



Kunal Jha

Course: GATE  
Computer Science Engineering(CS)

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## TOPICWISE : GENERAL APTITUDE-1 (GATE - 2020) - REPORTS

OVERALL ANALYSIS

COMPARISON REPORT

SOLUTION REPORT

ALL(17)

CORRECT(0)

INCORRECT(0)

SKIPPED(17)

Q. 1

Solution Video

Have any Doubt ?

Consider the set of the numbers  $\{1, 7, 7^2, \dots, 7^{100}\}$ . The ratio of last number and the sum of remaining numbers is closest to**A** 2**B** 6

Correct Option

Solution :

(b)

$$\begin{aligned} \text{Last number} &= 7^{100} \\ \text{sum, } s &= 1 + 7 + 7^2 + \dots + 7^{99} \\ &= \frac{1(7^{100} - 1)}{7 - 1} = \frac{7^{100} - 1}{6} \approx \frac{7^{100}}{6} \\ \text{Ratio} &= \frac{7^{100}}{7^{100}/6} = 6 \end{aligned}$$

**C** 9**D** 12

QUESTION ANALYTICS



Q. 2

Solution Video

Have any Doubt ?



Five years ago, Akash was 3 times as old as Bhawana. 10 years later, Akash shall be twice as old as Bhawana. What is present age of Akash?

**A** 45 years**B** 30 years

Correct Option

Solution :

(c)

Let present ages of Akash and Bhawana be  $x$  and  $y$  years.

$$x - 5 = 3(y - 5)$$

$$x - 3y + 10 = 0 \quad \dots(i)$$

$$x + 10 = 2(y + 10)$$

$$x - 2y - 10 = 0 \quad \dots(ii)$$

By equation (i) and (ii),

$$x = 50,$$

$$y = 20$$

Present age of Akash is 50 years.

**D** 40 years

QUESTION ANALYTICS



Q. 3

Solution Video

Have any Doubt ?



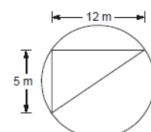
There is a circular aquarium. A fish is released in the water at the edge of the aquarium. The fish swims north for 5 m before it hits the edge of the aquarium. It then turns East and swims for 12 m before hitting the edge. The area of the aquarium is

**A**  $\frac{169}{4} \pi \text{ m}^2$ 

Correct Option

Solution :

(a)



$$\text{Diameter} = \sqrt{(5)^2 + (12)^2} = 13 \text{ m}$$

$$\text{Radius} = 6.5 \text{ m}$$

$$\text{Area of pool} = \pi r^2 = \pi \times \left(\frac{13}{2}\right)^2 = \frac{169}{4} \pi \text{ m}^2.$$

- B  $1690 \text{ m}^2$
- C  $169 \pi \text{ m}^2$
- D Can't be determined

 QUESTION ANALYTICS



Q. 4

 Solution Video

 Have any Doubt?



There are 5 friends. They are standing in a row facing South. Jaya is to the immediate right of Ankita. Preeti is between Binita and Sonal. Sonal is between Jaya and Preeti. Which of the following pair does not represent immediate neighbor?

- A Preeti - Sonal
- B Jaya - Ankita
- C Binita - Preeti
- D Ankita - Sonal

Correct Option

Solution :

(d)

The order is : Binita Preeti Sonal Jaya Ankita.

It is clear that Ankita and Sonal are not immediate neighbors.

 QUESTION ANALYTICS



Q. 5

 Solution Video

 Have any Doubt?



Shyam was walking on the road early morning after the sun rise and his shadow was falling to his right. In which direction he was facing?

- A East
- B South
- C West
- D Either East or West

Correct Option

 QUESTION ANALYTICS



Q. 6

 Solution Video

 Have any Doubt?



6 points lie on the circumference of a circle. The difference between the number of triangles and the number of quadrilaterals that can be formed is \_\_\_\_\_.

5

Correct Option

Solution :

5

Number of triangles =  ${}^6C_3 = 20$

Number of quadrilaterals =  ${}^6C_4 = 15$

Difference =  $20 - 15 = 5$

 QUESTION ANALYTICS



Q. 7

 Solution Video

 Have any Doubt?



$x, 13, 2x + y - 5$  and  $3x - y - 2$  are 4 consecutive terms of an arithmetic progression. The value of  $x + y$  is \_\_\_\_\_.

13

Correct Option

Solution :

13

Since these are in arithmetic progression and,

$$2b = a + c$$

$$2 \times 13 = x + 2x + y - 5$$

$$3x + y = 31$$

$$2(2x + y - 5) = 13 + 3x - y - 2$$

$$x + 3y = 21$$

... (i)

... (ii)

By equation (i) and (ii),

$$x = 9$$

$$y = 4$$

$$x + y = 13$$

#### QUESTION ANALYTICS

Q. 8

Solution Video

Have any Doubt?



Next term in series:  
51840, 4320, 432, 54, ?, 2.25

9

Correct Option

Solution:  
9

$$\begin{aligned}\frac{51840}{12} &= 4320 \\ \frac{4320}{10} &= 432 \\ \frac{432}{8} &= 54 \\ \frac{54}{6} &= 9 \\ \frac{9}{4} &= 2.25\end{aligned}$$

#### QUESTION ANALYTICS

Q. 9

Solution Video

Have any Doubt?



In a Zoo, there are rabbits and pigeons. If heads are counted, there are 340 heads, if legs are counted there are 1060 legs. The difference of number of pigeons and number of rabbits is \_\_\_\_\_.

40

Correct Option

Solution:  
40

Let number of pigeons be  $x$  and number of rabbits be  $y$ .

$$x + y = 340$$

$$2x + 4y = 1060$$

... (i)

... (ii)

By equation (i) and (ii),

$$x = 150,$$

$$y = 190$$

Difference in number of pigeons and rabbits is

$$= 190 - 150 = 40$$

#### QUESTION ANALYTICS

Q. 10

Solution Video

Have any Doubt?



A stairway of 20 feet height is such that each step accounts for half a foot upward and one foot forward. The minimum distance travelled by an ant if it starts from ground level to reach the top of the stairway would be \_\_\_\_\_ feet.

A 55

B 57

C 59

Correct Option

Solution:  
(c)

Total distance covered = Total horizontal distance + Total vertical distance

Total vertical distance = 20 feet

$$\text{Number of steps} = \frac{20}{0.5} = 40$$

Total horizontal distance =  $40 - 1 = 39$  feet

Total distance =  $39 + 20 = 59$  feet

D 61

#### QUESTION ANALYTICS







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## TOPICWISE : GENERAL APTITUDE-1 (GATE - 2020) - REPORTS

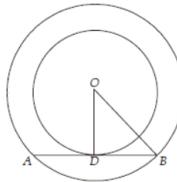
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**Q. 11**
[▶ Solution Video](#)
[Have any Doubt ?](#)


In two concentric circles, a chord of length 120 cm of larger circle becomes a tangent to the smaller circle whose radius is 11 cm. The radius of the larger circle will be \_\_\_\_\_

 A 51 cm

 B 61 cm

Correct Option

**Solution :**  
 (b)

**Given**

$$AB = 120 \text{ cm}$$

$$DB = 60 \text{ cm}$$

$$OD = 11 \text{ cm}$$

$$OB^2 = 60^2 + 11^2 = 3721$$

$$OB = 61 \text{ cm}$$

 C 66 cm

 D 71 cm

[QUESTION ANALYTICS](#)

**Q. 12**
[▶ Solution Video](#)
[Have any Doubt ?](#)


Four pipes A, B, C and D can fill the cistern in 10, 15, 20 and 25 hours respectively. The pipe A is opened at 2 : 00 AM, pipe B at 4 : 00 AM, pipe C at 5 : 00 AM and pipe D at 6 : 00 AM. The time at which cistern will be full is

 A 6 : 37 AM

 B 7 : 37 AM

Correct Option

**Solution :**  
 (b)

 Let  $t$  hours past 2 AM, the cistern is full.

$$\frac{t}{10} + \frac{t-2}{15} + \frac{t-3}{20} + \frac{t-4}{25} = 1$$

$$t \left[ \frac{1}{10} + \frac{1}{15} + \frac{1}{20} + \frac{1}{25} \right] = 1 + \frac{2}{15} + \frac{3}{20} + \frac{4}{25}$$

$$t = \frac{433}{77} = 5 \text{ hours } 37.4 \text{ minutes}$$

The cistern will be full at 7 : 37 AM

 C 8 : 37 AM

 D 9 : 37 AM

[QUESTION ANALYTICS](#)

**Q. 13**
[▶ Solution Video](#)
[Have any Doubt ?](#)


The length, breadth and height of a room are in the ratio 5 : 4 : 3. If the breadth and height are halved while the length is doubled then the total area of the four walls of the room will

 A decrease by 16.66%

 B decrease by 20%

 C decrease by 25%

D decrease by 33.33%

Correct Option

Solution :

(d)

$$\text{Let, } l_1 = 5x$$

$$b_1 = 4x$$

$$h_1 = 3x$$

$$\text{The area of 4 walls} = 2h_1(l_1 + b_1)$$

$$= 6x(5x + 4x)$$

$$= 54x^2$$

Now,

$$l_2 = 10x$$

$$b_2 = 2x$$

$$h_2 = \frac{3x}{2}$$

$$\text{Changed area of 4 walls} = 2h_2(l_2 + b_2)$$

$$= 2 \times \frac{3x}{2}(10x + 2x) = 36x^2$$

$$\% \text{ decrease in area of 4 walls} = \frac{54x^2 - 36x^2}{54x^2} \times 100 = 33.33\%$$

QUESTION ANALYTICS



Q. 14

Solution Video

Have any Doubt ?



It takes 20 seconds for a train travelling at 120 km/h to entirely cross another train of double its length travelling at  $\frac{4}{5}$ th of its speed in opposite direction. If it passes a bridge in 42 seconds then length of the bridge is \_\_\_\_\_ m.

1000

Correct Option

Solution :

1000

Let the length of the train be  $L$

Length of second train =  $2L$

$$\text{speed of second train} = \frac{4}{5} \times 120 = 96 \text{ km/h}$$

$$(120 + 96) \times \frac{5}{18} \times 20 = (L + 2L)$$

From here,  $L = 400 \text{ m}$

Let the length of bridge =  $B$

$$120 \times \frac{5}{18} \times 42 = (L + B)$$

$$L + B = 1400$$

$$\Rightarrow B = 1000 \text{ m}$$

QUESTION ANALYTICS



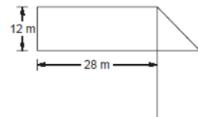
Q. 15

Solution Video

Have any Doubt ?



The figure below has been obtained by folding a rectangle. The total area of the figure (as visible) is  $576 \text{ m}^2$ . Had the rectangle not been folded, the current overlapping part would have been a square. The total area of the original unfolded rectangle is \_\_\_\_\_ sq m.



648

Correct Option

Solution :

648

The extra area that will be part of unfolded rectangle

$$= \frac{1}{2} \times 12 \times 12 = 72 \text{ m}^2$$

$$\Rightarrow \text{Area of original rectangle} = 576 + 72 = 648 \text{ m}^2$$

QUESTION ANALYTICS



Q. 16

Solution Video

Have any Doubt ?



In a certain code language if the value of  $14 \times 15 = 25$  and  $26 \times 42 = 64$  then the value of  $73 \times 31$  will be \_\_\_\_\_.

100

Correct Option

Solution :

100

$$14 \times 15 = 14 + 15 = 29 - 4 = 25$$

$$26 \times 42 = 26 + 42 = 68 - 4 = 64$$

Similarly,  $73 \times 31 = 73 + 31 = 104 - 4 = 100$

QUESTION ANALYTICS +

Q. 17

Have any Doubt ?



A rod is cut into 3 equal parts. The resulting portions are then cut into 18, 27 and 48 equal parts, respectively. If each of the resulting portions have integral lengths, then minimum length of the rod is \_\_\_\_\_ units.

1296

Correct Option

Solution :

1296

Minimum length of 3 equal parts of rod = LCM (18, 27, 48) = 432

Therefore minimum length of the rod =  $432 \times 3 = 1296$  units

QUESTION ANALYTICS +

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COMPARISON REPORT

SOLUTION REPORT

ALL(17)

CORRECT(0)

INCORRECT(0)

SKIPPED(17)

Q. 1

Solution Video

Have any Doubt ?



He did no work since yesterday. No error

(a) (b) (c) (d)

A a

Correct Option

Solution :

(a) Change 'did' into 'has done'.

B b

C c

D d

QUESTION ANALYTICS



Q. 2

Solution Video

Have any Doubt ?



The Municipality has made littering public places a punished offence. No error

(a) (b) (c) (d)

A a

B b

C c

Correct Option

Solution :

(c) Change 'punished' into 'punishable'

D d

QUESTION ANALYTICS



Q. 3

Solution Video

Have any Doubt ?

Select the pair that best expresses the relation in the original pair.  
Callow: Maturity

A Eager : Anxiety

B Incipient : Fruition

Correct Option

Solution :

(b) 'Callow' is opposite of 'Maturity'. Similarly 'Incipient' is opposite of 'Fruition'.

C Apathetic : Disinterest

D Exposure : Weathering

QUESTION ANALYTICS



Q. 4

Solution Video

Have any Doubt ?

Choose the correct word which may closely fit the definition given below.  
A conversation between two persons

A epilogue

**B** analog

**C** monologue

**D** dialogue

Correct Option

Solution :  
(d)

QUESTION ANALYTICS

Q. 5

Solution Video

Have any Doubt ?



Avarice

**A** Generosity

**B** Envy

**C** Greed

Correct Option

Solution :  
(c)  
'Avarice' means 'extreme greed for wealth or material gain'.

**D** Hatred

QUESTION ANALYTICS

Q. 6

Solution Video

Have any Doubt ?



Infructuous

**A** Meaningful

**B** Necessary

**C** Relevant

**D** Fruitless

Correct Option

Solution :  
(d)  
'Infructuous' means 'fruitless or without any purpose or value'.

QUESTION ANALYTICS

Q. 7

Solution Video

Have any Doubt ?



Cessation

**A** Commencement

Correct Option

Solution :  
(a)  
'Cessation' means 'the fact or process of ending or being brought to an end'.

**B** Renewal

**C** Ongoing

**D** Interruption

QUESTION ANALYTICS

Q. 8

Solution Video

Have any Doubt ?



Potent

**A** Efficient

**B** Powerful

**C** Fragile

Correct Option

**Solution :**

(c) 'Potent' means 'having great power, influence or effect'. The antonym of potent is fragile.

**D** Strong

 QUESTION ANALYTICS



Q. 9

 Solution Video

 Have any Doubt ?



Astronomer: Most stars are born in groups of thousands, each star in a group forming from the same parent cloud of gas. Each cloud has a unique homogeneous chemical composition. Therefore whenever two stars have the same chemical composition as each other, they must have originated from the same cloud of gas. Which of the following, if true, would most strengthen the astronomer's argument?

**A** In some groups of stars, not every star originated from the same parent cloud of gas.

**B** Clouds of gas of similar or identical chemical composition may be remote from each other.

**C** Whenever a star forms, it inherits the chemical composition of its parent cloud of gas.

Correct Option

**Solution :**

(c) The one piece of information that the argument lacks is that the stars take on an identifiable chemical signature from the parent cloud. Option (c) gives us exactly that.

**D** Many stars in vastly different parts of the universe are quite similar in their chemical compositions.

 QUESTION ANALYTICS



Q. 10

 Solution Video

 Have any Doubt ?



When I opened the door, my books were lying at sixes and sevens.

**A** in neat order

**B** in disorder

Correct Option

**Solution :**

(b) 'at sixes and sevens' implies a state of total confusion or disorder.

**C** under the table

**D** in piles on the floor

 QUESTION ANALYTICS



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ALL(17)

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INCORRECT(0)

SKIPPED(17)

Q. 11

Solution Video

Have any Doubt ?



I find myself in a position where I have to choose between the devil and the deep blue sea.

- A near the horrid sea
- B in a state of stability
- C out of one's proper place
- D a dilemma to choose between two equal evils

Correct Option

Solution :  
(d)

QUESTION ANALYTICS



Q. 12

Solution Video

Have any Doubt ?

They had to face a lot of problems due to mismanagement on the behalf of the organisers.

- A They had to face a lot of problems due to mismanagement in the hand of the organisers.
- B They had to face a lot of problems due to mismanagement on the part of the organisers.
- C They had to face a lot of problems due to mismanagement under no control of the organisers.
- D No improvement.

Correct Option

Solution :  
(b)

QUESTION ANALYTICS



Q. 13

Solution Video

Have any Doubt ?

Wandering in the woods, the princess was abducted by a gang of robbers.

- A Wandering in the woods, a gang of robbers abducted the princess.
- B A gang of robbers wandering in the woods abducted the princess.
- C A gang of robbers abducted the princess who was wandering in the woods.
- D No improvement.

Correct Option

Solution :  
(c)

QUESTION ANALYTICS



Q. 14

Solution Video

Have any Doubt ?



If we wish to\_\_\_\_\_democracy, we must\_\_\_\_\_fast to our constitutional norms.

- A engage, stick
- B rule, access
- C absorb, work
- D maintain, hold

Correct Option

**Solution :**  
(d)

QUESTION ANALYTICS

Q. 15

Solution Video

Have any Doubt ?



Two \_\_\_\_\_ guide the judge's \_\_\_\_\_ : justice and fairness.

A advocates, court

B principles, decision

Correct Option

**Solution :**  
(b)

C members, sentences

D officials, cases

QUESTION ANALYTICS



Q. 16

Solution Video

Have any Doubt ?



Maria won this year's local sailboat race by beating Sue, the winner in each of the four previous years. We can conclude from this that Maria trained hard. The conclusion follows logically if which one of the following is assumed?

A Sue did not train as hard as Maria trained.

B If Maria trained hard, she would win the sailboat race.

C Maria could beat a four-time winner only if she trained hard.

Correct Option

**Solution :**  
(c)  
We can conclude that training hard ONLY led to Maria's win and nothing else. Thus option (c) is correct.

D If Sue trained hard, she would win the sailboat race.

QUESTION ANALYTICS



Q. 17

Solution Video

Have any Doubt ?



People tend to estimate the likelihood of an event's occurrence according to its salience; that is, according to how strongly and how often it comes to their attention. By placement and headlines, newspapers emphasize stories about local crime over stories about crime elsewhere and about many other major events. It can be concluded on the basis of the statements above that, if they are true, which of the following is most probably also true?

A The language used in newspaper headlines about local crime is inflammatory and fails to respect the rights of suspects.

B The press is the news medium that focuses people attention most strongly on local crimes.

C Readers of local news in newspapers tend to overestimate the amount of crime in their own localities relative to the amount of crime in other places.

Correct Option

**Solution :**  
(c)  
We know that newspapers' coverage of local crimes is stronger than that of non-local crimes. Nothing is said about frequency of coverage so, we can not assume anything about it. However, all else being equal, we can assume that people tend to think the local crimes outnumber non-local crimes.

D None of the events concerning other people that are reported in newspapers is so salient in people's minds as their own personal experiences.

QUESTION ANALYTICS





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ALL(33)    CORRECT(0)    INCORRECT(0)    SKIPPED(33)

Q. 1

Solution Video

Have any Doubt ?



Her mother does not approve of her to go to the party without dressing formally.

(a)  (b)  (c)

No error

(d)

**A** a

**B** b

Correct Option

**C** c

**D** d

QUESTION ANALYTICS



Q. 2

Solution Video

Have any Doubt ?



My sister asked me that how long I would stay there. No error.

(a)  (b)  (c)  (d)

**A** a

**B** b

Correct Option

**C** c

**D** d

QUESTION ANALYTICS



Q. 3

Solution Video

Have any Doubt ?



Sum of first 12 terms of a GP is equal to the sum of the first 14 terms in the same GP. Sum of the first 17 terms is 92, what is the third term in the GP?

**A** 92

Correct Option

**Solution :**

(a)

Sum of first 12 terms is equal to sum of first 14 terms.

Sum of first 14 terms = Sum of first 12 terms + 13<sup>th</sup> term + 14<sup>th</sup> term  $\Rightarrow$  13<sup>th</sup> term + 14<sup>th</sup> term = 0

Let us assume 13<sup>th</sup> term = k, common ratio = r. 14<sup>th</sup> term will be kr.

$$k + kr = 0$$

$$k(1+r) = 0$$

$\Rightarrow r = -1$  as k cannot be zero

Common ratio = -1

Now, if the first term of this GP is a, second term would be -a, third would be a and so on

The GP would be a, -a, a, -a, a, -a,...

Sum to even number of terms = 0

Sum to odd number of terms = a

Sum to 17 terms is 92  $\Rightarrow a = 92$

Third term = a = 92

**B** - 92

**C** 46

**D** 231

Q. 4

[▶ Solution Video](#)[Have any Doubt ?](#)

Find the missing number in the series.  
4, 13, 41, 126, ?, 1151

**A** 382

Correct Option

**Solution :**

(a)

$$\begin{aligned}4 \times 3 + 1 &= 13, \\13 \times 3 + 2 &= 41, \\41 \times 3 + 3 &= 126, \\126 \times 3 + 4 &= 382, \\382 \times 3 + 5 &= 1151\end{aligned}$$

**B** 688**C** 453**D** 562

Q. 5

[▶ Solution Video](#)[Have any Doubt ?](#)

Place for keeping birds

**A** Aquarium**B** Gymnasium**C** Aviary

Correct Option

**Solution :**

(c)

An aviary is a large enclosure for confining birds.

**D** Aerodrome

Q. 6

[▶ Solution Video](#)[Have any Doubt ?](#)

Gruesome

**A** Sullen**B** Hideous

Correct Option

**Solution :**

(b)

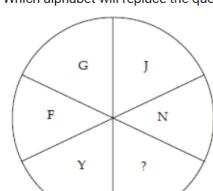
'Gruesome' means 'causing repulsion or horror, hideous'.

**C** Exhausting**D** Insulting

Q. 7

[▶ Solution Video](#)[Have any Doubt ?](#)

Which alphabet will replace the question mark?



A T

B N

C S

Correct Option

Solution :

(c)

Starting with the G, move clockwise around the circle, in steps of 3, 4, 5, 6 and 7 letters.

D L

 QUESTION ANALYTICS

+

Q. 8

 Solution Video

 Have any Doubt ?

Q

A, B, C, D and E are sitting on a bench. A is sitting next to B, C is sitting next to D, D is not sitting with E who is on the left end of the bench. C occupies the second position from the right. A is to the right of B and E. A and C are sitting together. In which position is A sitting?

A Between B and D

B Between B and C

Correct Option

Solution :

(b)

• • • • •  
E B A C D

∴ A is sitting in between B and C.

C Between E and D

D Between C and E

 QUESTION ANALYTICS

+

Q. 9

 Solution Video

 Have any Doubt ?

Q

Pernicious

A Prolonged

B Ruinous

C Ruthless

D Beneficial

Correct Option

Solution :

(D)

'Pernicious' means 'having a harmful effect, especially in a gradual or subtle way'.

 QUESTION ANALYTICS

+

Q. 10

 Solution Video

 Have any Doubt ?

Q

Opulence

A Luxury

B Transparency

C Affluence

D Poverty

Correct Option

Solution :

(d)

'Opulence' means 'great wealth or affluence'.

 QUESTION ANALYTICS

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The trek is difficult but it is worth well the endeavour.

**A** well worth the endeavour

[Correct Option](#)

**Solution :**

(a)

**B** worth the endeavour well

**C** the endeavour well worth

**D** No improvement

QUESTION ANALYTICS


**Q. 12**
[▶ Solution Video](#)
[Have any Doubt ?](#)


We kept all the old paintings in a place where they would remain safe from harm or danger.

**A** will remain safe

**B** are safe

**C** may remain safe

**D** No improvement

[Correct Option](#)

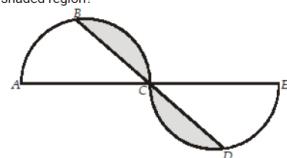
**Solution :**

(d)

QUESTION ANALYTICS


**Q. 13**
[▶ Solution Video](#)
[Have any Doubt ?](#)


In the figure given below,  $ABC$  and  $CDE$  are two identical semi-circles of radius 2 units.  $B$  and  $D$  are the mid points of the arc  $ABC$  and  $CDE$  respectively. What is the area of the shaded region?



**A**  $4\pi - 1$

**B**  $3\pi - 1$

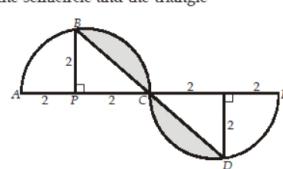
**C**  $2\pi - 4$

[Correct Option](#)

**Solution :**

(c)

Compute areas of half the semicircle and the triangle



Area of half the semicircle - Area of region  $PBC$

Area of the semicircle  $ABC = \frac{1}{2}$  area of the circle of radius 2.

So, area of half the semicircle,  $PBC = \frac{1}{4}$  area of the circle of radius 2 =  $\frac{1}{4} \times \pi \times 2^2 = \pi$  sq units

Area of right isosceles triangle  $PBC = \frac{1}{2} PC \times PB = \frac{1}{2} \times 2 \times 2 = 2$  sq units

Area of shaded region in one of the semi circles  $ABC = (\pi - 2)$  sq units

Therefore, area of the overall shaded region =  $2(\pi - 2)$  sq units =  $2\pi - 4$  sq units

D.  $\frac{(3\pi - 1)}{2}$

QUESTION ANALYTICS



Q. 14

Solution Video

Have any Doubt ?



When you reverse the digits of the number 13, the number increases by 18. The total number of other two digit numbers apart from 13 which increase by 18 when their digits are reversed is\_\_\_\_\_.

6

Correct Option

Solution :  
6

Let the number be  $(10x + y)$ , so when the digits of number are reversed the number becomes  $(10y + x)$ .

According to the question,  $(10y + x) - (10x + y) = 18$

$$\Rightarrow 9(y - x) = 18$$

$$\Rightarrow y - x = 2$$

So, the possible pairs of  $(x, y)$  are  $(1, 3), (2, 4), (3, 5), (4, 6), (5, 7), (6, 8)$  and  $(7, 9)$ .

But we want the number other than 13.

Thus, there are 6 possible numbers, i.e., 24, 35, 46, 57, 68, 79.

So, total number of possible numbers are 6.

QUESTION ANALYTICS



Q. 15

Solution Video

Have any Doubt ?



The remainder when  $x^4 + 5x^3 - 3x^2 + 4x + 3$  is divided by  $(x + 2)$  is\_\_\_\_\_.

-41

Correct Option

Solution :  
-41

When  $f(x)$  is divided by  $(x - a)$ , the remainder  $= f(a)$ ,

$$\text{Here } f(x) = x^4 + 5x^3 - 3x^2 + 4x + 3$$

$$\text{and } (x - a) = x + 2$$

$$\Rightarrow a = -2$$

$$\text{Therefore remainder} = f(-2) = (-2)^4 + 5(-2)^3 - 3(-2)^2 + 4(-2) + 3$$

$$f(-2) = 16 - 40 - 12 - 8 + 3$$

$$f(-2) = -41$$

Hence remainder is -41

QUESTION ANALYTICS



Q. 16

Solution Video

Have any Doubt ?



A fruit seller has oranges, apples and guavas in the ratio 2 : 5 : 8. The number of apples is more than the number of oranges by a number that is a multiple of both 6 and 8. The minimum number of fruits in his shop would be\_\_\_\_\_.

120

Correct Option

Solution :  
120

Let the number of fruits be  $2k, 5k$  and  $8k$

Given,  $5k - 2k = \text{multiple of 6 and 8}$

LCM of 6 and 8 is 24

Let's say  $5k - 2k = 24n$

$$3k = 24n$$

For  $k$  to be a natural number and have minimum value,  $n$  should be equal to 1

$$3k = 24$$

$$\text{Or } k = 8$$

Hence, the minimum number of fruits  $= 2k + 5k + 8k = 15 \times 8 = 120$

QUESTION ANALYTICS



Q. 17

Solution Video

Have any Doubt ?



A stockist wants to make some profit by selling sugar. He contemplates about various methods. Which of the following would maximize his profit?

1. Sell sugar at 10% profit.
2. Use 900 g of weight instead of 1 kg.
3. Mix 10% impurities in sugar and selling sugar at cost price.
4. Increase the price by 5% and reduce weights by 5%.

A I or III

**B**

Correct Option

**Solution :**

(b)

We will solve this question by taking all the cases one by one.  
In the first case it is given that the profit is 10%.

For second case, let the CP of 1 kg of sugar be ₹ 100  
Then CP of 900 g of sugar =  $(100/1000) \times 900 = ₹ 90$   
Hence, profit % in Case II =  $\{[(100-90)/90] \times 100\} = 11.11\%$

For case III, If he adds 10% impurity then his CP for 1 kg =  $\{(100/1100) \times 1000\} = ₹ \frac{1000}{11}$

Hence, profit % in Case III =  $\{[(100 - \frac{1000}{11})/ \frac{1000}{11}] \times 100\} = 10\%$

and in the last case, If he reduces weight by 5%  
Then cost price of 950 g =  $[(100/1000) \times 950] = ₹ 95$  and SP = ₹ 105  
Hence, profit % in Case IV =  $\{(105 - 95)/95\} \times 100 = 10.52\%$   
Hence, the profit is maximum in second case.

**C** II, III and IV**D** Profits are same

QUESTION ANALYTICS



Q. 18

▶ Solution Video

☞ Have any Doubt ?



A sphere of radius  $r$  is cut by a plane at a distance of  $h$  from its center, thereby breaking this sphere into two different pieces. The cumulative surface area of these two pieces is 25% more than that of the sphere. Find  $h$ .

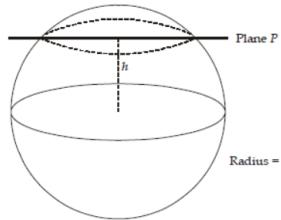
**A**  $r/\sqrt{2}$ 

Correct Option

**Solution :**

(a)

$$\text{Area} = 4\pi r^2$$

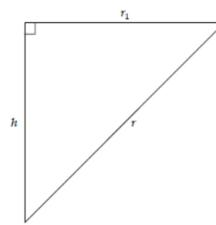


Cumulative area of the two pieces = 25% more than that of sphere =  $1.25 \times 4\pi r^2 = 5\pi r^2$

Extra area = area of two new circles =  $\pi r^2$

Let radius of new circle be  $r_1$ .

$$\text{Now, } \pi r_1^2 = \pi r^2/2$$



$$r_1 = r/\sqrt{2}$$

Now,  $r_1$ ,  $h$  and  $r$  form a right angled triangle.

$$h^2 + r_1^2 = r^2$$

$$h = r/\sqrt{2}$$

**B**  $r/\sqrt{3}$ **C**  $r/\sqrt{5}$ **D**  $r/\sqrt{6}$ 

QUESTION ANALYTICS



Q. 19

▶ Solution Video

☞ Have any Doubt ?



If it \_\_\_\_\_ anything else, I would have been disappointed.

A had been

Correct Option

Solution :  
(a)

B was being

C would be

D were being

 QUESTION ANALYTICS

+

Q. 20

 Solution Video

 Have any Doubt ?



The thief was let off because there was not enough \_\_\_\_\_ to convict him.

A circumstance

B evidence

Correct Option

Solution :  
(b)

'Evidence' means 'the available body of facts or information indicating whether a belief or proposition is true or valid'.

C confirmation

D verification

 QUESTION ANALYTICS

+

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**Q. 21**
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**A** 5/21

**B** 3/7

**C** 4/7

**D** 16/21

[Correct Option](#)
**Solution :**

(d)

- As there are 4 people with exactly 1 sibling each : we have two pairs of siblings (1-2; 3-4).
- As there are 3 people with exactly 2 siblings each : we have one triplet of siblings (5-6-7).

 No. of selections of 2 out of 7 =  ${}^7C_2 = 21$ 

 No. of selections of 2 people which are not siblings =  ${}^2C_1 \times {}^2C_1$  (one from first pair of siblings  $\times$  one from second pair of siblings) +  ${}^2C_1 \times {}^3C_1$  (one from first pair of siblings  $\times$  one from triple) +  ${}^2C_1 \times {}^3C_1$  (one from second pair of siblings  $\times$  one from triple) = 4 + 6 + 6 = 16.

$$P = \frac{16}{21}$$

**Alternative Solution:**

 No. of selections of 2 out 7 =  ${}^7C_2 = 21$ 

 No. of selections of 2 siblings =  ${}^3C_2 + {}^2C_2 + {}^2C_2 = 3 + 1 + 1 = 5$ 

$$P = 1 - \frac{5}{21} = \frac{16}{21}$$

[QUESTION ANALYTICS](#)

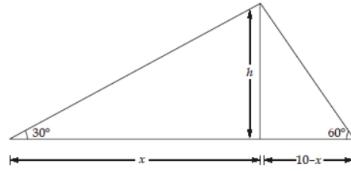
**Q. 22**
[▶ Solution Video](#)
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Ram and Shyam are 10 km apart. They both see a hot air balloon passing in the sky making an angle of  $60^\circ$  and  $30^\circ$  respectively. What is the height (in km) at which the balloon could be flying?

**A**  $5\sqrt{3}/2$ 
**B**  $5\sqrt{3}$ 
**C** Both a and b

[Correct Option](#)
**Solution :**

(c)

**Case 1 :**


$$\tan 30^\circ = h/x$$

$$\therefore h = x/\sqrt{3}$$

$$\tan 60^\circ = h/(10-x) \quad \dots(1)$$

$$\dots(2)$$

Equating (1) and (2) we get

$$30 - 3x = x$$

$$\Rightarrow x = 30/4 = 15/2$$

$$\Rightarrow h = 15/(2\sqrt{3}) = (5\sqrt{3})/2$$

**Case 2 :**

$$\tan 60^\circ = h/x \Rightarrow h = x\sqrt{3}$$

Also,

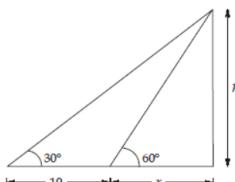
$$\tan 30^\circ = h/(10+x)$$

$$\Rightarrow h = (10+x)/\sqrt{3}$$

$$\Rightarrow 3x - x = 10$$

$$\Rightarrow x = 5$$

$$\Rightarrow h = 5\sqrt{3}$$


**D** Can't be determined

Q. 23

[▶ Solution Video](#)[Have any Doubt ?](#)

**Educator :** Like many other difficult pursuits, music requires intense study and practice from an early age in order for one to become proficient. But many school music programs encourage only children who demonstrate early aptitude to continue studying music, while children who do not appear especially musical are directed towards other activities. Having learned to think of themselves as musically inept, these children do not devote any time to music, and thus some of them deprive themselves of the opportunity to develop latent but potentially significant musical talent.

The educator's statements, if true, would best support which of the following conclusions?

**A** Music education should not devote special attention to talented students.**B** Everyone has the potential to learn music**C** There might be a possibility or ability to learn music at later age.

Correct Option

**Solution :**

(c)

You can get the main idea from the phrase "*thus some of them deprive themselves of the opportunity to develop latent but potentially significant musical talent*"

It means some people would have the ability to develop musical talent later than other people.

**D** Children are particularly sensitive to criticism from adults.

Q. 24

[▶ Solution Video](#)[Have any Doubt ?](#)

Select the one which is most nearly the same to the given idiom or phrase.

He is putting the cart before the horse by purchasing furniture before buying a house?

**A** doing a thing in the unconventional way

Correct Option

**Solution :**

(a)

'putting the cart before the horse' is an idiom used to suggest something is done contrary to a conventional or culturally expected order of relationship.

**B** doing a thing in the right way**C** committing a great crime**D** doing things meticulously

Q. 25

[▶ Solution Video](#)[Have any Doubt ?](#)

Two varieties of steel, A and B, have a ratio of iron to chromium as 5:1 and 7:2, respectively. Steel C is produced by mixing alloys A and B at a ratio of 3:2. What is the ratio of iron to chromium in C?

**A** 17 : 73**B** 78 : 14**C** 45 : 30**D** 73 : 17

Correct Option

**Solution :**

(d)

In 6 parts of alloy A, 5 parts are iron, and 1 part is chromium.

In 9 parts of alloy B, 7 parts are iron and 2 parts are chromium.

First, to compare the two alloys, get the same number of parts in total - we can use 18. So we have:

In 18 parts of alloy A, 15 parts are iron and 3 are chromium.

In 18 parts of alloy B, 14 parts are iron and 4 are chromium.

So combining 3 of A with 2 of B, we'd be combining 45 and 28 parts of iron, or 73 parts of iron, with 9 and 8 of chromium, or 17 of chromium, so 73 : 17 is the answer.

Q. 26

[▶ Solution Video](#)[Have any Doubt ?](#)

PQRS is a square. SR is a tangent (at point S) to the circle with centre O and TR = OS. Then, the ratio of area of the circle to the area of the square is :



**B** Scientists can establish that sunspot activity directly affects the Earth's weather.

**C** Evidence other than sunspot activity has previously enabled meteorologists to forecast the weather conditions that are predictable on the basis of sunspot activity.

Correct Option

**Solution :**

- (c)
  - Conclusion is that meteorologists will be able to improve their weather forecasts based on this information.
  - We need to prove that meteorologists will NOT be able to improve their weather forecasts based on this information.
  - Option (c) exactly does that. Whatever can be deduced using the Sun spot activity has been deduced from other activity. Hence, meteorologists will NOT be able to improve their weather forecasts based on this information.

**D** Scientists have not determined why the sunspot activity on the Sun follows an 11-year cycle.

 QUESTION ANALYTICS



**Q. 29**

 Solution Video

 Have any Doubt ?



Traders A and B buy two goods for Rs. 1000 and Rs. 2000 respectively. Trader A marks his goods up by  $x\%$ , while trader B marks his goods up by  $2x\%$  and offers a discount of  $x\%$ . If both make the same non-zero profit, find  $x$ .

**A** 25%

Correct Option

**Solution :**

(a)

$$\begin{aligned} \text{SP of trader } A &= 1000(1+x) \\ \text{Profit of trader } A &= 1000(1+x) - 1000 \\ \text{MP of trader } B &= 2000(1+2x) \\ \text{SP of trader } B &= 2000(1+2x)(1-x) \\ \text{Profit of trader } B &= 2000(1+2x)(1-x) - 2000 \\ \text{Both make the same profit} &= 1000(1+x) - 1000 = 2000(1+2x)(1-x) - 2000 \\ 1000x &= 2000 - 4000x^2 + 4000x - 2000x - 2000 \\ 4000x^2 - 1000x &= 0 \\ 1000x(4x - 1) &= 0 \\ \Rightarrow x &= 25\% \end{aligned}$$

**B** 12.5%

**C** 37.5%

**D** 40%

 QUESTION ANALYTICS



**Q. 30**

 Solution Video

 Have any Doubt ?



Equation  $x^2 + 5x - 7 = 0$  has roots a and b. Equation  $2x^2 + px + q = 0$  has roots  $(a+1)$  and  $(b+1)$ . Find  $p+q$ ?

**A** 6

**B** 0

**C** -16

Correct Option

**Solution :**

(c) Given,  $x^2 + 5x - 7 = 0$  has roots a and b. We know that,

$$\text{Sum of roots in a quadratic equation} = a+b = \frac{(-5)}{1} = -5$$

$$\text{Product of the roots} = ab = \frac{(-7)}{1} = -7.$$

Now, the second equation  $2x^2 + px + q = 0$  has roots  $a+1$  and  $b+1$ .

$$\text{Sum of the roots} = a+1+b+1 = a+b+2 = \frac{(-p)}{2} = -5+2 = -3 = \frac{(-p)}{2} \Rightarrow -p = -6 \Rightarrow p = 6$$

$$\text{Product of the roots} = (a+1)(b+1) = ab + a + b + 1 = \frac{q}{2}.$$

$$\text{We know the values of } ab \text{ and } a+b. \text{ Substituting this, we get, } -7 + (-5) + 1 = \frac{q}{2} \Rightarrow q = -22.$$

$$\therefore p+q = 6 - 22 = -16$$

**D** 2

 QUESTION ANALYTICS





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**Q. 31**
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20 men or 24 women or 40 boys can do a job in 12 days working for 8 hours a day. The number of men working with 6 women and 2 boys it would take to do a job four times as big working for 5 hours a day for 12 days is\_\_\_\_\_

122
[Correct Option](#)
**Solution :**

122

$$R_m = \frac{1}{12 \times 8 \times 20}$$

$$R_w = \frac{1}{12 \times 8 \times 24}$$

$$R_b = \frac{1}{12 \times 8 \times 40}$$

Let number of men needed = x

$$\left( \frac{x}{12 \times 8 \times 20} + \frac{6}{12 \times 8 \times 24} + \frac{2}{12 \times 8 \times 40} \right) \times 5 \times 12 = 4$$

$$\frac{6+x}{32} = 4$$

$$x + 6 = 128$$

$$x = 122$$

[QUESTION ANALYTICS](#)

**Q. 32**
[▶ Solution Video](#)
[Have any Doubt ?](#)


The smallest number that leaves a remainder of 4 on division by 5, 5 on division by 6, 6 on division by 7, 7 on division by 8 and 8 on division by 9 is\_\_\_\_\_

2519
[Correct Option](#)
**Solution :**

2519

When a number is divided by 8, a remainder of 7 can be thought of as a remainder of -1. So, N =  
 $5a - 1$  or  $N + 1 = 5a$

$$N = 6b - 1 \text{ or } N + 1 = 6b$$

$$N = 7c - 1 \text{ or } N + 1 = 7c$$

$$N = 8d - 1 \text{ or } N + 1 = 8d$$

$$N = 9e - 1 \text{ or } N + 1 = 9e$$

N + 1 can be expressed as a multiple of (5, 6, 7, 8, 9)

$$N + 1 = 5a \times 6b \times 7c \times 8d \times 9e$$

$$\text{Or } N = (5a \times 6b \times 7c \times 8d \times 9e) - 1$$

Smallest value of N will be when we find the smallest common multiple of (5, 6, 7, 8, 9)  
 or LCM of (5, 6, 7, 8, 9)

$$N = \text{LCM}(5, 6, 7, 8, 9) - 1 = 2520 - 1 = 2519.$$

[QUESTION ANALYTICS](#)

**Q. 33**
[▶ Solution Video](#)
[Have any Doubt ?](#)


If  $\log_2 4 \times \log_4 8 \times \log_8 16 \times \dots \text{nth term} = 49$ , the value of n is\_\_\_\_\_

48
[Correct Option](#)
**Solution :**

48

First, the  $n^{\text{th}}$  term of L.H.S need to be defined by observing the pattern :-

It is  $\log_{2^n} 2^{2^n}$

$$\log_2 4 \times \log_4 8 \times \log_8 16 \times \dots \log_{2^n} 2^{2^n} = 49$$

Whenever solving a logarithm equation, generally one should approach towards making the base same.

Making the base 2 :-

$$\log_2 4 \times \frac{\log_2 8}{\log_2 4} \times \frac{\log_2 16}{\log_2 8} \times \dots \frac{\log_2 2^{2^n}}{\log_2 2^n}$$

$$\log_{2^n} 2 + \log_{2^n} 2^n = 49$$

$$\Rightarrow 1 + n = 49$$

$$\Rightarrow n = 48$$

