

GATE PYQ PAPER

2010 - 2016

GATE PYQ PAPER

2010



Which of the following options is the closest in meaning to the word below:

Circuitous

- (A) Cyclic
- (B) Indirect
- (C) Confusing
- (D) Crooked

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Circuitous comes from the Latin word circuitous meaning basically "a going around." If you're being circuitous it's like you're going around and around in circles.

It can also refer to someone's manner or speech if they are not being direct.

Circuitous means roundabout or indirect (may be cyclic or non-cyclic).

Other synonyms are circular, serpentine, meandering, etc..



The question below consists of a pair of related words followed by four pairs of words. Select the pair that best expresses the relation in the original pair.

Unemployed : Worker

- | | |
|--------------------|-----------------------|
| (A) fallows : land | (B) unaware : sleeper |
| (C) wit : jester | (D) renovated : house |

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ANS.- (A)

The relationship between the given words is that the first word tells the status of the worker.

So, option A. is correct because fallow means uncultivated land which is may also the situation of the land..



Choose the most appropriate word from the options given below to complete the following sentence:

If we manage to _____ our natural resource, we would leave a better planet for our children.

- (A) uphold
- (B) restrain
- (C) cherish
- (D) conserve

ANS.- (D)

Conserve means to Protect (something, especially something of environmental or cultural importance) from harm or destruction. So, Conserve is the most appropriate word because it means protect or safe.



Choose the most appropriate word from the options given below to complete the following sentence:

His rather casual remarks on politics _____ his lack of seriousness about the subject.

- (A) masked
- (B) belied
- (C) betrayed
- (D) suppressed

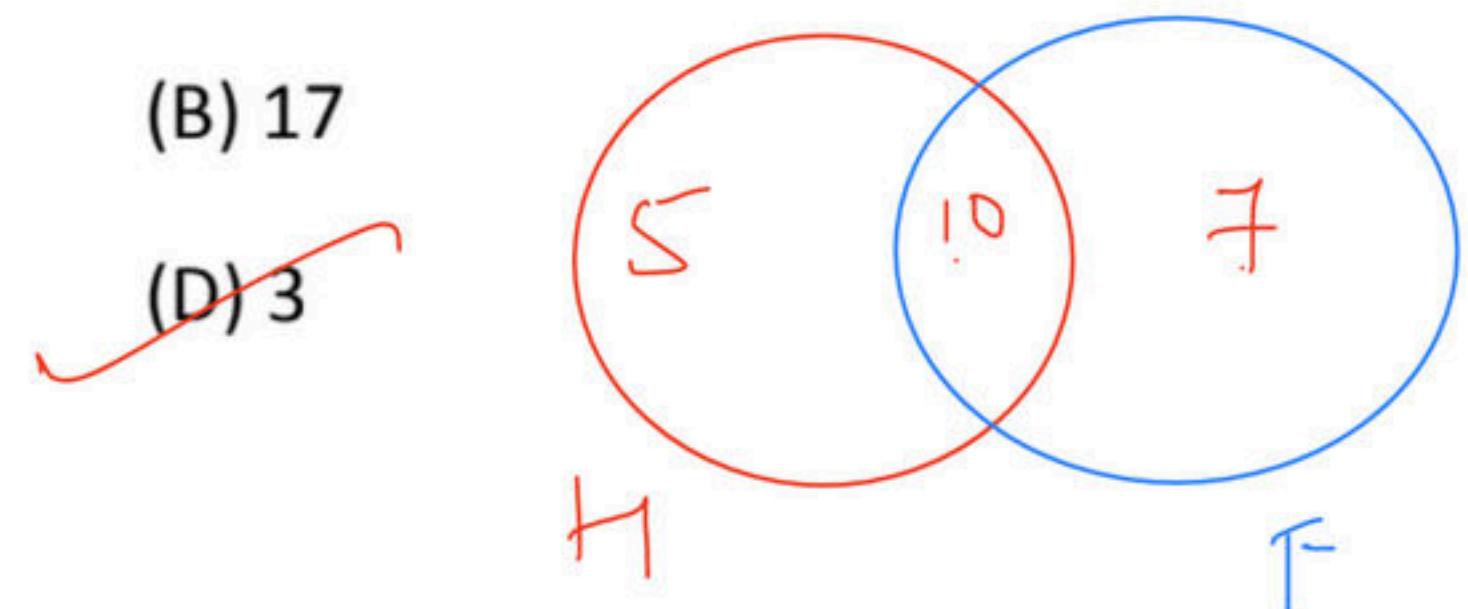


ANS.- (C)

When you betray someone or something, you reveal something, like a secret or your true feelings. You may betray your impatience. That's why Betrayed is the most appropriate word because it means to tell identity unintentionally.

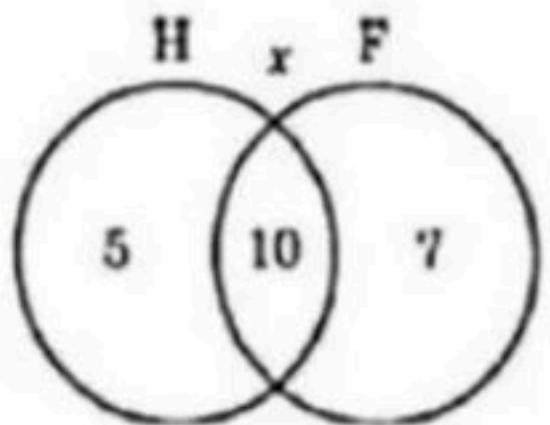
25 persons are in a room. 15 of them play hockey, 17 of them play football and 10 of them play both hockey and football. Then the number of person playing neither hockey nor football is:

- (A) 2
- (B) 17
- (C) 13
- (D) 3



$$\begin{array}{r} \cancel{25} \\ - 22 \\ \hline \cancel{03} \end{array}$$

ANS.- (D)



$$\therefore 5 + 10 + 7 + x = 25$$

$$\Rightarrow x = 3$$

WMD



Modern warfare has changed from large scale clashes of armies to suppression of civilian populations. Chemical agents that do their work silently appear to be suited to such warfare; and regrettably, there exist people in military establishments who think that chemical agents are useful tools for their cause.

Which of the following statements best sums up the meaning of the above passage :

- (A) Modern warfare has resulted in civil strife.
- (B) Chemical agents are useful in modern warfare.
- (C) Use of chemical agents in warfare would be undesirable.
- (D) People in military establishments like to use chemical agents in war.

Sohit



ANS.- (D)

From the statement of the passage, it is clear that people in military establishment think that chemical agents are useful tool for their cause. It is not given in the passage that chemical agents are useful or undesirable in modern warfare.

If $137 + 276 = 435$ how much is $731 + 672$?

- (A) 534
- (B) 1403
- (C) 1623
- (D) 1513



ANS.- (C)

By observation of summation, it can be seen that numbers are not in decimal. Let they have base n . Then converting all number in decimal.

$$(137)_n = [1 \times n^2 + 3n + 7n^0]_{10}$$

$$(276)_n = [2n^2 + 7n + 6n^0]_{10}$$

$$(435)_n = [4n^2 + 3n + 5n^0]_{10}$$

$$(731)_n = [7n^2 + 3n + 1n^0]_{10}$$

$$(672)_n = [6n^2 + 7n + 2n^0]_{10}$$

$$\text{So } (137)_n + (276)_n = (435)_n$$

$$\Rightarrow n^2 + 3n + 7 + 2n^2 + 7n + 6n = 4n^2 + 3n + 5$$

$$\Rightarrow n^2 - 7n - 8 = 0$$

$$n = -1, 8$$

ANS.- (C) Possible base $n = 8$ (+ve)

$$\text{So } (435)_n = (435)_8 = (4 \times 8^2 + 3 \times 8 + 5)_{10} = (285)_{10}$$

$$(731)_n = (731)_8 = (7 \times 8^2 + 3 \times 8 + 1)_{10} = (473)_{10}$$

$$(672)_n = (672)_8 = (6 \times 8^2 + 7 \times 8 + 2)_{10} = (442)_{10}$$

$$\text{So } (731)_8 + (672)_8 = (473)_{10} + (442)_{10} = (915)_{10}$$

$$(915)_{10} = (1623)_8$$

5 skilled workers can build a wall in 20 days; 8 semi-skilled workers can build a wall in 25 days; 10 unskilled workers can build a wall in 30 days. If a team has 2 skilled, 6 semi-skilled and 5 unskilled workers, how long will it take to build the wall?

- (A) 20 days
- (B) 18 days
- (C) 16 days
- (D) 15 day



ANS.- (D)

5 skilled workers build wall in 20 days

1 skilled worker build wall in 20×5 days

Hence in 1 day, part of work done by skilled work = $\frac{1}{100}$

Similarly in 1 day part of work done by semi-skilled workers = $\frac{1}{25 \times 8}$ and in 1 day part of work done by un-skilled

worker = $\frac{1}{30 \times 10}$

So part of work done in 1 day by 2 skilled, 6 semi-skilled and 5 unskilled

$$= \frac{2}{100} + \frac{6}{200} + \frac{5}{300} = \frac{1}{15}$$

So work done by given workers in days = 15



Given digits 2, 2, 3, 3, 3, 4, 4, 4, 4, how many distinct 4 digit numbers greater than 3000 can be formed?

- (A) 50
- (B) 51
- (C) 52
- (D) 54



ANS.- (B) Case 1: First digit 3; Number is 3 _ _ _

Rest 3 digit may be combination of as follows

$$234 \rightarrow 3!$$

$$223 \rightarrow 3!/2!$$

$$224 \rightarrow 3!/2!$$

$$332 \rightarrow 3!/2!$$

$$334 \rightarrow 3!/2!$$

$$442 \rightarrow 3!/2!$$

$$443 \rightarrow 3!/2!$$

$$444 \rightarrow 1$$

ANS.- (B)

So total combination = 25

Case 2: First digit is 4; Number is 4 _ _ _

Rest 3 digits may be combination as follows

234 → 6

223 → 3

224 → 3

332 → 3

334 → 3

442 → 3

443 → 3

444 → 1

333 → 1

So total combination = 26

Using Case1 and Case 2:

Distinct 4 digit numbers greater than 3000 = 25 + 26 = 51



Hari(H), Gita(G), Irfan(I) and Saira(S) are siblings (i.e., brothers and sisters). All were born on 1st January. The age difference between any two successive siblings (that is born one after another) is less than 3 years. Given the following facts:

- i. Hari's age + Gita's age > Irfan's age + Saira's age
- ii. The age difference between Gita and Saira is 1 year. However Gita is not the oldest and Saira is not the youngest.
- iii. There are no twins.

In what order were they born (oldest first)?

- (A) HSIG
- (B) SGHI
- (C) IGSH
- (D) IHSG



ANS.- (B)

Explanation:

$$H + G > I + S$$

$$G - S = 1 \text{ OR } S - G = 1$$

G is not the oldest and S is not the youngest. So, S&G should be together.

Option A - Not possible.

Option D - Not possible because $I > H$ & $S > G$, so it doesn't satisfy $H + G > I + S$.

Option C - It may or may not possible.

Option B - it is definitely possible.



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If $\log(P) = (1/2)\log(Q) = (1/3)\log(R)$, then which of the following options is TRUE?

- (A) $P^2 = Q^3R^2$
- (B) $Q^2 = PR$
- (C) $Q^2 = R^2P$
- (D) $R = P^2Q^2$



Sol. -(B)

Given: $\log P = (1/2) \log Q = (1/3) \log(R) = Z$

Therefore, $P = b^z$, $Q = b^{2z}$, $R = b^{3z}$

Consider, $Q^2 = b^{4z}$

Can be written as, $Q^2 = b^{3z} * b^z = RP = PR$



Which of the following options is the closest in the meaning to the word below :
Inexplicable

- (A) Incomprehensible
- (B) Indelible
- (C) Inextricable
- (D) Infalliable

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Sol. -(A)

Solution:

Inexplicable

means not explicable; that cannot be explained, understood, or accounted for. So the best synonym here is incomprehensible.

Incomprehensible:

not able to be understood; not intelligible.

Ex- "a language which is

incomprehensible to

anyone outside the office"



Choose the word from the options given below that is most nearly opposite in meaning to the given word:

Amalgamate

- (A) merge
- (B) split
- (C) collect
- (D) separate



Sol. -(D)

Solution:

Amalgamate:

combine or unite to form one organization or structure.

So, D option should be correct.

NOTE:

Split

implies a forceful

separation

of something that was one thing.

Separate

means to take two things that were already different, further apart. to

separate

the milk from the cream.



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

If you are trying to make a strong impression on your audience, you cannot do so by being understand, tentative or _____.

- (A) hyperbolic
- (B) restrained
- (C) argumentative
- (D) indifferent



Sol. -(B)

Tone of the sentence clearly indicates a word that is similar to understated is needed for the blank. Alternatively, word should be antonym of strong (fail to make strong impression). Therefore, best choice is restrained which means controlled/reserved/timid



Choose the most appropriate word(s) from the options given below to complete the following sentence.

I contemplated _____ Singapore for my vacation but decided against it.

- (A) to visit
- (B) having to visit
- (C) visiting
- (D) for a visit



Sol. -(C)

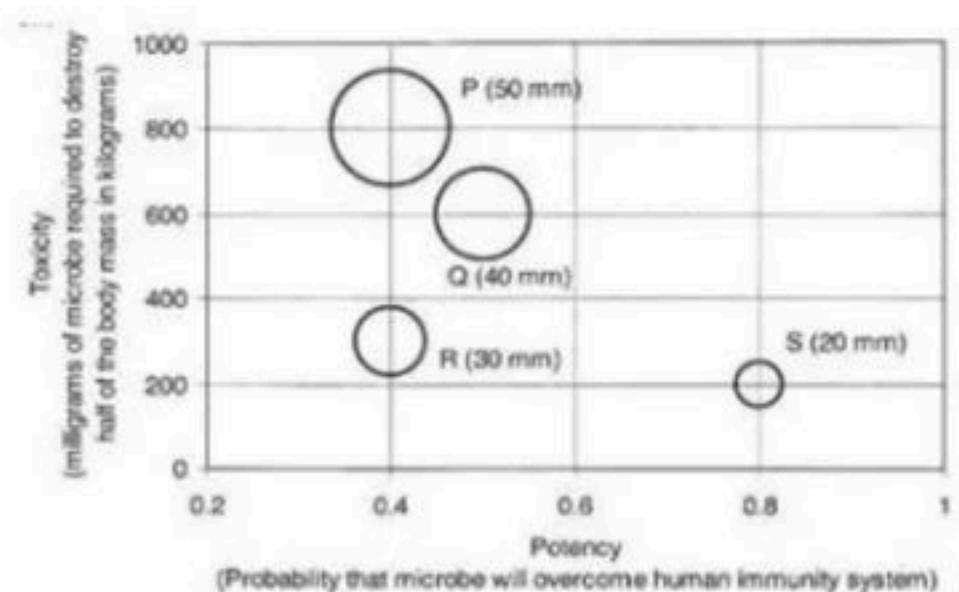
Solution:

Contemplate is a transitive verb and hence is followed by a gerund. Hence the correct usage of contemplate is verb + ing form.



R Q, R and S are four types of dangerous microbes recently found in a human habitant. The area of each circle with its diameter printed in brackets represent the growth of a single microbe surviving human immunity system within 24 hours of entering the body. The danger to human beings varies proportionately with the toxicity, potency and growth attributed to a microbe shown in the figure below: A pharmaceutical company is contemplating the development of a vaccine against the most dangerous microbe. Which microbe should the company target in its first attempt?

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



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Sol. -(D)

Solution:

By observation of the table, we can say S, because it has the maximum probability to overcome the human system. Hence, it is more dangerous.

	P	Q	R	S
Requirement	800	600	300	200
Potency	0.4	0.5	0.4	0.8

The danger is inversely proportional to toxicity. Because as stated in the figure, toxicity is the milligrams required to affect half the human body in kg, thus the less it is more effective is the microbe.



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

- (A) howto write a letter of condolence
- (B) what emotional stages are passed through in the healing process
- (C) what the leading causes of death are
- (D) how to give support to a grieving friend



Sol. -(C)

Solution:

Given passage clearly deals with how to deal with bereavement and grief and so after the tragedy occurs and not about precautions. Therefore, irrespective of the causes of death, a school student rarely gets into details of causes – which is beyond the scope of the context. Rest all are important in dealing with grief.



A container originally contains 10 litres of pure spirit. From this container 1 litre of spirit is replaced with 1 litre of water. Subsequently, 1 litre of the mixture is again replaced with 1 litre of water and this process is repeated one more time. How much spirit is now left in the container?

- (A) 7.58 litres
- (B) 7.84 litres
- (C) 7 litres
- (D) 7.29 litres



Sol. -(D)

Solution:

$$10 \left(\frac{10-1}{10} \right)^3 = 10 \left(\frac{9}{10} \right)^3 = \frac{729}{100}$$

= 7.29 litres

Note: Concentration decreases as 100%, 90%, 81%, 72.9 %.



A transporter receives the same number of orders each day. Currently, he has some pending orders (backlog) to be shipped. If he uses 7 trucks, then at the end of the 4th day he can clear all the orders. Alternatively, if he uses only 3 trucks, then all the orders are cleared at the end of the 10th day. What is the minimum number of trucks required so that there will be no pending order at the end of the 5th day?

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



Sol. -(C)

Solution:

Let each truck carry 100 units.

$$2800 - 4n + e$$

where, n = normal

$$3000 = 10n + e$$

where, e = excess/pending

$$\therefore n = \frac{100}{3}$$

$$e = \frac{8000}{3}$$

$$\Rightarrow 5 \text{ days} \rightarrow 500x = \frac{5 \times 100}{3} + \frac{8000}{3}$$

$$\Rightarrow 500x = \frac{8500}{3}$$

$$\Rightarrow x = \frac{17}{3}$$

$$\Rightarrow x > 5$$

Minimum possible = 6



The variable cost (V) of manufacturing a product varies according to the equation $V = 4q$, where q is the quantity produced. The fixed cost (F) of production of same product reduces with q according to the equation $F = 100/q$. How many units should be produced to minimize the total cost ($V+F$)?

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

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Sol. -(A)

Solution:

Checking with all options in formula

$$(4q + \frac{100}{q}) \text{ i.e. } (V + F).$$

Option (A) gives the minimum cost.

Hint: Just Put & Check.



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Choose the most appropriate alternative from the options given below to complete the following sentence:

Despite several _____ the mission succeeded in its attempt to resolve the conflict.

- (A) attempts
- (B) setbacks
- (C) meetings
- (D) delegations



Sol. -(B)

Solution:

The most suitable word for the given sentences is setbacks.

So, Option (B) is correct answer. That's why the sentence will become

Despite several setbacks the mission succeeded in its attempt to resolve the conflict.



The cost function for a product in a firm is given by $5q^2$, where q is the amount of production. The firm can sell the product at a market price of Rs. 50 per unit. The number of units to be produced by the firm such that the profit is maximized is

- (A) 5
- (B) 10
- (C) 15
- (D) 25

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Sol. -(A)

Solution:

Total cost

$$= 5q^2$$

SP of 1 unit = ₹ 50

So, total SP = $50q$

$$p = \text{profit} = \text{SP} - \text{CP}$$

$$= 50q - 5q^2$$

To maximize p ,

$$\frac{dp}{dq} = 50 - 10q = 0$$

$$\Rightarrow q = 5 \text{ units}$$



Choose the most appropriate alternative from the options given below to complete the following sentence :

Suresh's dog is the one _____ was hurt in the stampede.

- (A) that
- (B) which
- (C) who
- (D) whom



Sol. -(A)

Solution:

The most suitable word for the given sentences is 'that'.

So, Option A. is
the correct
answer. And the sentence will become

Suresh's dog is the one that was hurt in the stampede.



Choose the grammatically INCORRECT sentence:

- (A) They gave us the money back less the service charges of Three Hundred rupees
- (B) This country's expenditure is not less than that of Bangladesh.
- (C) The committee initially asked for a funding of Fifty Lakh rupees, but later settled for a lesser sum.
- (d) This country's expenditure on educational reforms is very less.

Sol. -(D)

Solution:

Out of all four given sentence's first three option is the true statement and only fourth statement is incorrect. So option D is the correct answer.
This country's expenditure on educational reforms is very low.

Note:

'less' is used when you have to make comparisons between two things which are uncountable.

'low' is used to show the degree or the extent. It can be used even when there is nothing to make the comparison with.



Which one of the following options is the closest in meaning to the word given below ?
Mitigate

- (A) Diminish
- (B) Divulge
- (C) Dedicate
- (D) Denote

IIT, Delhi GATE 2012



Sol. -(A)

Solution:

The meaning of Mitigate is to make something less

harmful,

unpleasant, or

bad which is similar to Diminish.

So option (A) is correct answer.

A political party orders an arch for the entrance to the ground in which the annual convention is being held. The profile of the arch follows the equation $y = 2x - 0.1 x^2$ where y is the height of the arch in meters. The maximum possible height of the arch is

- (A) 8 meters
- (B) 10 meters
- (C) 12 meters
- (D) 14 meters



Sol. -(B)

Solution:

$$y = 2x - 0.1x^2$$

$$\Rightarrow \frac{dy}{dx} = 2 - 0.2x$$

$$\frac{d^2y}{dx^2} < 0$$

Hence y maximises at $2 - 0.2x = 0$

$$\Rightarrow x = 10$$

$$\therefore y = 20 - 10 = 10 \text{ m}$$



Wanted Temporary, Part-time persons for the post of Field Interviewer to conduct personal interview to collect and collate economic data. Requirements: High School-pass, must be available for Day, Evening and Saturday work. Transportation paid, expenses reimbursed. Which one of the following is the best inference from the above advertisement?

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

Sol. -(D)

Solution:

Gender is not mentioned and (B) clearly eliminated.



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

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

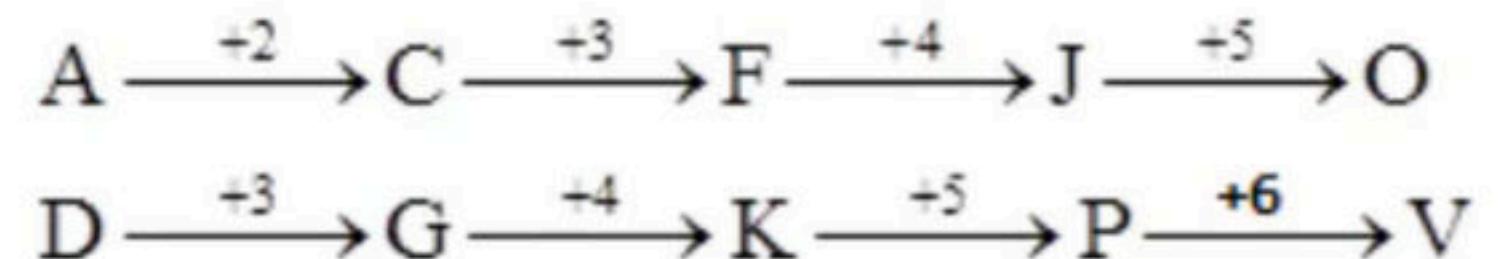
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Sol. -(A)

Solution:

The pattern of series is



∴ Next term = OV



Which of the following assertions are CORRECT?

- P: Adding 7 to each entry in a list adds 7 to the mean of the list
- Q: Adding 7 to each entry in a list adds 7 to the standard deviation of the list
- R: Doubling each entry in a list doubles the mean of the list
- S: Doubling each entry in a list leaves the standard deviation of the list unchanged

- (A) P,Q
- (B) Q,R
- (C) P,R
- (D) R,S



Sol. -(C)

Solution:

P and R always be correct, For P and R always correct check a sample test (1, 2, 3, 4).

(P) Consider the example,

Let entry be 1, 2, 3, 4

$$\therefore \text{Mean} = \frac{1+2+3+4}{4} = 2.5$$

Add 7 to all entry 8, 9, 10, 11

$$\text{Mean} = \frac{8+9+10+11}{4}$$

$$= 9.5 = 2.5 + (7)$$

(R) Double the entry, 2, 4, 6, 8

$$\text{Mean} = \frac{2+4+6+8}{4}$$

$$= 2 \times 2.5$$

$$= 5$$



An automobile plant contracted to buy shock absorbers from two suppliers X and Y, X supplies 60% and Y supplies 40% of the shock absorbers. All shock absorbers are subjected to a quality test.

The ones that pass the quality test are considered reliable. Of X's shock absorbers, 96% are reliable. Of Y's shock absorbers, 72% are reliable.

The probability that a randomly chosen shock absorber, which is found to be reliable, is made by Y is

- (A) 0.288
- (B) 0.334
- (C) 0.667
- (D) 0.720

Sol. -(B)

Solution:

	x	y
Supply	60%	40%
Reliable	96%	72%
Overall	0.576	0.288

$$\therefore P(x) = \frac{0.288}{0.576 + 0.288}$$

$$= 0.334$$

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Abhishek is elder to Savar.
Savar is younger to Anshul.

Which of the given conclusions is logically valid and is inferred from the above statements?

- (A) Abhishek is elder to Anshul
- (B) Anshul is elder to Abhishek
- (C) Abhishek and Anshul are of the same age
- (D) No conclusion follows



Sol. -(D)

Solution:

Since Abhishek is elder to Savar and Saver is younger to Anshul.

So here Saver is younger to both Abhishek and Anshul but it is difficult to judge that weather Abhishek and Anshul are of same age or they are of different age.

Therefore, Option (D) is the correct answer.



A firm is selling its product at Rs. 60 per unit. The total cost of production is Rs. 100 and firm is earning total profit of Rs. 500. Later, the total cost increased by 30%. By what percentage the price should be increased to maintain the same profit level.

- (A) 5
- (B) 10
- (C) 15
- (D) 30



Solution:

Let X be the total quantity of product.

Sol. -(A)

$$\text{Then, } 60X = 500 + 100 = 600$$

$$X = 10$$

Total cost of production after increased price = $100 + 30 = 130$

Since the increased price is Rs 30

So, increased price per quantity =

$$\frac{\text{Total Price Increased}}{\text{Total number of quantity of products}} = \frac{30}{10} = 3$$

Therefore % of price increased =

$$3 \times \frac{100}{60} = 5\%$$

Note: It is independent of unit price.



Following table provides figures (in rupees) on annual expenditure of a firm for two years - 2010 and 2011.

In 2011, which of the following two categories have registered increase by same percentage?

- (A) Raw material and Salary & wage
- (B) Salary & wages and Advertising
- (C) Power & fuel and Advertising
- (D) Raw material and Research & Development

Category	2010	2011
Raw material	5200	6240
Power & fuel	700	9450
Salary & wages	9000	12600
Plant & machinery	2000	25000
Advertising	15000	19500
Research & Development	22000	26400



Sol. -(D)

Solution:

$$\% \text{ increase in raw material} = \frac{6240 - 5200}{5200} \times 100 = 20\%$$

$$\left(\begin{array}{l} \% \text{ increase research} \\ \text{and development} \end{array} \right) = \frac{26400 - 22000}{22000} \times 100 = 20\%$$

If $|4x - 7| = 5$ then the values of $2|x| - |-x|$ is:

- (A) 2, $\frac{1}{3}$
- (B) $\frac{1}{2}, 3$
- (C) $\frac{3}{2}, 9$
- (D) $\frac{2}{3}, 9$



Sol. -(B)

Solution:

$$|4x - 7| = 5; 4x - 7 = 5 \text{ or } 4x - 7 = -5 \Rightarrow x = 3 \text{ or } 0.5$$

$$\therefore 2|x| - |-x| = 2 \times 3 - 3 = 3 \text{ or } 2|x| - |-x| = 2 \times \frac{1}{2} - \frac{1}{2} = \frac{1}{2}$$

Note:

$$|-x| = |x|$$

X and Y are two positive real numbers such that $2X + Y \leq 6$ and $X + 2Y \leq 8$. For which of the following values of (X, Y) the function $f(X, Y) = 3X + 6Y$ will give maximum value?

- (A) (4/3, 10/3)
- (B) (8/3, 20/3)
- (C) (8/3, 10/3)
- (D) (4/3, 20/3)

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Sol. -(A)

Solution:

$$2x + y \leq 6; x + 2y \leq 8$$

By Solving this we will get,

$$x \leq 1.33; y \leq 3.33;$$

∴ option (B) and (C) is rejected because $x > 1.33$

Option (D) is rejected $y > 10 / 3$

A Option is correct!



Select the pair that best expresses a relationship similar to that expressed in the pair: Medicine: Health

- (A) Science : Experiment
- (B) Wealth : Peace
- (C) Education : Knowledge
- (D) Money : Happiness

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Sol. -(C)

Solution:

Medicine leads to good health. Similarly, Education leads to Knowledge.

Science does not lead to experiment.

Wealth may not necessarily lead to peace.

Also money may not also lead to happiness all the time



Friendship, no matter how _____ it is, has its limitations.

- (A) cordial
- (B) intimate
- (C) secret
- (D) pleasant



Sol. -(B)

Solution:

Friendship, No matter how intimate it is, has its limitation. Intimate refers to close personal relations, e.g. an intimate friend. It is also characterized by or involving warm friendship or a personally close or familiar association or feeling.



Which of the following options is the closest in meaning to the word given below :
Primeval

- (A) Modern
- (B) Historic
- (C) Primitive
- (D) Antique



Sol. -(C)

Solution:

Synonyms for **Primeval**: ancient, earliest, **first**, prehistoric, antediluvian, antique, primordial, **primeval**, primal, primary, lower, original,etc.

"preserving the character of an early stage in the evolutionary or historical development of something"



The professor ordered to the students to go out of the class

I

II

III

IV

Which of the above underlined parts of the sentences is grammatically incorrect?

- (A) I
- (B) II
- (C) III
- (D) IV

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Sol. -(B)

Solution:

It should be 'ordered' instead of '*ordered to*'.

The correct sentence should be

"The professor **ordered** the students to go out of the class".

So part II is grammatically incorrect.



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



Sol. -(D)

Solution:

Since, the number much higher than 75 among all the given option is 96 which is simultaneously smaller than 117.

As the number given in all other options are smaller than 96.

So, option D. is the correct answer.



A large, semi-transparent graphic in the background features a complex pattern of overlapping triangles in shades of blue, white, and light grey, creating a sense of depth and motion.

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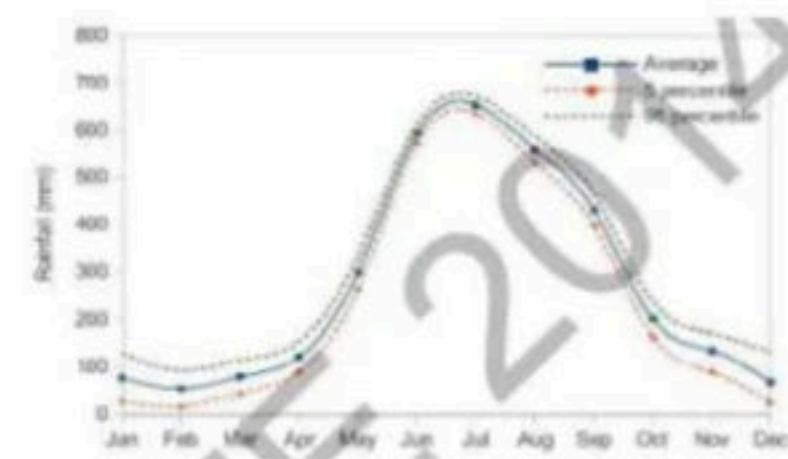
01



The monthly rainfall chart based on 50 years of rainfall in Agra is shown in the following figure. Which of the following are true? (k percentile is the value such that k percent of the data fall below that value)

- (i) On average, it rains more in July than in December
- (ii) Every year, the amount of rainfall in August is more than that in January
- (iii) July rainfall can be estimated with better confidence than February rainfall
- (iv) In August, there is at least 500 mm of rainfall

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





Sol. -(B)

Solution:

In the question the monthly average rainfall chart for 50 years has been given.

Let us check the options.

- (i) On average, it rains more in July than in December \Rightarrow correct.
- (ii) Every year, the amount of rainfall in August is more than that in January.

\Rightarrow

may not be correct

because average rainfall is given in the question.

- (iii) July rainfall can be estimated with better confidence than February rainfall.

\Rightarrow From chart it is clear the gap between 5 percentile and 95 percentile from average is higher in February than that in July \Rightarrow correct.

- (iv) In August at least 500 mm rainfall \Rightarrow

May not be correct

, because its 50 year average.

So correct option (B) (i) and (iii).



One percent of the people of country X are taller than 6 ft. Two percent of the people of country Y are taller than 6 ft. There are thrice as many people in country X as in country Y. Taking both countries together, what is the percentage of people taller than 6 ft?

- (A) 30
- (B) 25
- (C) 15
- (D) 1.25



Sol. -(D)

Solution:

Let number of people in country y = 100

So, number of people in country x = 300

Total number of people taller than 6ft in both the countries

$$= 300 \times \frac{1}{100} + 100 \times \frac{2}{100} = 5$$

$$\% \text{ of people taller than 6ft in both the countries} = \frac{5}{400} \times 100 = 1.25\%$$



The smallest angle of a triangle is equal to two thirds of the smallest angle of a quadrilateral. The ratio between the angles of the quadrilateral is 3: 4: 5: 6. The largest angle of the triangle is twice its smallest angle. What is the sum, in degrees, of the second largest angle of the triangle and the largest angle of the quadrilateral?

- (A) 50°
- (B) 55°
- (C) 180°
- (D) 25°

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Solution:

Let the angles of quadrilateral are $3x, 4x, 5x, 6x$

Sol. -(C)

$$\text{So, } 3x + 4x + 5x + 6x = 360$$

$$x = 20$$

$$\text{Smallest angle of quadrilateral} = 3 \times 20 = 60^\circ$$

Smallest angle of triangle =

$$\frac{2}{3} \times 60^\circ = 40^\circ$$

$$\text{Largest angle of triangle} = 2 \times 40^\circ = 60^\circ$$

Three angles of triangle are $40^\circ, 60^\circ, 80^\circ$

Largest angle of quadrilateral is 120°

Sum (2nd largest angle of triangle + largest angle of quadrilateral)

$$= 60^\circ + 120^\circ = 180^\circ.$$

Anuj, Bhola, Chandan, Dilip, Eswar and Faisal live on different floor in a six-storeyed building (the ground floor is numbered 1, the floor above it 2, and so on). Anuj lives on an even-numbered floor, Bhola does not live on an odd numbered floor. Chandan does not live on any of the floors below Faisal's floor. Dilip does not live on floor number 2. Eswar does not live on a floor immediately above or immediately below Bhola. Faisal lives three floors above Dilip. Which of the following floor-person combinations is correct?

(A)

Anuj	Bhola	Chandan	Dilip	Eswar	Faisal
6	2	5	1	3	4

(C)

Anuj	Bhola	Chandan	Dilip	Eswar	Faisal
4	2	6	3	1	5

(B)

Anuj	Bhola	Chandan	Dilip	Eswar	Faisal
2	6	5	1	3	4

(D)

Anuj	Bhola	Chandan	Dilip	Eswar	Faisal
2	4	6	1	3	5



Sol. -(B)

Solution:

- (A). Anuj: Even numbered floor (2,4,6)
- (B). Bhola: Even numbered floor (2,4,6)
- (C). Chandan lives on the floor above that of Faisal.
- (D). Dilip: not on 2nd floor.
- (E). Eswar: does not live immediately above or immediately below Bhola From the options its clear, that only option (B) satisfies condition (e). So, correct Ans is (B).



Find the odd one in the following group : ABRVX, EPVZB, ITZDF, OYEIK

- (A) ABRVX
- (B) EPVZB
- (C) ITZDF
- (D) OYEIK

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Sol. -(D)

Solution:

ABRVX → only one vowel

EPVZB → only one vowel

ITZDF → only one vowel

OYEIK → three vowels

So OYEIK is odd one.



A foundry has a fixed daily cost of Rs. 50,000 whenever it operates and a variable cost of Rs. 800 Q, where Q is the daily production in tonnes. What is the cost o production in Rs per tone for a daily production of 100 tonnes?

- (A) Rs, 1300
- (B) Rs, 1500
- (C) Rs, 1600
- (D) None

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Sol. -(A)

Solution:

Fixed cost = Rs. 50,000

Variable cost = Rs. 800 Q

Q = daily production in tones

For 100 tonnes of production daily, total cost of production

$$= 50,000 + 800 \times 100 = 130,000$$

$$= \frac{1,30,000}{100} = \text{Rs.} 1300$$



If $y = 5x^2 + 3$, then the tangents at $x = 0, y = 3$

- (A) passes through $x = 0, y = 0$
- (B) has a slope of $+1$
- (C) is parallel to the x -axis
- (D) has a slope of -1

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Sol. -(C)

Solution:

$$Y = 5x^2 + 3, \frac{dy}{dx} = 10x$$

$$\text{Slope of tangent} = \left(\frac{dy}{dx} \right)_{x=0,y=3} = 10 \times 0 = 0$$

Slope = 0 \Rightarrow tangent is parallel to x -axis.



Rajan was not happy that Sajan decided to do the project on his own. On observing his unhappiness, Sajan explained to Rajan that he preferred to work independently. Which one of the statements below is logically valid and can be inferred from the above sentences?

- (A) Rajan has decided to work only in a group.
- (B) Rajan and Sajan were formed into a group against their wishes.
- (C) Sajan had decided to give in to Rajan's request to work with him.
- (D) Rajan had believed that Sajan and he would be working together.



Sol. -(D)

Solution:

The statement given in Option (D) is logically valid and can be inferred from the above sentences.



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

One of his biggest ____ was his ability to forgive.

- (A) vice
- (B) virtues
- (C) choices
- (D) strength

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Sol. -(B)

Solution:

"Virtues", Virtues is related to moral standards while strength is related to physical ability. So the most suitable word among all four option to complete the given sentences.

Hence option (B) is correct answer.



A student is required to demonstrate a high level of comprehension of the subject, especially in the social sciences.

The word closest in meaning to comprehension is

- (A) understanding
- (B) meaning
- (C) concentration
- (D) stability

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Sol. -(A)

Solution:

The closest meaning to comprehension is the ability to understand something. Hence option (A) is correct answer.

Its synonyms are

grasp, grip, conception, apprehension, cognition, cognizance, ken, knowledge, awareness, perception, discernment; interpretation

GATE PYQ PAPER 2014

02



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

A person suffering from Alzheimer's disease _____ short-term memory loss.

- (A) experienced
- (B) unexperienced
- (C) is experiencing
- (D) experiences

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Sol. -(D)

Solution:

experiences short-term memory loss.



Choose the most appropriate word from the options given below to complete the following sentence. _____ is the key to their happiness; they are satisfied with what they have.

- (A) Contentment
- (B) Ambition
- (C) Perseverance
- (D) Hunger

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Sol. -(A)

Solution:

Contentment is the key to their happiness,



Which of the following options is the closest in meaning to the sentence below? "As a woman, I have no country."

- (A) Women have no country
- (B) Women are not citizens of any country
- (c) Women's solidarity knows no national boundaries
- (D) Women of all countries have equal legal rights

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Sol. -(C)

Solution:

Women's solidarity knows no national boundaries: Women Empowerment



In any given year, the probability of an earthquake greater than Magnitude 6 occurring in the Garhwal Himalayas is 0.04. The average time between successive occurrences of such earthquakes is _____ years.

- (A) 50
- (B) 20
- (C) 25
- (D) 40

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Sol. -(C)

Solution:

$$P = 0.04 = \frac{4}{100}$$

For 1 earth quake

$$\frac{100}{4} P = 1 \text{ earth quake}$$

25 years

} Reverse probability



The population of a new city is 5 million and is growing at 20% annually. How many years would it take to double at this growth rate?

- (A) 3-4 years
- (B) 4-5 years
- (C) 5-6 years
- (D) 6-7 years

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Sol. -(A)

Solution:

Initial Population = 5 M

growth rate = 20%

So, Population after 1 year = $5 + 0.2 \times 5 = 6 M$

Population after 2 years = $6 + 0.2 \times 6 = 7.2 M$

Population after 3 years = $7.2 + 0.2 \times 7.2 = 8.64 M$

Population after 4 years = $8.64 + 0.2 \times 8.64 = 10.368 M$

Hence, Population becomes double in between 3 – 4 years.



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

Statements:

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

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Sol. -(A)

Solution:

First statement itself clarify the eldest child.

St2: As per this statement Shiva may be younger or elder than Riaz.

So option A is correct!



Moving into a world of big data will require us to change our thinking about the merits of exactitude. To apply the conventional mindset of measurement to the digital, connected world of the twenty-first century is to miss a crucial point. As mentioned earlier, the obsession with exactness is an artifact of the information-deprived analog era. When data was sparse, every data point was critical, and thus great care was taken to avoid letting any point bias the analysis. From "BIG DATA" Viktor Mayer-Schonberger and Kenneth Cukier The main point of the paragraph is:

- (A) The twenty-first century is a digital world
- (B) Big data is obsessed with exactness
- (C) Exactitude is not critical in dealing with big data
- (D) Sparse data leads to a bias in the analysis

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Sol. -(C)

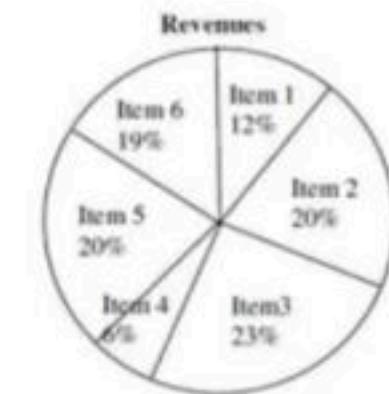
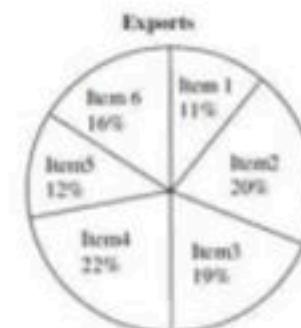
Solution:

“Exactitude is not critical in dealing with big data”



The total exports and revenues from the exports of a country are given in the two pie charts below. The pie chart for exports shows the quantity of each item as a percentage of the total quantity of exports. The pie chart for the revenues shows the percentage of the total revenue generated through export of each item. The total quantity of export of all the items is 5 lakh tonnes and the total revenues are 250 crore rupees. What is the ratio of the revenue generated through export of Item 1 per kilogram to the revenue generated through export of Item 4 per kilogram?

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



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Sol. -(D)

Solution:

revenue generated through export
of item 1 Kg

$$= \frac{\text{Item}}{\text{quantity}} = \frac{11}{100} \times 5 = \frac{11}{20} \text{ (lakhs tows)}$$

$$\begin{matrix} \text{revenue gen} \\ \text{Item 1} \end{matrix} \left. \begin{matrix} 12 \\ 100 \end{matrix} \right\} \times 6 \times 250 \times (C)$$

$$= \frac{30 \text{ cr}}{11} \times 20 \quad \dots(1)$$

$$\text{Revenue gen Item 4} = \frac{6}{100} \times 250.(C)$$

$$= \frac{15 \text{ cr}}{22} \times 20 \text{ Lt.} \quad \dots(2)$$

1:2

$$\frac{30}{11} \times \frac{20 \times 22}{15 \times 20} = 4 : 1$$



X is 1 km northeast of Y. Y is 1 km southeast of Z. W is 1 km west of Z. P is 1 km south of W. Q is 1 km east of P. What is the distance between X and Q in km?

- (A) 1
- (B) $\sqrt{2}$
- (C) $\sqrt{3}$
- (D) 2

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Sol. -(C)

Solution:

From the fig: $zx = \sqrt{2}$. [Pythagoras theorem]

$zQ = 1$ Given

\Rightarrow Considering ZQX , which is right angle, is

$$\Rightarrow Qx^2 = ZQ^2 + ZX^2$$

$$= \sqrt{1+2}$$

$$= \sqrt{3}$$



10% of the population in a town is HIV+. A new diagnostic kit for HIV detection is available, this kit correctly identifies HIV+ individuals 95% of the time and HIV- individuals 89% of the time. A particular patient is tested using this kit and is found to be positive. The probability that the individual is actually positive is ____.

- (A) 0.40
- (B) 0.50
- (C) 0.49
- (D) 0.47

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Sol. -(C)

Solution:

The patient is actually HIV +ve. So probability of that = $P(\text{he belongs to HIV +ve population}) * P(\text{ HIV +ve test gives correct result given he is HIV +ve})$.

So the probability $P(A) = 0.1$ and $P(E/A) = 0.95$

b) The next case is a patient is HIV -ve but the test is showing HIV +ve i.e. test shows wrong result. So,

$P(B) = 0.9$ and $P(E/B) = 1 - 0.89 = 0.11$

So By Bayes' Theorem,

$$P(A/E) \text{ i.e. } P(\text{actually is HIV +ve}) = P(A) * P(E/A) / [(P(A) * P(E/A)) + (P(B) * P(E/B))]$$

$$= 0.1 * 0.95 / [(0.1 * 0.95) + (0.9 * 0.11)]$$

$$= 0.095 / 0.095 + 0.099$$

$$= 0.095 / 0.194$$

$$= 95 / 194$$

$$= 0.4897$$

$$= 48.97\%$$

GATE PYQ PAPER 2015

01



Select the pair that does not express a relationship similar to that expressed in the pair :
Children : Paediatricians

- (A) Adult : Orthopaedist
- (B) Females : Gynaecologist
- (C) Kidney : Nephrologist
- (D) None of these

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Sol. -(D)

Solution:

Here pediatrician: children represent a particular community of ppl viz.children

So among the following option B is correct and option A is eliminated coz here bone specialists is specified whereas pediatrician represents overall health concern of children.



Extreme focus on syllabus and studying for test has become such a dominant concern of Indian students that this has closed their minds to anything _____ to the requirements of the exam

- (A) related
- (B) extraneous
- (C) Outside
- (D) useful

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Sol. -(B)

Solution:

extraneous -irrelevant or unrelated to the subject being dealt with.



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

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

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Sol. -(B)

Solution:

R+3=U, O+3=R, A+3=D, D+3=G;

S+3=V, W+3=Z, A+3=D, N+3=Q





The Tamil version of _____ John Abraham-starrer Madras Café _____ cleared by the censor board with no cuts last week, but the film's distributors _____ no takers among the exhibitors for a release in Tamil Nadu _____ this Friday.

- (A) Mr., was, found, on
- (B) a, was found, at
- (C) the, was, found, on
- (D) a, being, find, at

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Sol. -(C)

Solution:

John-Abraham starrer Madras Café talks about the movie not the person, so Mr. is ruled out.

'Find no takers' is not the correct phrase. At this Friday is incorrect. So, option C is correct.



A function $f(x)$ is linear and has a value of 29 at $x = -2$ and 39 at $x = 3$. Find its value at $x = 5$

- (A) 59
- (B) 45
- (C) 43
- (D) 35

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Sol. -(C)

Solution:

Assume $f(x) = ax + b$

$$\text{so, } -2a+b = 29 \dots\dots\dots(1)$$

$$3a+b = 39 \dots\dots\dots(2)$$

By solving equation 1 & 2, we get

$$a = 2 \text{ & } b = 33$$

$$f(x) = 2x+33$$

$$\Rightarrow f(5) = 43$$

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

Which is the valid distribution of portfolio?

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

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Sol. -(B)

Solution:

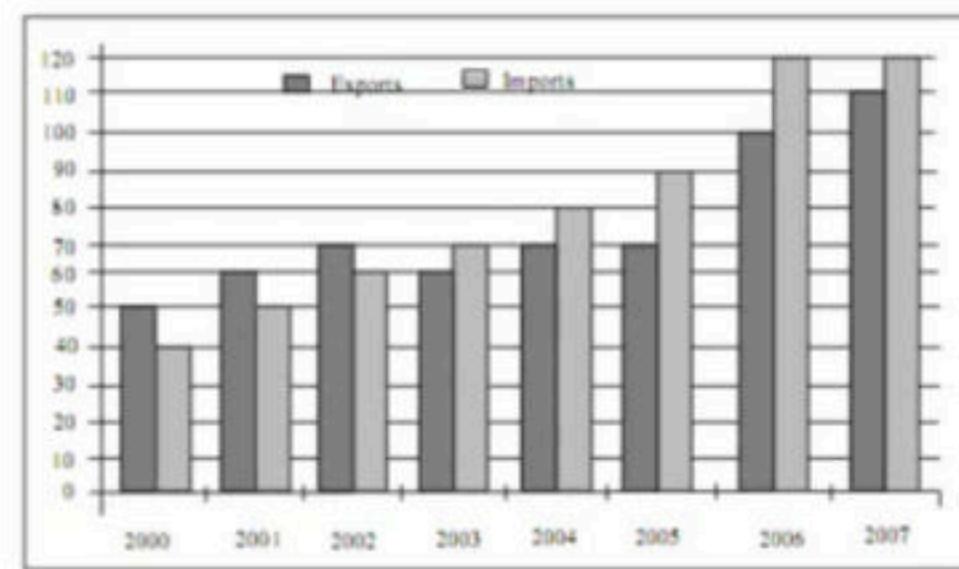
Since U does not want any portfolio, (C) and (D) are ruled out.

R wants Home, or Finance or No portfolio, (A) is not valid. Hence option (B) is correct



The exports and imports (in crores of Rs.) of a country from the year 2000 to 2007 are given in the following bar chart. In which year is the combined percentage increase in imports and exports the highest?

- (A) 2007
- (B) 2003
- (C) 2004
- (D) 2006



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Sol. -(D)

Solution:

Just observe the bar chart, here %increase is asked, so just check for previous year & next year pair, where you can find maximum positive change.

$$\text{Increase in exports in 2006} = \frac{100 - 70}{70} = 42.8\%$$

$$\text{Increase in imports in 2006} = \frac{120 - 90}{90} = 33.3\%$$

which is more than any other year



Most experts feel that in spite of possessing all the technical skills required to be a batsman of the highest order., he is unlikely to be so due to lack of requisite temperament. He was guilty of throwing away his wicket several times after working hard to lay a strong foundation. His critics pointed out that until he addressed to this problem, success at the highest level will continue to elude him.

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

- (i) He was already a successful batsman at the highest level
- (ii) He has to improve his temperament in order to become a great batsman
- (iii) He failed to make many of his good starts count
- (iv) Improving his technical skills will guarantee success

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

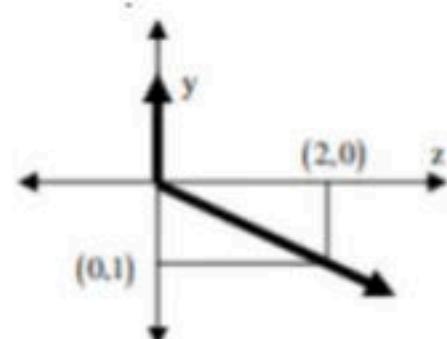
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Sol. -(B)



Choose the most appropriate equation for the function drawn as a thick line, in the plot below.

- (A) $z = y - |y|$
- (B) $z = -(y - |y|)$
- (C) $z = y + |y|$
- (D) $z = -(y + |y|)$



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Sol. -(B)

Solution:

As from the graph we can write

$$y=0 \text{ at } x=0$$

$$y=-1 \text{ at } x=2$$

Option B works out to be correct when we substitute the values in all the four options.



Alexander turned his attention towards India since he had conquered Persia.

Which one of the statements below is logically valid and can be inferred from the above sentence?

- (A) Alexander would not have turned his attention towards India had he not conquered Persia.
- (B) Alexander was not ready to rest on his laurels, and wanted to march to India
- (C) Alexander was completely in control of his army and could command it to move towards India.
- (D) Since Alexander's kingdom extended to Indian borders after the conquest of Persia, he was keen to move further.

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Sol. -(A)

Solution:

The answer should be A as other options required more information

GATE PYQ PAPER 2015
02





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

The official answered _____ that the complaints of the citizen would be looked into.

- (A) respectably
- (B) respectfully
- (C) reputably
- (D) respectively

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Sol. -(B)

Solution:

The official answered respectfully that the complaints of the citizen would be looked into.



Choose the statement where underlined word is used correctly

- (A) The minister insured the victims that everything would be all right.
- (B) He ensured that the company will not have to bear any loss.
- (C) The actor got himself ensured against any accident.
- (D) The teacher insured students of good results

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Sol. -(B)

Solution:

insured-the person, group, or organization whose life or property is covered by an insurance policy.

ensured- to secure or guarantee



Four cards are randomly selected from a pack of 52 cards. If the first two cards are kings, what is the probability that the third card is a king?

- (A) $4/52$
- (B) $2/50$
- (C) $1/52 \times (1/52)$
- (D) $1/52 \times (1/52) \times (1/50)$

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Sol. -(B)

Solution:

There are 4 kings in a pack of 52 cards.

If 2 cards are selected and both are kings, remaining cards will be 50 out of which 2 will be kings.

Which word is not a synonym for the word vernacular?

- (A) regional
- (B) indigeneous
- (C) indigent
- (D) colloquial

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Sol. -(C)

Solution:

vernacular- expressed or written in the native language of a place indigent -deficient in what is requisite



Mr. Vivek walks 6 meters North-East, then turns and walks 6 meters South- East, both at 60 degrees to East. He further moves 2 meters South and 4 meters West. What is the straight distance in meters between the point he started from and the point he finally reached?

- (A) $2\sqrt{2}$
- (B) 2
- (C) $\sqrt{2}$
- (D) $1/\sqrt{2}$

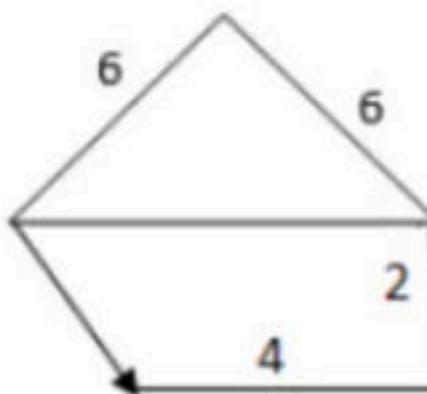
IIT, Kanpur GATE 2015



Solution:

The distance between initial & Final Point is given as

$$\sqrt{2^2 + 2^2} = 2\sqrt{2}$$





How many four digit numbers can be formed with the 10 digits 0,1, 2,...,9 if no number can start with 0 and if repetitions are not allowed?

- (A) 2345
- (B) 2453
- (C) 4536
- (D) 1234

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Sol. -(C)

Solution:

In thousands place, 9 digits except 0 can be placed

In hundreds place, 9 digits can be placed (including 0, excluding the one used in thousands place)

In tens place, 8 digits can be placed (excluding the ones used in thousands and hundreds place)

In ones place, 7 digits can be placed (excluding the one used in thousands, hundreds and tens place)

Total number of combinations = $9 \times 9 \times 8 \times 7 = 4536$

The word similar in meaning to 'dreary' is

- (A) cheerful
- (B) dreamy
- (C) hard
- (D) dismal

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Sol. -(D)

Solution:

dreary- depressingly dull and bleak or repetitive.



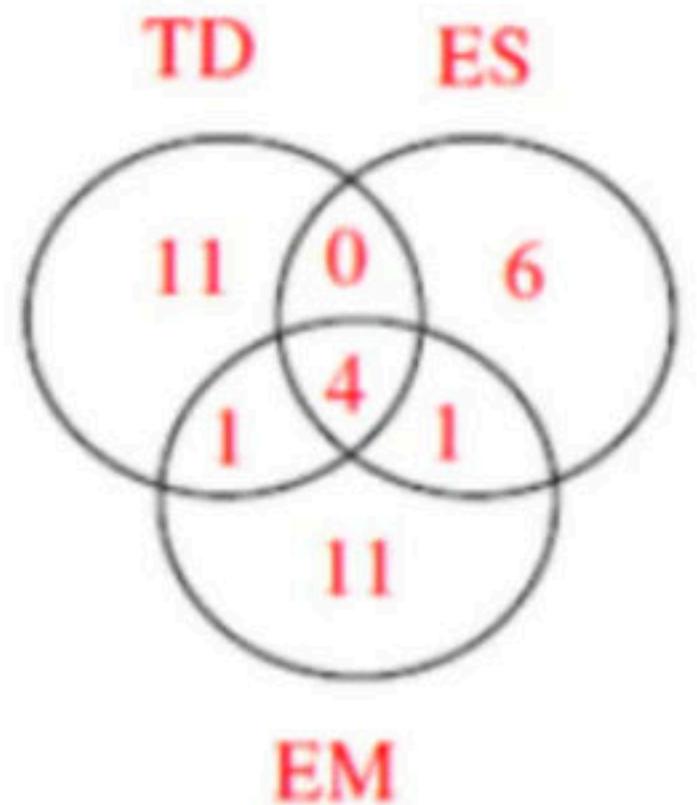
There are 16 teachers who can teach Thermodynamics (TD), 11 who can teach Electrical Sciences (ES), and 5 who can teach both TD and Engineering Mechanics (EM). There are a total of 40 teachers, 6 cannot teach any of the three subjects, i.e. EM, ES or TD. 6 can teach only ES. 4 can teach all three subjects, i.e. EM, ES and TD. 4 can teach ES and TD. How many can teach both ES and EM but not TD?

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

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Sol. -(A)

Solution:





Read the following table giving sales data of five types of batteries for years 2006 to 2012

Out of the following, which type of battery achieved highest growth between the years 2006 and 2012?

- (A) Type V
- (B) Type III
- (C) Type II
- (D) Type I

Year	Type I	Type II	Type III	Type IV	Type V
2006	75	144	114	102	108
2007	90	126	102	84	126
2008	96	114	75	105	135
2009	105	90	150	90	75
2010	90	75	135	75	90
2011	105	60	165	45	120
2012	115	85	160	100	145

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Sol. -(D)

Solution:

Type-I achieved a growth of 53% (75 to 115 units)in this period which is higher than any other type of battery



The given question is followed by two statements: select the most appropriate option that solves the question Capacity of a solution tank A is 70% of the capacity of tank B. How many gallons of solution are in tank A and tank B? Statements:

- I. Tank A is 80% full and tank B is 40% full
- II. Tank A if full contains 14,000 gallons of solution

- (A) Statement I alone is sufficient
- (B) Statement II alone is sufficient
- (C) Either statement I or II alone is sufficient
- (D) Both the statements I and II together are sufficient

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Sol. -(D)

Solution:

Statement I can be used to solve the question if capacity of both tanks is already known

Statement-II can be used if it is known what quantity of each tank is full/empty.

Therefore, by using both statements

Let capacity of tank B is x

$$\frac{70}{100}x = 14000$$

$$\Rightarrow x = 20000 \text{ gallons}$$

$$\text{Solution in tank A} = \frac{80}{100} \times 14000 = 11200 \text{ gallons}$$

$$\text{Solution in tank A} = \frac{40}{100} \times 20000 = 8000 \text{ gallons}$$

$$\therefore \text{Total solution} = 11200 + 8000 = 19200 \text{ gallons}$$



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01





Out of the following four sentences, select the most suitable sentence with respect to grammar and usage.

- (A) I will not leave the place until the minister does not meet me.
- (B) I will not leave the place until the minister doesn't meet me.
- (C) I will not leave the place until the minister meet me.
- (D) I will not leave the place until the minister meets me.



Sol.01 -(D)

Solution:

Not is already embedded in until. So, A and B are incorrect.

Also, the minister is a single person, and with a singular subject, singular verb follows(ending in 's').

Thus, C is incorrect and D is the right answer.

A rewording of something written or spoken is a _____.

- (A) paraphrase
- (B) paradox
- (C) paradigm
- (D) paraffin

IISc, Bangalore GATE 2016



Sol.02 –(A)

Solution:

Paraphrase – To express something in different words so that it becomes easy for the listener to understand.

Paradox – A statement which sounds logical, but proves to be illogical when investigated.

Paradigm – A way of looking or thinking (perception) about something.

Paraffin – A flammable substance used in candles, polishes, etc.

So, A is the correct choice.



Archimseedes said, "Give me a lever long enough and a fulcrum on which to place it, and I will move the world."

The sentence above is an example of a _____ statement.

- (A) figurative
- (B) collateral
- (C) literal
- (D) figurine



Sol.03 -(A)

Solution:

Here, we are talking about figure of speech So, figurative is figure of speech meaning: Use of metamorphic meaning of words to explain your thoughts instead of literal use of them.



If 'relftaga' means carefree, 'otaga' means careful and 'fertaga' means careless, which of the following could mean aftercare'?

- (A) zentaga
- (B) tagafer
- (C) tagazen
- (D) relffer



Sol.04 –(C)

Solution:

'taga' and 'care' are a matching pair in every combination.

So, 'taga' surely represents 'care'.

Also, note here that the second half of the word in encoded value refers to the first half of the word in the decoded value.

So, 'fer' represents 'less', 'relf' represents 'free' and 'o' represents 'ful'.

Going by checking the options, the answer would be tagazen, i.e., C.



A cube is built using 64 cubic blocks of side one unit. After it is built, one cubic block is removed from every corner of the cube. The resulting surface area of the body (in square units) after the removal is _____

- (A) 56
- (B) 64
- (C) 72
- (D) 96



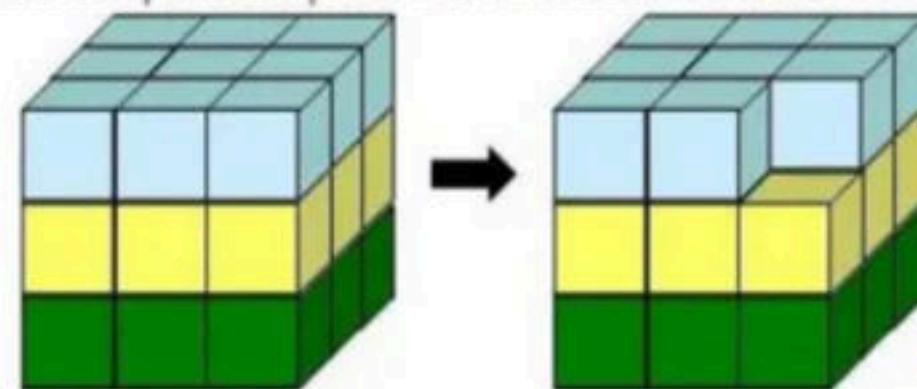
Sol.05 -(D)

Solution:

Four blocks are needed for each direction (totally 3 directions) to build a bigger cube containing 64 blocks. So area of one side of the bigger cube
 $= 4 \times 4 = 16$ units

There are 6 faces so total area $= 6 \times 16 = 96$ units

When cubes at the corners are removed they introduce new surfaces equal to exposed surfaces so the area of the bigger cube does not change from 96.



No Change in outer surface area



A shaving set company sells 4 different types of razors, Elegance, Smooth, Soft and Executive.

Elegance sells at Rs. 48, Smooth at Rs. 63, Soft at Rs. 78 and Executive at Rs. 173 per piece. The table below shows the numbers of each razor sold in each quarter of a year.

- (A) Elegance
- (B) Executive
- (C) Smooth
- (D) Soft

Quarter/ Product	Elegance	Smooth	Soft	Executive
Q1	27300	20009	17602	9999
Q2	25222	19392	18445	8949
Q3	28976	22429	19544	10234
Q4	21012	18229	16595	10109



Sol.06 –(B) **Solution:**

Revenue from Elegance = $(27300+25222+28976+21012) * \text{Rs. } 48 = \text{Rs. } 4920480$

Revenue from Smooth = $(20009+19392+22429+18229) * \text{Rs. } 63 = \text{Rs. } 5043717$

Revenue from Soft = $(17602+18445+19544+16595) * \text{Rs. } 78 = \text{Rs. } 5630508$

Revenue from Executive = $(9999+8942+10234+10109) * \text{Rs. } 173 = \text{Rs. } 6796132$

Total Revenue = Rs. 22390837

Fraction of Revenue for Elegance = 0.219

Fraction of Revenue for Smooth = 0.225

Fraction of Revenue for Soft = 0.251

Fraction of Revenue for Executive = 0.303

Thus, B (Executive) is the correct answer.



Indian currency notes show the denomination indicated in at least seventeen languages. If this is not an indication of the nation's diversity, nothing else is. Which of the following can be logically inferred from the above sentences?

- (A) India is a country of exactly seventeen languages.
- (B) Linguistic pluralism is the only indicator of a nation's diversity.
- (C) Indian currency notes have sufficient space for all the Indian languages.
- (D) Linguistic pluralism is strong evidence of India's diversity.



Sol.07 -(D)

Solution:

A is incorrect as it cannot be inferred that exactly 17 languages are there, because the statement says that there are atleast 17 languages on the currency note.
B is incorrect because of the word 'only' in the option, which is too strong to be inferred.
C is incorrect as it says 'space for all Indian languages', but the number of languages in India is not mentioned in the question.
D is correct as it can be easily inferred from the statement.



Consider the following statements relating to the level of poker play of four players P, Q, R and S.

- I. P always beats Q
- II. R always beats S
- III. S loses to P only sometimes
- IV. R always loses to Q

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

- (i) P is likely to beat all the three other players
- (ii) S is the absolute worst player in the set

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



Sol.08 -(D)

Solution:

All three can Beat S, but S loses to P only sometimes. So, (ii) can not be inferred from the given statements.

Defeating in Poker is not transitive. P beats Q. Q beats R and R beats S. Yet S loses to P only sometimes, meaning that S mostly wins against P. So we can not logically infer that P is likely to beat R.



If $f(x^7) = 2x^7 + 3x - 5$, which of the following is a factor of $f(x)$?

- (A) $(x^3 + 8)$
- (B) $(x - 1)$
- (C) $(2x - 5)$
- (D) $(x + 1)$



Sol.09 -(B)

Solution:

from the option (b) substitute $x = 1$ in

$$2x^7 + 3x - 5 = 0$$

$$2(1)^7 + 3(1) - 5 = 0;$$

$$5 - 5 = 0$$

So $(x - 1)$ is a factor of $f(x)$



In a process, the number of cycles to failure decreases exponentially with an increase in load. At a load of 80 units, it takes 100 cycles for failure. When the load is halved, it takes 10000 cycles for failure. The load for which the failure will happen in 5000 cycles is _____.

- (A) 40.00
- (B) 46.02
- (C) 60.01
- (D) 92.02



Sol.10 -(B)

Solution:

From the data given we approximate

$$\text{load} = \frac{\text{exponent}}{\log(\text{cycles})}$$

$$80 = \frac{x}{\log(100)} \Rightarrow x = 160$$

$$40 = \frac{x}{\log(10000)} \Rightarrow x = 160$$

$$\text{load} = \frac{160}{\log 5000} = 43.25$$

So closest answer is 46.02

Note: We have done an approximation.

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02



If I were you, I _____ that laptop. Its too much expensive,

- (A) won't buy
- (B) shan't buy
- (C) wouldn't buy
- (D) would buy



Sol.01 -(C)

Solution:

In if clause 'were' is in the past tense so the main clause should be in the conditional clause (past tense).

If I were you, I wouldn't buy that laptop. It's too much expensive.

Therefore 'C' is the best answer



He turned a deaf ear to my request.

What does the underlined phrasal verb mean?

- (A) ignored
- (B) appreciated
- (C) twisted
- (D) returned



Sol.02 –(A)

Solution:

'turned a deaf ear' means ignored



Choose the most appropriate set of words from the options given below to complete the following sentence . _____, _____ is a will, _____ is a way.

- (A) Wear, there, their
- (B) Were, their, there
- (C) Where, there, there
- (D) Where, their, their

Sol.03 –(C)

Solution:

Where there is a will there is a way. It is a quotation



(x% of y) + (y% of x) is equivalent to _____.

- (A) 2 % of xy
- (B) 2 % of $(xy/100)$
- (C) xy % of 100
- (D) 100 % of xy



Sol.04 -(A)

Solution:

$$x\% \text{ of } y = \frac{x}{100}y = \frac{xy}{100}$$

$$y\% \text{ of } x = \frac{y}{100}x = \frac{xy}{100}$$

$$(x\% \text{ of } y) + (y\% \text{ of } x) = \frac{2}{100}xy = 2\% \text{ of } xy$$



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

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Sol.05 -(A)

Solution:

Let the original number be xy

y —unit digit of

$$x + y = 12 \quad \text{---(1)}$$

$$10y + x = 10x + y + 54$$

$$9x - 9y = -54 \quad \text{---(2)}$$

Solving (1) & (2) we get, $x = 3$ and $y = 9$

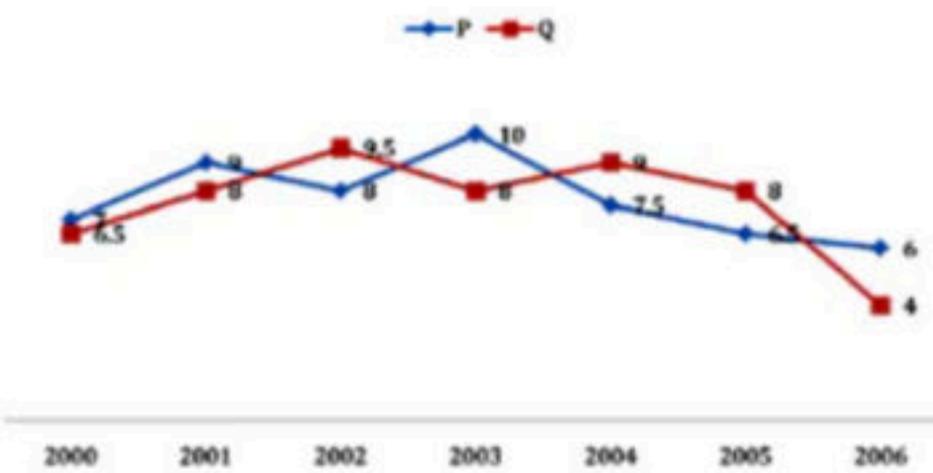
So the number is 39



Two finance companies, P and Q, declared fixed annual rates of interest on the amounts invested with them. The rates of interest offered by these companies may differ from year to year. Year-wise annual rates of interest offered by these companies are shown by the line graph provided below

If the amounts invested in the companies, P and Q, in 2006 are in the ratio 8 : 9, then the amounts received after one year as interests from companies P and Q would be in the ratio:

- (A) 2:3
- (B) 3:4
- (C) 6:7
- (D) 4:3





Sol.06 -(D)

Solution:

let the deposited money in the company P is $8x$

And the deposited money in the company Q is $9x$

Interest after one year from the company P = $8x \left(\frac{6}{100} \right)$

Interest after one year from the company Q = $9x \left(\frac{4}{100} \right)$

$$\text{Ratio of Interest} = \frac{\frac{8x \times 6}{100}}{\frac{9x \times 4}{100}} = \frac{4}{3}$$



Today, we consider Ashoka as a great ruler because of the copious evidence he left behind in the form of stone carved edicts. Historians tend to correlate greatness of a king at his time with the availability of evidence today.

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

- (A) Emperors who do not leave significant sculpted evidence are completely forgotten.
- (B) Ashoka produced stone carved edicts to ensure that later historians will respect him.
- (C) Statues of kings are a reminder of their greatness.
- (D) A king's greatness, as we know him today, is interpreted by historians



Sol.07 -(D)

Solution:

'Today, historians correlate greatness of a king at his time with the availability of evidence.' This statement leads to the best inference i.e. option 'D'



Fact 1: Humans are mammals.

Fact 2: Some humans are engineers.

Fact 3: Engineers build houses.

If the above statements are facts, which of the following can be logically inferred?

- I. All mammals build houses.
- II. Engineers are mammals.
- III. Some humans are not engineers.

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

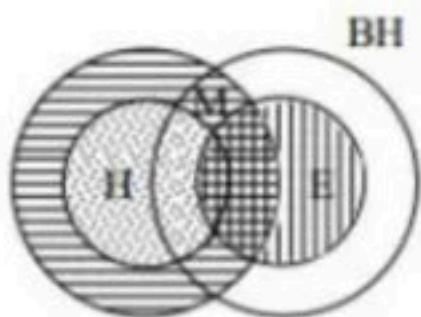
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Sol.08 –(B)

Solution:

From given facts, the following venn diagram is possible.



H = Humans

M = Mammals

E = Engineers

BH = Build houses

∴

From above diagram, we can clearly say statement III is true.



A square pyramid has a base perimeter x , and the slant height is half of the perimeter. What is the lateral surface area of the pyramid?

- (A) x^2
- (B) $0.75x^2$
- (C) $0.50x^2$
- (D) $0.25x^2$



Sol.09 -(D)

Solution:

Lateral surface area of the square pyramid

$$A = a\sqrt{a^2 + 4h^2} \quad 4a \rightarrow \text{perimeter}$$

$h \rightarrow \text{height}$

$l \rightarrow \text{slanting height}$

$$P = \left(\frac{a}{2}\right)^2 + h^2 \Rightarrow h^2 = \left(P - \frac{a^2}{2}\right)$$

$$A = a\sqrt{a^2 + 4\left(l^2 - \frac{a^2}{2}\right)} = a2l$$

$$A = 2al = 2 \times \frac{P}{4} \times \frac{P}{2}$$

$$= 0.25P^2 = 0.25x^2$$



Ananth takes 6 hours and Bharath takes 4 hours to read a book. Both started reading copies of the book at the same time. After how many hours is the number of pages to be read by Ananth, twice that to be read by Bharath? Assume Ananth and Bharath read all the pages with constant pace.

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



Sol.10 -(C) **Solution:**

Ananth covers $1/6$ of the book in 1 hour.

Bharath covers $1/4$ of the book in 1 hour

$$\frac{\left(\frac{1}{6}\right)X}{\frac{1}{4}} = 2 \Rightarrow X = 3 \text{ hrs}$$



Thank You

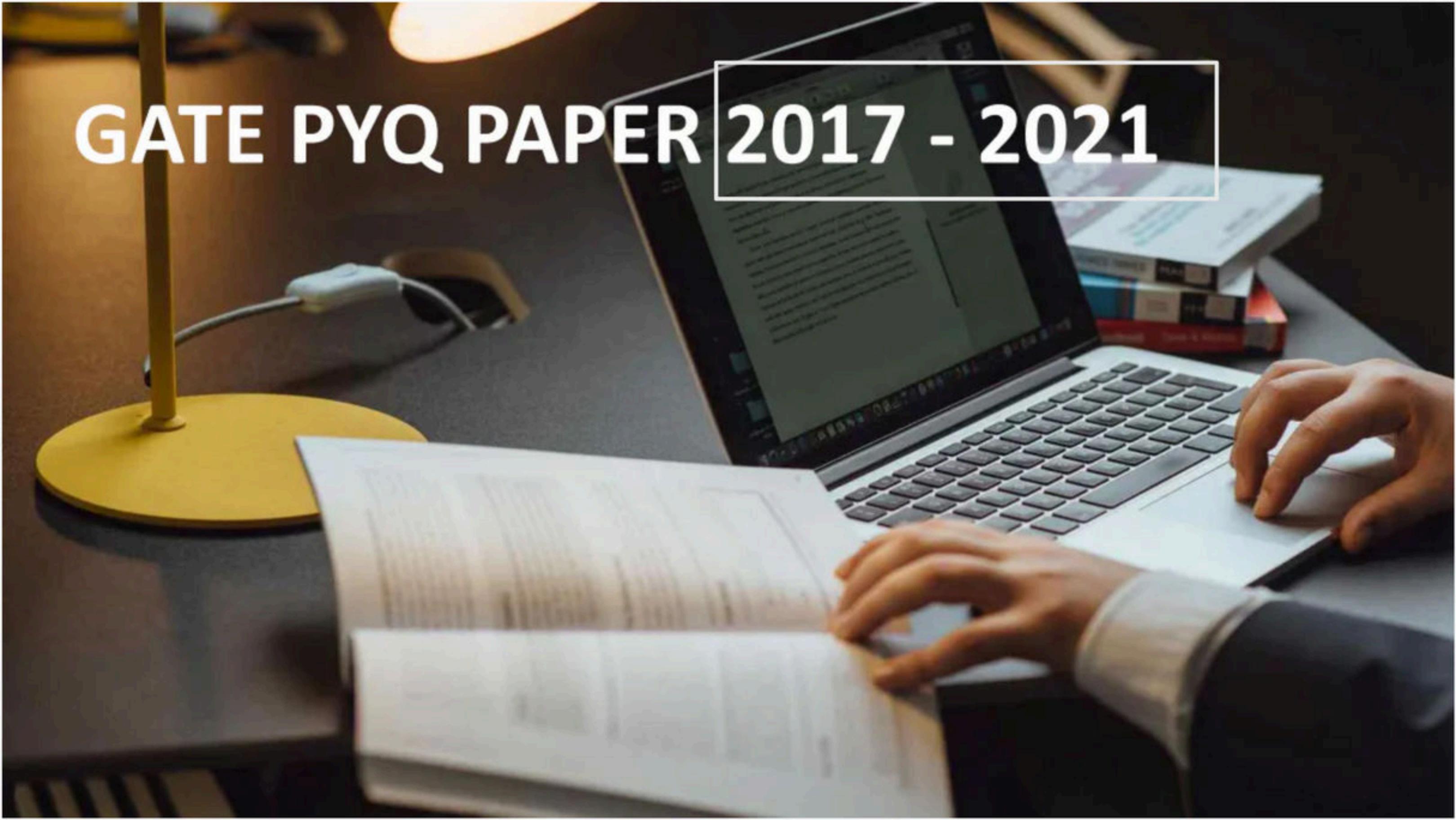


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A dark blue and black abstract geometric background featuring a large, stylized, three-dimensional shape composed of numerous small triangles. The shape has a sharp, pointed top right corner and a flatter base. The colors transition from dark navy blue at the top left to lighter shades of blue and white towards the bottom right.

GATE PYQ PAPER **2017**

01



Consider the following sentences:

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

- i. Some beds are lamps.
- ii. Some lamps are beds.

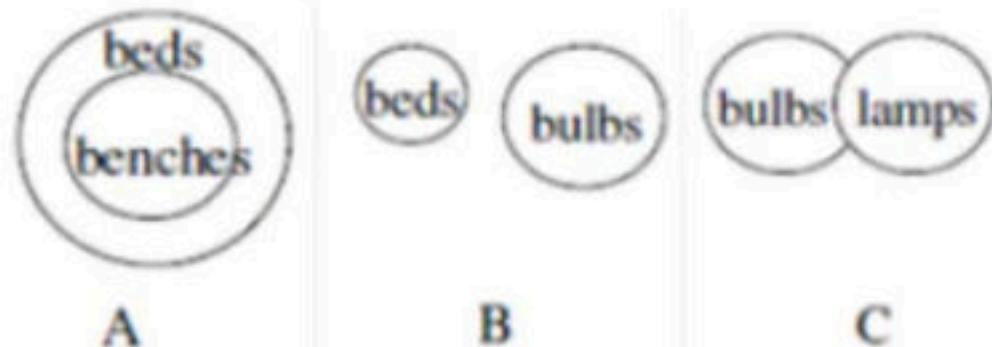
- (A) Only i
- (B) Only ii
- (C) Both i and ii
- (D) Neither i nor ii

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Sol.01 -(D)

Solution:



Since there is no direct relation given between lamps and beds. So, neither will be correct



The following sequence of numbers is arranged in increasing order : 1, x, x, x, y, y, 9, 16, 18. Given that the mean and median are equal, and are also equal to twice the mode, the value of y is

- (A) 5
- (B) 6
- (C) 7
- (D) 8



Sol.02 -(D)

Solution:

$$1, x, x, x, y, y, 9, 16, 18$$

Given, Mean=Median=2Mode

$$\Rightarrow \text{Mean} = \text{Median} = 2X [\because \text{Mode} = x] \rightarrow (1)$$

Note: The mode of a set of data values is the value that appears most often. It is the value x at which its probability mass function takes its maximum value.

\therefore Mean of data

$$\frac{3x+2y+44}{9}$$

$$\Rightarrow 2x = \frac{3x+2y+44}{9} \Rightarrow 15x - 2y = 44 \rightarrow (2)$$

Note:

In order to calculate the **median**, the data must first be ranked (sorted in ascending order).

The **median** is the number in the middle. **Median** = the middle value of a set of ordered data.

Median of the data = $y \rightarrow (3)$

$$\therefore y = 2x \rightarrow (4) [\because \text{Median} = 2\text{Mode}]$$

$$\text{From}(2); 11x = 44 \Rightarrow x = 4; \therefore y = 8$$



The bacteria in milk are destroyed when it _____ heated to 80 degree Celsius.

- (A) would be
- (B) will be
- (C) is
- (D) was



Sol.03 –(C)

Solution:

The bacteria in milk are destroyed when it
is
heated to 80 degree Celsius



If the radius of a right circular cone is increased by 50%, its volume increases by

- (A) 75%
- (B) 100%
- (C) 125%
- (D) 237.5%



Sol.04 -(C)

Solution:

Given, radius of a right circular cone is increased by 50%.

Let, height of the circular cone = (h)

A volume of the right circular cone(V)

$$= \frac{1}{3} \pi R^2 h \dots\dots\dots(1)$$

If $R \rightarrow R + R/2 = 3R/2$

then, V

1

$$= (1/3)\Pi(1.5R)$$

2

h = 2.25V

So, Percentage increase in volume = $100(V - 1)$

1

$$-\frac{V}{V} \times 100 = 100 \times \frac{(2.25V - V)}{V} = 125\%$$



_____ with someone else's email account is now very serious offence.

- (A) Involving
- (B) Assisting
- (C) Tampering
- (D) Incubating



Sol.05 –(C)

Solution:

Tamper - interfere with (something) in order to cause damage or make unauthorized alterations.

Tampering with someone else's email account is now very serious offence.

Students applying for hostel rooms are allotted rooms in order of seniority. Students already staying in a room will move if they get a room in their preferred list. Preferences of lower ranked applicants are ignored during allocation. Given the data below, which room will Ajit stay in?

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

Names	Student Seniority	Current room	Room preference list
Amar	1	P	R, Q, S
Akbar	2	None	
Anthony	3	Q	P
Ajit	4	S	Q, P, R



Sol.06 -(B)

Solution:

From given table, Amar is at higher priority number 1. His preference will be considered first. His first preference is R. Hence, he will be allotted room R. Coming to Akbar, his first preference is R, but it is already allotted to Amar so, his second preference will be considered which is S and is unallotted. Hence, Akbar will be allotted room S.

Coming to Anthony, his only preference is P and is unallotted so he will be allotted room P.

Coming to Ajit, he will be allotted the remaining unallotted room which is Q.



The bar graph below shows the output of five carpenters over one month, each of whom made different items of furniture: Chairs, tables, and beds.

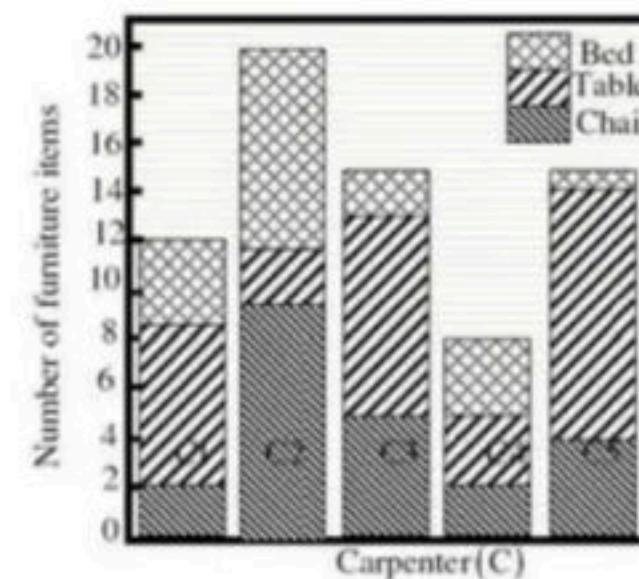
Consider the following statements.

i. The number of beds made by carpenter C2 is exactly the same as the number of tables made by carpenter C3.

ii. The total number of chairs made by all carpenters is less than the total number of tables.

Which one of the following is true?

- (A) Only i
- (B) Only ii
- (C) Both i and ii
- (D) Neither i nor ii





Sol.07 –(C)

Solution:

i. The number of beds made by carpenter C_2 is exactly the same as the number of table made by carpenter C_3 , i.e., beds made by carpenter $C_2 = 8 =$ tables made by carpenter C_3 [:: From the bargraph]

So,

(i) is correct

ii. Total Number of tables made by all carpenters=31.

iii. Total Number of chairs made by all carpenters=23

$\therefore 23 < 31$

\therefore (ii) is correct



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

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



Sol.08 -(B)

Solution:

We have,

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

All power values are divide with 4 then the possible remainders are 3, 1, 3 and 1

$$(1)^3 + (2)^1 + (3)^3 + (4)^1$$

$$1+2+27+4 = 34$$

\therefore The last digit is '4'



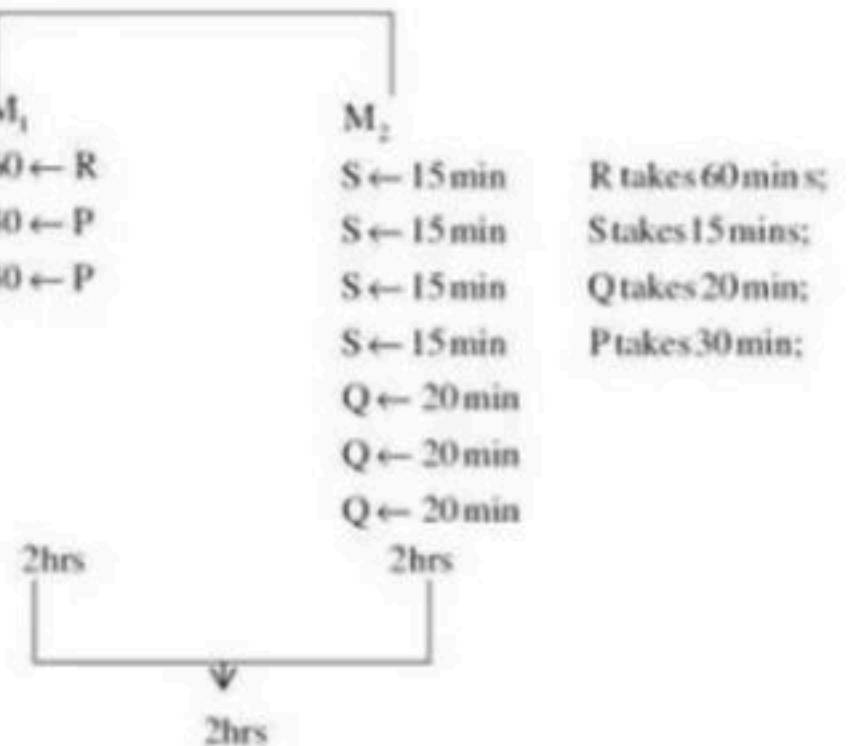
Two machines M1 and M2 are able to execute any of four jobs P, Q, R and S. The machines can perform one job on one object at a time. Jobs P, Q, R and S take 30 minutes, 20 minutes, 60 minutes and 15 minutes each respectively. There are 10 objects each requiring exactly 1 job. Job P is to be performed on 2 objects. Job Q on 3 objects. Job R on 1 object and Job S on 4 objects. What is the minimum time needed to complete all the jobs?

- (A) 2 hours
- (B) 2.5 hours
- (C) 3 hours
- (D) 3.5 hours



Sol.09 -(A)

Solution:



OR

$$P = 30\text{ min} \times 2 = 60\text{ min}$$

$$Q = 20\text{ min} \times 3 = 60\text{ min}$$

$$R = 60\text{ min} \times 1 = 60\text{ min}$$

$$P = 15\text{ min} \times 4 = 60\text{ min}$$

M_1

$$P Q = 2\text{ hrs}$$

M_2

$$P S = 2\text{ hrs}$$



The old concert hall was demolished because of fears that the foundation would be affected by the construction of the new metro line in the area. Modern technology for underground metro construction tried to mitigate the impact of pressurized air pockets created by the excavation of large amounts of soil. But even with these safeguards, it was feared that the soil below the concert hall would not be stable. From this, one can infer that

- (A) The foundations of old buildings create pressurized air pockets underground, which are difficult to handle during metro construction.
- (B) Metro construction has to be done carefully considering its impact on the foundations of existing buildings.
- (C) Old buildings in an area form an impossible hurdle to metro construction in that area.
- (D) Pressurized air can be used to excavate large amounts of soil from underground areas.



Sol.10 -(B)

Solution:

Metro construction has to be done carefully considering its impact on the foundations of existing buildings.

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02



There was no doubt that their work was thorough.

Which of the words below is closest in meaning to the underlined word above?

- (A) Pretty
- (B) Complete
- (C) Sloppy
- (D) Haphazard



Sol.01 -(B)

Solution:

Thorough:

complete with regard to every detail; not superficial or partial.



Four cards lie on a table. Each card has a number printed on one side and a colour on the other. The faces visible on the cards are 2, 3, red, and blue. Proposition: If a card has an even value on one side, then its opposite face is red. The cards which MUST be turned over to verify the above proposition are

- (A) 2, Red
- (B) 2,3, red
- (C) 2, blue
- (D) 2, red, blue



Sol.02 -(C)

Solution:

The proposition said that even value has red face but it is not necessary that red face has even value so we cannot use red now we cannot use 3 because it may have red face or blue face.

We use 2 to check the opposite side for red color and we use blue to check for odd number. So answer is (C) 2, blue.



Two dice are thrown simultaneously. The probability that the product of the numbers appearing on the top faces of the dice is a perfect square is

- (A) $1/9$
- (B) $2/9$
- (C) $1/3$
- (D) $4/9$



Sol.03 -(B)

Solution:

(Possible outcomes - (1 1), (2 2), (3 3), (4 4), (5 5), (6 6), (4 1), (1 4), hence favorable outcomes= 8

Total outcomes = 36

Required probability= $8/36 = 2/9$

What is the value of x when $81 \times \left(\frac{16}{25}\right)^{x+2} \div \left(\frac{3}{5}\right)^{2x+4} = 144$?

- (A) 1
- (B) -1
- (C) -2
- (D) cannot be determined

Sol.04 -(B)

Solution:

$$3^4 \times \left(\frac{2^4}{5^2}\right)^{x+2} \times \left(\frac{5}{3}\right)^{2x+4} = 2^4 3^2$$

$$\Rightarrow 2^{4x+8} 3^{-2x} = 2^4 3^2$$

$$\Rightarrow x = -1$$



The event would have been successful if you able to come.

- (A) are
- (B) had been
- (C) have been
- (D) would have been

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Sol.05 -(B)

Solution:

Conditional tense type (3 had+ third verb +would have + third verb)



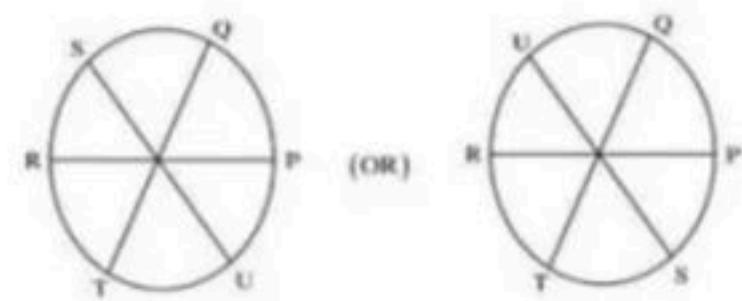
R Q, R, S, T and U are seated around a circular table. R is seated two places to the right of Q. P is seated three places to the left of R. S is seated opposite U. If P and U now switch seats. Which of the following must necessarily be true?

- (A) P is immediately to the right of R
- (B) T is immediately to the left of P
- (C) T is immediately to the left of P or P is immediately to the right of Q
- (D) U is immediately to the right of R or P is immediately to the left of T

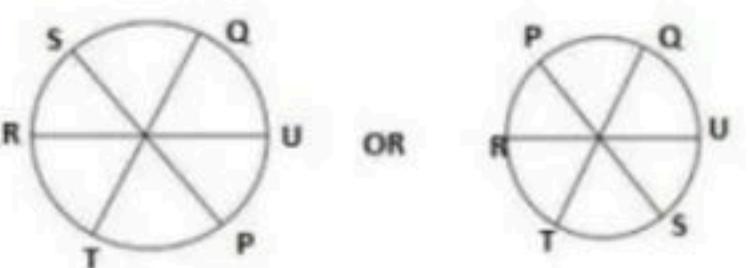


Sol.06 -(C)

Solution:



P \leftrightarrow U Now, P & U switch seats; then there are 2 possibilities



So from this diagram, we can predict that option 3 is always true.



Bhaichung was observing the pattern of people entering and leaving a car service centre. There was a single window where customers were being served. He saw that people inevitably came out of the centre in the order that they went in. However, the time they spent inside seemed to vary a lot: some people came out in a matter of minutes while for others it took much longer.
From this, what can one conclude?

- (A) The centre operates on a first-come-first-served basis but with variable service times, depending on specific customer needs.
- (B) Customers were served in an arbitrary order since they took varying amounts of time for service completion in the centre.
- (C) Since some people came out within a few minutes of entering the centre. The system is likely to operate on a last-come-first-served basis.
- (D) Entering the centre early ensured that one would have shorter service times and most people attempted to do this.

Sol.07 -(A)

Solution:

People coming out in the same order in which they enter indicates that the centre operates on a first come first serve basis.



A map shows the elevations of Darjeeling, Gangtok, Kalimpong, Pelling, and Siliguri. Kalimpong is at a lower elevation than Gangtok. Pelling is at a lower elevation than Gangtok. Pelling is at a higher elevation than Siliguri. Darjeeling is at a higher elevation than Gangtok.

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

- i. Pelling is at a higher elevation than Kalimpong
- ii. Kalimpong is at a lower elevation than Darjeeling
- iii. Kalimpong is at a higher elevation than Siliguri
- iv. Siliguri is at a lower elevation than Gangtok

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



Sol.08 –(C)

Solution:

: “Kalimpong is at a lower elevation than Darjeeling” &

“Siliguri is at a lower elevation than Gangtok” can be easily inferred from the given paragraphs.



Budhan covers a distance of 19 km in 2 hours by cycling one fourth of the time and walking the rest. The next day he cycles (at the same speed as before) for half the time and walks the rest (at the same speed as before) and covers 26 km in 2 hours. The speed in km/h at which Budhan walks is

- (A) 1
- (B) 4
- (C) 5
- (D) 6

Sol.09 -(D)

Solution:

Let cycling speed=C; and walking speed=W

$$C\left(\frac{1}{2}\right) + W\left(\frac{3}{2}\right) = 19 \dots(1)$$

$$C + W = 26 \dots(2)$$

On solving (1) & (2), we get $W=6$ km/hr



The points in the graph below represent the halts of a lift for duration of 1 minute, over a period of 1 hour.

Which of the following statements are correct?

- i. The elevator never moves directly from any non-ground floor to another non-ground floor over the one hour period
- ii. The elevator stays on the fourth floor for the longest duration over the one hour period

- (A) Only i
- (B) Only ii
- (C) Both i and ii
- (D) Neither i nor ii

Sol.10 -(D)

Solution:

- (i). is incorrect as it moves directly from one non-ground floor to another non-ground floor.
- (ii). is incorrect as it stayed for the maximum duration on the ground floor.

GATE PYQ PAPER 2018
01





The temperature y in a room varies as a function of the outside temperature T_0 and the number of persons in the room p , according to the relation $T = K[\theta p + T_0] z$ where θ is K are constants. What would be the value of z given the following data?

- (A) 0.8
- (B) 1.0
- (C) 2.0
- (D) 10.0

T_0	P	T
25	2	32.4
30	5	42.0



Sol.01 -(B)

Solution:

$$T_1 = k(\theta p_1 + T_{o1}) \quad \dots \dots 1$$

$$T_2 = k(\theta p_2 + T_{o2}) \quad \dots \dots 2$$

Hence,

$$32.4 = k(2\theta + 25) \quad \dots \dots 1$$

$$42 = k(5\theta + 30) \quad \dots \dots 2$$

Dividing equation 2/1

$$\frac{42}{32.4} = \frac{5\theta + 30}{2\theta + 25}$$

$$84\theta + 1050 = 162\theta + 972$$

$$78\theta = 78$$

$$\theta = 1$$



"It is no surprise that every society has had codes of behaviour ; however, the nature of these codes is often _____."

The word that best fills the blank in the above sentence is

- (A) unpredictable
- (B) simple
- (C) expected
- (D) strict



Sol.02 -(A)

Solution:

Unpredictable – Contrary word required



"The driver applied the _____ as soon as she approached the hotel where she wanted to take a _____."

The words that best fill the blanks in the above sentence are

- (A) brake, break
- (B) break, break
- (C) brake, brake
- (D) break, brake



Sol.03 –(A)

Solution:

- Brake is a device which is used for stopping or moving a vehicle.
- Break refers to a pause in work or during an activity.



Hema's age is 5 years more than twice Hari's age. Suresh's age is 13 years less than 10 times Hari's age. If Suresh is 3 times as old as Hema. How old is Hema?

- (A) 14
- (B) 17
- (C) 18
- (D) 19



Solution:

Let Hari's age be y years.

Sol.04 –(D)

$$\text{Hema} = 2y + 5 \dots \dots (1)$$

$$\text{Suresh} = 10y - 13 \dots \dots (2)$$

$$\text{Suresh} = 3 \text{ Hema} \dots (3)$$

Multiply eq (1) by 5,

$$\text{We get, } 5\text{Hema} = 10y + 25 \dots \dots (4)$$

Substitute (3) in (2)

$$\text{We get, } 3 \text{ Hema} = 10y - 13 \dots (5)$$

Now, (4) – (5)

$$\text{We get, } 2 \text{ Hema} = 0 + 38 = 38$$

$$\text{Hema} = 38/2 = 19 \text{ years.}$$

Hence, Hema is 19 years old.

Consider a sequence of number $a_1, a_2, a_3, \dots, a_n$ where $a_n = \frac{1}{n} - \frac{1}{n+2}$, for each integer $n > 0$. What is the sum of the first 50 terms?

- (A) $\left(1 + \frac{1}{2}\right) - \frac{1}{50}$
- (B) $\left(1 + \frac{1}{2}\right) - \frac{1}{50}$
- (C) $\left(1 + \frac{1}{2}\right) - \left(\frac{1}{50} + \frac{1}{52}\right)$
- (D) $1 - \left(\frac{1}{50} + \frac{1}{52}\right)$



Sol.05 -(C)

Solution:

Sum of series will

$$\left(1 - \frac{1}{3}\right) + \left(\frac{1}{2} - \frac{1}{4}\right) + \left(\frac{1}{3} - \frac{1}{5}\right) + \dots + \left(\frac{1}{48} - \frac{1}{50}\right) + \\ \left(\frac{1}{49} - \frac{1}{51}\right) + \left(\frac{1}{50} - \frac{1}{52}\right)$$

All like terms will cancel out and we will be left with

$$\left(1 + \frac{1}{2}\right) - \left(\frac{1}{51} + \frac{1}{52}\right)$$



A fruit seller sold a basket of fruits at 12.5% loss. Had he sold it for Rs. 108 more, he would have made a 10% gain. What is the loss in Rupees incurred by the fruit seller?

- (A) 48
- (B) 52
- (C) 60
- (D) 108



Sol.06 -(C) **Solution:**

$$12.5\%x + 10\%x = 108$$

$$x = \frac{108}{22.5}$$

So loss $108 \times \frac{12.5}{22.5} = 60$



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

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

A		D
B	G	E
C		F

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Sol.07 -(B)

Solution:

$$A \times B \times C = B \times G \times E = D \times E \times F = 72$$

$$8 \times 9 \times 1 = 9 \times 2 \times 4 = 3 \times 4 \times 6 = 72$$

Any of A, B, C, D, E, F, G cannot be 5.

[if any of the number is 5, that series should either end with 5 or 0 which might not happen in with the other series, so 5 cannot be the one]



The price of a wire made of a superalloy material is proportional to the square of its length. The price of 10 m length of the wire is Rs. 1600. What would be the total price (in Rs.) of two wires of lengths 4 m and 6 m?

- (A) 768
- (B) 832
- (C) 1440
- (D) 1600



Sol.08 -(B)

Solution:

$$C \propto W^2$$

$$C = kW^2$$

$$\Rightarrow C = k(10)^2 = 100k = 1600 \Rightarrow k = 16$$

$$C_1 = k(4)^2 = 16k$$

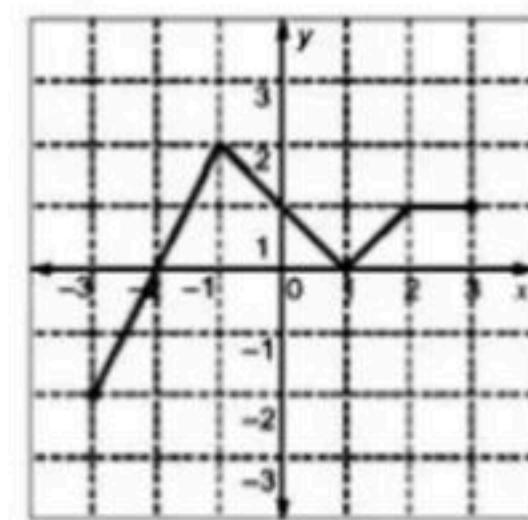
$$C_2 = k(6)^2 = 36k$$

$$\text{Now total cost} = 52k = 52 \times 16 = 832$$

What of the following function(s) in an accurate description of the graph for the range(s) indicated?

- i. $y = 2x + 4$ for $-3 \leq x \leq -1$
- ii. $y = |x - 1|$ for $-1 \leq x \leq 2$
- iii. $y = ||x| - 1|$ for $-1 \leq x \leq 2$
- iv. $y = 1$ for $2 \leq x \leq 3$

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





Sol.09 -(B)

Solution:

Put value and verify

(i)

$$y = 2x + 4$$

is true in

$$-3 \leq x \leq -1$$

On putting $x=-3, y=2$ and

$$x = -2, y = 0$$

and $x=-1, y=2$

(ii)

$$y = |x - 1|$$

is also true

$$(x = -1, y = 2),$$

$$(x = 0, y = 1)$$

and

$$(x = 1, y = 0)$$

(iv)

$$y = 1$$

in

$$(2 \leq x \leq 3)$$

always true

(i), (ii) and (iv) are true.



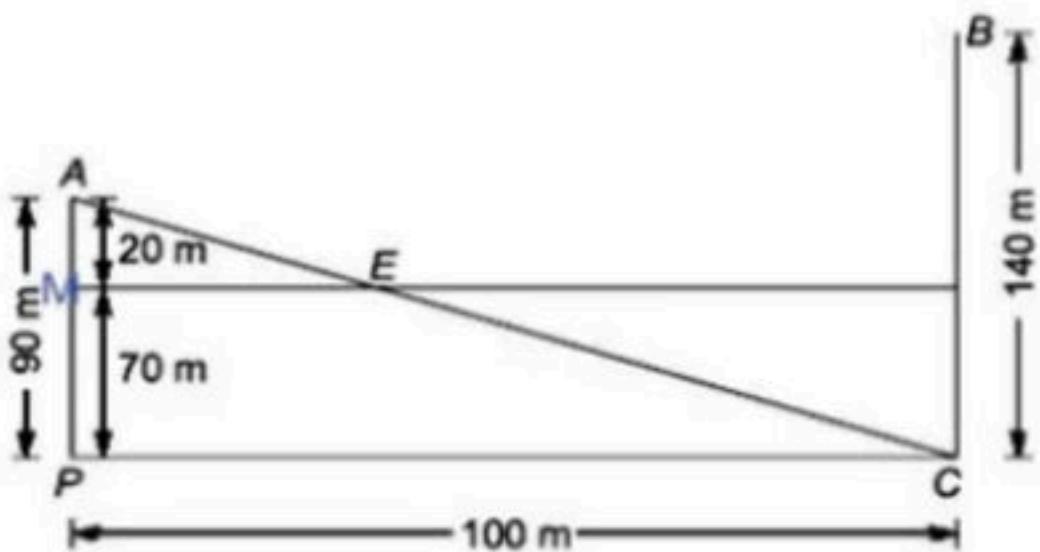
Tower A is 90 m tall and tower b is 140 m tall. They are 100 m apart. A horizontal skywalk connects the floors at 70 m in both the towers. If a taut rope connects the top of tower A to the bottom of tower B, at what distance (in meters) from tower A will the rope intersect the skywalk?

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Solution:

Sol.10 -()



$$\DeltaAME = \DeltaAPC$$

$$\frac{AM}{AP} = \frac{ME}{PC}$$

$$\Rightarrow \frac{20}{90} = \frac{ME}{100}$$

$$\Rightarrow ME = 22.22$$

GATE PYQ PAPER 2018
02





$\frac{a+a+a+\dots+a}{n \text{ times}} a^2 b$ and $\frac{b+b+b+\dots+b}{n \text{ times}} ab^2$, where a, b, n and m are natural numbers.
What is the value of $(\frac{m+m+m+\dots+m}{n \text{ times}}) (\frac{n+n+n+\dots+n}{n \text{ times}})$?

- (A) $2a^2b^2$
- (B) a^4b^4
- (C) $ab(a + b)$
- (D) $a^2 + b^2$



Solution:

Sol.01 -(B)

$$\Rightarrow n = ab$$

$$\Rightarrow m = ab$$

So, $\underbrace{m + m + \dots + m}_{n \text{ times}} \times \underbrace{n + n + \dots + n}_{m \text{ times}}$

i.e., $mn \times mn = (mn)^2$

from (i) and (ii) $mn = a^2b^2$

So, result, $(mn)^2 = (a^2b^2) = a^4b^4$



For non-negative integers a, b & c what would be the value of a + b + c if $\log a + \log b + \log c = 0$.

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



Solution:

As a, b, c are non-negative integers and given $\log a + \log b + \log c = 0$

Sol.02 -(A)

$$\begin{aligned} & \log(a \times b \times c) = \log 1 \\ \Rightarrow & \quad a = b = c = 1 \end{aligned}$$

Which can be possible for simple values.

$$a = b = c = 1$$

$$\text{Hence } a + b + c = 1 + 1 + 1 = 3$$

Alternate Method:

$$\text{Given, } a = b = c = 1$$

$$\log a + \log b + \log c = 0$$

As we know $\log 1 = 0$, so each one of them can be zero if $a = b = c = 1$

$$\log 1 + \log 1 + \log 1 = 0$$

By putting $a = b = 1$ equation satisfies

$$a + b + c = 1 + 1 + 1 = 3$$



A three-member committee has to be formed from a group of 9 people. How many such distinct committees can be formed?

- (A) 27
- (B) 72
- (C) 81
- (D) 84



Sol.03 -(D)

Solution:

$${}^9C_3 = \frac{9!}{6! \times 3!} = \frac{9 \times 8 \times 7}{6} = 84$$



"Although it does contain some pioneering ideas, one would hardly characterize the work as _____.

The word that best fills the blank in the above sentence is

- (A) innovative
- (B) simple
- (C) dull
- (d) boring



Sol.04 –(A)

Solution:

Innovative is similar to pioneer.



"His face _____ with joy when the solution of the puzzle was _____ to him." The words that best fill the blanks in the above sentence are

- (A) shone, shown
- (B) shone, shone
- (C) shown, shone
- (D) shown, shown



Sol.05 –(A)

Solution:

Shone – It is past – participle and past form of shine.

Shown – To show means to reveal and point out something.



A faulty wall clock is known to gain 15 minutes every 24 hours. It is synchronized to the correct time at 9 AM on 11th July. What will be the correct time to the nearest minute when the clock shows 2 PM on 15th July of the same year?

- (A) 12:45 PM
- (B) 12:58 PM
- (C) 1:00 PM
- (D) 2:00 PM

9 AM of 11 July of 2 PM on 15th July = 101 hours

$$\left(24 + \frac{15}{60}\right) \text{ hours of incorrect clock} = 24 \text{ hours of correct clock}$$

Sol.06 -(B)

$$\left(24 + \frac{15}{60}\right) \text{ hours of IC} = 24 \text{ hours of correct clock}$$

$$1 \text{ hour of IC} = \frac{96}{97} \text{ hours of correct clock}$$

$$101 \text{ hour of IC} = \frac{96}{97} \times 101 \text{ hours of correct clock}$$

$$= 99.958 \text{ hours of correct clock}$$

$$= 99 \text{ hours} + 0.95876 \times 60 \text{ minutes of correct clock}$$

$$= 99 \text{ hours} + 57.525 \text{ minutes}$$

$$= 99 \text{ hours and approx. 58 minutes}$$

So, correct time will be

$$2 \text{ PM, 11}^{\text{th}} \text{ July} + (99 \text{ hours and 58 minutes}) = 12 : 58 \text{ PM on } 15^{\text{th}} \text{ July}$$



Given that $\frac{\log P}{y-z} = \frac{\log Q}{z-x} = \frac{\log R}{x-y} = 10$ for $x \neq y \neq z$, what is the value of the product PQR ?

- (A) 0
- (B) 1
- (C) xyz
- (D) 10^{xyz}



Sol.07 -(B) **Solution:**

$$\log P = 10(y - z)$$

$$\log Q = 10(z - x)$$

$$\log R = 10(x - y)$$

$$\log P + \log Q + \log R = 0$$

$$\log(PQR) = \log 1$$

$$PQR = 1$$



In manufacturing industries, loss is usually taken to be proportional to the square of the deviation from a target. If the loss is Rs. 4900 for a deviation of 7 units, what would be the loss in Rupees for a deviation of 4 units from the target?

- (A) 400
- (B) 1200
- (C) 1600
- (D) 2800

Sol.08 -(C)

Solution:

$$\text{Loss} = kd^2$$

for deviation of 7 units

$$4900 = k (7)^2 \Rightarrow k = 100$$

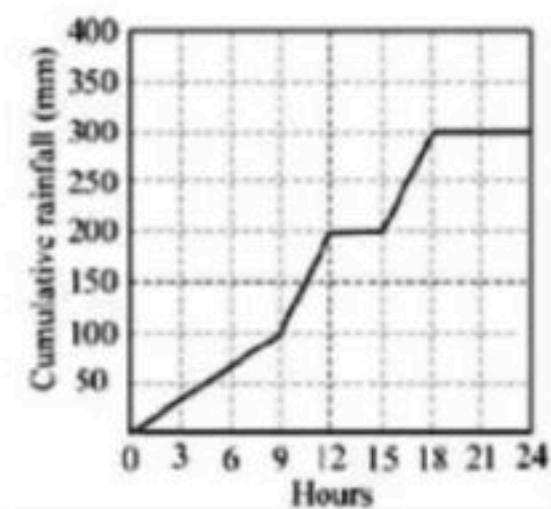
for deviation of 4 units

$$\text{loss} = 100 (4)^2 = 1600$$



The annual average rainfall in a tropical city is 1000 mm. On a particular rainy day (24-hour period), the cumulative rainfall experienced by the city is shown in the graph. Over the 24-hour period, 50% of the rainfall falling on a rooftop, which had an obstruction-free area of 50 m^2 , was harvested into a tank. What is the total volume of water collected in the tank in liters?

- (A) 25,000
- (B) 18,750
- (C) 7,500
- (D) 3-125





Sol.09 –(C)

Solution:

Cumulative rainfall = 300 mm

$$50\% \text{ of rainfall} = 300 \times \frac{50}{100} = 150 \text{ mm}$$

$$\text{Area} = 50 \text{ m}^2$$

$$\Rightarrow \text{Volume stored in tank} = 150 \times 10^{-3} \times 50 \text{ m}^3$$

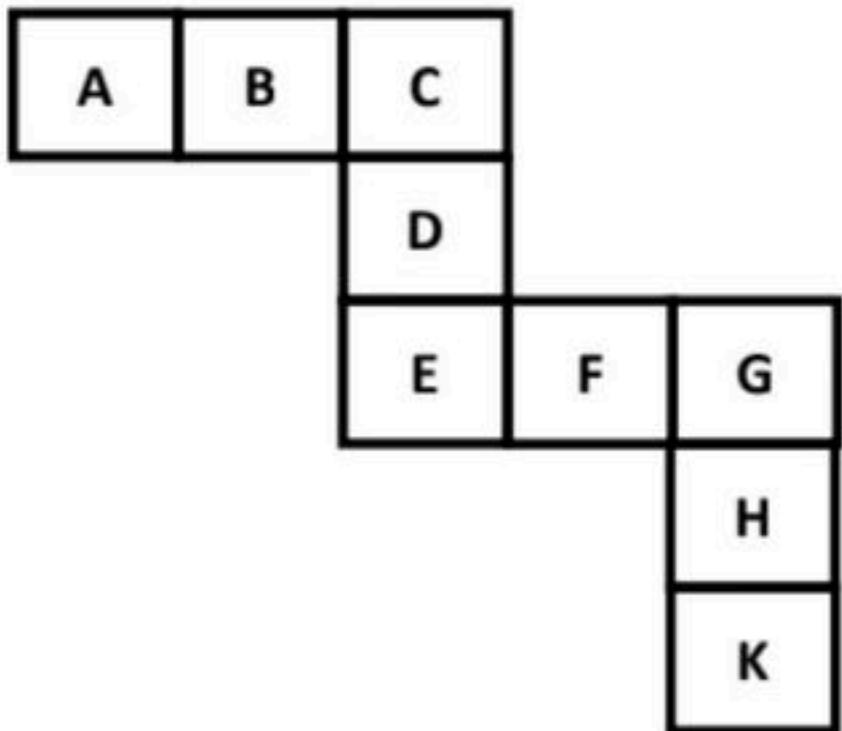
$$\text{or} = 7500 \text{ L}$$





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

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





Sol.10 -(B)

Solution:

$$\begin{aligned} A + B + C &= C + D + E = E + F + G \\ &= G + H + K = 13 \end{aligned}$$

If we add all, we will get

$$= 4 \times 13 = 52$$

But sum of all natural number 1 to 9

$$= 45 = \frac{9 \times 10}{2}$$

$$\begin{aligned} A + B + C + C + D + E + E + F + G + G + H + K \\ = 52 \end{aligned}$$

$$A + B + C + D + E + F + G + H + K = 45$$

Substraction eq. (iii) from (iv)

$$D - G = 6$$

$$E = 4$$

Substraction eq. (ii) from (i)

Hence,

$$C + E + G = 7$$

Also,

$$C + D + E = 13$$

Alternative Method

By checking other equations

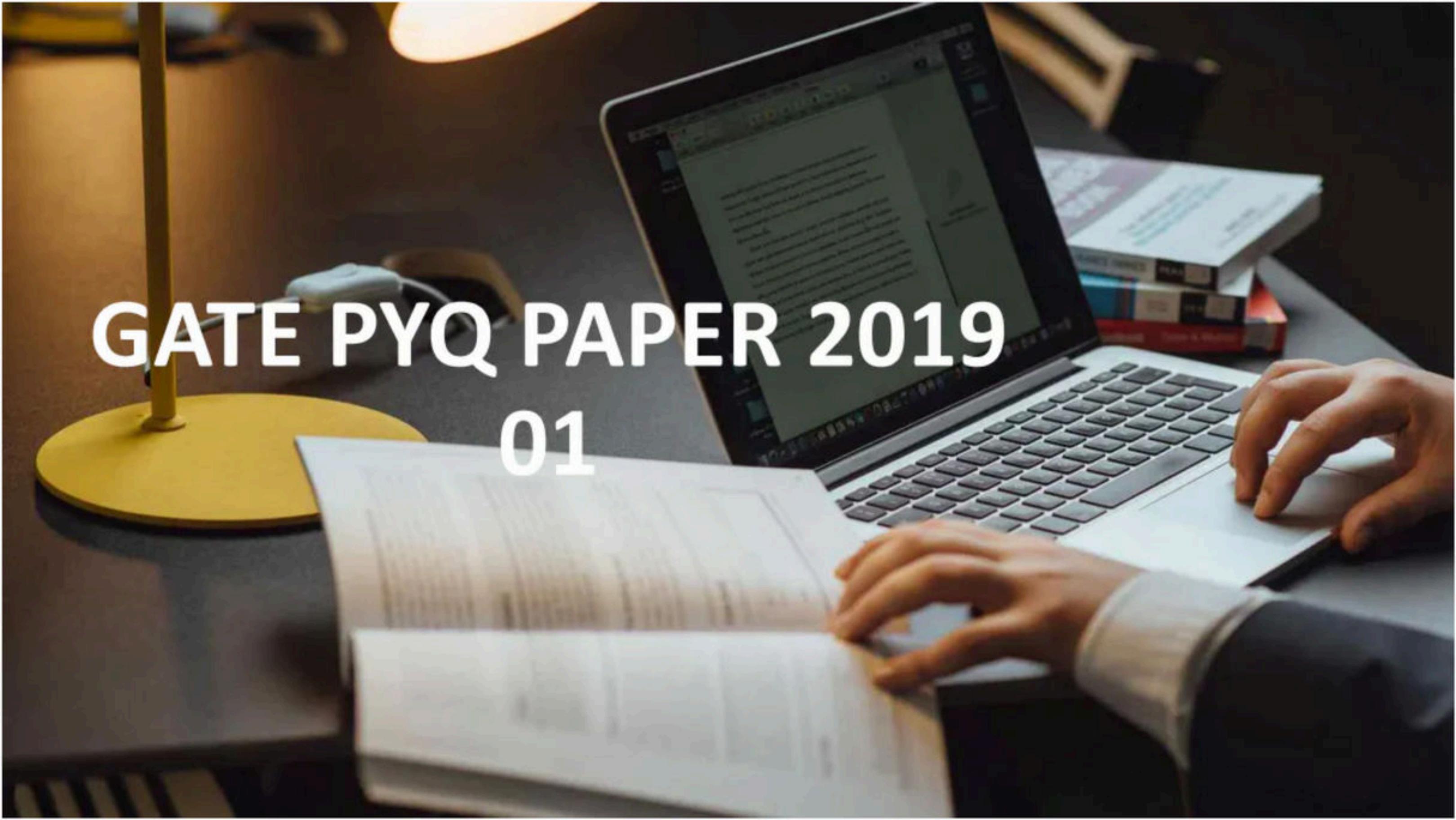
(ABC)	(CDE)	(EFG)	(GHK)
(1,3,9)	(1,8,4)	(2,4,7)	(2,5,6)

13

13

13

13

A photograph of a study setup. In the foreground, a person's hands are visible on a laptop keyboard. To the left, a stack of books is partially visible. In the background, there is a lamp with a yellow shade and a stack of papers or books. The lighting is warm.

GATE PYQ PAPER 2019

01



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

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



Sol.01 -(B)

Solution:

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

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

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



Sol.02 -(B)

Solution:

"me"



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

Sol.03 -(D)

Solution:

a few, quiet

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

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



Solution:

Sol.04 -(C)

$$P = 16 \times 2 = 32$$

$$E = 5 \times 2 = 10$$

$$S = 19 \times 2 = 38$$

$$T = 20 \times 2 = 40$$

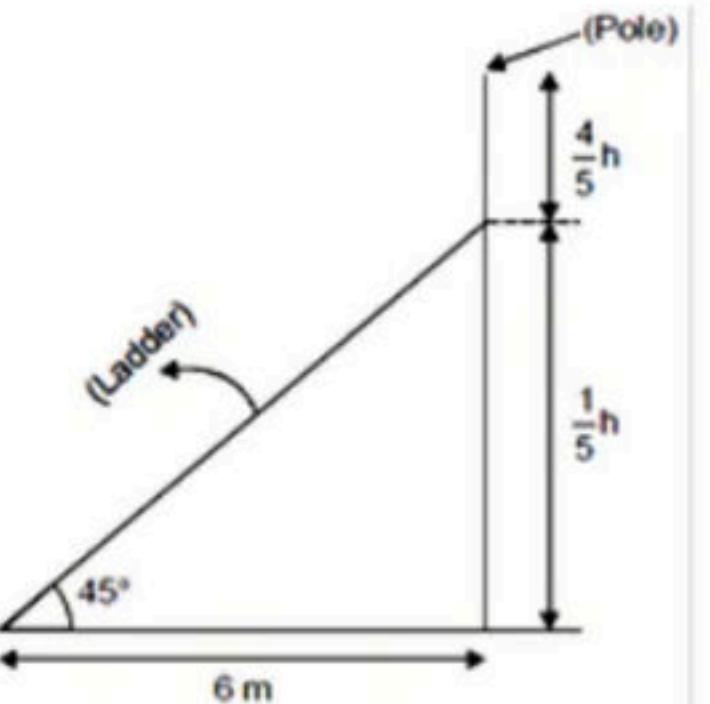
$$P + E + S + T = 120$$

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.



Solution:

Sol.05 -()



$$\begin{aligned}\tan 45^\circ &= \frac{h}{6} \\ \Rightarrow \quad 1 &= \frac{h}{30} \\ \Rightarrow \quad h &= 30 \text{ m}\end{aligned}$$



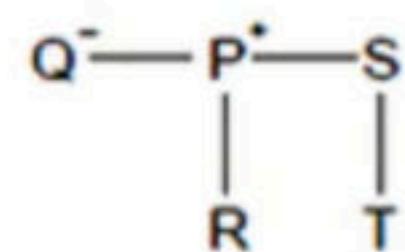
R Q, R, S and T are related and belong to the same family. P is the brother of S. Q is the wife of P. R and T are the children of the siblings P and S respectively. Which one of the following statements is necessarily FALSE?

- (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



Sol.06 -(B)

Solution:



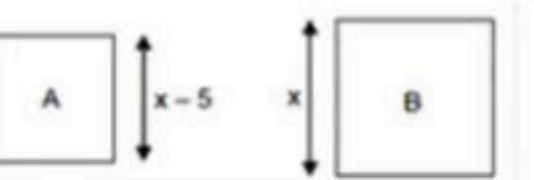
'T' is child of 'S'. So option (b) is right.



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

Solution:



Sol.07 –(C)

Given,

$$(\text{Area})_B = 4 \times (\text{Area})_A$$

$$\Rightarrow x^2 = 4(x - 5)^2$$

$$\Rightarrow x^2 = 4[x^2 + 25 - 10x]$$

$$\Rightarrow x^2 = 4x^2 + 100 - 40x$$

$$\Rightarrow 3x^2 - 40x + 100 = 0$$

$$\Rightarrow 3x^2 - 30x - 10x + 100 = 0$$

$$\Rightarrow 3x(x - 10) - 10(x - 10) = 0$$

$$\Rightarrow x = 10 \text{ or } x = \frac{10}{3}$$



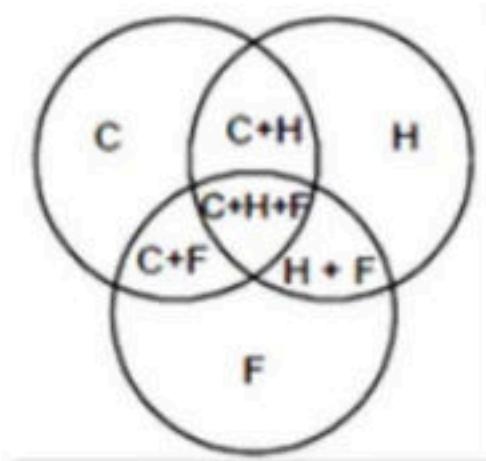
In a sports academy of 300 people, 105 play only cricket, 70 play only hockey, 50 play only football, 25 play both cricket and hockey, 15 play both hockey and football and 30 play both cricket and football. The rest of them play all three sports. What is percentage of people who play at least two sports?

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



Sol.08 -(D)

Solution:



$$\text{Total} = 300$$

$$C = 105$$

$$H = 70$$

$$F = 50$$

$$C + H = 25$$

$$H + F = 15$$

$$C + F = 30$$

$$C + H + F = 300 - (295) = 5$$

% of people playing at least 25 sports

$$= \frac{25 + 15 + 30 + 5}{300} \times 100$$

$$= \frac{75}{300} \times 100 = 25\%$$



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



Sol.09 –(C)

Solution:

The word 'arrived' mean in the above para is to "Attained a status"



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



Sol.10 -(D)

Solution:

Farmers want to access the new technology even if it is not legal

GATE PYQ PAPER 2019

02



Daytime temperature in Delhi can ____ 40°C

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



Sol.01 -(B)

Solution:

Daytime temperature in Delhi can reach 40°C



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



Sol.02 –(C)

Solution:

The growth rate of ABC Motors in 2017 was the same as that of XYZ Motors in 2016.



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



Sol.03 -(A)

Solution:

$$\text{Area of mansion} = 70 \times 55 = 3850 \text{ m}^2$$

$$\text{Area for flower pots} = 550 \text{ m}^2$$

$$\therefore \text{Area left for carpet} = 3850 - 550 = 3300 \text{ m}^2$$

$$\therefore \text{Cost} = 3300 \times 50 = 165000$$



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

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



Sol.04 -(A)

Solution:

$$\text{Volume of wall} = 30 \times 12 \times 6 = 2160 \text{ m}^3$$

$$= 2160 \times 106 \text{ cm}^3$$

$$\text{Total volume of bricks required} = 2160 \times 106 \times 0.6 \text{ cm}^3 = 1296 \times 106 \text{ cm}^3$$

$$\text{Volume of one brick} = 8 \times 6 \times 6 = 288 \text{ cm}^3$$

$$\therefore \text{No. of bricks required} = \frac{1296 \times 10^6}{288}$$

$$= 4.5 \times 10^6 = 45 \text{ lakhs}$$

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

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



Sol.05 –(D)

Solution:

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



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) $\frac{x}{y}$



Sol.06 –(C)

Solution:

Let population of X is 'A' in 2001

and Population of Y is 'B' in 2001

$$\therefore \text{Population of A in 2011} = A \left(1 + \frac{x}{100} \right)$$

$$\& \text{Population of B in 2011} = B \left(1 + \frac{y}{100} \right)$$

$$\text{Given, } \frac{A}{B} = P$$

$$\begin{aligned} \text{\% increase in P} &= \frac{\frac{A \left(1 + \frac{x}{100} \right)}{B \left(1 + \frac{y}{100} \right)} - \frac{A}{B}}{\frac{A}{B}} \times 100 \\ &= \frac{\left[\frac{P \left(1 + \frac{x}{100} \right)}{\left(1 + \frac{y}{100} \right)} - P \right]}{P} \times 100 \end{aligned}$$

$$\begin{aligned} &= \left[\frac{1 + \frac{x}{100}}{1 + \frac{y}{100}} - 1 \right] \times 100 = \frac{(x - y)100}{100 + y} \end{aligned}$$



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



Sol.07 –(D)

Solution:

"it cannot be inferred who"

From given information, nobody can be held responsible.



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

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

IIT, Madras GATE 2019



Sol.08 -(A)

Pipe X will fill how much in one hour = $\frac{1}{5}$ tank

Pipe Y will fill how much in one hour = $\frac{1}{4}$ tank

Drainage will drain out how much water in 1 hour = $\frac{1}{20}$ tank

∴ Total tank filled in one hour

$$= \left(\frac{1}{5} + \frac{1}{4} - \frac{1}{20} \right) \text{tank} = \frac{2}{5} \text{ tank}$$

$\frac{2}{5}$ tank gets filled in = 1 hour

∴ Full (i) tank gets filled in = $\frac{1}{\left(\frac{2}{5}\right)} \times 1$

$$= \frac{5}{2} = 2.5 \text{ hr}$$



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



Sol.09 –(B)

Solution:

Conditions given:

- (i) Ram & John have worked for 5 hours.
- (ii) Krishna doesn't want to work with Ram.
- (iii) No pair should work beyond 5 hours.

Hence, Krishna should work with John to satisfy the above conditions.



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

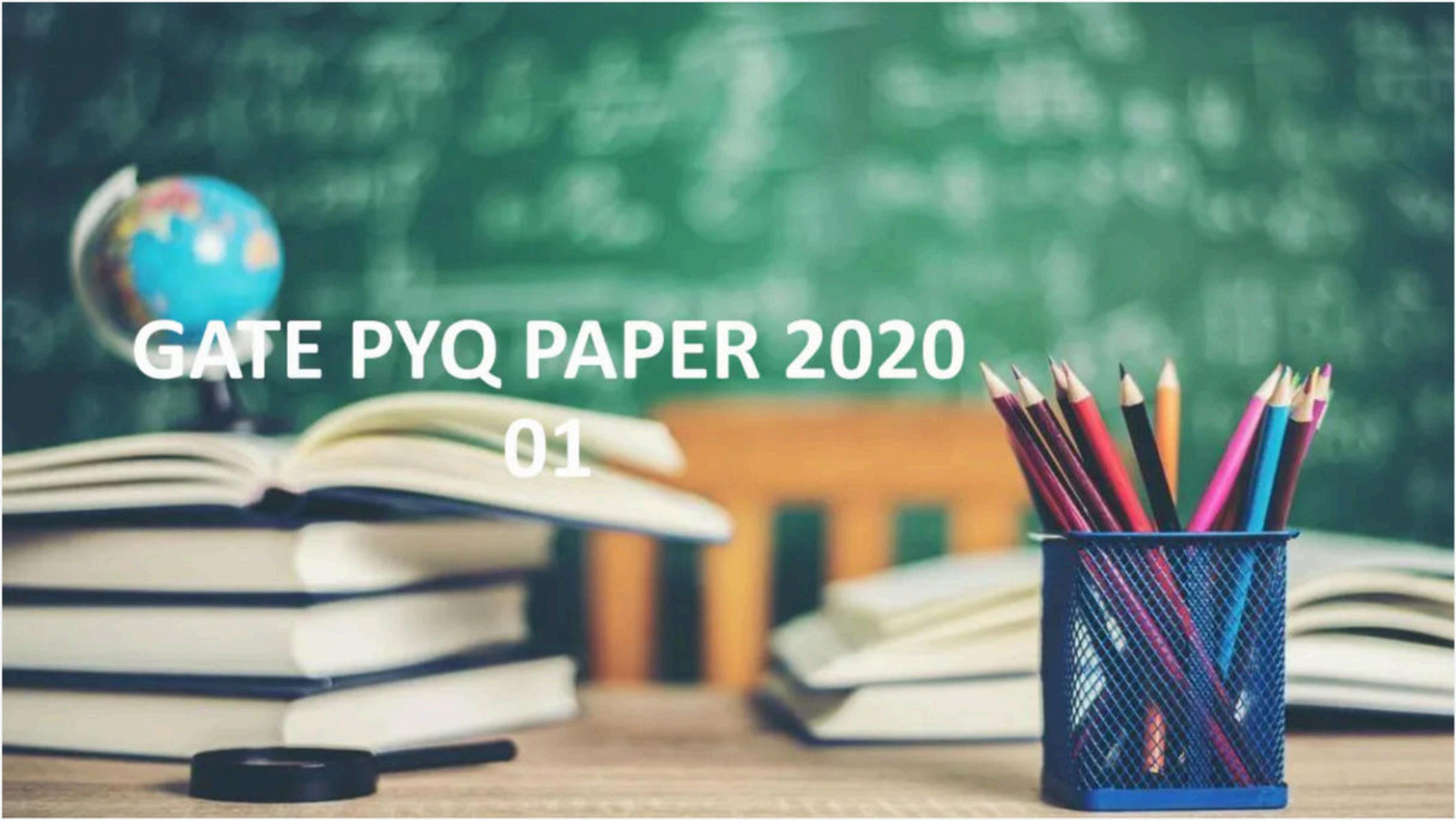
- (A) Textbooks, English books or high literature have aspirational value, but not popular Hindi fiction
- (B) People do not look up to writers of textbooks, English book or high value literature
- (C) Though popular Hindi fiction was widely read, it often does not appear in the movies
- (D) Protagonists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



Sol.10 –(B)

Solution:

People do not look up to writers of textbooks, English book or high value literature.



GATE PYQ PAPER 2020

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



Sol.01 -(A)

It is a common criticism that most of the academicians live in their ivory tower, so they are not aware of the real-life challenges.



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

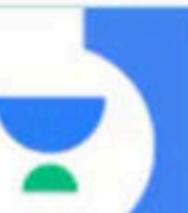
- (A) all-round
- (B) voracious
- (C) wise
- (D) precocious



Sol.02 -(B)

Solution:

His hunger for reading is insatiable, he reads indiscriminately. He is most certainly a/an voracious reader.



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

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



Sol.03 -(C)

Solution:

Fuse : Fusion :: use : Usage



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



Sol.04 -(C)

Solution:

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

So, 45 → ST



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



Sol.05 -(A)

Solution:

Let one positive number be a other positive number = $100 - a$ product of number after subtracting 5 from each number = $(a - 5) \times (95 - a) = 0$

$$\Rightarrow 95a - a^2 - 475 + 5a = 0$$

$$\Rightarrow a^2 - 100a + 475 = 0$$

$$\Rightarrow a^2 - 95a - 5a + 475 = 0$$

$$\Rightarrow a(a - 95) - 5(a - 95) = 0$$

$$\Rightarrow \text{either } a = 5 \text{ or } a = 95$$

From, the options given 95 is the answer.



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.

Sol.06 -(C)





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



Sol.07 –(A)

Solution:

Option A is the only arrangement where given conditions are met.

In option B & C, R is sleeping next to P

In option D, R is sleeping next to Q.



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



Sol.08 -(D)

As per the given question, the sequence of given AP is, 2 _____ 34

In this sequence first term (a) = 2

Last term (t_n) = 34

So, as per the relation,

$$t_n = a + (n - 1) d$$

$n \rightarrow$ number of terms

$d \rightarrow$ common difference

$$34 = 2 + (9 - 1) d$$

$$d = 4$$

So, the A.P. becomes, 2, 6, 10, 14, 18, 22, 26, 30, 34

Sum of 7 terms between 2234 is 126

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

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



The unit digit in the power of 9 can be found by,

$$9^1 = 9 \rightarrow \text{unit digit is } 9$$

Sol.09 -(B)

$$9^2 = 81 \rightarrow \text{so, unit digit is } 1$$

$$9^3 = 729 \rightarrow \text{unit digit is } 9$$

$$9^4 = 6561 \rightarrow \text{unit digit is } 1$$

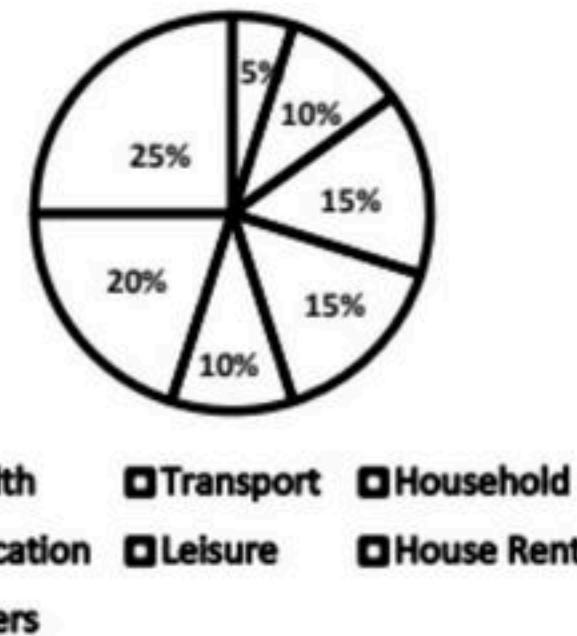
So, from the above sequence, it follows that 9 power, if even the unit digit will be 1. and if 9 power, is odd unit digit will be 9 As per the question, 26591749^{110016}

The answer of unit digit will be 1.



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





Sol.10 -(A)

Extra money spent on education as compared to transport = $\left(\frac{15 - 10}{10} \right) \times 100$

= 50%

A photograph showing a person's hands writing in a small notebook with a pen. In the background, a calculator is visible on a desk. The scene is set in an indoor environment, likely a study or office.

GATE PYQ PAPER 2020
02



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

Sol.01 -(B)





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

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

Sol.02 -(A)

Belittle: Disparage





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

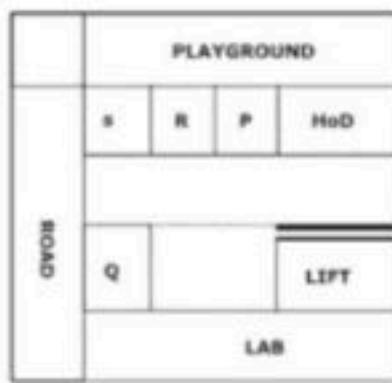
- (A) Dispopolitan
- (B) Impopular
- (C) Unpopular
- (D) Mispopular

Sol.03 –(C)

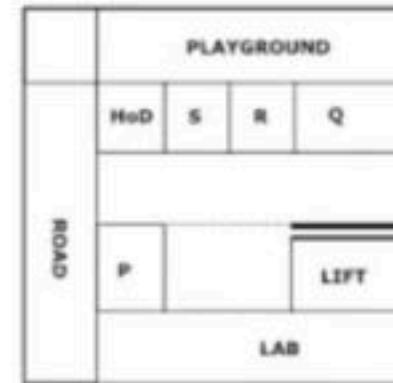
Solution:

Partial : Impartial :: Popular : Unpopular

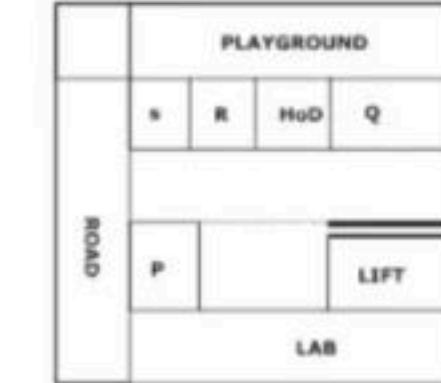
After the inauguration of the new building, the Head of the Department (HoD) collated faculty preferences for office space. P wanted a room adjacent to the lab. Q wanted to be close to the lift. R wanted a view of the playground and S wanted a corner office. Assuming everyone was satisfied, which among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



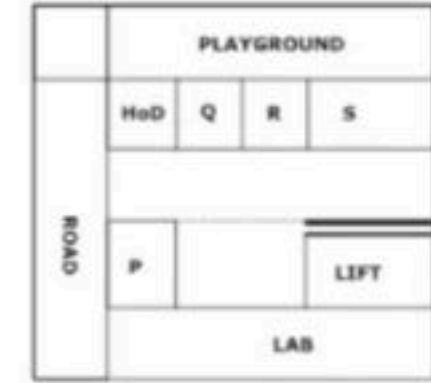
(A)



(B)



(C)



(D)



Sol.04 –(C)

Solution:

Option C is the only arrangement where all the conditions are successfully fulfilled.

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) $f(x)$



Solution:

Sol.05 –(C)

$$F(x) = x^2$$

$$f(f(x)) = fof(x) = (x^2)^2 = x^4$$

$$f(f(f(x)))) = fofof(x) = (x^4)^2 = x^8$$

$$\frac{f(f(f(x))))}{f(x)} = \frac{fofof(x)}{f(x)} = \frac{x^8}{x^2}$$

$$= x^6 = (f(x))^3$$



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.

Sol.06 -(C)





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

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



Sol.07 -(A)

Solution:

A year has 365 days, except a leap year, which has 366 days.

$365 \text{ days} = 52 \text{ weeks} + 1 \text{ day.}$

$366 \text{ days} = 52 \text{ weeks} + 2 \text{ days.}$

So, for a normal year, the next year's calendar will shift by one day and for a leap year, the next year's calendar will shift by two days.

Assuming 2019 starts on a Sunday.

2018: Saturday

2017: Friday

2016: Wednesday (Since 2016 is a leap year)

2015: Tuesday

2014: Monday

2013: Sunday



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



Sol.08 –(C)

Solution:

Sum of the odd positive integers from 1 to 100

$$= 1 + 3 + 5 \dots + 99$$

No. of terms = 50,

First term = 1; Last term = 99

Therefore, Sum = $50 \times (1+99)/2 = 2500$

Sum of the even positive integers from 150 to 200

No. of terms = 26

First term = 150; Last term = 200

Therefore, Sum = $26 \times (150+200)/2 = 4550$

\ ratio = $2500/4550 = 50/91$



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



Solution:

Sol.09 –(A)

$$N(S) = 1000$$

$$N(C) = 300$$

$$N(F) = 600$$

$$N(C \& F) = 50$$

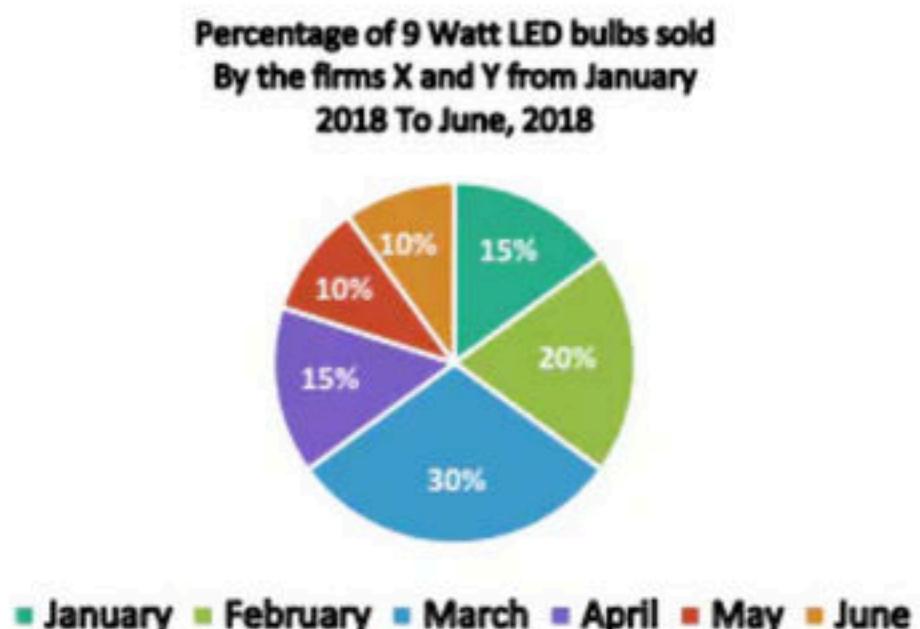
$$N(S) = N(C) + N(F) - N(C \& F) + N(\text{none})$$

$$\backslash N(\text{none}) = 150$$



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 ____.

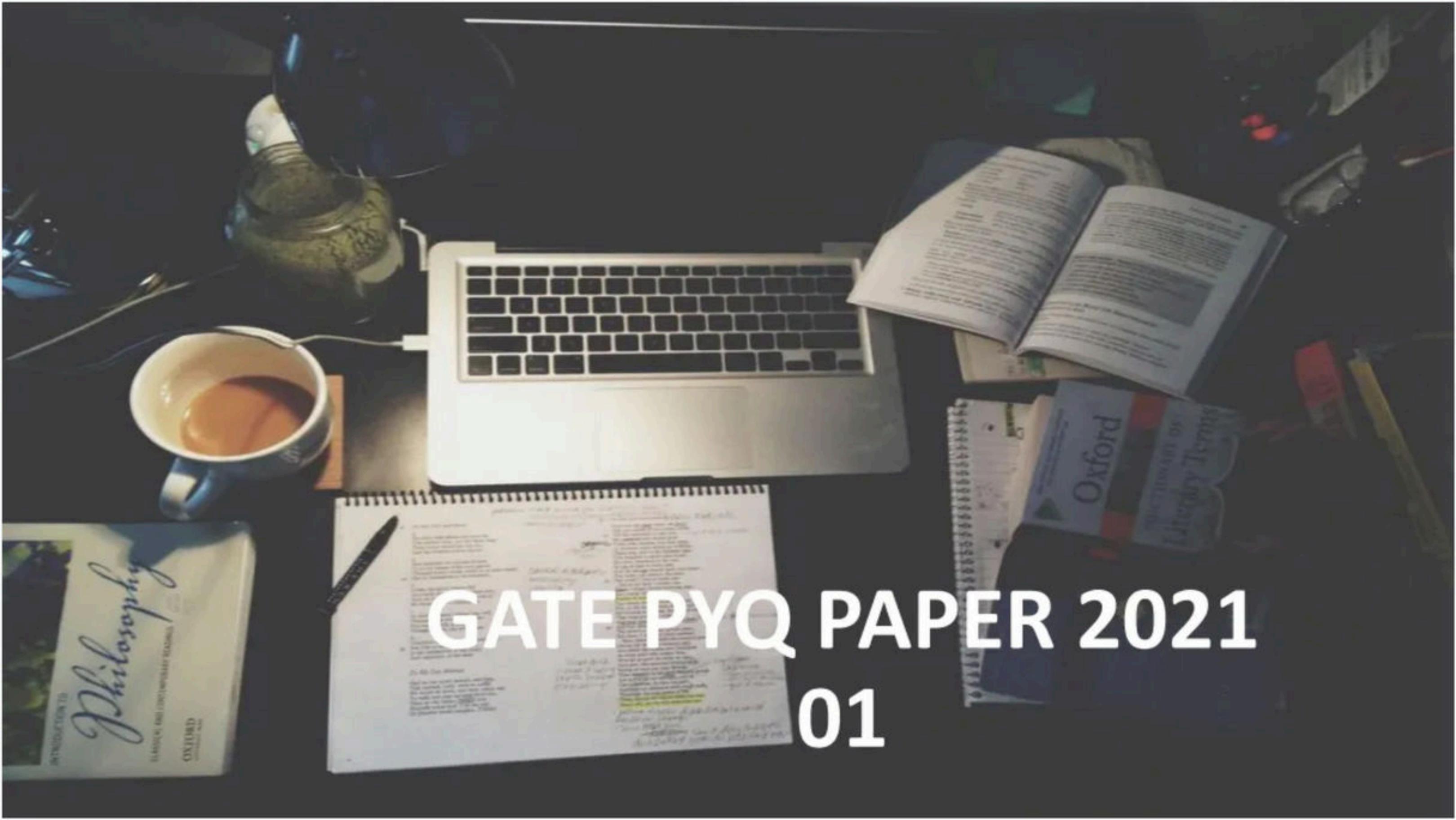
- (A) 8750
- (B) 8250
- (C) 9750
- (D) 11250



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

Sol.10-(C)





GATE PYQ PAPER 2021

01



Getting to the top is _____ than staying on top.

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



Sol.01 -(A)

Solution:

Getting to the top is easier than staying on top.

\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) $y/2$



Sol.02 -(A)

Solution:

Given,

$$p \oplus q = \frac{p^2 + q^2}{pq} \text{ and } p \circ q = \frac{p^2}{q}$$

Also, $x \oplus x = z \circ z$

Using the above definitions, we get

$$\frac{x^2 + y^2}{xy} = \frac{z^2}{z}$$

$$\Rightarrow \frac{x^2 + y^2}{xy} = 2$$

$$\Rightarrow x^2 + y^2 - 2xy = 0$$

$$\Rightarrow (x - y)^2 = 0$$

$$x = y$$



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

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

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

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

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

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

(A) 5 : 13

(C) 7 : 5

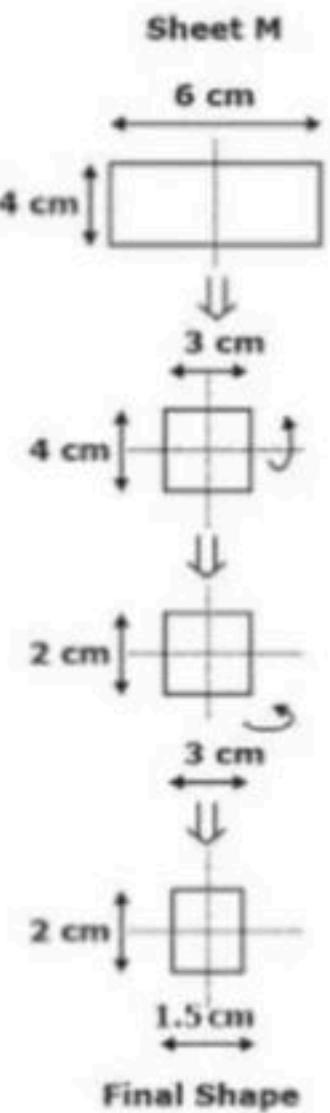
(B) 13 : 7

(B) 3 : 2

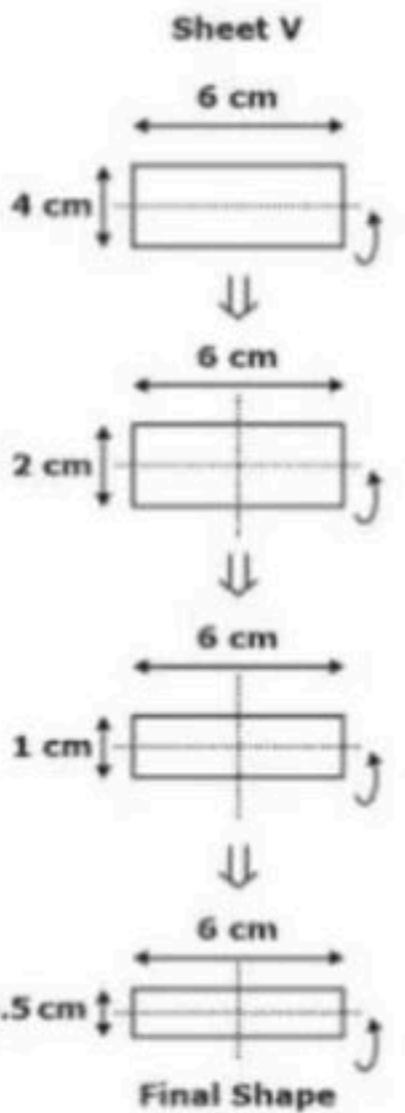


Solution:

Sol.03 –(B)



$$\text{Perimeter} = 2(2+1.5) \\ = 7 \text{ cm}$$



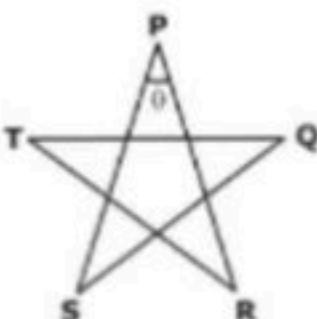
$$\text{Perimeter} = 2(6+0.5) \\ = 13 \text{ cm}$$

Required Ratio = 13/7



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

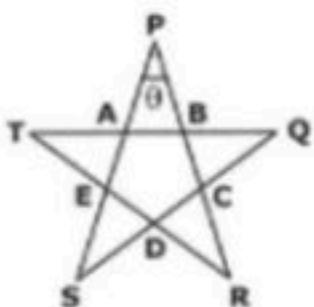
- (A) 45
- (B) 72
- (C) 36
- (D) 108





Solution:

Sol.04 –(C)



Given,

$$PR = PS = QS = QT = RT$$

ABCDE will be a regular pentagon

$\angle PAB$ = exterior angle for the pentagon

$$\text{Each exterior angle} = \frac{360^\circ}{n} = \frac{360^\circ}{5} = 72^\circ$$

$$\text{So, } \angle PAB = \angle PBA = 72^\circ$$

$$\text{In } \triangle PAB, \angle PAB + \angle PBA + \theta = 180^\circ$$

$$\theta = 36^\circ$$

Ans. (C)



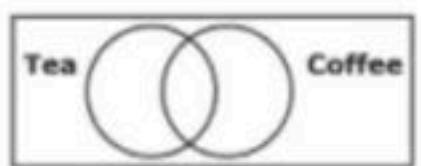
In a company, 35% of the employees drink coffee, 40% of the employees drink tea and 10% of the employees drink both tea and coffee. What % of employees drink neither tea nor coffee?

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



Sol.05 –(A)

Solution:



$n(T)$: No. of employees who drink coffee = 35%

$n(T)$: No. of employees who drink tea = 40%

Then, $n(T \cap C)$: No. of employees who drink both tea and coffee = 40%

No. of employees who neither drink tea

or, coffee $n(U) - n(T \cup C)$

$$= 100 - [n(T) + n(C) - n(T \cap C)]$$

$$= 100 - (35 + 40 - 10)$$

$$= 35\%$$

Answer (1)

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

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

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



Solution:

Sol.06 -(D)

Given,

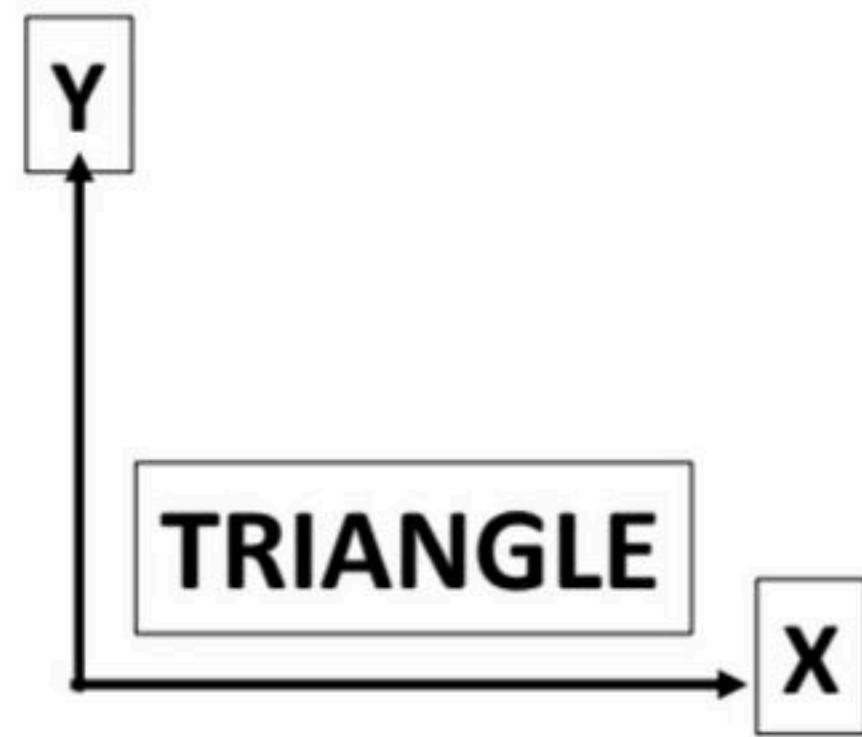
$$\lambda(p, q) = \begin{cases} (p - q)^2, & p \geq q \\ (p + q), & p < q \end{cases}$$

$$\lambda(-(-3+2), (-2+3)) = \lambda(1, 1)$$

$$= (1 - 2)^2 = 0$$

Value of the expression = 0

Ans. (D)



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

Sol.07 -(A)

Solution:

TRIANGLE
~~~~~  
**TRIANGLE**

**Answer (A)**





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.



## Sol.08 -(A)

### **Solution:**

The logical negation will be.

Neither P marries Q nor X and marries Y.

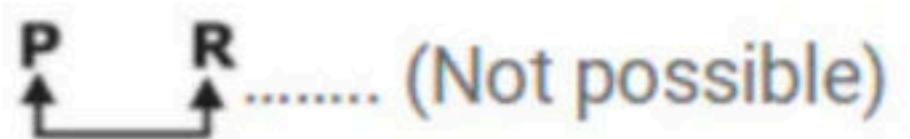
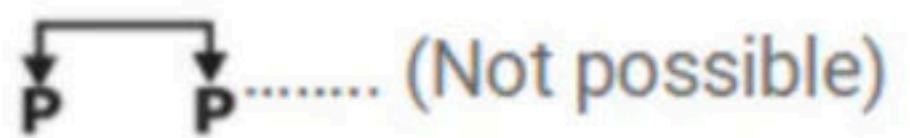


Four persons P, Q, R and S are to be seated in a row, all facing the same direction, but not necessarily in the same order. P and R cannot sit adjacent to each other. S should be seated to the right of Q. The number of distinct seating arrangements possible is:

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

Sol.09 –(D)

**Solution:**



RQSP (Possible)

RQSP (Possible)



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?

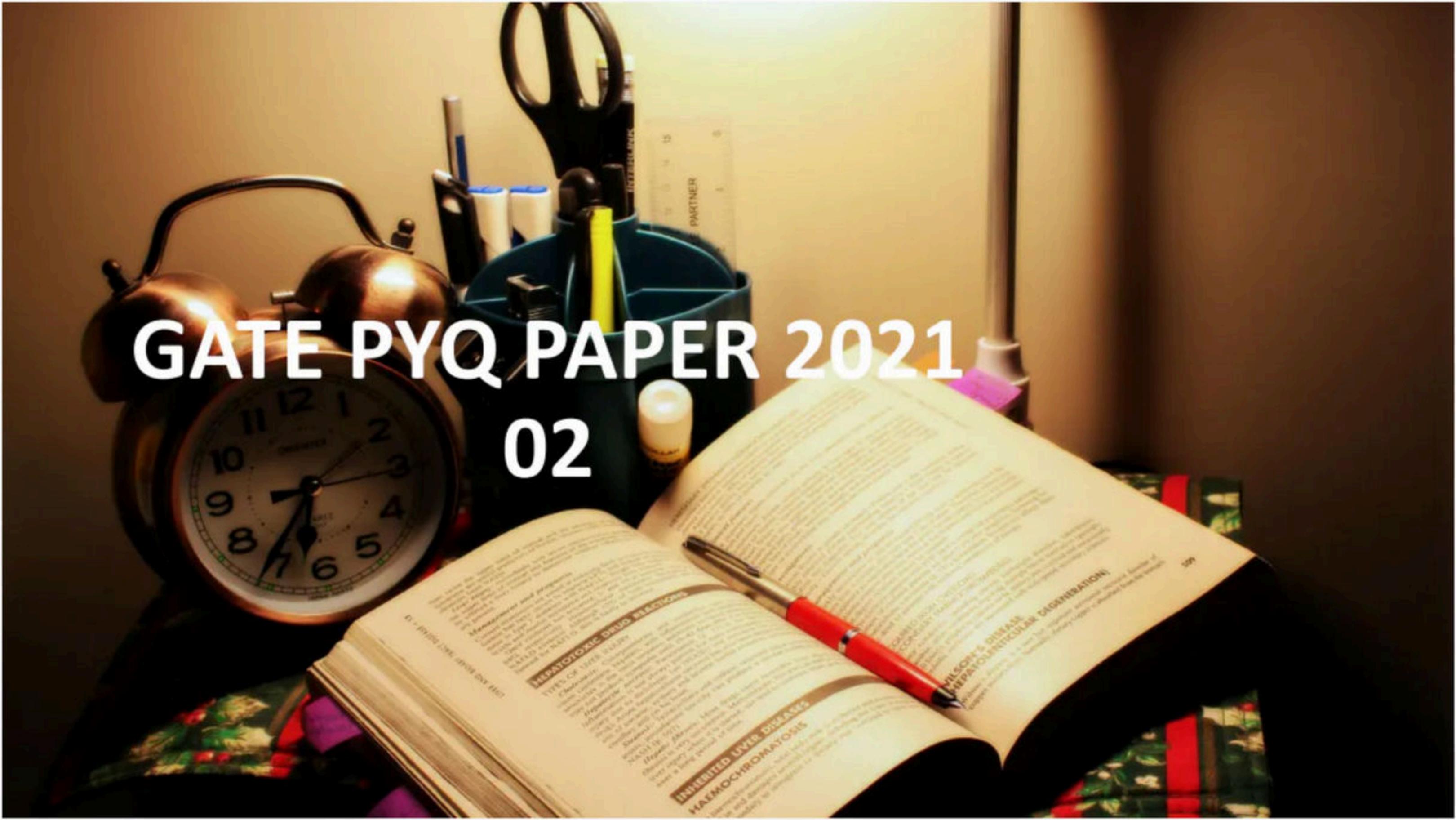
- (A) We do not know of any species other than humans who possess the ability to construct mental worlds.
- (B) Imagination, invention, and innovation are unrelated to the ability to construct mental worlds.
- (C) The terms imagination, invention and innovation refer to unrelated skills.
- (D) No species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

Sol.10-(C)



# GATE PYQ PAPER 2021

## 02





- (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)

Sol.01 -(D)



$\oplus$  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



## Sol.02 -(B)

### **Solution:**

$$(9 \odot (6 \oplus 7)) \odot (7 \oplus (6 \odot 5)) = (9 - (6 \times 7)) - (7 \times (6 - 5))$$

$$= (9 - 42) - (7 \times 1) = -40$$



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

(A)

PHYΛΓXIS

(B)

бHΛΓXIS

(C)

SIХAГYHP

(D)

бHΛГXIS



Sol.03 -(B)

**Solution:**

Reverse image of **SIKALYAH** is shown in option (B).



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)  $48\sqrt{3}$



### Solution:

Let side of Equilateral  $\Delta$  =  $x$

**Sol.04 –(C)**

So length of each segment of  $PQ = x/4$

$$QR = x/6$$

$$PR = x/8$$

For min. area,  $x = \text{LCM } \{4, 6, 8\} = 24$

$$\text{So, } A_{\min.} = \frac{\sqrt{3}}{4} x^2 = \frac{\sqrt{3}}{4} \times 24 \times 24$$

$$= 144\sqrt{3}$$

Option (C)



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)  $\frac{1}{8}$



Sol.05 -(B)

**Solution:**

Sample space =  $\{(2, 2), (4, 4), (6, 6)\}$

= 3 cases

Total no. of outcomes = 36 (when 2 die are rolled)

Required probability =  $\frac{3}{36} = \frac{1}{12}$

Option (B)



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.



## Sol.06 –(A)

### **Solution:**

Based on the passage, option (A) seems logical inference.



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.

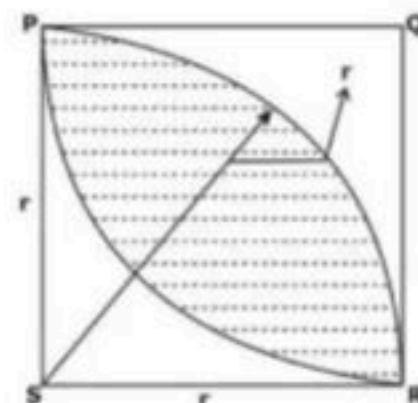
The probability that any point picked randomly within the square falls in the shaded area is \_\_\_\_\_.

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

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

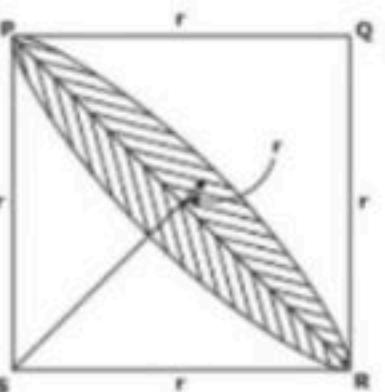
(C)  $\frac{\pi}{4}$

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





Solution:



Shaded area = b

$$= \left[ \frac{\pi r^2}{4} - \frac{1}{2} \cdot r^2 \right] \times 2$$

$$= \frac{r^2}{2} \left[ \frac{\pi}{2} - 1 \right] \times 2$$

$$= r^2 \left( \frac{\pi}{2} - 1 \right)$$

Total area =  $r^2$

$$\text{For required probability} = \frac{r^2 \left( \frac{\pi}{2} - 1 \right)}{r^2} = \frac{\pi}{2} - 1$$

Option (B)



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

## Sol.08 -(B)



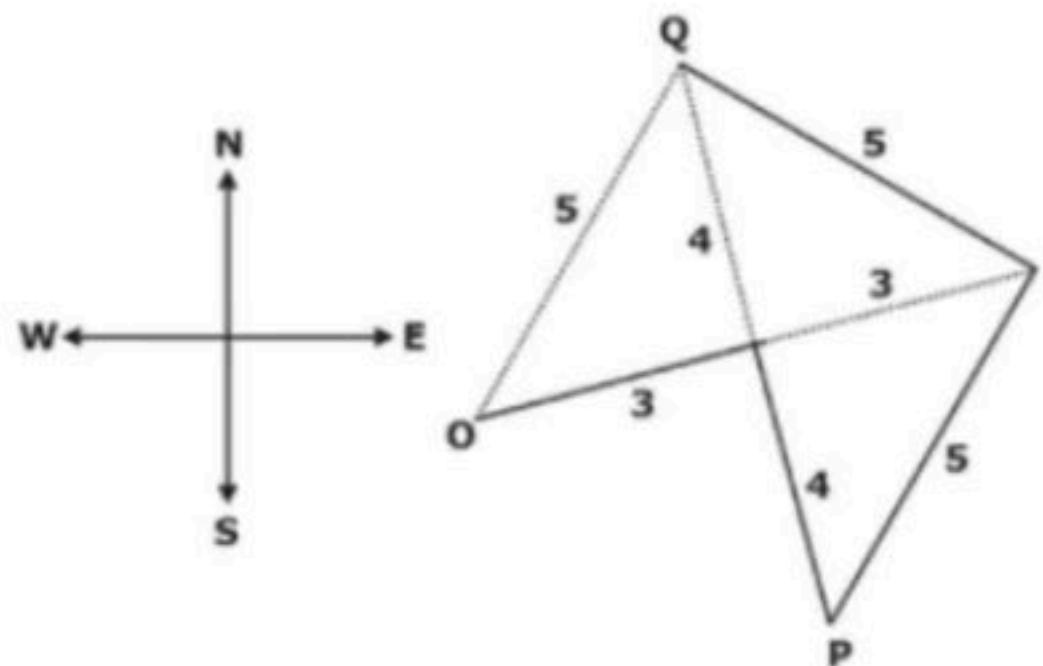


On a planar field, you travelled 3 units East from a point O. Next you travelled 4 units South to arrive at point P. Then you travelled from P in the North-East direction such that you arrive at a point that is 6 units East of point P. Next, you travelled in the North-West direction, so that you arrive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

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

Sol.09 -(C)

**Solution:**



Required distance = OQ

$$\sqrt{(3)^2 + (4)^2} = 5$$



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

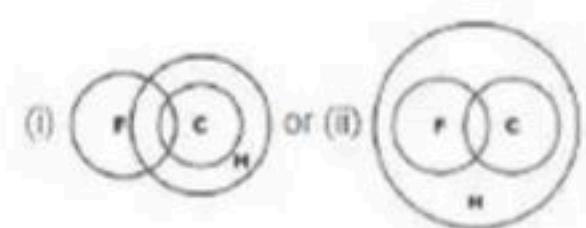
Among the options given below, the statement that logically follows from the two statements 1 and 2 above, is :

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



## Sol.10 -(C)

**Solution:**



Two arrangements are possible according to statements given for any option to be true, it should be true in both. All football play hockey  $\Rightarrow$  This is true in (ii) but false in (i)  $\Rightarrow$  This is false statement.

Some football play hockey  $\Rightarrow$  This is true in both.

$\Rightarrow$  Option C is correct.



# Thank You



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