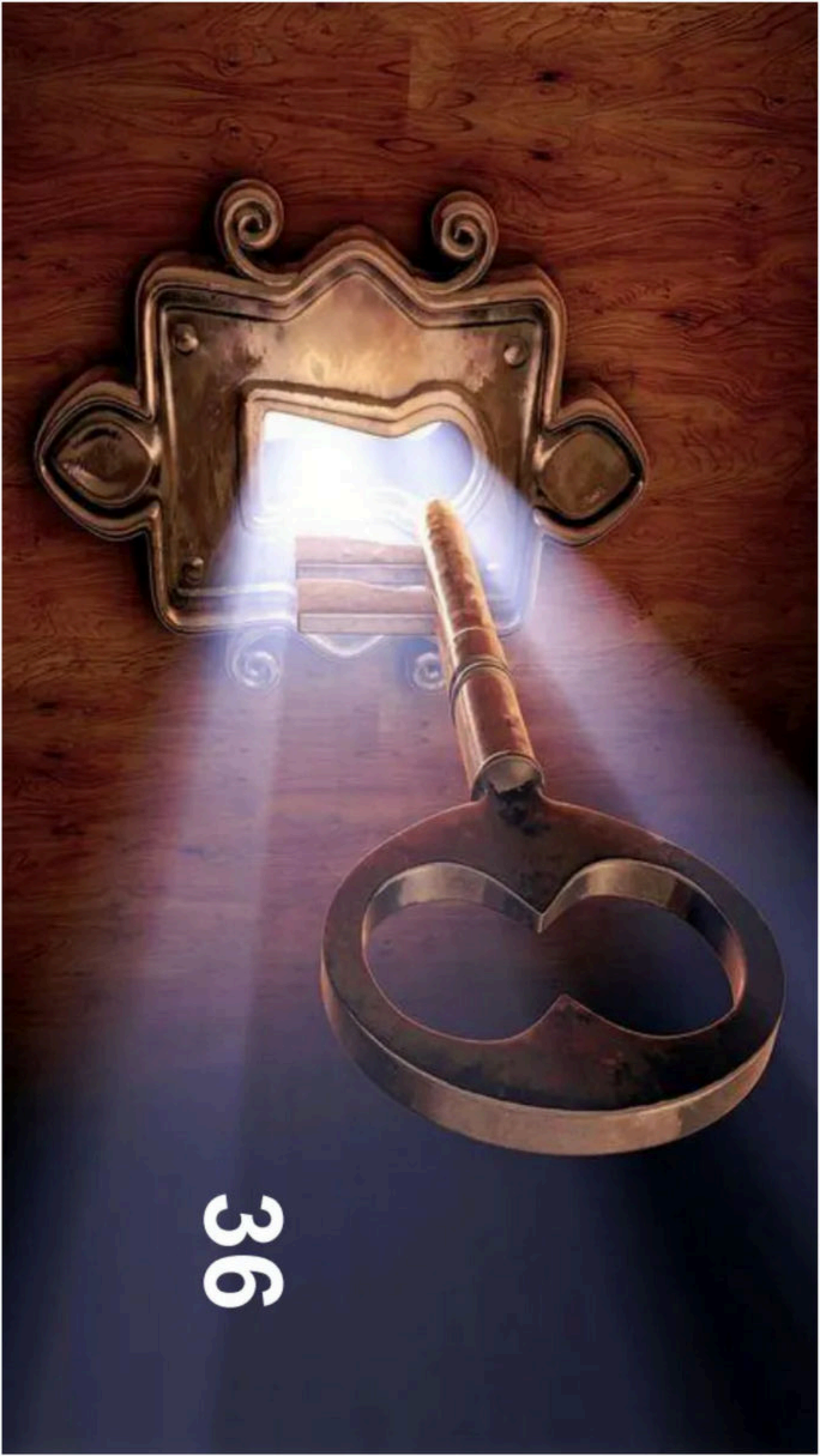
A number consists of two digits, the sum of digits is 9. If 45 is subtracted from the number, its digits are interchanged. What is the number?

(A) 63
(B) 72
(C) 81
(D) 90

SUCCESS
35

The sum of eight consecutive odd numbers is 656. The average of four consecutive even numbers is 87. What is the sum of the smallest odd number and second largest even number?

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



36

In a sequence of 12 consecutive odd numbers, the sum of the first 5 numbers is 425. What is the sum of the last 5 numbers in the sequence?

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

Direction (37 – 40) : Given, $m = 1! + 2! + 3! + 4! + \ldots\ldots\ldots\ldots\ldots\ldots\ldots + 99! + 100!$

37
MALIK

Given, $m = 1! + 2! + 3! + 4! + \ldots\ldots\ldots\ldots\ldots\ldots\ldots + 99! + 100!$

Find the unit digit of “m”

38

Given, $m = 1! + 2! + 3! + 4! + \ldots\ldots\ldots\ldots\ldots\ldots\ldots + 99! + 100!$

Find the last two digits of ‘m’

39

Given, $m = 1! + 2! + 3! + 4! + \ldots\ldots\ldots\ldots\ldots\ldots\ldots + 99! + 100!$

Find the remainder, when 'm' is divided by 168.

40

Given, $m = 1! + 2! + 3! + 4! + \ldots\ldots\ldots\ldots\ldots\ldots\ldots + 99! + 100!$

If N is a natural number such that $10^{12} < N < 1013$ and the sum of the digits of n is 2 , then the number of values n take is :

41

Which among $2^{1/2}$, $3^{1/3}$, $4^{1/4}$, $6^{1/6}$ and $12^{1/12}$ is the largest ?

(A) $2^{1/2}$

(B) $3^{1/3}$

(C) $4^{1/4}$

(D) $6^{1/6}$

42

If $\frac{a}{b} = \frac{1}{3}$, $\frac{b}{c} = 2$, $\frac{c}{d} = \frac{1}{2}$, $\frac{d}{e} = 3$ and $\frac{e}{f} = \frac{1}{4}$, then what is the value of $\frac{abc}{def}$?

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

(B) $\frac{27}{8}$

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

(D) $\frac{27}{4}$

(2006)

43

S is a 6 digit number beginning with 1 . If the digit 1 is moved from the leftmost place to the rightmost place the number obtained is three times of S . Then the sum of the digits of S is-

2014 - 3×1 AP.

If N = 15 × 30 × 45 × 60 × .....× 1500, what will be the number of zeroes at the end of N?

(A) 63
(B) 55
(C) 97
(D) 124

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

$$N = 15 \times 30 \times 45 \times \ldots \times 1500$$

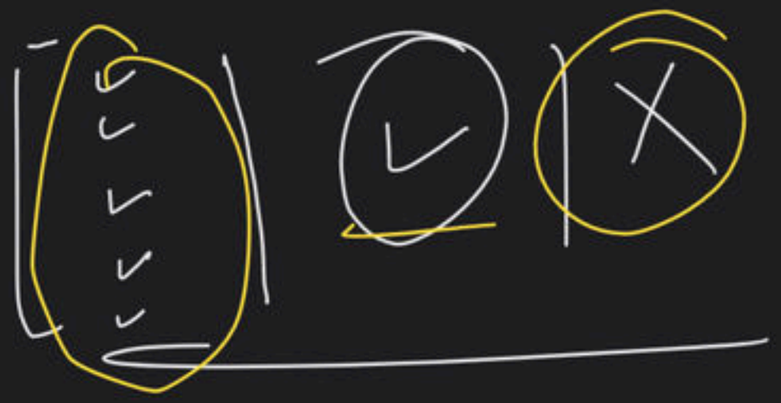
$$= (15 \times 1)(15 \times 2) \times (15 \times 3) \times \ldots \times (15 \times 100)$$

$$= \boxed{15^{100} \times 100!} \Rightarrow 5^{124} \times 2^{97}$$

(3×5)

5's $\Rightarrow$ 24

2's = 97



TEST (0's)

$\boxed{1}$ 27 ×

30 diff

$\boxed{2}$ 27^{27} = odd

21 2

$\boxed{3}$ $27^{27!}$ < 27^{27} = odd

6 $3!$

27 = odd

$\boxed{4}$ $27!$ 66

$\boxed{5}$ $27!^{27}$

$\boxed{6}$ $27!$ $27!$ 6

$27!$ × 5

1500

(100!)

8's ⇒ Power x 24

27|27

$5! = 120$

$(5!)^2 = (120)^2$

$\Rightarrow 14400$

$5! \Rightarrow 5|5 = 1$

$(5!)^2 = 1 \times 2$

$\boxed{\text{Porcex } 24}$

$= 25 \times 24$

$= 600$

১৫০০০০

১০০০০

প্রথম × ২৪৭ (২৩ + ৪৬ + ৪১)

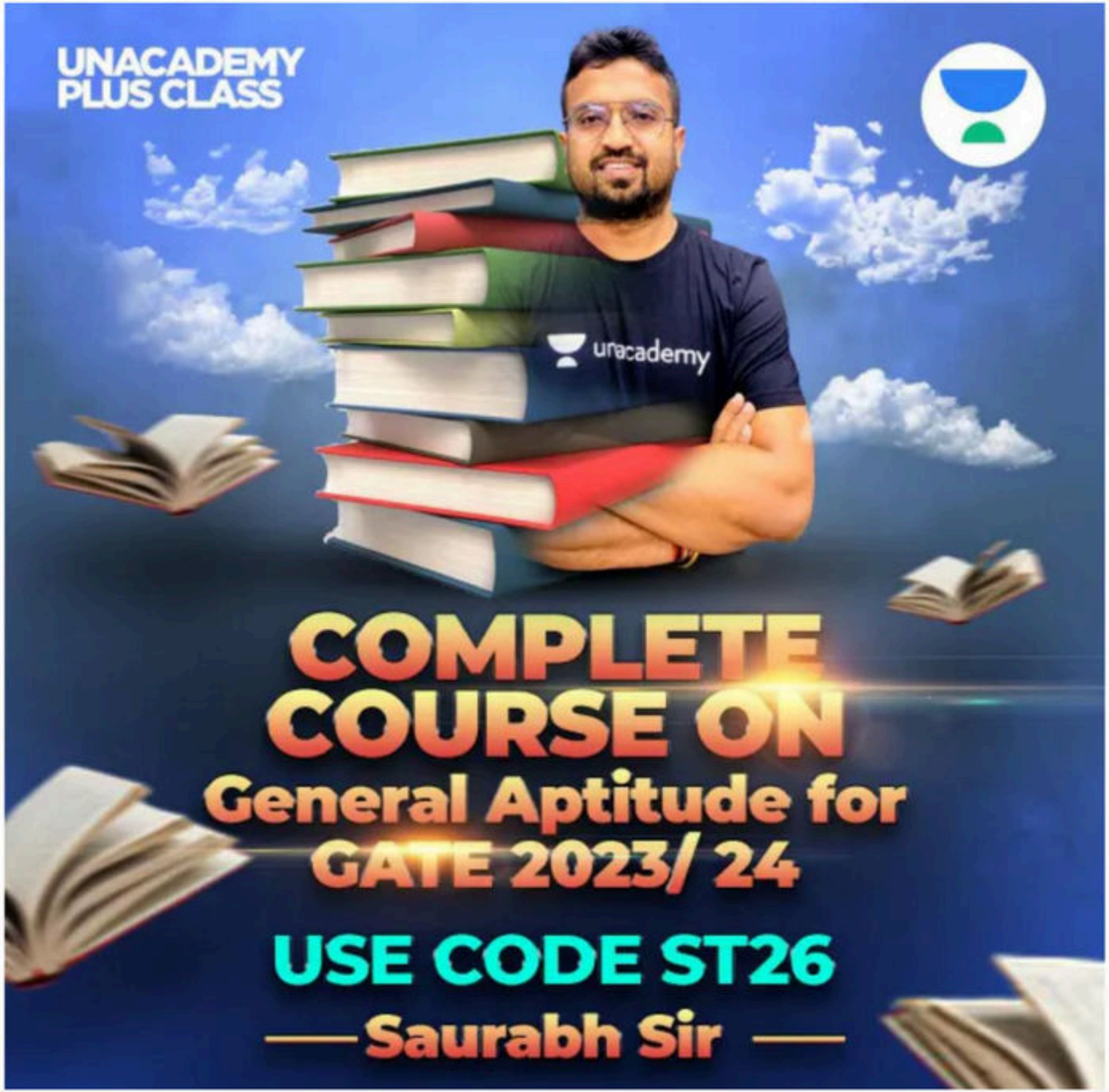
$$\text{Q7} \Rightarrow \text{X11}$$

$$\boxed{5\text{'s} = 0\text{'s}}$$

$$\text{Q7} \Rightarrow 5+1 = \boxed{06}$$

Let x, y and z be distinct integers, that are odd and positive. Which one of the following statements cannot be true?

(A) xyz^2 is odd
(B) $(x-y)^2z$ is even
(C) (x+y-z) (x+y) is even
(D) (x-y) (y+z) (x+y-z) isodd
(E) None of these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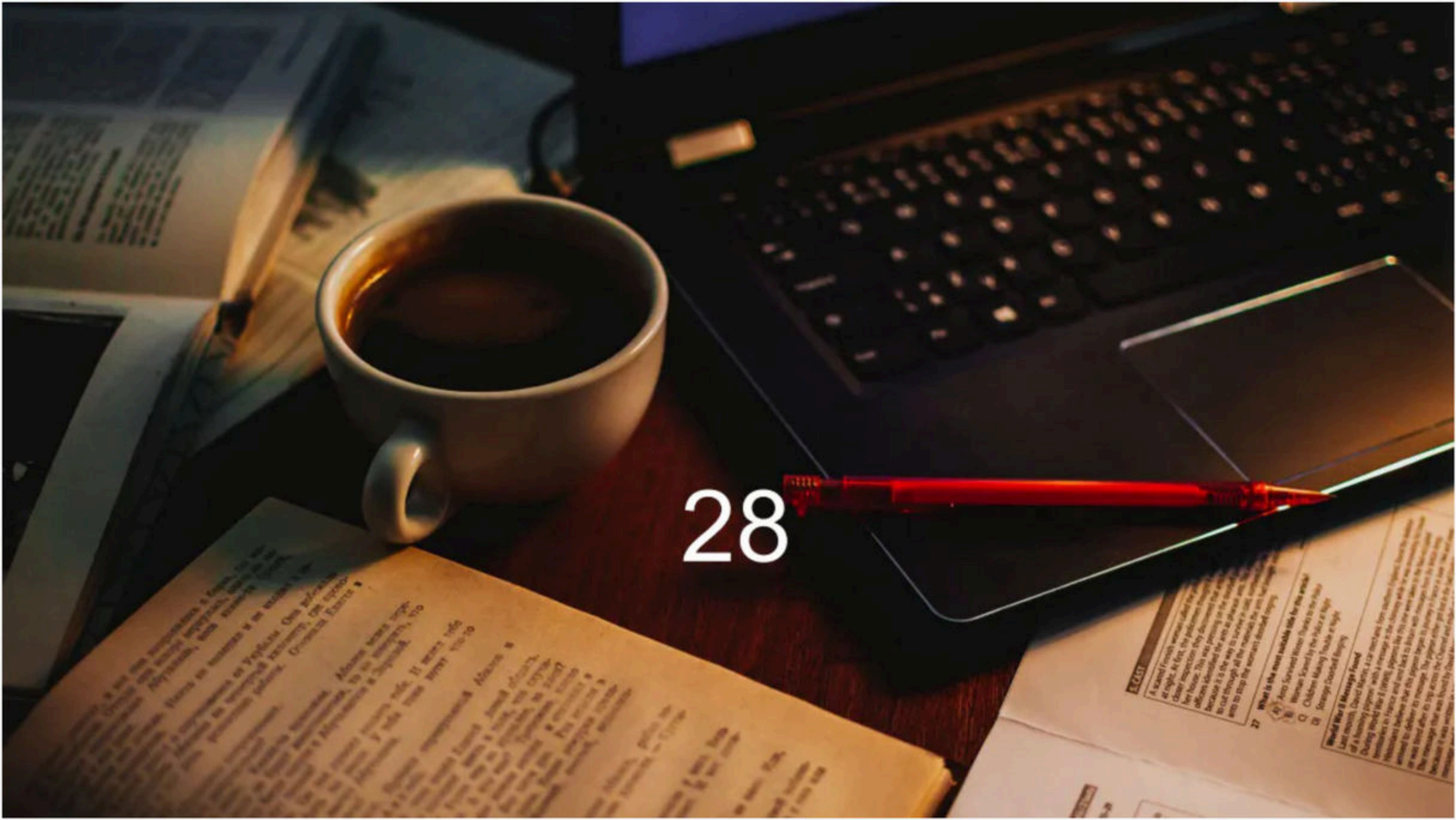
Miscellaneous



28

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)]

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)]

34

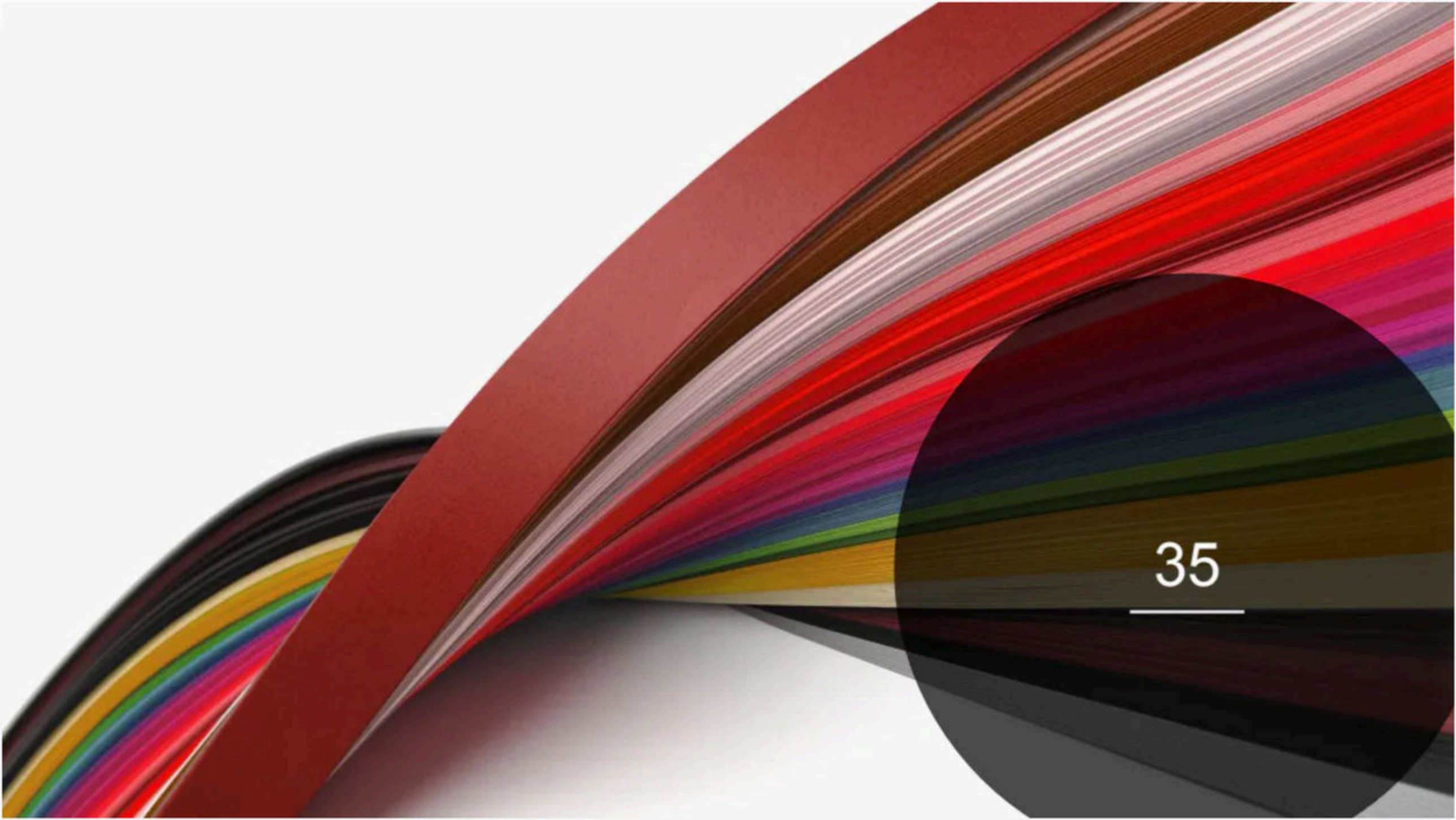
Find the missing group of letters in the following series :

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)]

36

Find the missing sequence in the letter series below:

A, CD, GHI,?, UVWXY

(A) LMN (B) MNO

(C) MNOP (D) NOPQ

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

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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)]

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)]

40

The next term in the series 81, 54, 36, 24 … is _____

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

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 $1 + \frac{1}{4} + \frac{1}{16} + \frac{1}{64} + \frac{1}{256} + \ldots.?$

(A) 2 (B) $\frac{7}{4}$

(C) $\frac{3}{2}$ (D) $\frac{4}{3}$

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

48

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. P2 , R2 , S2 ,T2 ,U2

(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)]

YouWall.com
50

The value of $\sqrt{12+\sqrt{12+\sqrt{12+\ldots}}}$ 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, ... ?

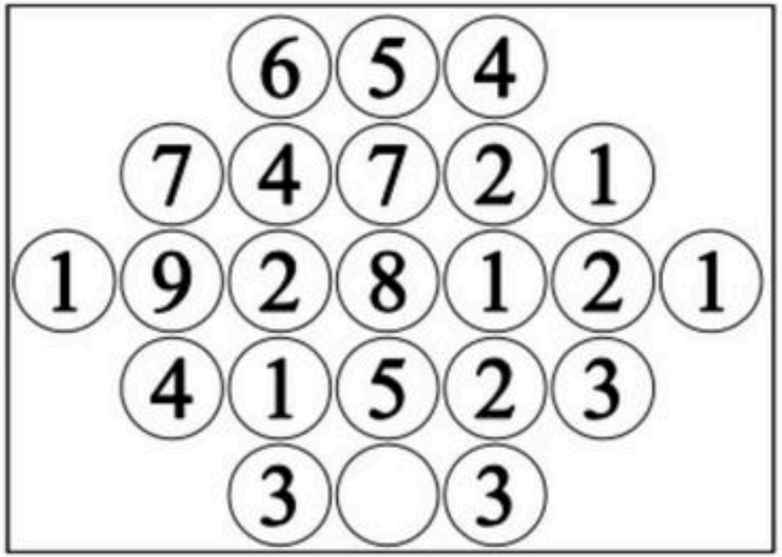
(A) 502 (B) 504

(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

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

(A) 7 (B) 8

(C) 9 (D) 10

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

54

What is the sum of the series:

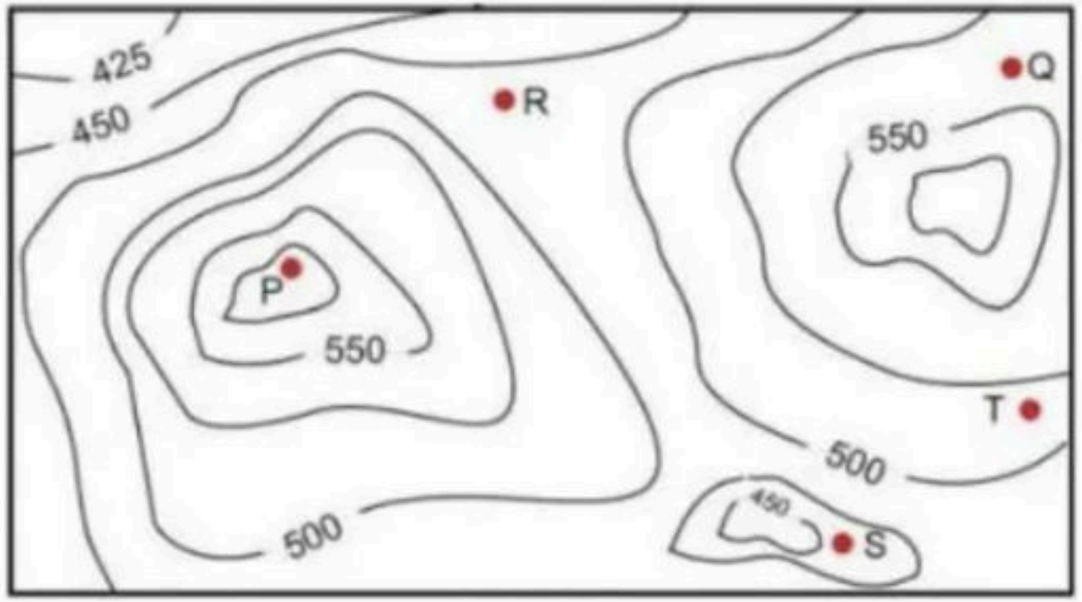
$$\frac{1}{(1\times2)}+\frac{1}{(2\times3)}+\frac{1}{(3\times4)}+\ldots\ldots+\frac{1}{(100\times101)}$$

(A) Ignored (B) Appreciated

(C) Twisted (D) Returned

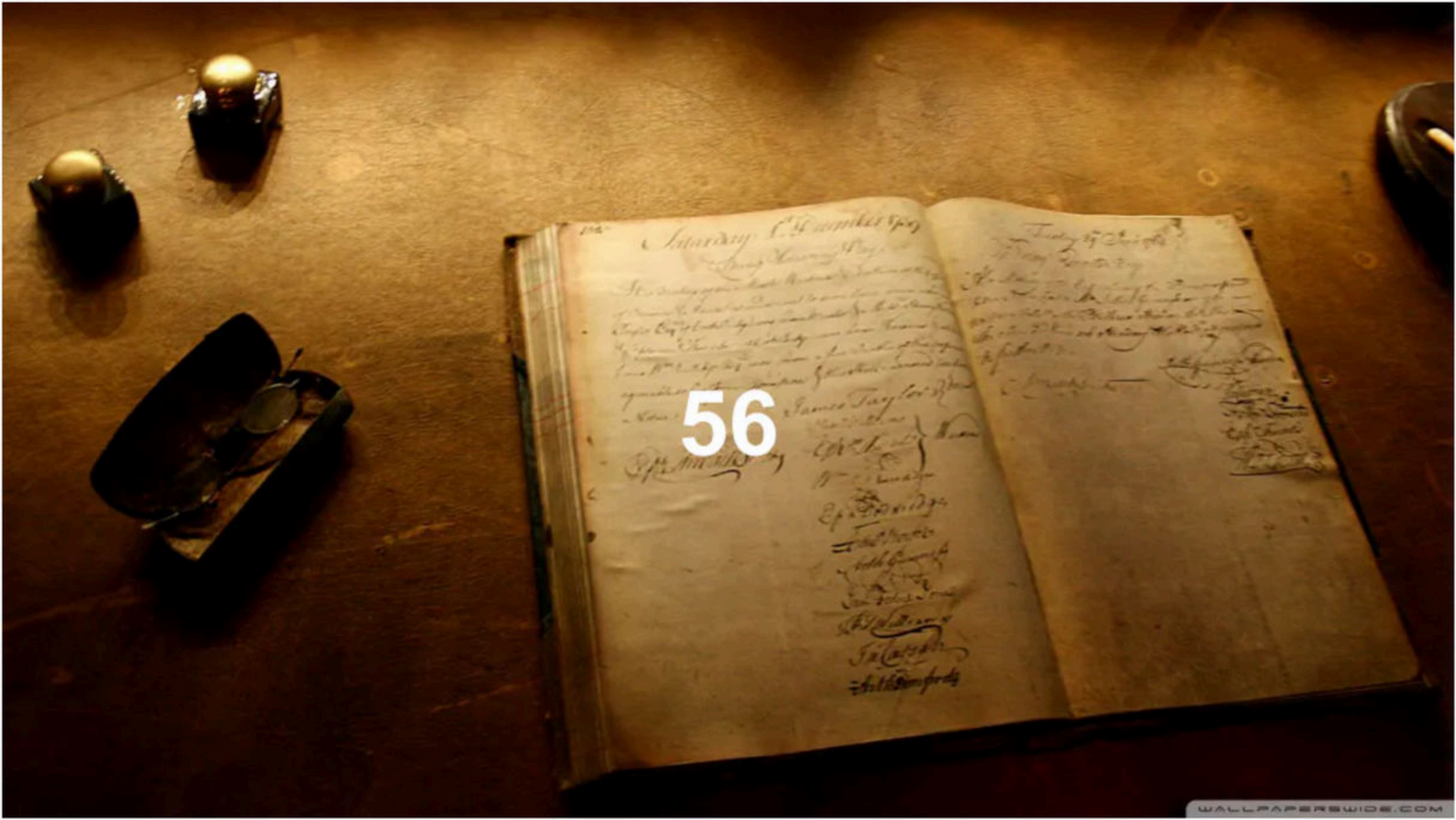
55

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?

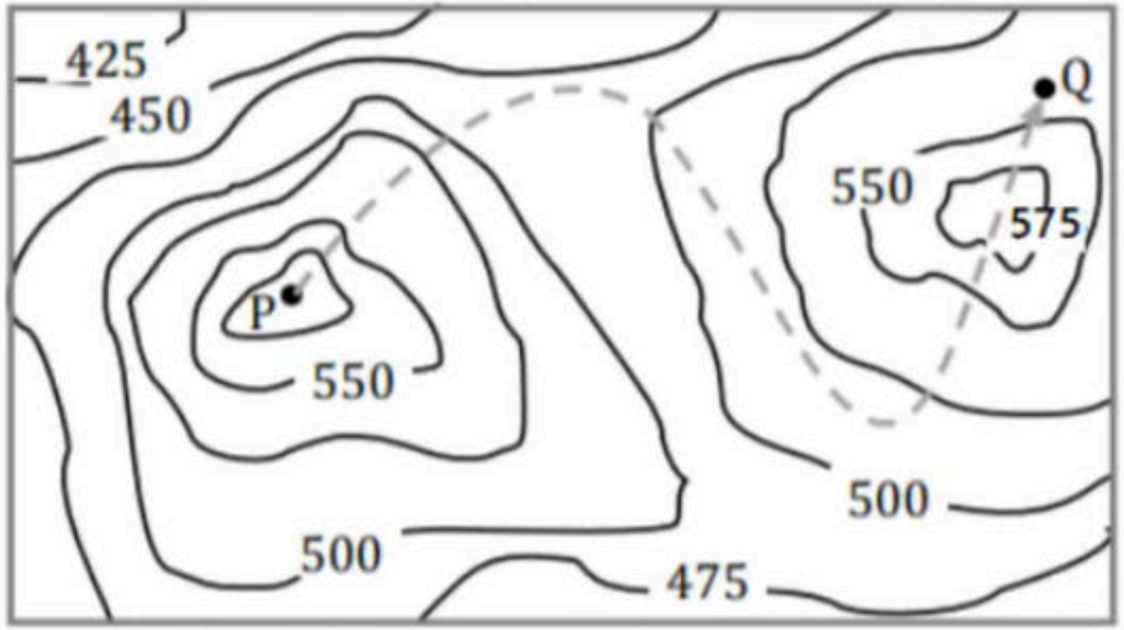


A. P, Q
B. P, Q, T
C. R, S, T
D. Q, R, S

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


56

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

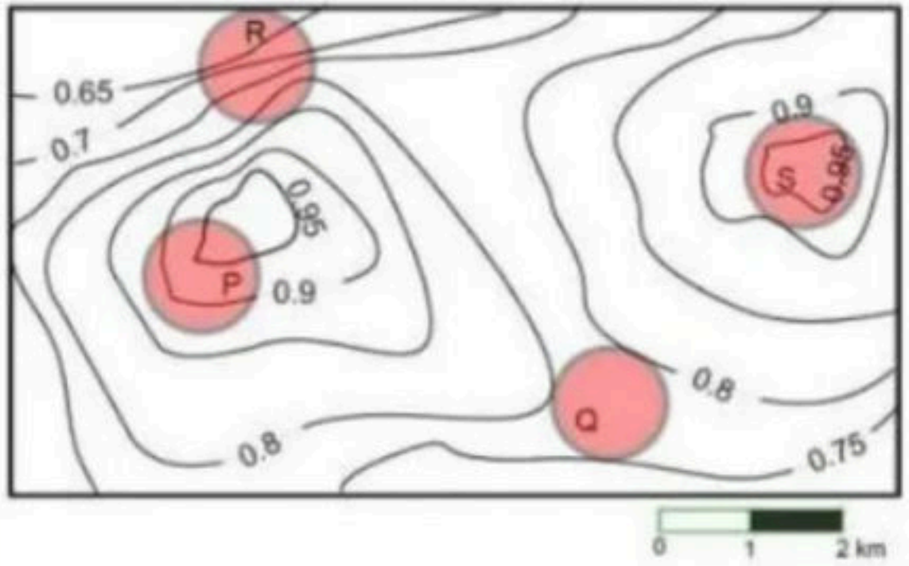
A. Up-Down-Up-Down
B. Down-Up-Down-Up
C. Down-Up-Down
D. Up-Down-Up

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

57

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)]

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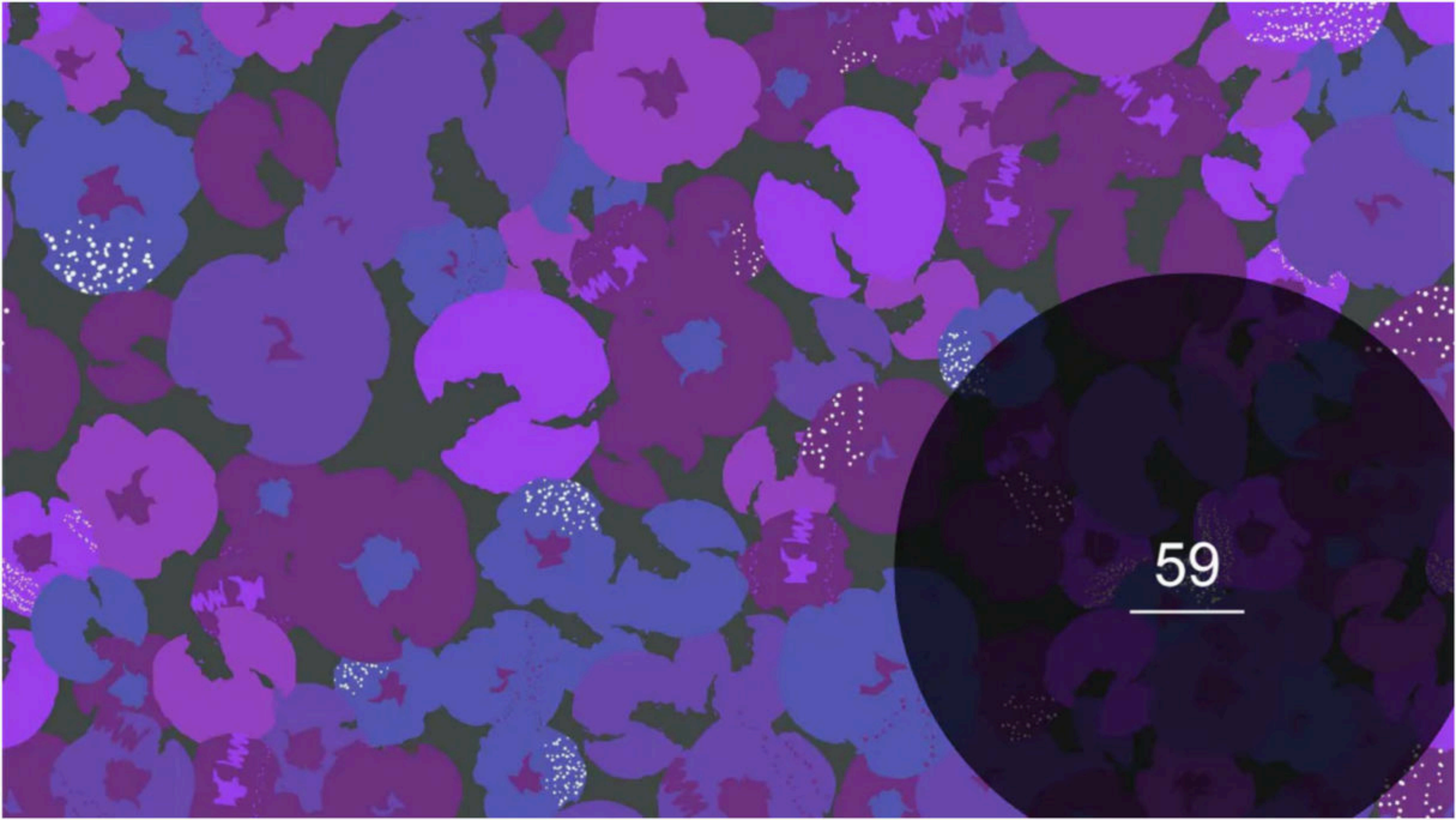
Find the sum of the series : $\frac{1}{3} + \frac{2}{3^2} + \frac{3}{3^3} + \frac{4}{3^4} + \ldots \infty$

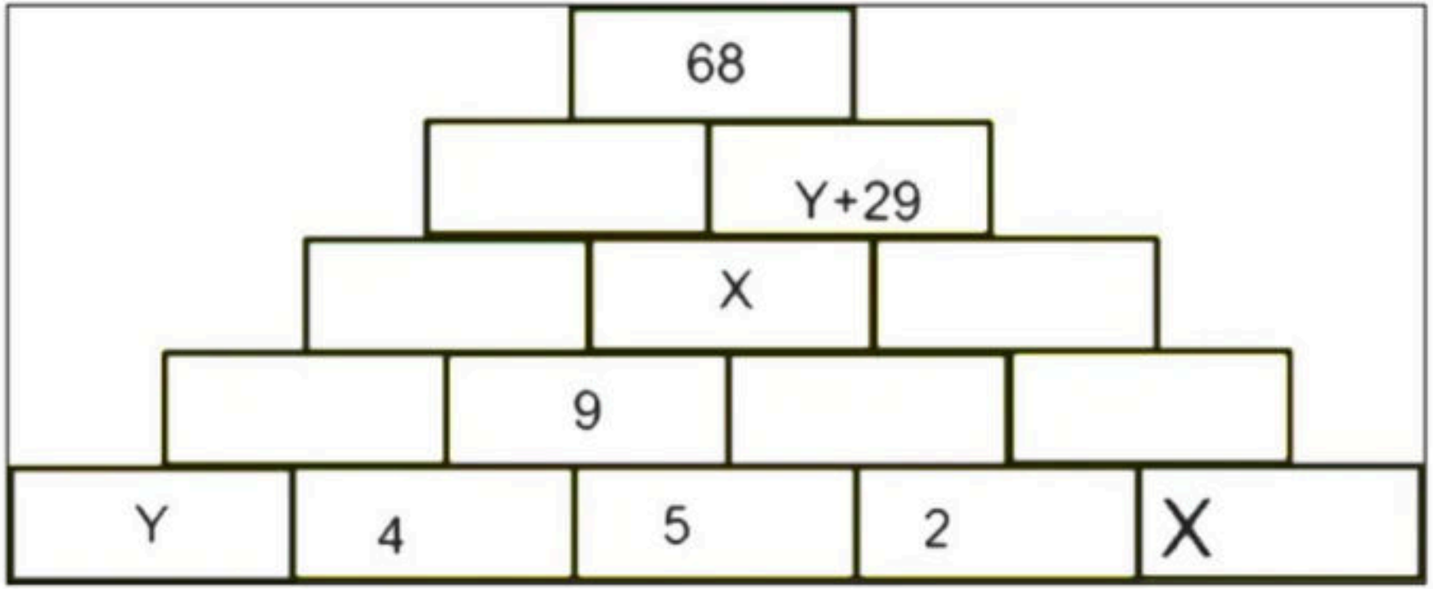

59

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

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



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)]

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 Cludia 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 ?

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

(A) 0 (B) 1

(C) 3 (D) Cannot be determined

67

THE TENNIS PLAYERS :

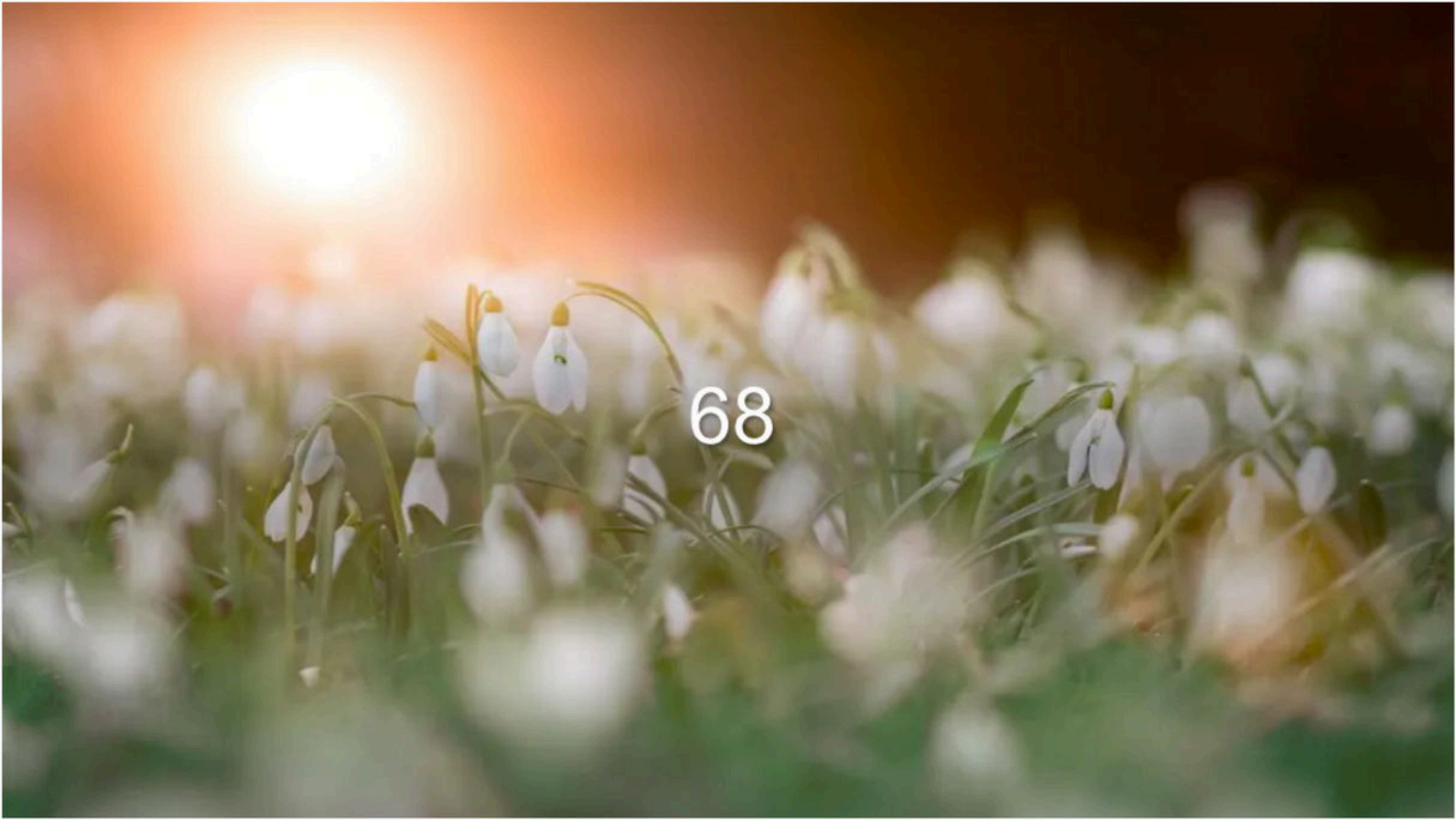
Zita , her brother , her daughter and her son are tennis players. As a game of doubles is about to begin :

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.

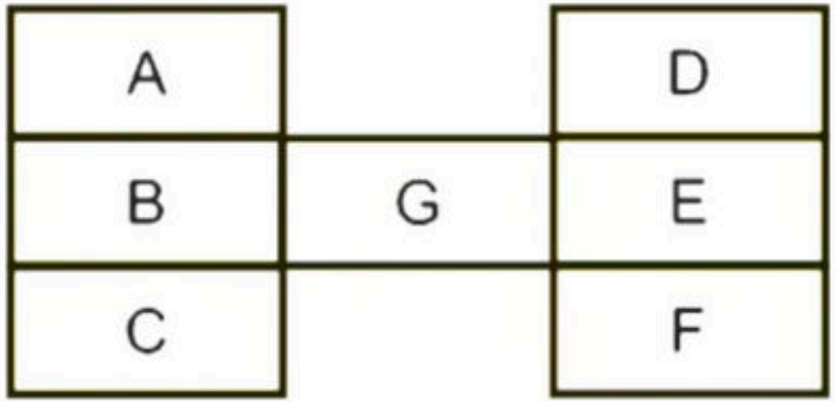
C. The best player and the worst player are on the same side of the net.

Who is the best player?

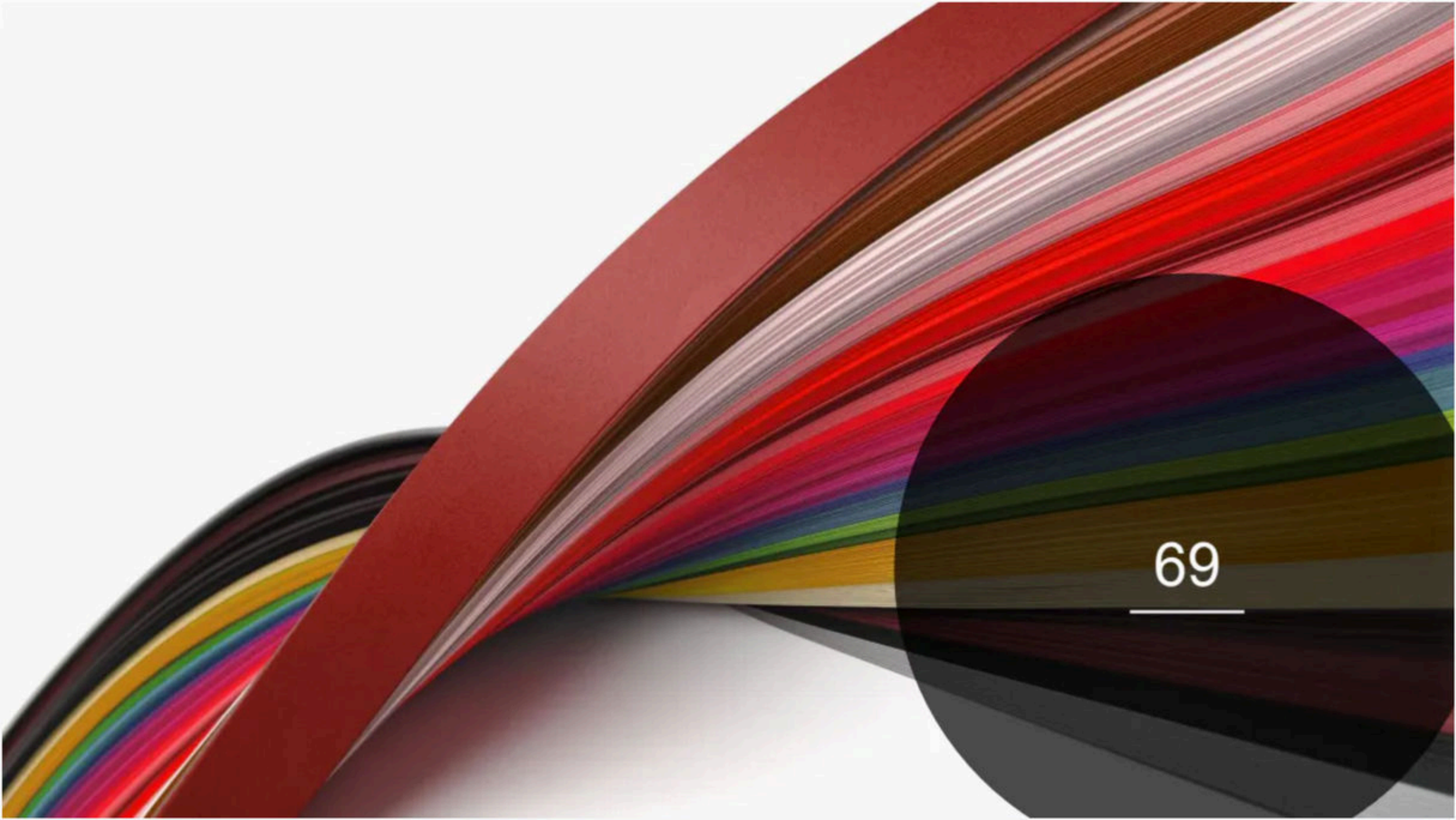

68

Each of the letters arranged as below represents a unique integer from 1 to 9.
The letters are positioned in the figure such that and 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?

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)]

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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 0

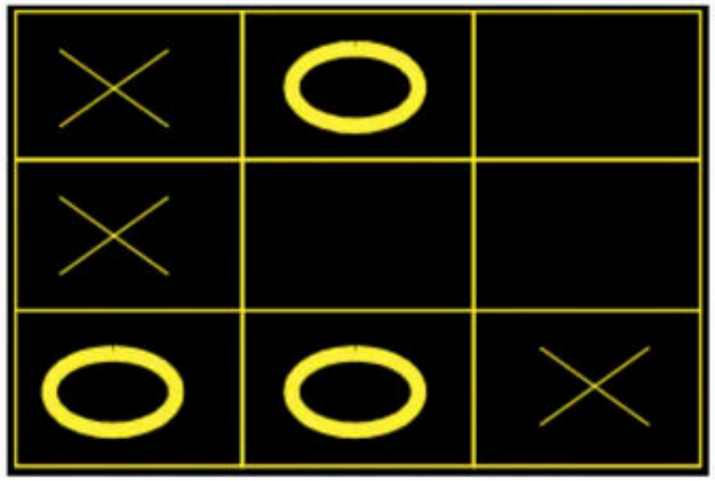
The game of Tic-tac-toe is played in a large square divided into nine small squares.

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?



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:

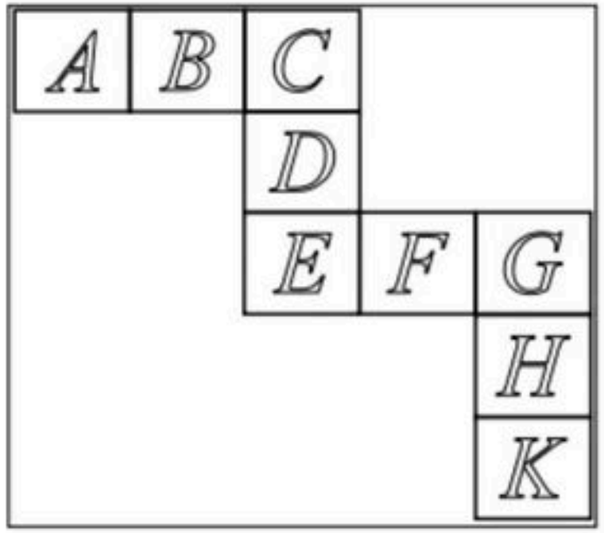
Who does not guard with Ida?

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 and is equal to 13. Which integers does E represent?

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



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

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		

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

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.

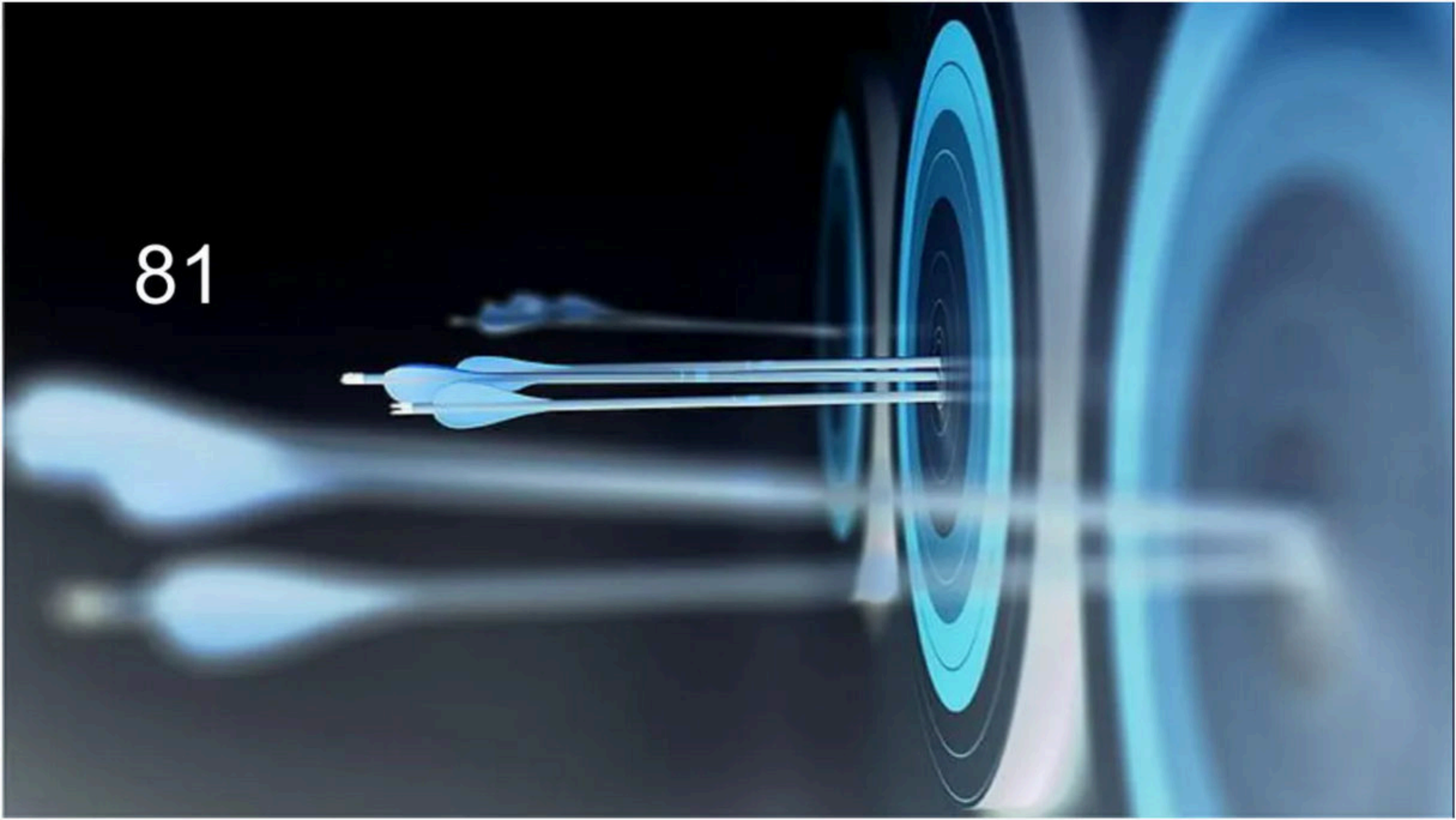
Which of the following are brother and sister?

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

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)]

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

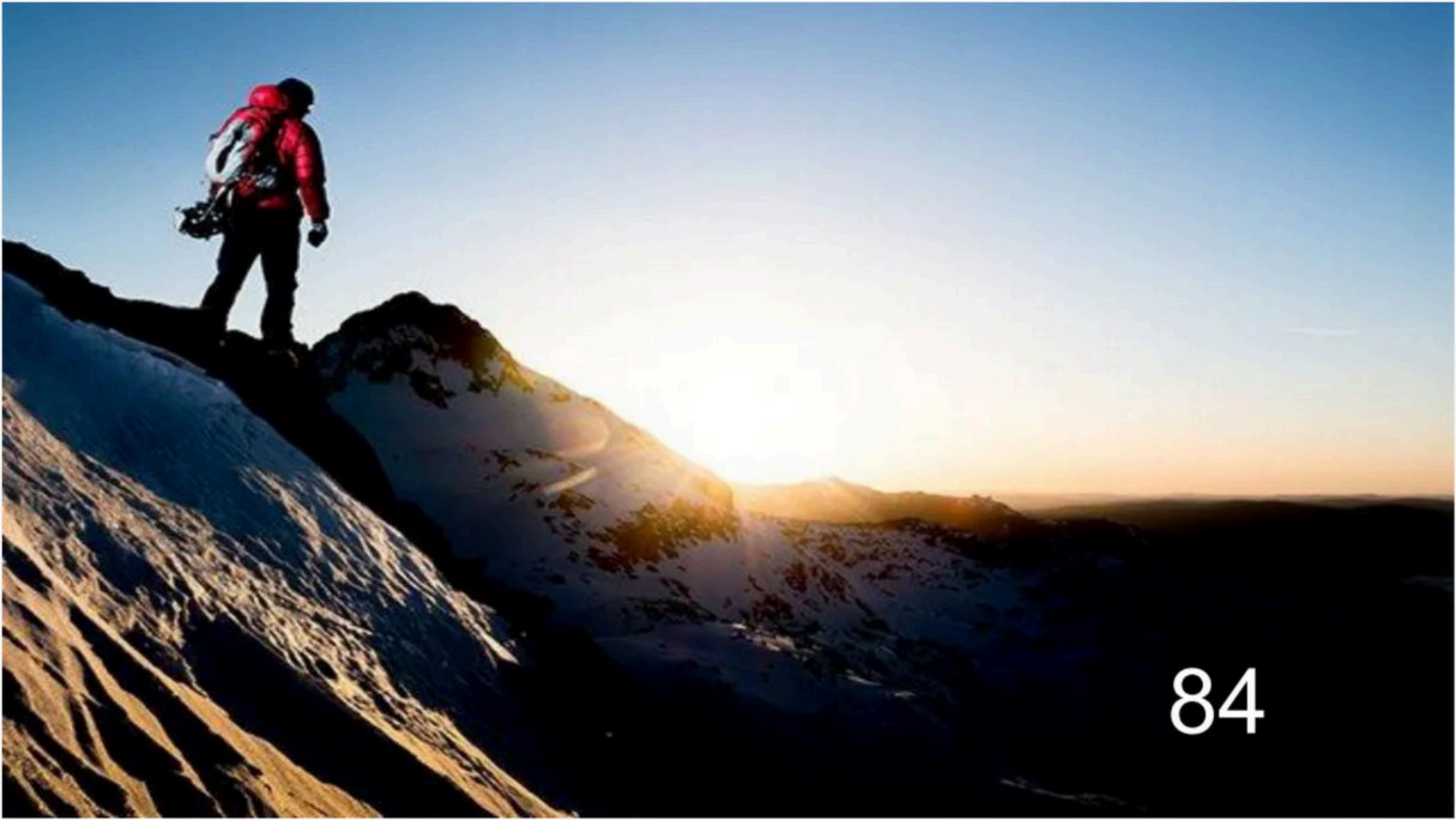
Read the given information carefully and answer the questions that follow.

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.

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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

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

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

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

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

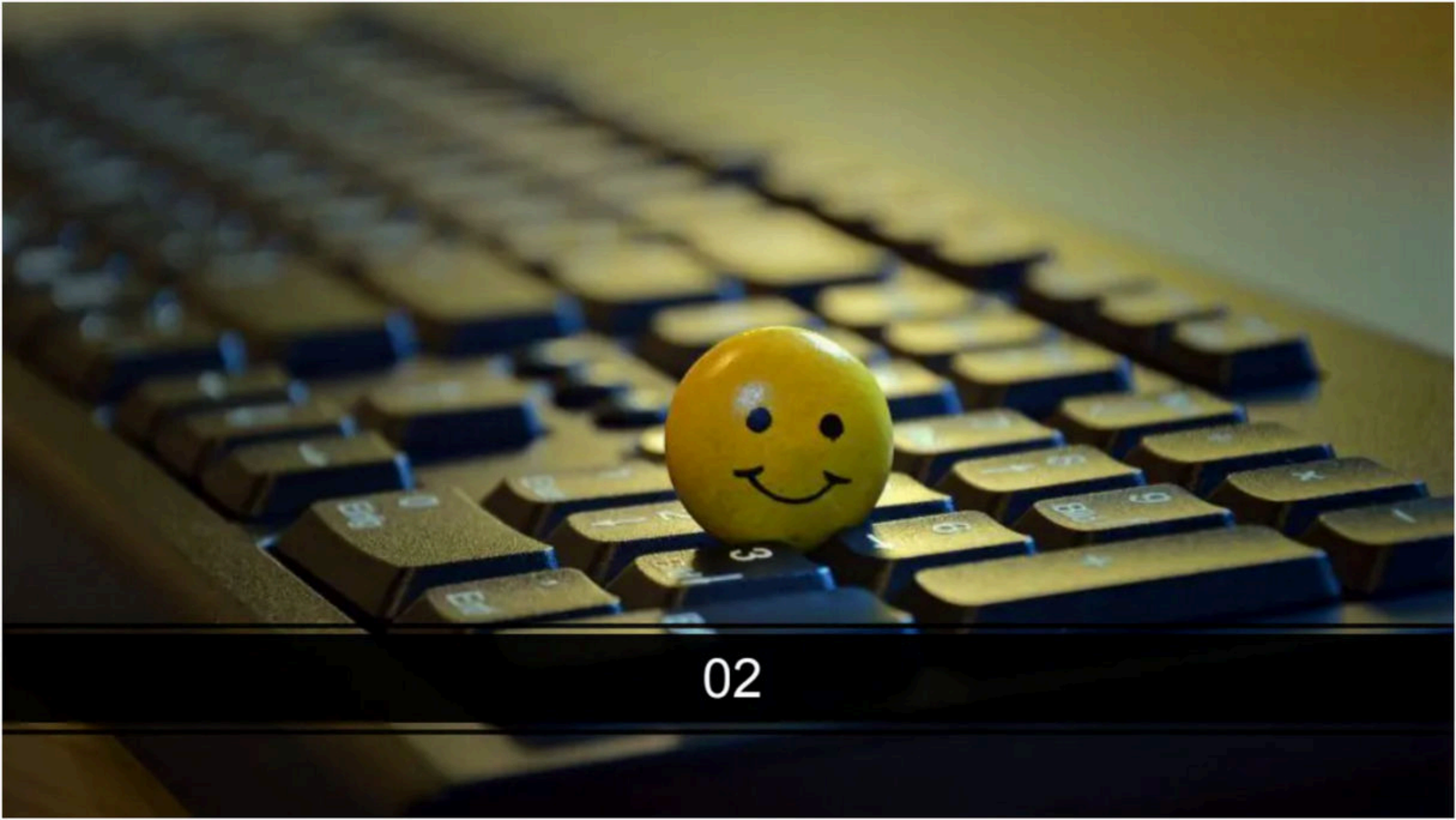
GATE 2019 - 01

01

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

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

IIT, Madras GATE 2019



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

IIT, Madras GATE 2019

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

IIT, Madras GATE 2019

04

If E = 10; J = 20; 0 = 30; and T = 40, what will be P + E + S + T ?

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

IIT, Madras GATE 2019

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° 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.

IIT, Madras GATE 2019

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

IIT, Madras GATE 2019

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

IIT, Madras GATE 2019

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

IIT, Madras GATE 2019

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

IIT, Madras GATE 2019

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

IIT, Madras GATE 2019

GATE 2019 - 02

01

Daytime temperature in Delhi can____ 40°C

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

IIT, Madras GATE 2019

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

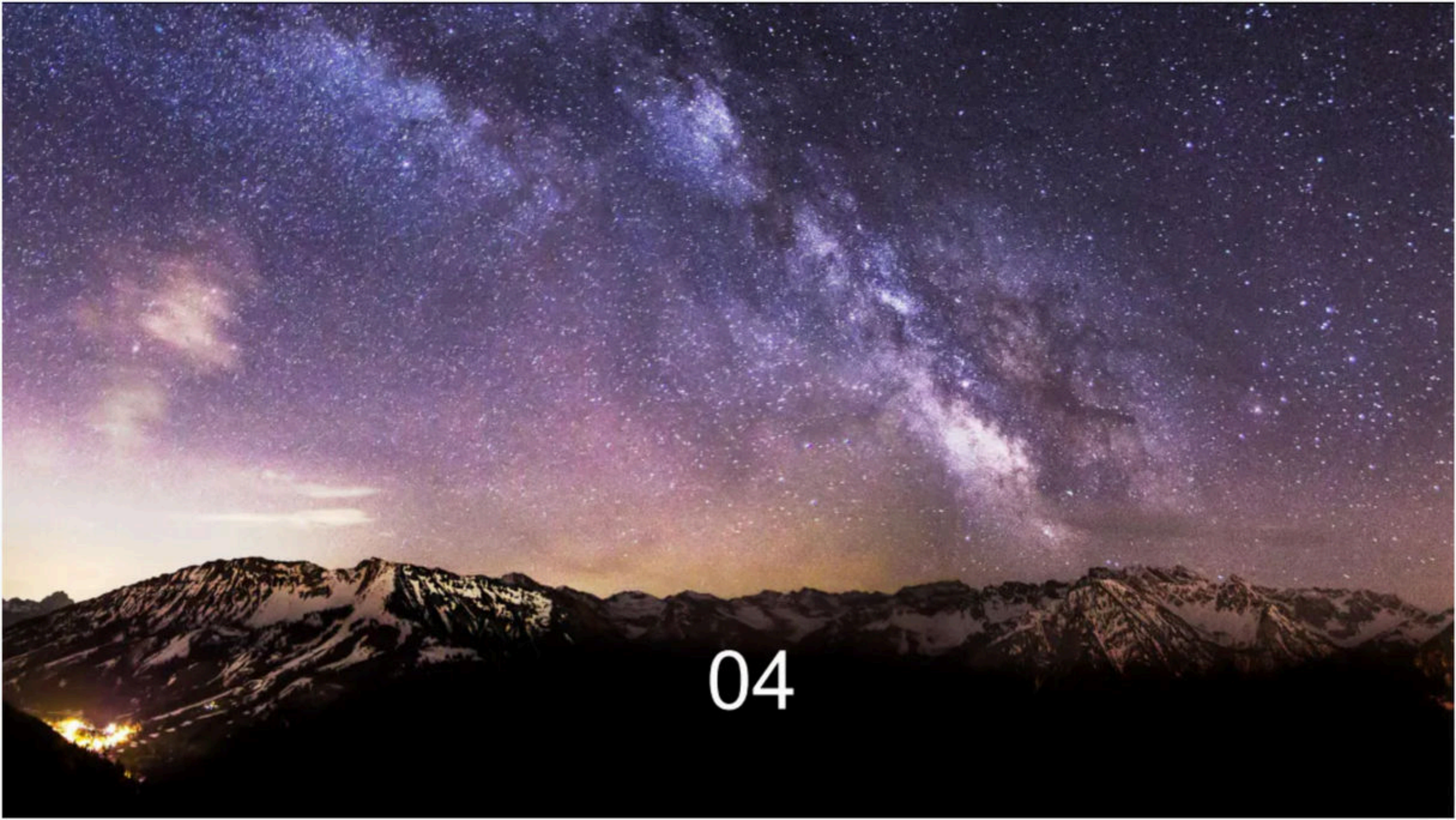
IIT, Madras GATE 2019

03

Suresh wanted to lay a new carpet in his new mansion with an area of 70×55 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

IIT, Madras GATE 2019


04

A retaining wall with measurements 30 m × 12 m × 6 m was constructed with bricks of dimensions 8 cm × 6 cm × 6 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

IIT, Madras GATE 2019

05

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

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

IIT, Madras GATE 2019

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_____

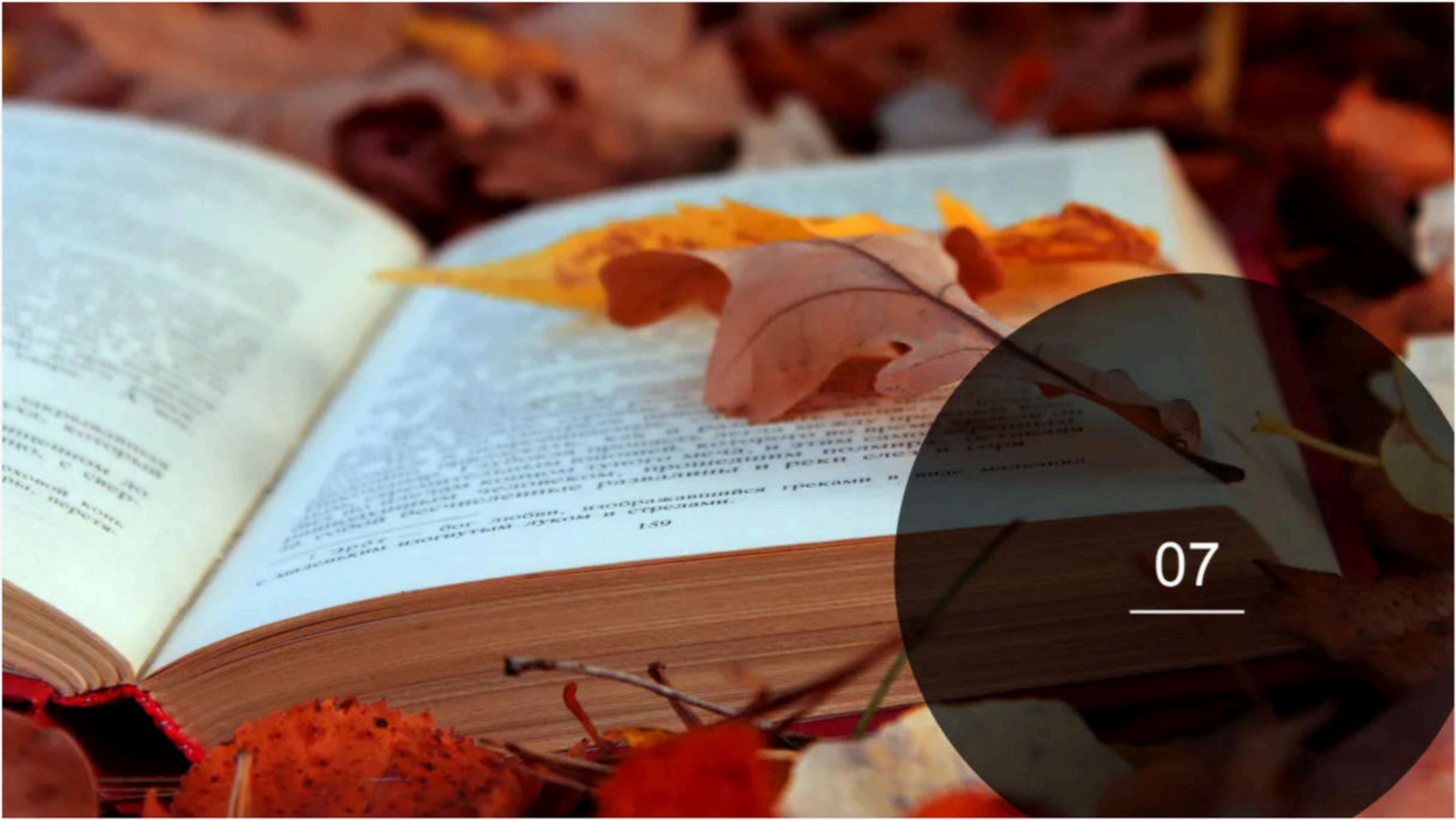
(A) $x - y$

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

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

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

IIT, Madras GATE 2019



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

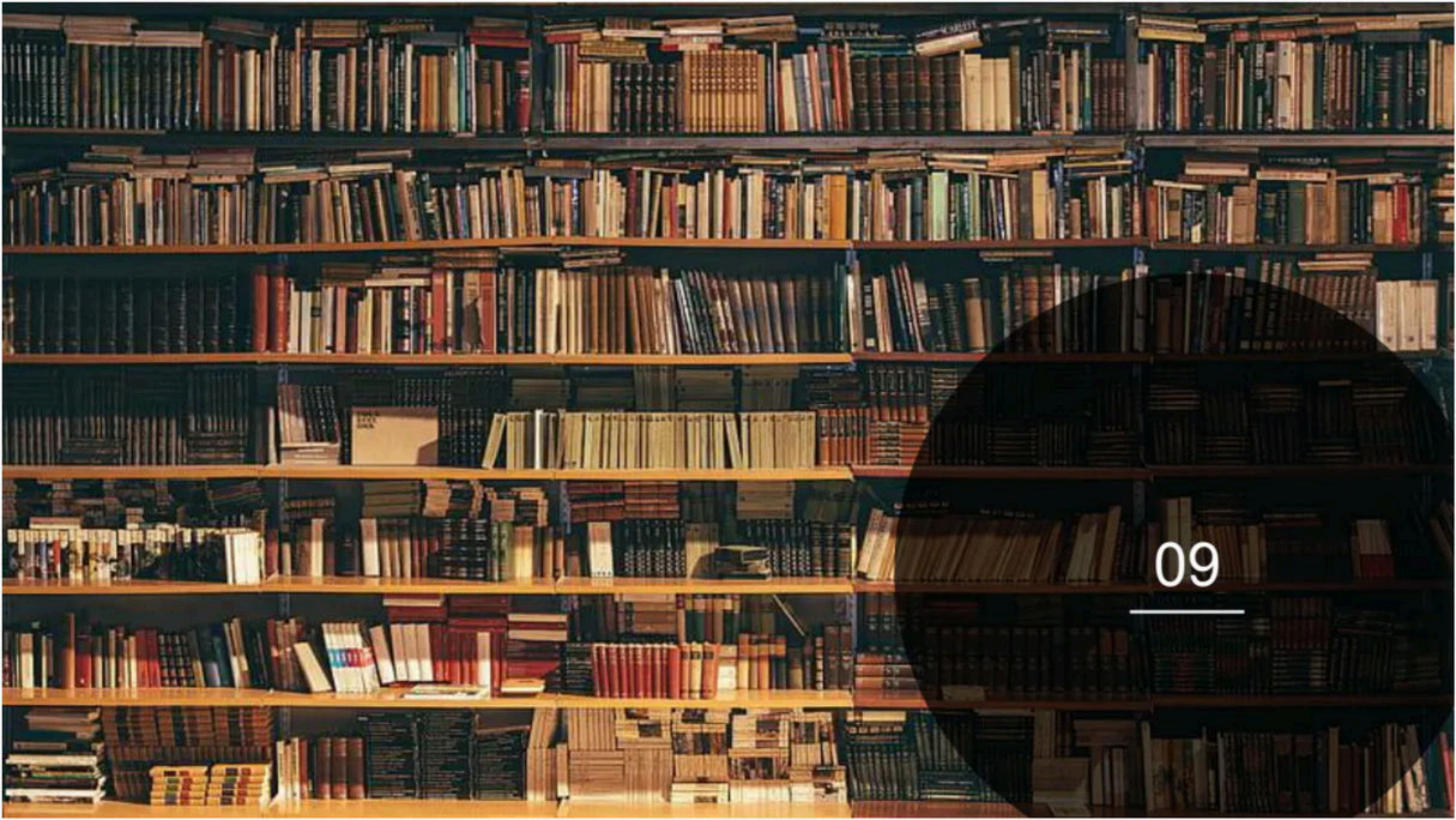
IIT, Madras GATE 2019

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 tak 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



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

IIT, Madras GATE 2019

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 protagonisits usually read books of apsirational 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 apsirational 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 wide readh, it often does not appear in the movies
(D) Protagonists in Hindi movies, being ideals for viewers, read only books of aspirational value.

IIT, Madras GATE 2019

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

IIT, Delhi GATE 2020

02
hdwallpapersdesktop.com

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

IIT, Delhi GATE 2020

03

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

(A) User
(B) Uses
(C) Usage
(D) Usion

IIT, Delhi GATE 2020

04

0 — E

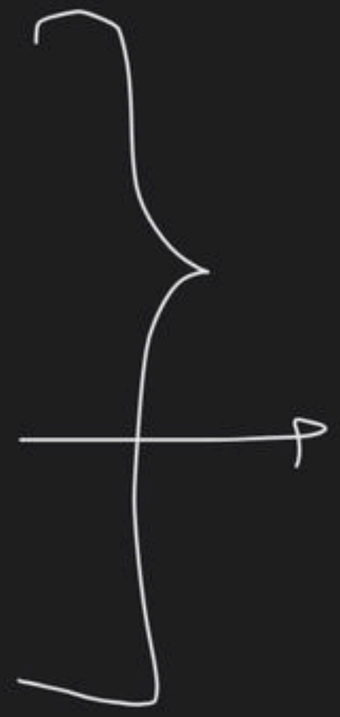
1 — F

2 — G

3 — H

4 — I

5 — J



H I

3 4

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

0 — O
1 — P
2 — Q
3 — R
4 — S
5 — T
6 — U
7 — V
8 — W
9 — X

IIT, Delhi GATE 2020

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

IIT, Delhi GATE 2020

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.

IIT, Delhi GATE 2020

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

IIT, Delhi GATE 2020

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

IIT, Delhi GATE 2020

09

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

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

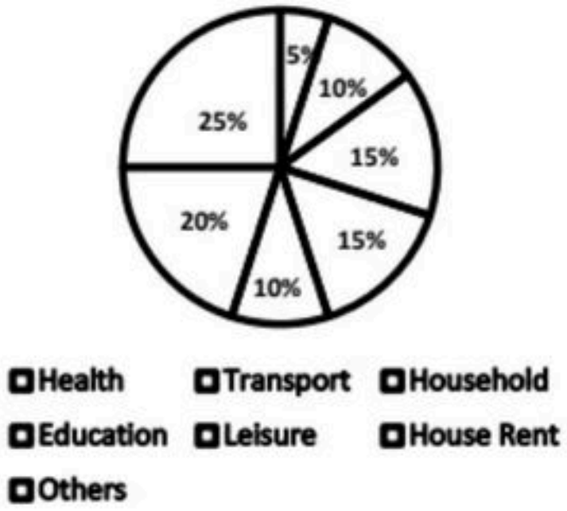
$9^{110016} \rightarrow 9 \rightarrow 1$

IIT, Delhi GATE 2020

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



IIT, Delhi GATE 2020

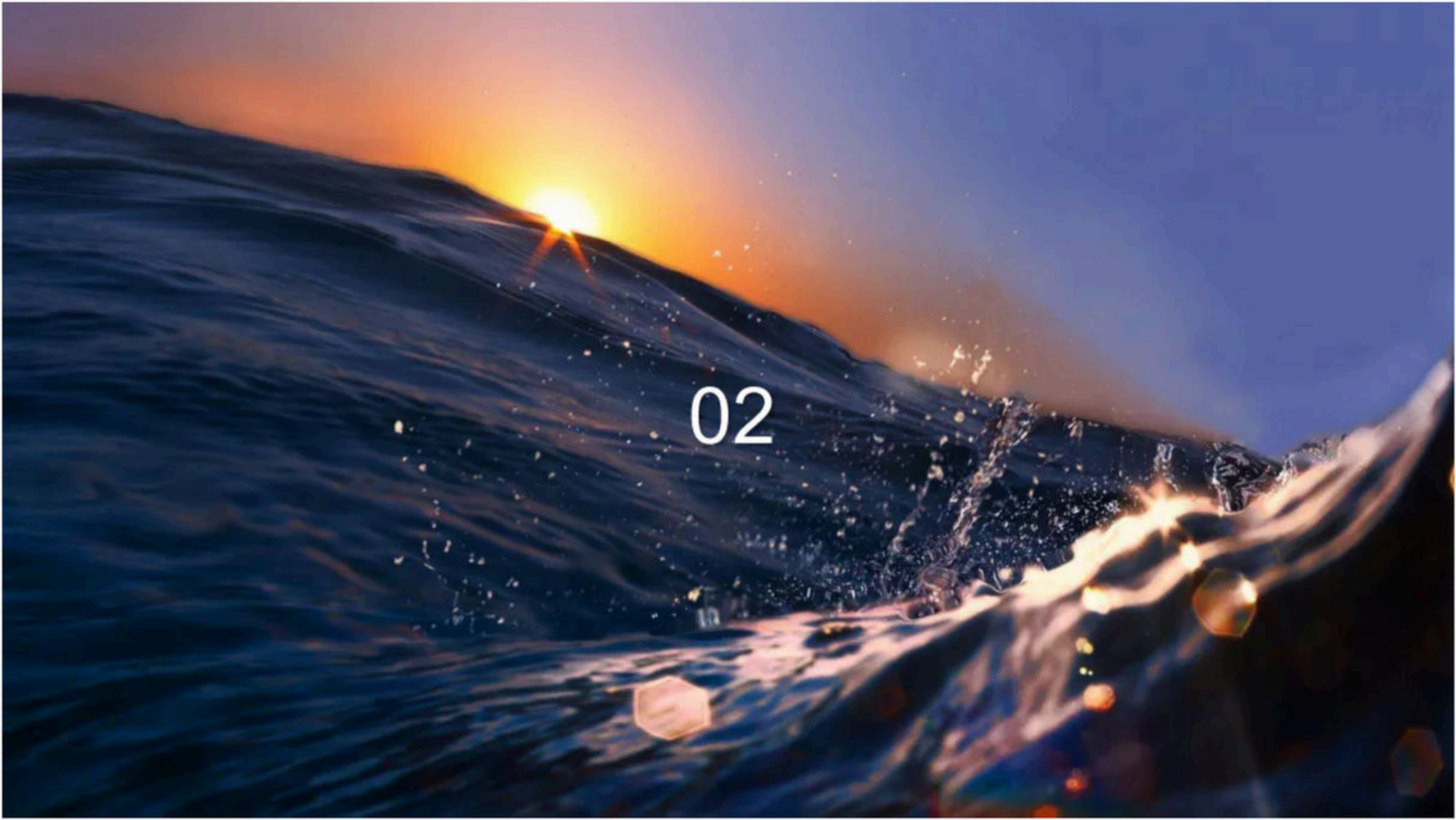
GATE 2020 - 02

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

IIT, Delhi GATE 2020


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 <u>belittle</u> the legitimate concerns of their parents.

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

IIT, Delhi GATE 2020

03

Select the word that fits the analogy : Partial : Impartial :: Popular : _____

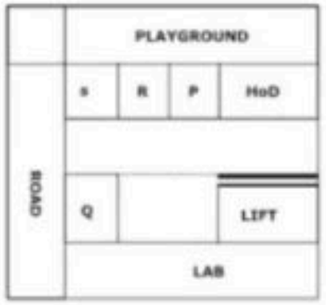
(A) Dispopular
(B) Impopular
(C) Unpopular
(D) Mispopular

IIT, Delhi GATE 2020

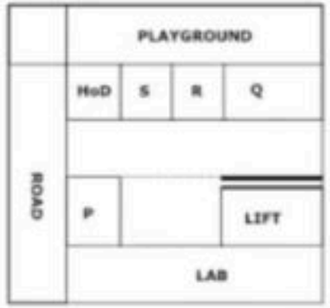
Success
Business
Innovation
Branding
Solution
Marketing
Analysis
Ideas
Success
Management
Solution

04

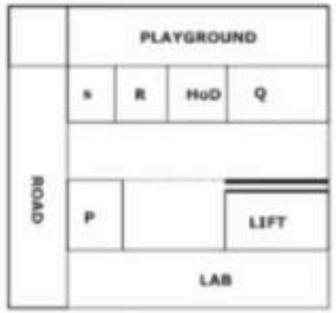
After the inauguration of the new building, the Head of the Department (HoD) collated faculty preferences for office space. P wanted a room adjacent to the lab. Q wanted to be close to the lift. R wanted a view of the playground and S wanted a corner office. Assuming the everyone was satisfied, which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



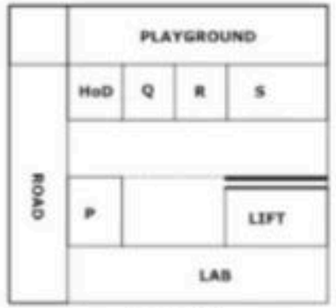
(A)



(B)

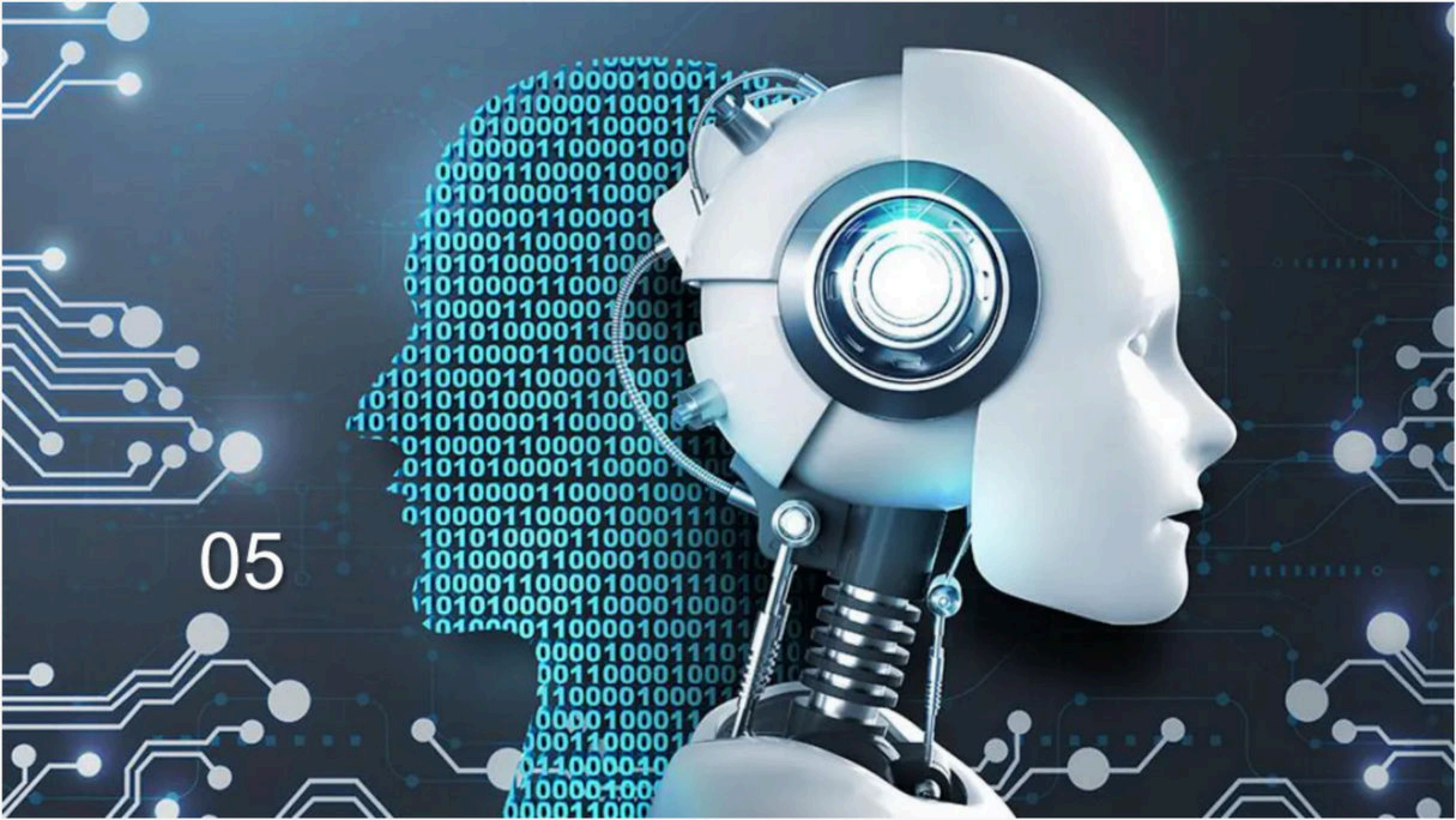


(C)



(D)

IIT, Delhi GATE 2020


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) $f(x)$

IIT, Delhi GATE 2020

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.

IIT, Delhi GATE 2020

07

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

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

IIT, Delhi GATE 2020

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

IIT, Delhi GATE 2020

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____.

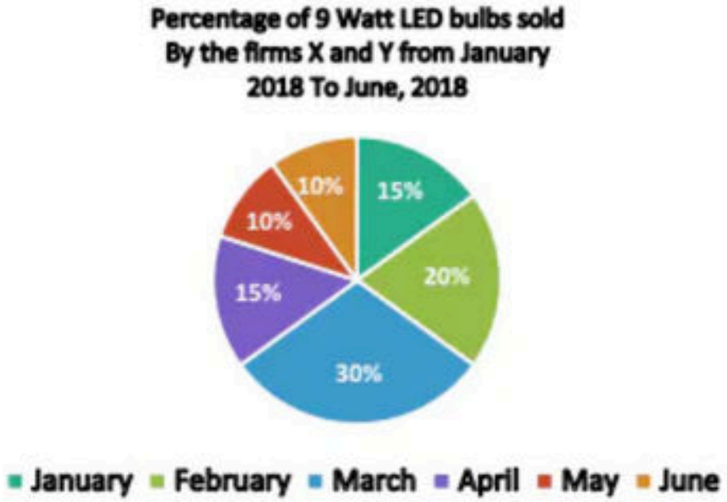
(A) 150
(B) 200
(C) 100
(D) 50

IIT, Delhi GATE 2020

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

IIT, Delhi GATE 2020

GATE 2021 - 01

01

Getting to the top is _____ than staying on top.

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

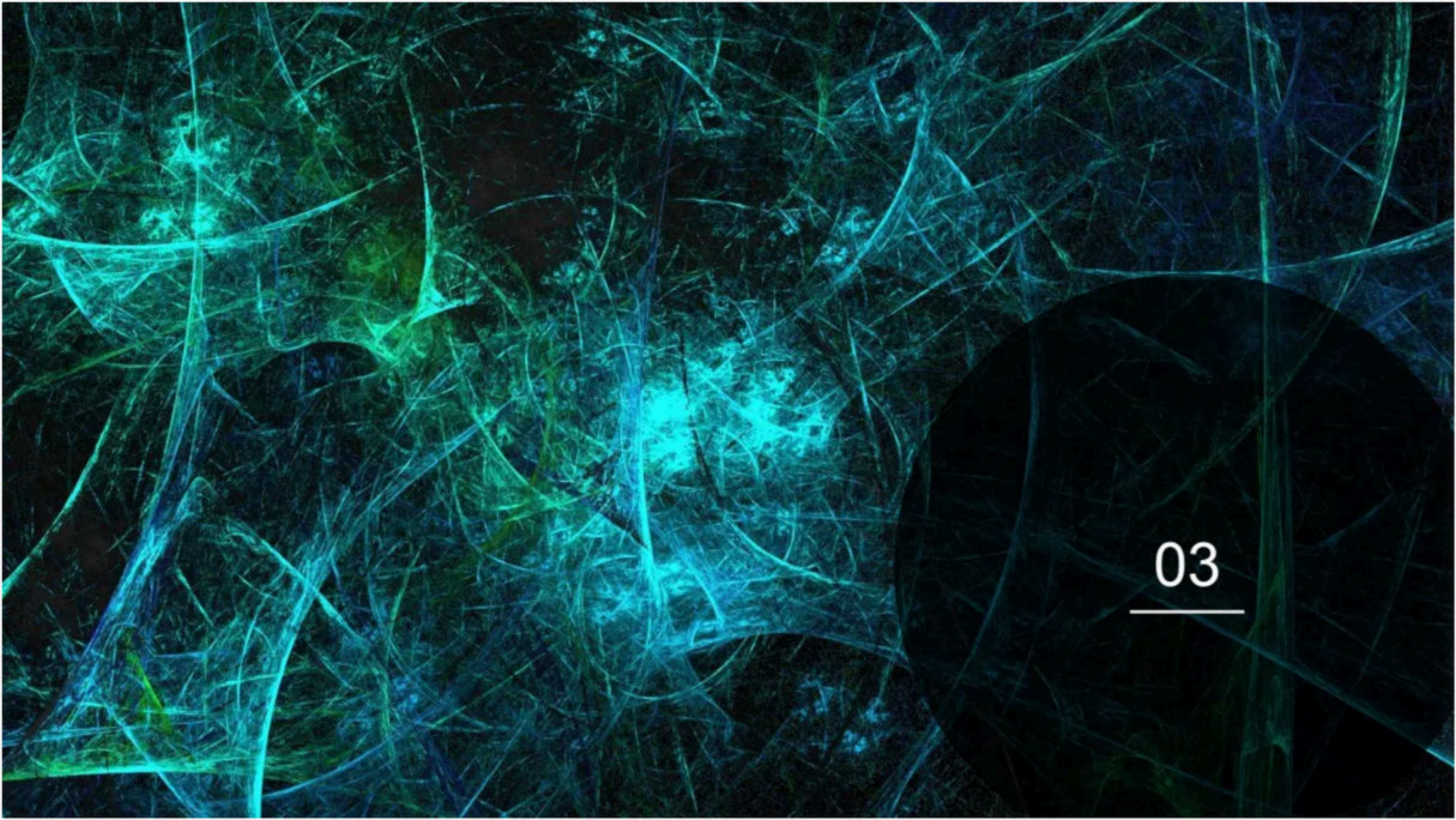
IIT, Bombay GATE 2021

WINGS OF KNOWLEDGE'
02

$\oplus$ 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

IIT, Bombay GATE 2021



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____.

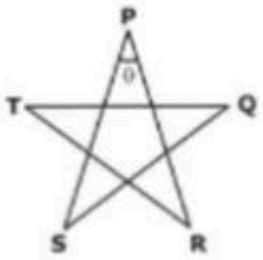
(A) 5 : 13 (B) 13 : 7
(C) 7 : 5 (B) 3 : 2

IIT, Bombay GATE 2021

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 θ, in degrees, is

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



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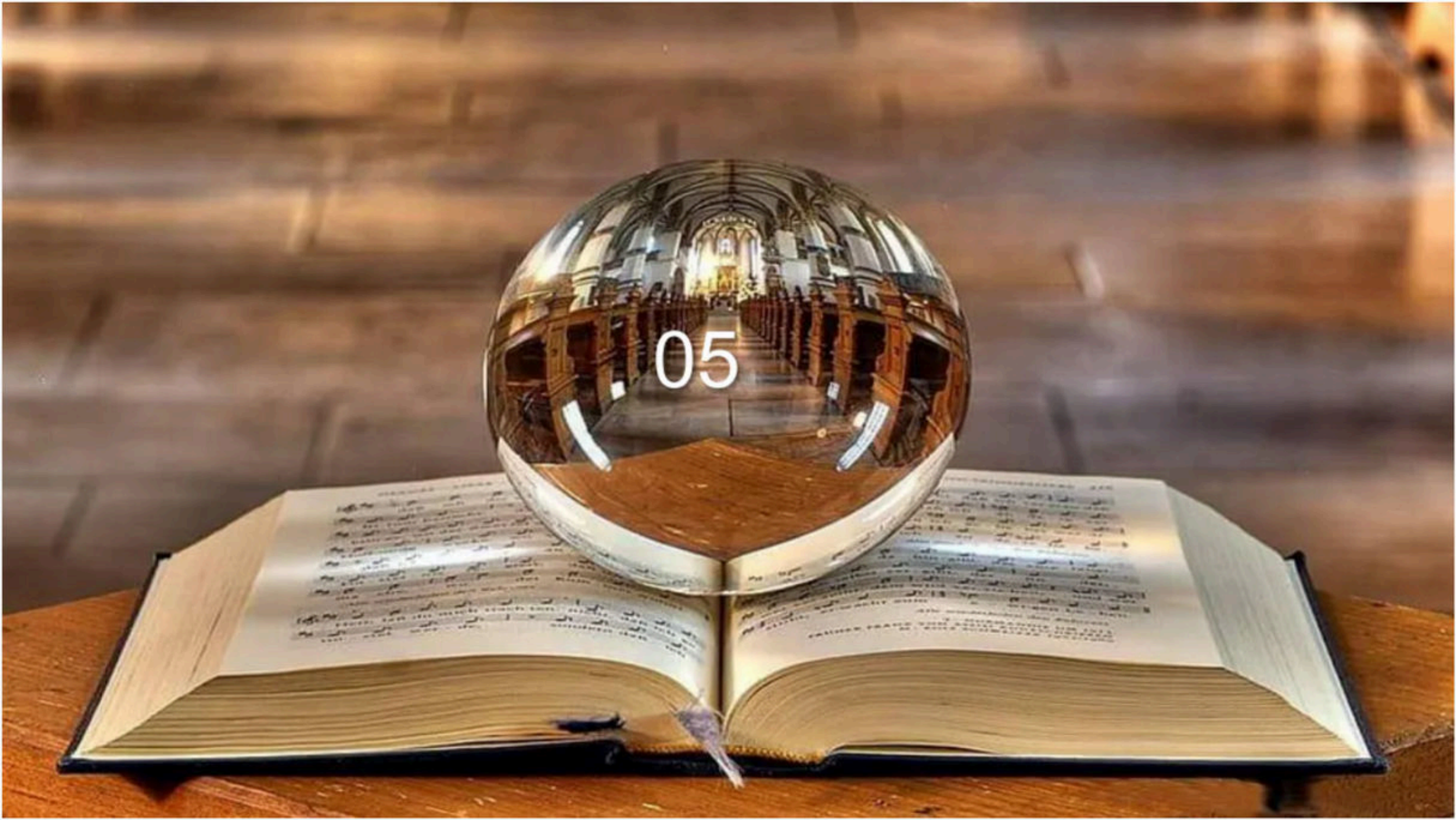

05

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

IIT, Bombay GATE 2021

06

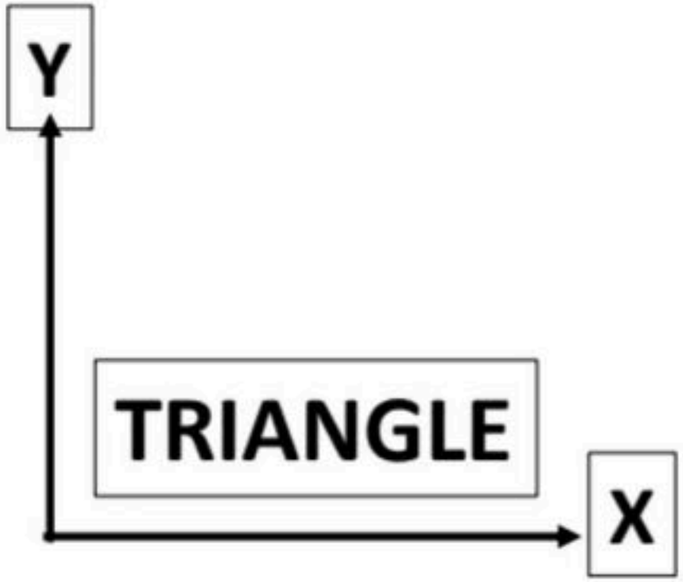
A function, λ, is defined by $\lambda(p, q) = \begin{Bmatrix} (p-q)^2, \text{if } p \geq q \\ p+q, \text{if } p < q \end{Bmatrix}$

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

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

IIT, Bombay GATE 2021

07



(A) TRIANGLE

(B) TRIANGLE

(C) TRIANGLE

(D) TRIANGLE

IIT, Bombay GATE 2021

08

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.

IIT, Bombay GATE 2021

09

Four persons R 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

IIT, Bombay GATE 2021

28.328
75.32
19.75
19.35
2.785
12.45
45.50
10

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.

IIT, Bombay GATE 2021

GATE 2021 - 02

TRAINING
BUSINESS VALUE
EMPLOYEE
?
SUCCESS
EMPLOYEE RECRUITMENT
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)

IIT, Bombay GATE 2021

02

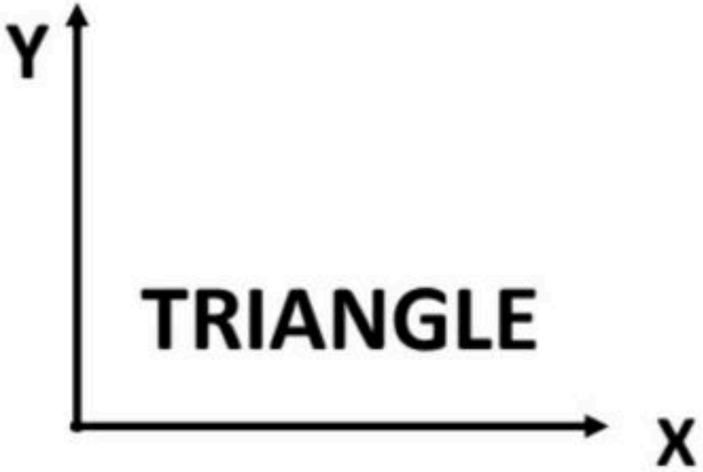
$\oplus$ and $\odot$ are two operators on numbers p and q such that $p \odot q = p - q$, and $p \oplus q = p \times q$

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

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

IIT, Bombay GATE 2021

03



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

(A) PHYLAXIS

(B) PHYLAXIS

(C) PHYLAXIS

(D) PHYLAXIS

IIT, Bombay GATE 2021

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) $48\sqrt{3}$

IIT, Bombay GATE 2021

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) $\frac{1}{8}$

IIT, Bombay GATE 2021

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.

IIT, Bombay GATE 2021

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.

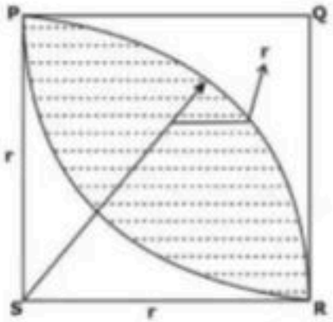
The probability that any point picked randomly within the square falls in the shaded area is_____..

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

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

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

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



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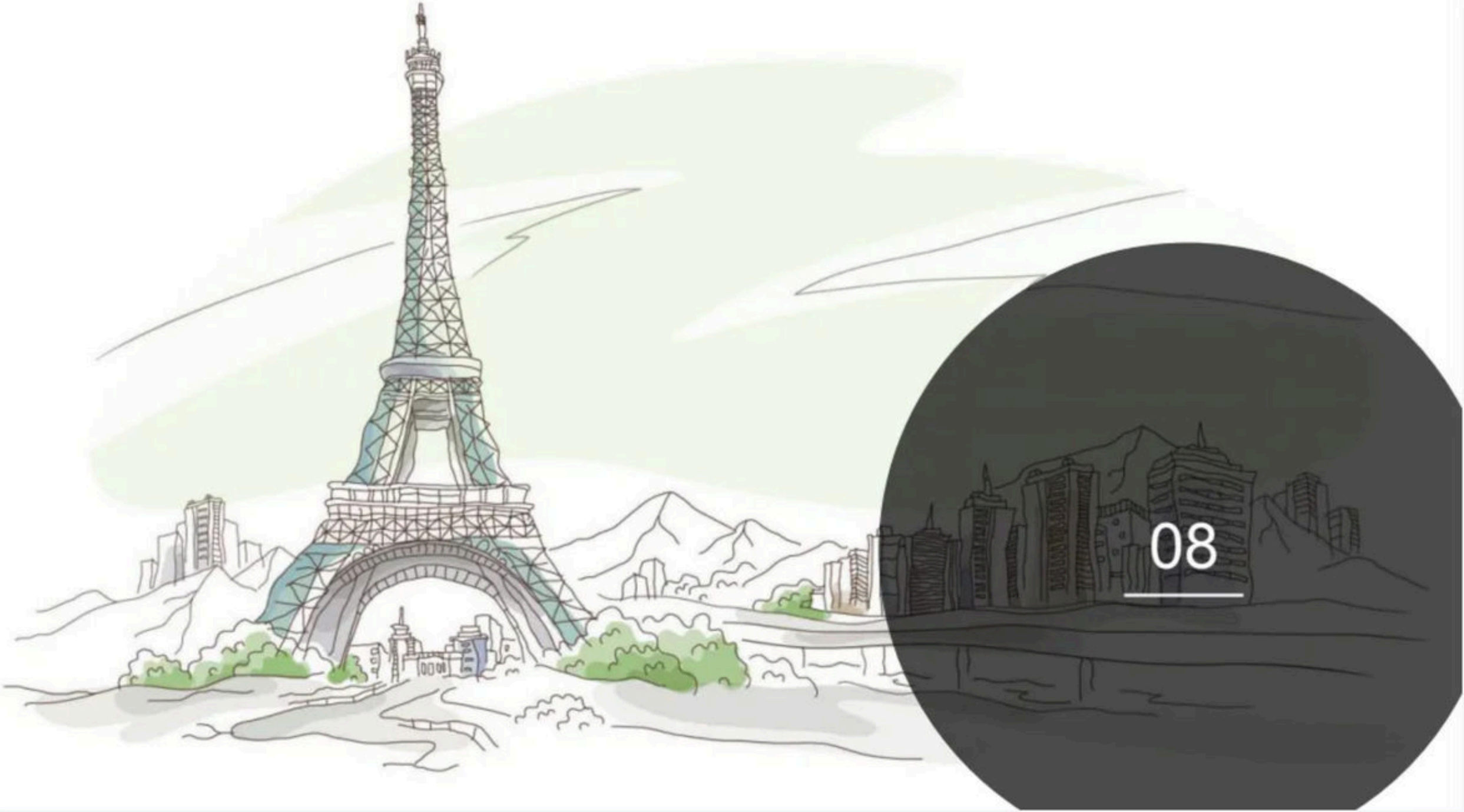

08

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

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09
Start at monthly
Can we do this?

On a planar field, you travelled 3 units East from a point 0. 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 0, in the same units, should be____ .

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

IIT, Bombay GATE 2021

OFF
%
MU
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.

IIT, Bombay GATE 2021

GATE 2022 (ME Set-1) Mechanical Engineering

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

IIT, Kharagpur GATE 2022

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%

IIT, Kharagpur GATE 2022

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

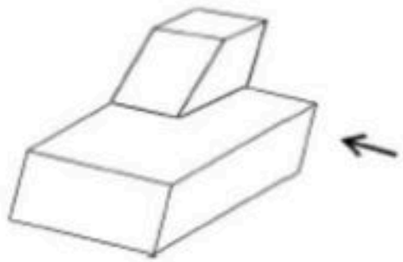
IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022

05

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)	

IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022

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)	$2\sqrt{2}$

IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022

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

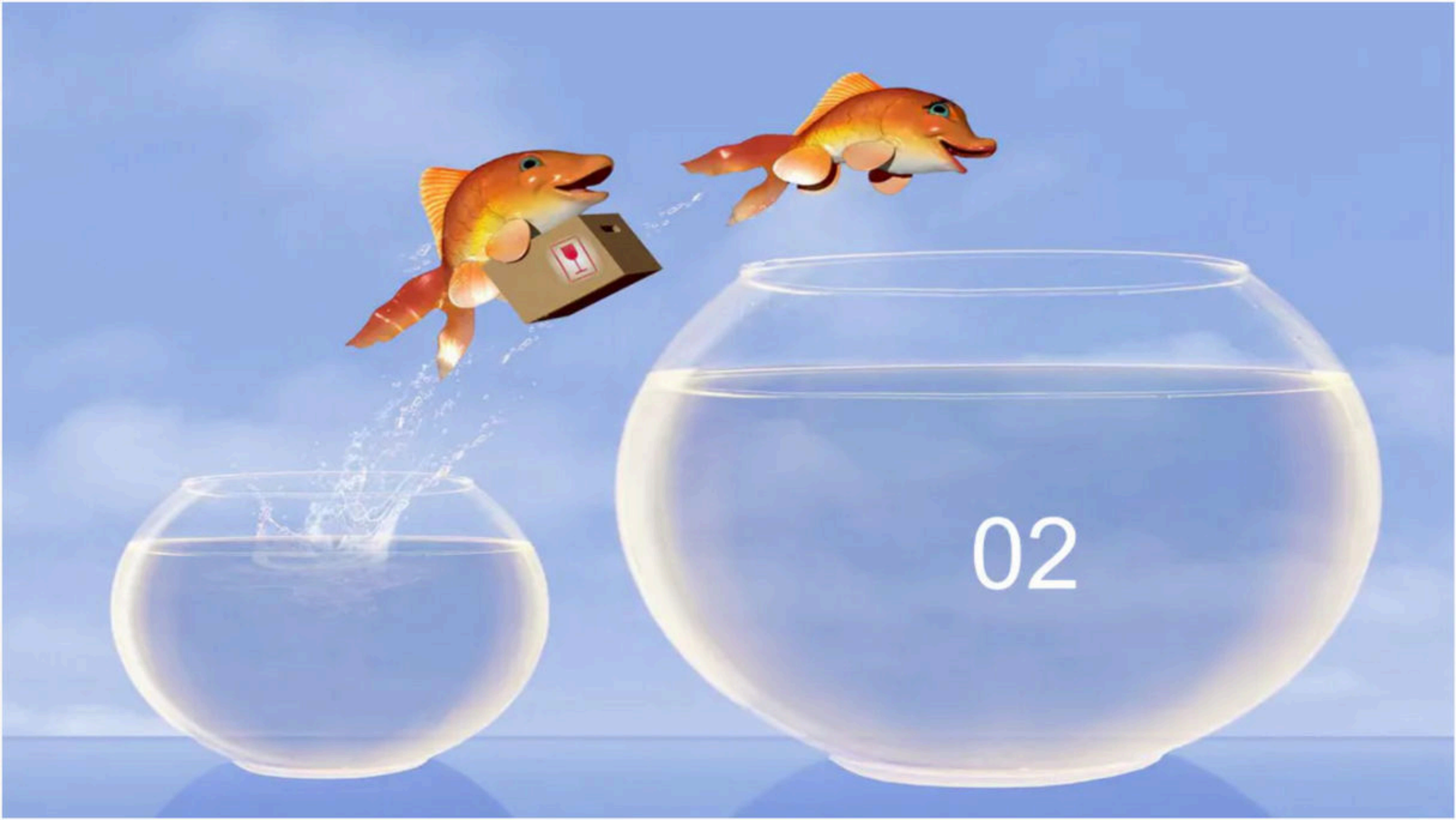
IIT, Kharagpur GATE 2022

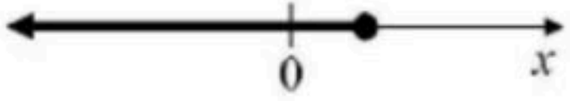
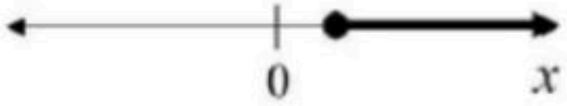
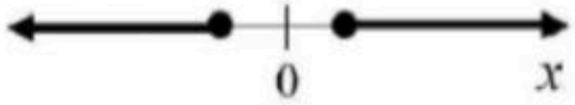
GATE 2022 (ME Set-2) Mechanical Engineering

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

IIT, Kharagpur GATE 2022


02

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)	

IIT, Kharagpur GATE 2022

03

Q.	If $f(x) = 2\ln\left(\sqrt{e^x}\right)$, 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

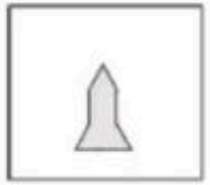
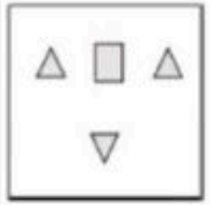
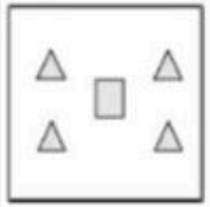
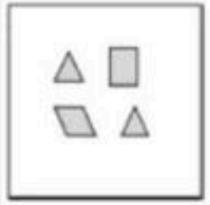
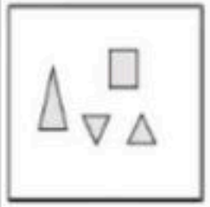
IIT, Kharagpur GATE 2022

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 2nd February of that year is a Tuesday
(B)	There will be five Sundays in the month of February in that year
(C)	The 1st February of that year is a Sunday
(D)	All Mondays of February in that year have even dates

IIT, Kharagpur GATE 2022

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)	

IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022

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

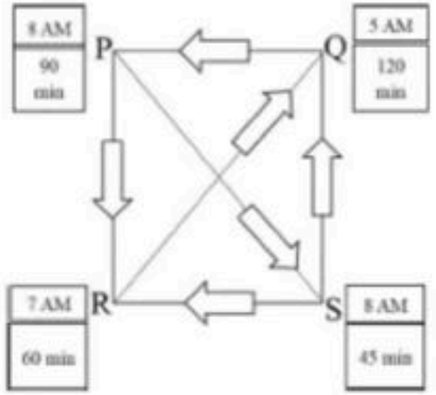
IIT, Kharagpur GATE 2022

08

Q.	Consider the following functions for non-zero positive integers, p and q. $f(p,q) = \underbrace{p \times p \times p \times \ldots\ldots\ldots \times p}_{q \text{ terms}} = p^q; \quad f(p,1) = p$ $g(p,q) = p^{p^{p^{p^{\cdot^{\cdot^{\cdot^{(\text{up to } q \text{ terms})}}}}}}} \quad ; \quad g(p,1) = p$ 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)	$f(3,2) > g(3,2)$

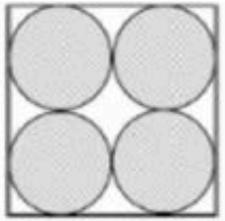
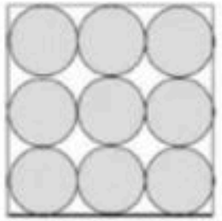
IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022

GATE 2022 (CE Set - 01) Civil Engineering

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

IIT, Kharagpur GATE 2022

02

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

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

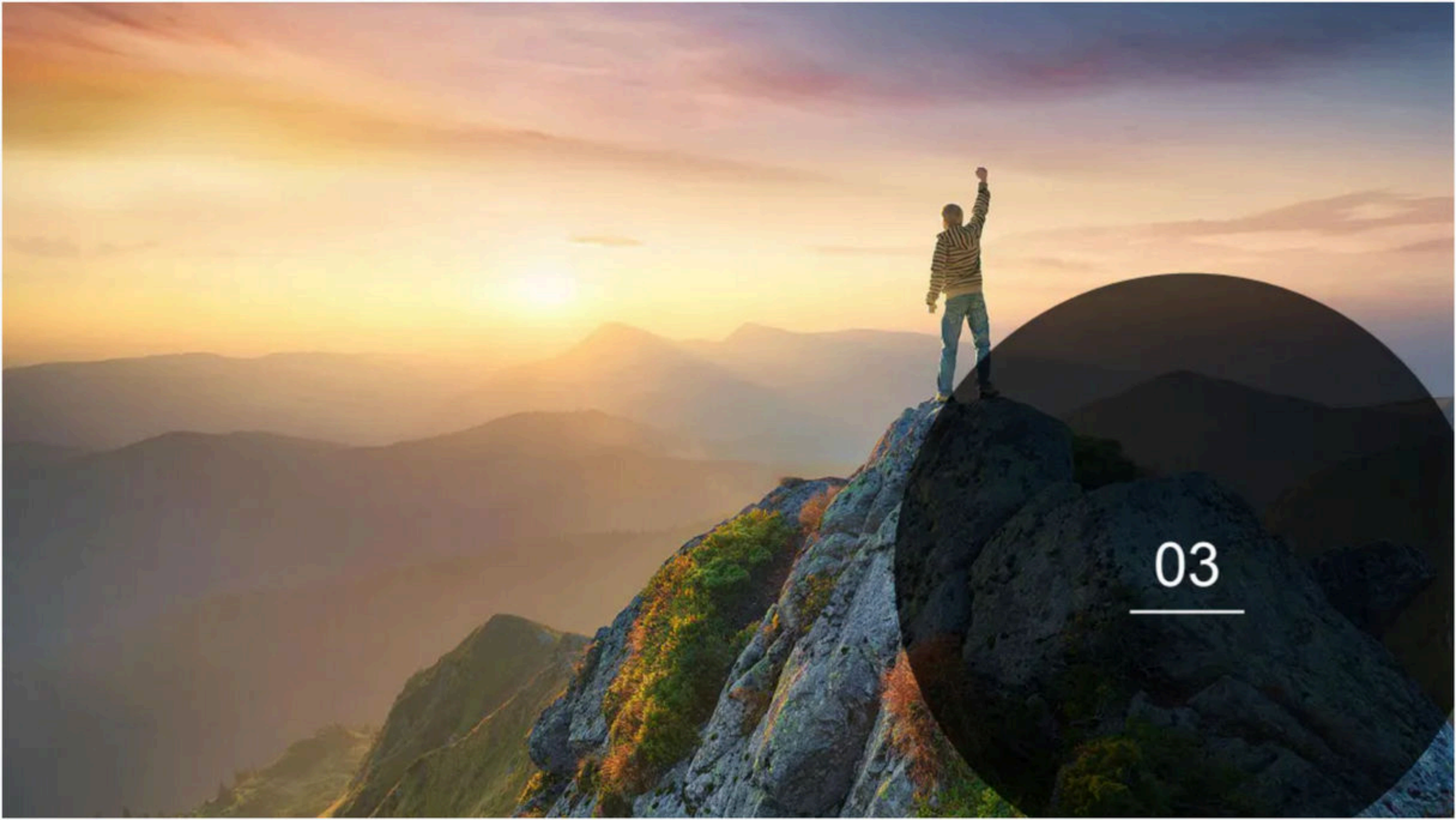
A 0.75

B 1.25

C 2 .25

D 3 .25

IIT, Kharagpur GATE 2022



03

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

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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

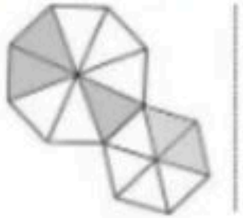
C 40

D 45

IIT, Kharagpur GATE 2022

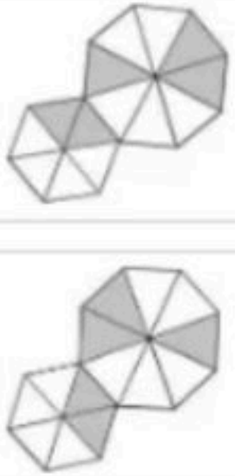
05

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?

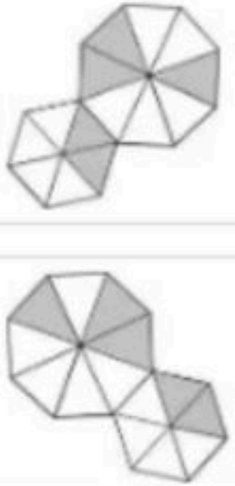


A

B



C



D

IIT, Kharagpur GATE 2022

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

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© Jenny E. Ross
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

IIT, Kharagpur GATE 2022

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?

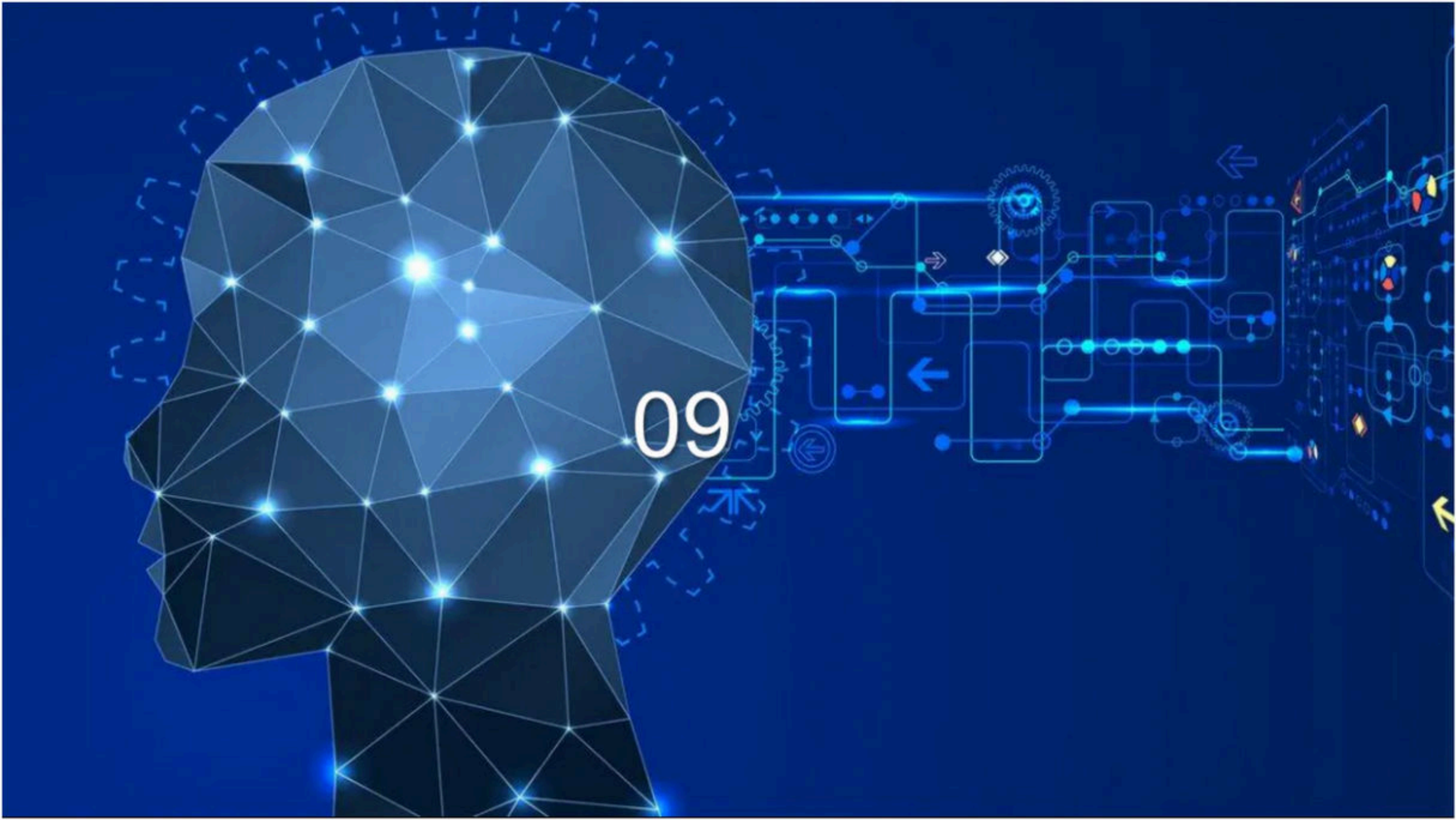
A. L1 is parallel to L2 and L1 is perpendicular to L3

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

IIT, Kharagpur GATE 2022


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

IIT, Kharagpur GATE 2022

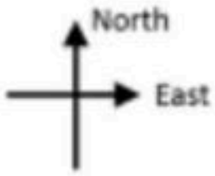
10

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° 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 144o clockwise.



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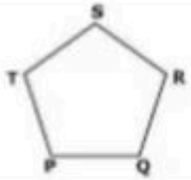
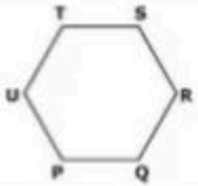
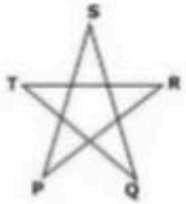
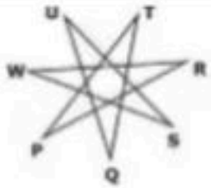
The pattern made by the trace left behind by the ant is

A


B


C


D


GATE 2022 (CE Set-02) Civil Engineering

01

Q.	You should _____ when to say _____.
(A)	no / no
(B)	no / know
(C)	know / know
(D)	know / no

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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

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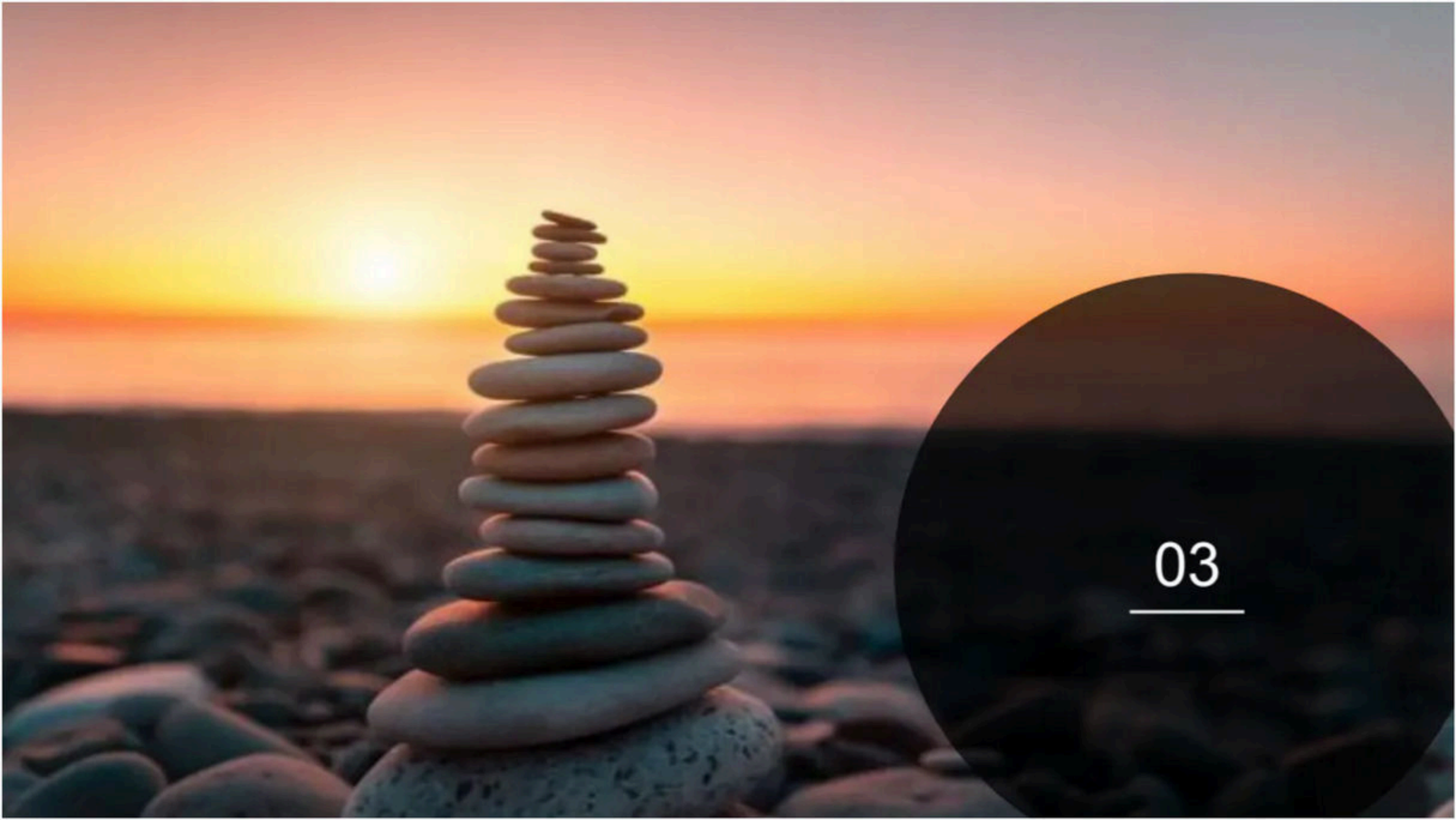

03

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)	$16 : 45$

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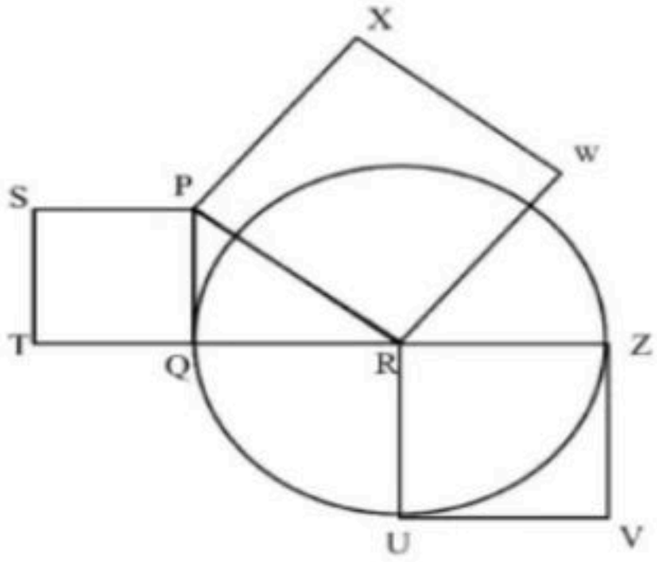
04

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

IIT, Kharagpur GATE 2022

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

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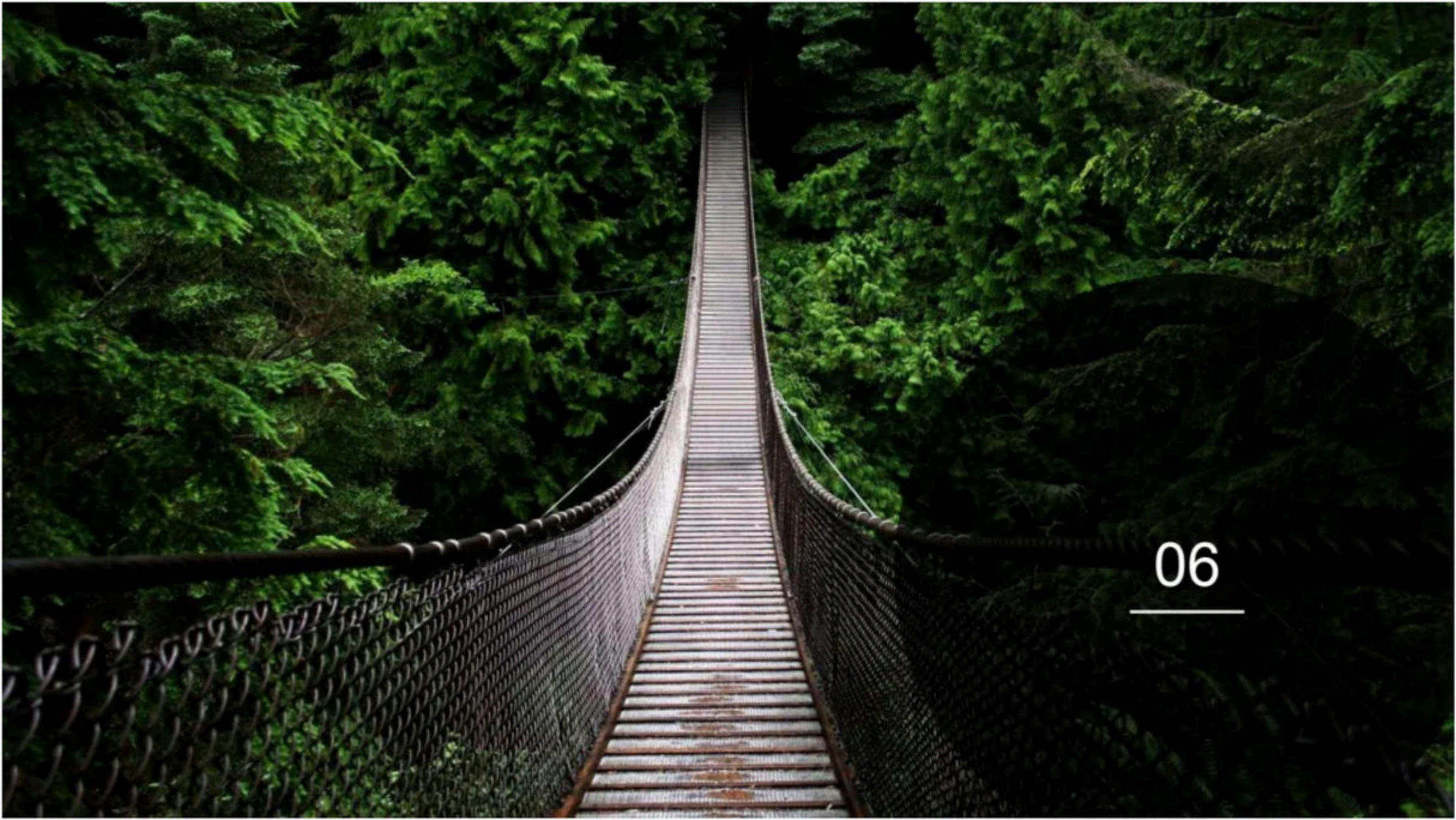

06

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

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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

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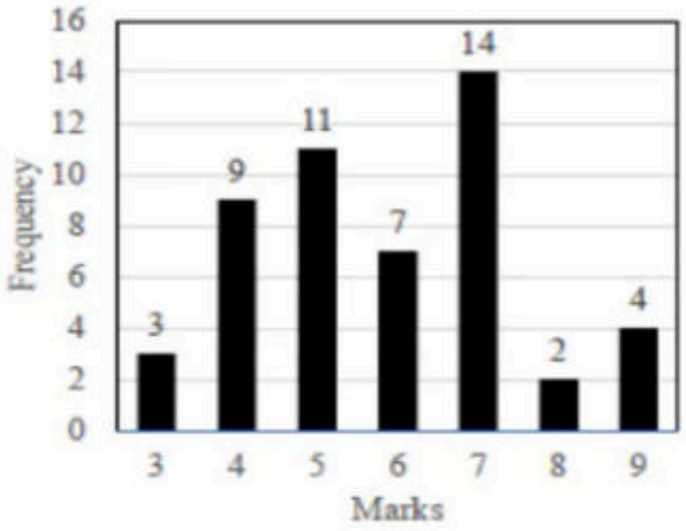
08

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

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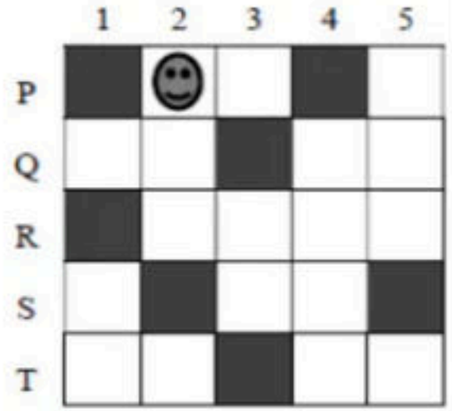
09

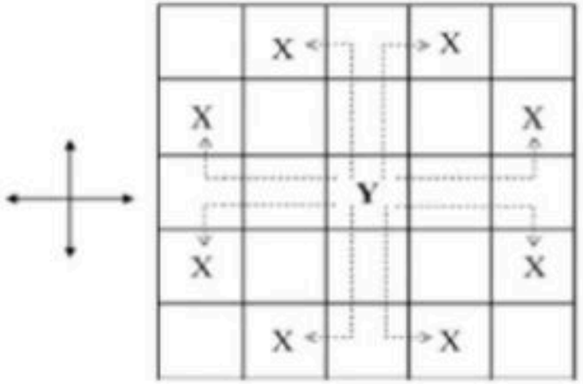
Q. In the square grid shown on the left, a person standing at P2 position is required to move to P5 position.

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





Example: Allowed steps for a person at **Y**

(A)	4
(B)	5
(C)	6
(D)	7

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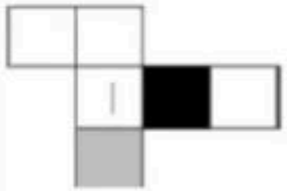
Q

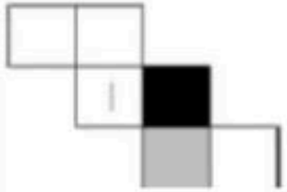
Consider a cube made by folding a single sheet of paper of appropriate shape. The interior faces of the cube are all blank. However, the exterior faces that are not visible in the above view may not be blank.

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

(A)

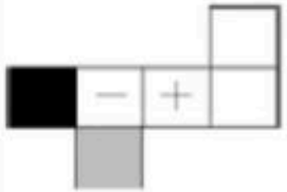


(B)



(C)

(D)



IIT, Kharagpur GATE 2022

GATE 2022 Computer Science and Information Technology (CS)

01

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

IIT, Kharagpur GATE 2022

02

Q.	A function $y(x)$ is defined in the interval $[0, 1]$ on the x-axis as $$y(x) = \begin{cases} 2 & \text{if } 0 \le x < \frac{1}{3} \\ 3 & \text{if } \frac{1}{3} \le x < \frac{3}{4} \\ 1 & \text{if } \frac{3}{4} \le x \le 1 \end{cases}$$ 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)	$\frac{6}{13}$

IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022

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. A D 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)	D D J
(B)	R A R
(C)	Z E D
(D)	I L Y

IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022

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)	$\frac{23}{50}$

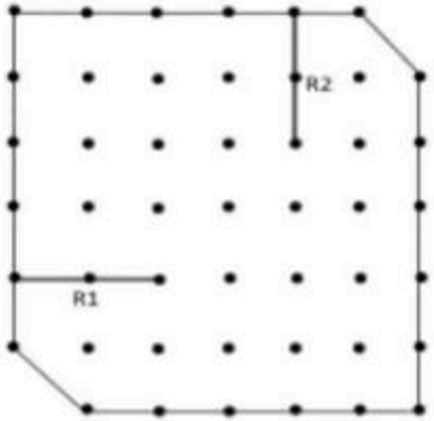
IIT, Kharagpur GATE 2022

Success
Ahead

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

IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022

GATE 2022 Electrical Engineering (EE)

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

IIT, Kharagpur GATE 2022

02

Q.	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. What is the distance between P and Q (in m) when P wins the race?
(A)	20
(B)	40
(C)	60
(D)	140

IIT, Kharagpur GATE 2022

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

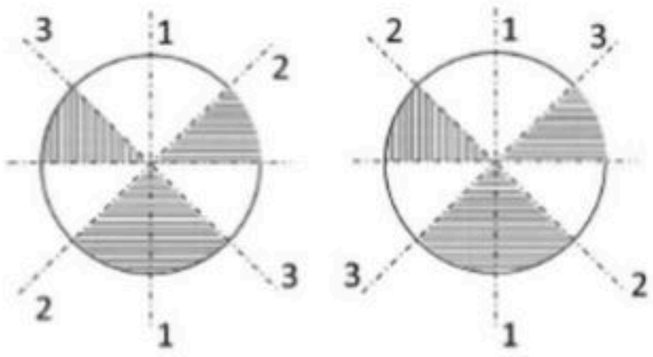
IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022

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?  Front View Rear View
(A)	0
(B)	$\frac{1}{3}$
(C)	$\frac{2}{3}$
(D)	1

IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022

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)	$\frac{5}{36}$

IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022

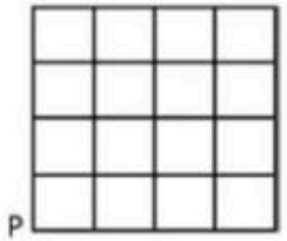
09

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

IIT, Kharagpur GATE 2022

10

Q.

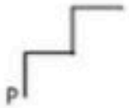


An ant is at the bottom-left corner of a grid (point P) as shown above. It aims to move to the top-right corner of the grid. The ant moves only along the lines marked in the grid such that the current distance to the top-right corner strictly decreases.

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

(A)

(B)

(C) 

(D)

IIT, Kharagpur GATE 2022

GATE 2022 Metallurgical Engineering (MT)

01

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

IIT, Kharagpur GATE 2022

02
CRAZY-FRANKENSTEIN.COM

Q.	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

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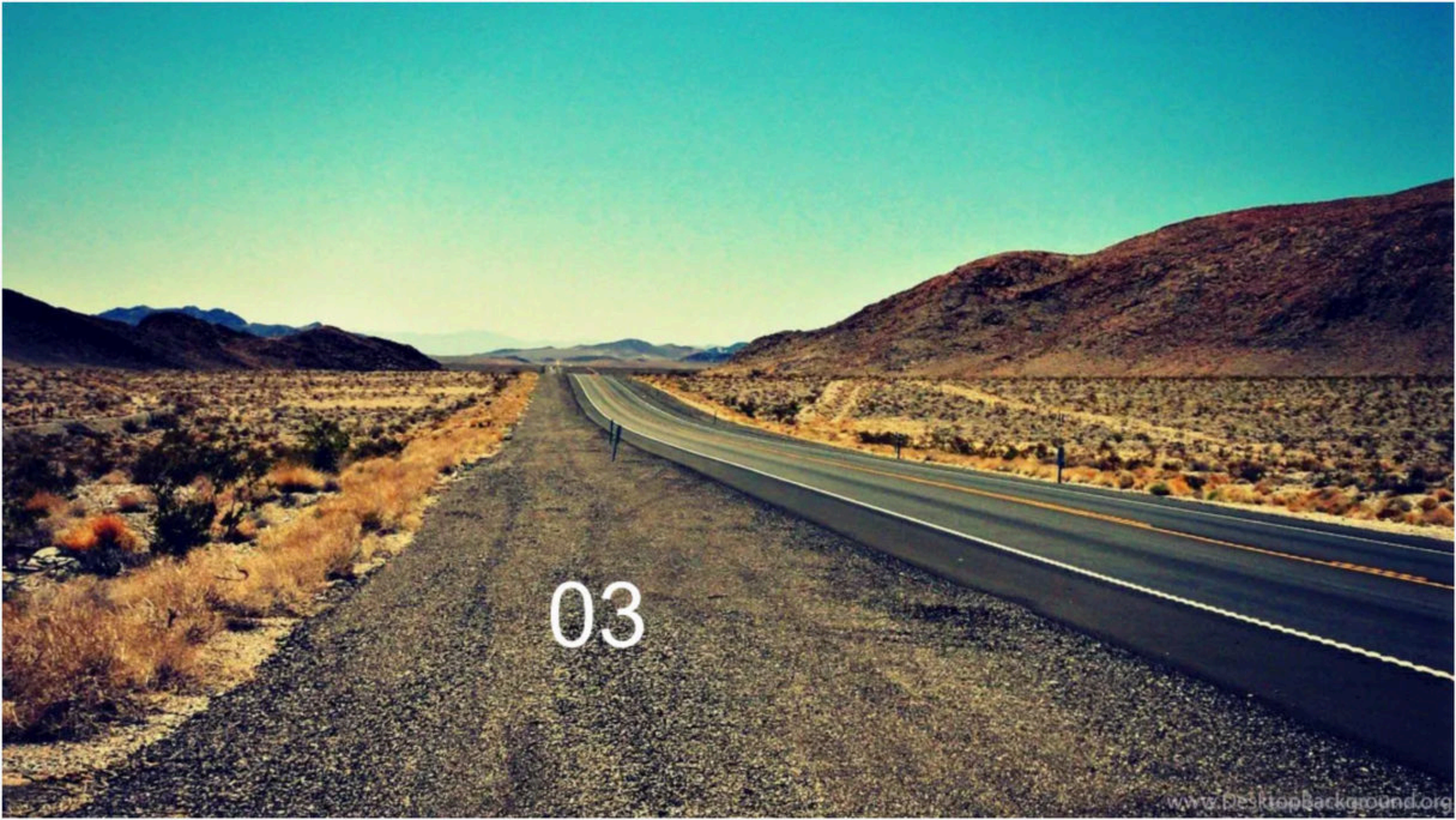
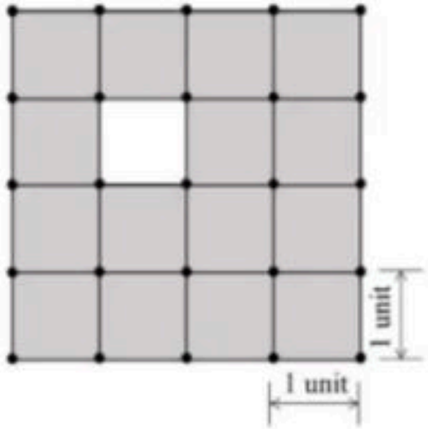

03
www.DesktopBackground.org

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

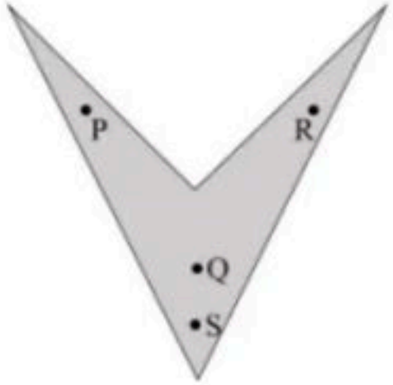
IIT, Kharagpur GATE 2022

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 × 4 grid using the unit squares as building blocks?
(A)	15
(B)	20
(C)	21
(D)	26

IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022

07
A Dreamy World

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)	$x \geq 5$

IIT, Kharagpur GATE 2022

08

Q.	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)	$8\sqrt{2}$

IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022

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

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GATE 2022 Chemical Engineering- CH

01

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

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02

Q.	A sphere of radius r cm is packed in a box of cubical shape. What should be the minimum volume (in cm^3) of the box that can enclose the sphere?
(A)	$\frac{r^3}{8}$
(B)	r^3
(C)	$2r^3$
(D)	$8r^3$

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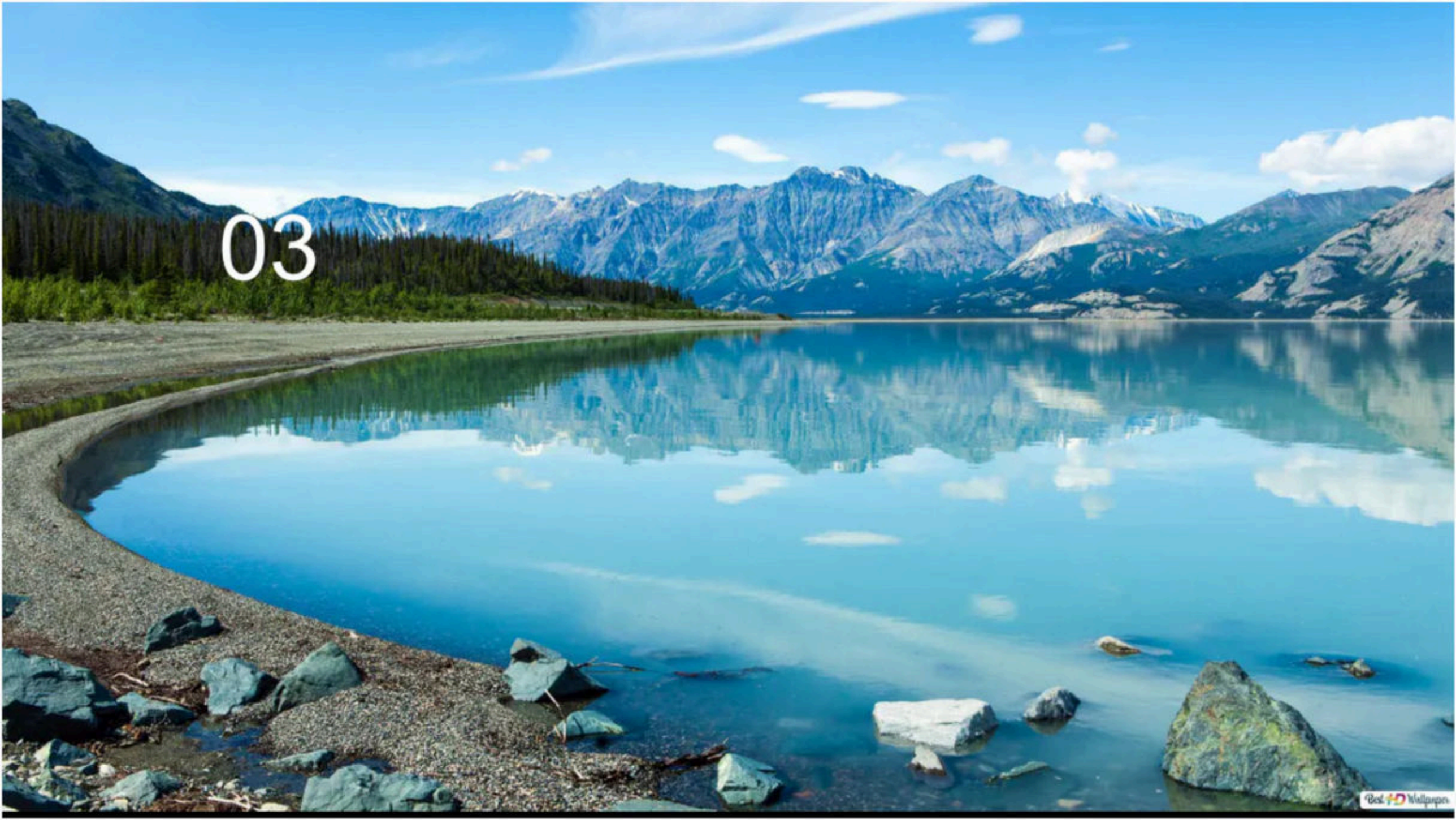
03

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

IIT, Kharagpur GATE 2022

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

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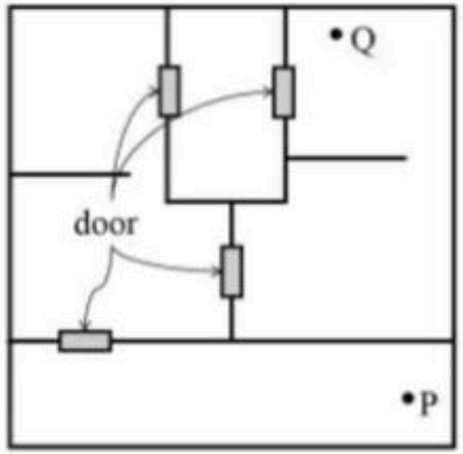
05

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

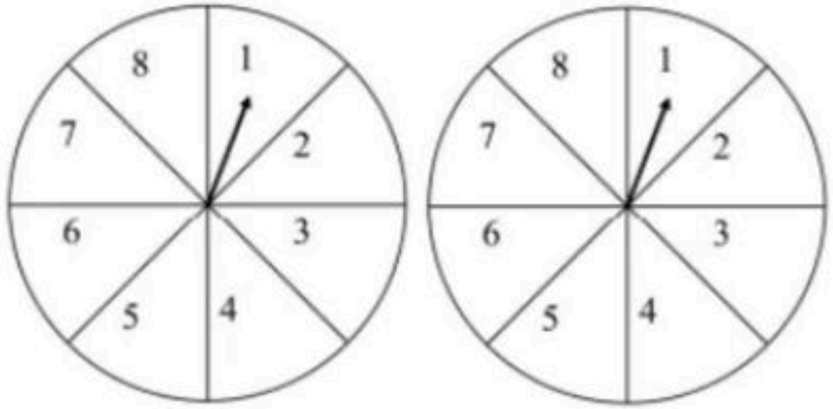
IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022

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)	$\frac{7}{64}$

IIT, Kharagpur GATE 2022

08

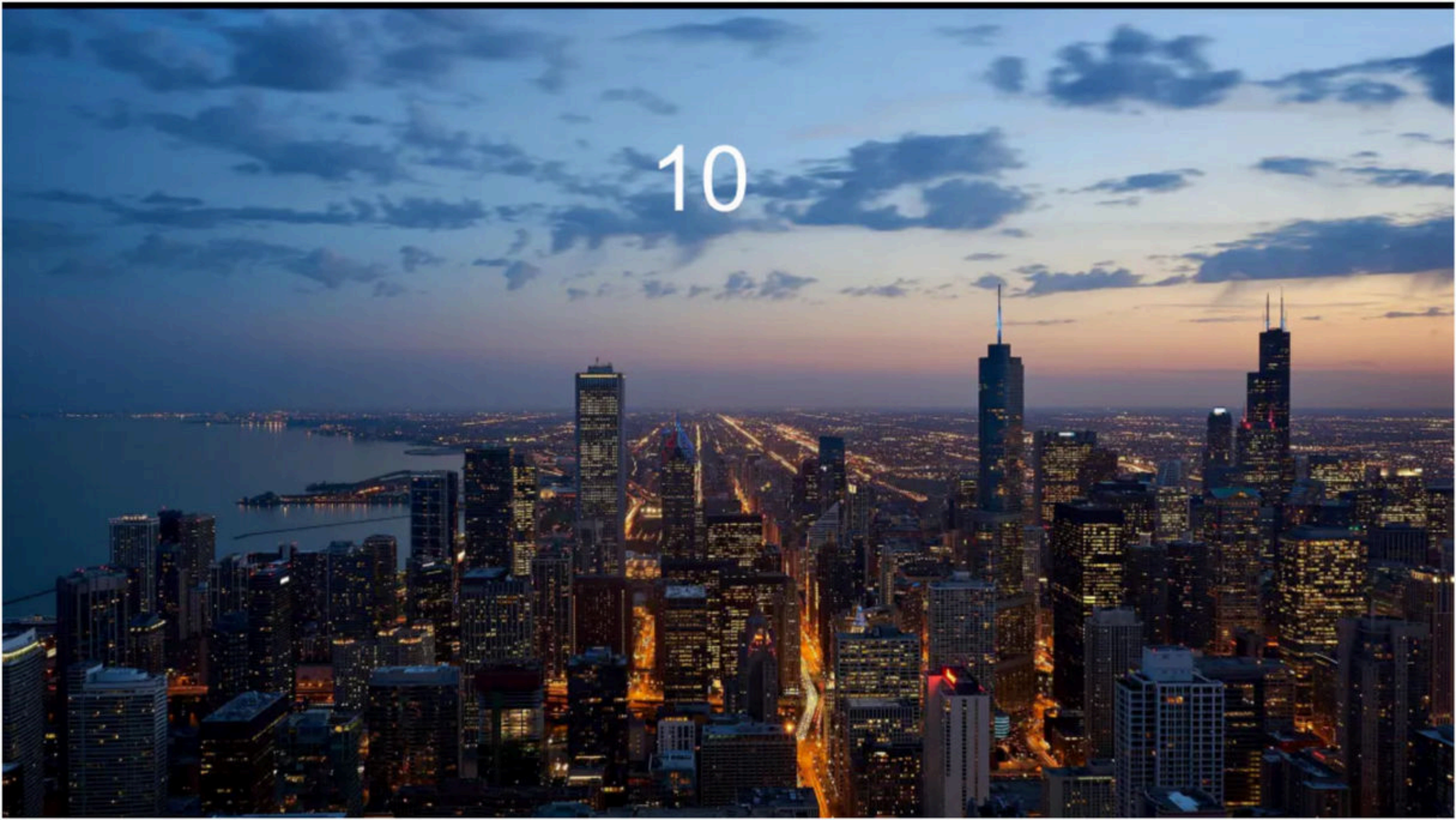
Q.	Consider the following inequalities. (i) $3p - q < 4$ (ii) $3q - p < 12$ Which one of the following expressions below satisfies the above two inequalities?
(A)	$p + q < 8$
(B)	$p + q = 8$
(C)	$8 \leq p + q < 16$
(D)	$p + q \geq 16$

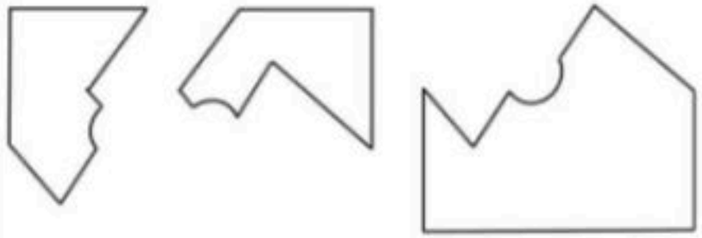
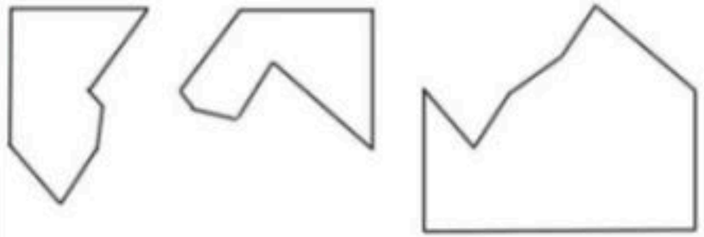
IIT, Kharagpur GATE 2022

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

IIT, Kharagpur GATE 2022


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)	

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GATE 2022 Electronics and Communications (EC)

01

Mr. X speaks _____ Japanese _____ Chinese.

A neither/or

B either/nor

C neither/nor

D also/but

IIT, Kharagpur GATE 2022

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

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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

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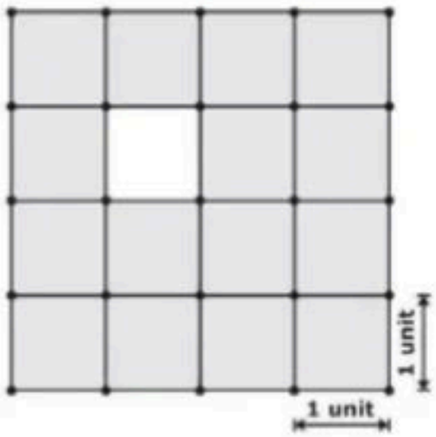
04

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 × 4 grid using the unit squares as building blocks?

A 15

B 20

C 21

D 26

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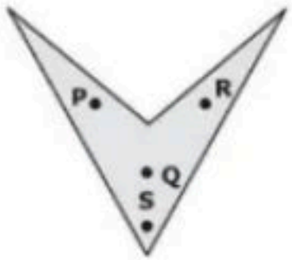
05

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° 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

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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

IIT, Kharagpur GATE 2022

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 Â 5

IIT, Kharagpur GATE 2022

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 $8\sqrt{2}$

IIT, Kharagpur GATE 2022

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.

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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

IIT, Kharagpur GATE 2022

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.

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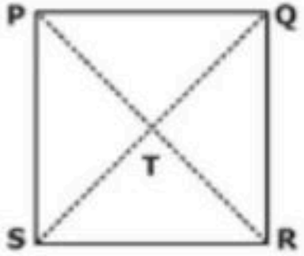

Consider the following three distinct sequences of operation (which are applied in the left to right order).

(1) XYZZ

(2) XY

(3) ZZZZ