

Previous Year Questions (GATE ME): Numerical Ability

Year: GATE ME 2026

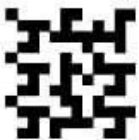
Question 1: Which one of the patterns labelled P Q R and S is used to generate the following figure?



P



Q



R



S

A: P

B: Q

C: R

D: S

Answer: B

Solution: Pattern Analysis:

The large figure is formed by tiling a small pattern repeatedly.

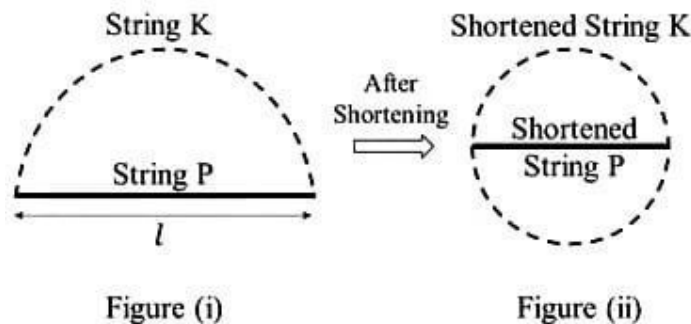
Method: Compare the top-left corner of the large figure with each of the given patterns P Q R S.

The large figure when divided into identical small blocks matches pattern Q when tiled in a 3×3 arrangement.

Pattern Q matches the repeating unit that generates the given figure when arranged side by side both horizontally and vertically.

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Question 2: Consider a string P of length l that is laid out as a straight-line segment. Another string K is laid out as a semicircular arc with string P as its diameter as represented in Figure (i). When both the strings are shortened by a length x they can be re-arranged such that the shortened string K forms a full circle with the shortened string P as its diameter as represented in Figure (ii).



A: π

B:

$$\frac{\pi - 1}{2\pi}$$

C:

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

D:

$$\frac{\pi}{\pi - 1}$$

Answer: C

Solution: Given:

String **P** (diameter)

$$= l$$

String **K** (semicircle)

$$= \frac{\pi l}{2}$$

After shortening by x :

New length of **P**

$$= l - x$$

(new diameter)

New length of **K**

$$= \frac{\pi l}{2} - x$$

(now forms full circle)

Condition: Shortened **K** forms full circle with shortened **P** as diameter.

Circumference of full circle

$$= \pi \times \text{diameter} = \pi(l - x)$$

Setting up equation:

$$\frac{\pi l}{2} - x = \pi(l - x)$$

$$\frac{\pi l}{2} - x = \pi l - \pi x$$

$$\pi x - x = \pi l - \frac{\pi l}{2}$$

$$x(\pi - 1) = \frac{\pi l}{2}$$

$$\frac{x}{l} = \frac{\pi}{2(\pi - 1)}$$

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Question 3: The table lists the unit selling price of five products P Q R S and T. On a particular day 250 items were sold with the average selling price of Rs. 60.

The following observations were made:

- (i) The quantity of S sold was twice that of T.
- (ii) The quantity of R sold was thrice that of T.
- (iii) The quantity of Q sold was four times that of T.

Product	P	Q	R	S	T
Unit selling price (Rs.)	100	50	40	60	60

What is the quantity of product P sold on that day?

A: 40

B: 50

C: 60

D: 70

Answer: B

Solution: Give:

Total items sold = 250

Average selling price = Rs. 60

Total revenue = $250 \times 60 = \text{Rs.}15000$

Let quantity of T = t

Quantity of S = 2t

Quantity of R = 3t

Quantity of Q = 4t

Quantity of P = p

Step 1: Total quantity equation

$$p + 4t + 3t + 2t + t = 250$$

$$P + 10t = 250 \dots (1)$$

Step 2: Total revenue equation

$$100p + 50(4t) + 40(3t) + 60(2t) + 60t = 15000$$

$$100p + 200t + 120t + 120t + 60t = 15000$$

$$100p + 500t = 15000$$

$$P + 5t = 150 \dots (2)$$

Step 3: Solve (1) and (2)

$$(1) - (2) : 5t = 100 \Rightarrow t = 20$$

$$P = 150 - 5(20) = 150 - 100 = 50$$

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Question 4: Consider the following statements about four numbers:

(S1) The average of the four numbers is 25

(S2) Each number is at most 40

(S3) Each number is at least 20

Choose the option that is necessarily correct.

A: (S1) and (S2) together imply (S3)

B: (S2) and (S3) together imply (S1)

C: (S1) and (S3) together imply (S2)

D: (S1) implies (S3)

Answer: C

Solution: Given Statements:

(S1) Average of four numbers = 25 $\rightarrow$ Sum = 100

(S2) Each number ≤ 40

(S3) Each number ≤ 20

Check Option (C): (S1) and (S3) together imply (S2)

If average = 25 and each number ≥ 20 :

Let three numbers = 20 each $\rightarrow$ Fourth = $100 - 60 = 40$

But what if three numbers = 20 $\rightarrow$ Fourth = 40

What if three numbers = 20 $\rightarrow$ can fourth exceed 40?

If three numbers = 20 $\rightarrow$ Fourth = 40 (exactly)

If one number = 19 (less than 20) $\rightarrow$ violates S3

So with S1 and S3: maximum any number can be = $100 - (3 \times 20) = 40$

Therefore each number ≤ 40 which is S2

Answer: (C) (S1) and (S3) together imply (S2)

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Question 5: If a positive real x satisfies the following equation

$$\log_2 x + \log_{\sqrt{2}} x = 48$$

then the value of x is _____

A: 2^{16}

B: 4^{16}

C: 2^{14}

D: 4^{14}

Answer:

Solution: Given equation:

$$\log_2 x + \log_{\sqrt{2}} x = 48$$

Step 1: Convert $\log_{\sqrt{2}} x$ to base 2.

$$\log_{\sqrt{2}} x = \frac{\log_2 x}{\log_2 \sqrt{2}} = \frac{\log_2 x}{1/2} = 2\log_2 x$$

Step 2: Substitute back.

$$\log_2 x + 2\log_2 x = 48$$

$$3\log_2 x = 48$$

$$\log_2 x = 16$$

$$x = 2^{16}$$

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Question 6: A final year student appears for placement interview in two companies, S and T . Based on her interview performance, she estimates the probability of receiving job offers from companies S and T to be 0.8 and 0.6, respectively. Let p be the probability that she receives job offers from both the companies. Select the most appropriate option.

A: $0 \leq p \leq 0.2$

B: $0.4 \leq p \leq 0.6$

C: $0.2 \leq p \leq 0.4$

D: $0.6 \leq p \leq 1.0$

Answer: B

Solution: The probability of receiving job offers from both companies, p , is the intersection of the two events. Using the formula for the intersection of two events, we know:

$$P(S \cap T) = P(S) + P(T) - P(S \cup T)$$

The maximum value of $P(S \cup T)$ is 1, as the probability of the union cannot exceed 1. Thus, the maximum possible value for p is:

$$p_{\max} = P(S) + P(T) - 1 = 0.8 + 0.6 - 1 = 0.4$$

The minimum value of p occurs when the two events are mutually exclusive, i.e., there is no overlap between the two events. In this case, the minimum value of p is 0.

Thus, the probability p lies in the range:

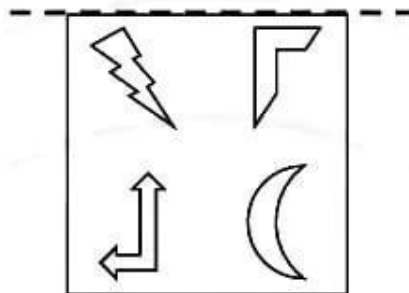
$$0 \leq p \leq 0.4$$

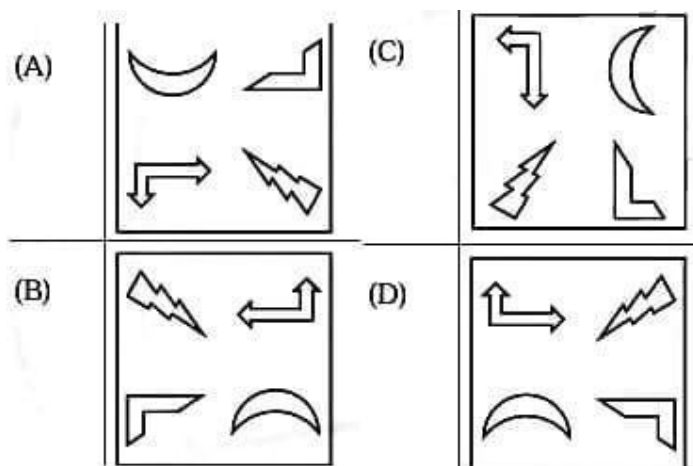
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Question 7: The given figure is reflected about the horizontal dashed line and then rotated clockwise by 90° about an axis perpendicular to the plane of the figure.

Which one of the following options correctly shows the resultant figure?

Note: The figures shown are representative.





A: A

B: B

C: C

D: D

Answer: B

Solution:

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Question 8: If HIDE and CAGE are coded as 19-23-7-11 and 5-2-17-11 respectively, then what is the code for HIGH?

A: 5-17-1-2

B: 17-19-13-17

C: 13-3-1-2

D: 19-23-17-19

Answer: D

Solution: It appears the pattern involves adding a constant to the position of the letter in the alphabet to get the coded value. Let's calculate this constant using the difference between the positions of the letters and their corresponding code values.

HIDE:

- H = 8 $\rightarrow$ 19, the difference is $19 - 8 = 11$

- I = 9 $\rightarrow$ 23, the difference is $23 - 9 = 14$

- D = 4 $\rightarrow$ 7, the difference is $7 - 4 = 3$

- E = 5 $\rightarrow$ 11, the difference is $11 - 5 = 6$

Final Answer: Based on this calculation, we would need to apply the same pattern to the word "HIGH".

For H = 8 $\rightarrow$ 19

For I = 9 $\rightarrow$ 23

For G = 7 $\rightarrow$ 17

For H = 8 $\rightarrow$ 19

Year: GATE ME 2025

Question 9: P and Q play chess frequently against each other. Of these matches, P has won 80% of the matches, drawn 15% of the matches and lost 5% of the matches.

If they play 3 more matches, what is the probability of P winning exactly 2 of these 3 matches?

A: $\frac{48}{125}$

B: $\frac{16}{125}$

C: $\frac{16}{25}$

D: $\frac{25}{48}$

Answer: A

Solution: Given: P has won 80% of the matches, drawn 15% of the matches, and lost 5% of the matches. If they play 3 more matches, we need to find the probability of P winning exactly 2 out of these 3 matches.

Step 1: The probability of P winning a match is $P(\text{win}) = 0.80$. The probability of P losing or drawing a match doesn't affect the outcome for P winning, so we focus only on the probability of winning.

Step 2: We can model the number of wins as a binomial distribution, where the number of trials is 3 (the number of matches) and the probability of success (P winning) is 0.80.

Step 3: The probability of P winning exactly 2 matches out of 3 is given by the binomial probability formula:

$$P(X = 2) = \binom{3}{2} (0.80)^2 (0.20)^1$$

Where $\binom{3}{2}$ is the number of ways to choose 2 wins from 3 matches.

Step 4: Calculating the terms:

$$\binom{3}{2} = \frac{3!}{2!(3-2)!} = 3$$

$$(0.80)^2 = 0.64 \text{ and } (0.20)^1 = 0.20.$$

Step 5: Now, calculating the probability:

$$P(X = 2) = 3 \times 0.64 \times 0.20 = 3 \times 0.128 = 0.384.$$

Final Answer: The probability of P winning exactly 2 of the 3 matches is 48/125, so the correct answer is **(A) 48/125**.

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Question 10: The ceiling function of a real number x , denoted by $ce(x)$, is defined as the smallest integer that is greater than or equal to x . Similarly, the floor function, denoted by $fl(x)$ is defined as the largest integer that is smaller than or equal to x . Which one of the following statements is NOT correct for all possible values of x ?

A: $ce(x) \geq x$

B: $fl(x) \leq x$

C: $ce(x) \geq fl(x)$

D: $fl(x) < ce(x)$

Answer: D

Solution: Given: The ceiling function $\lceil x \rceil$ is the smallest integer greater than or equal to x , and the floor function $\lfloor x \rfloor$ is the largest integer smaller than or equal to x .

Step 1: Let's analyze each statement one by one.

(A) $\lceil x \rceil \geq x$

This is **true**. By definition, the ceiling function gives the smallest integer greater than or equal to x , so $\lceil x \rceil \geq x$.

(B) $\lfloor x \rfloor \leq x$

This is **true**. By definition, the floor function gives the largest integer smaller than or equal to x , so $\lfloor x \rfloor \leq x$.

(C) $\lceil x \rceil \geq \lfloor x \rfloor$

This is **true**. The ceiling of x is always greater than or equal to the floor of x , because the ceiling rounds up, while the floor rounds down.

(D) $\lfloor x \rfloor < \lceil x \rceil$

This is **not necessarily true** for all values of x . If x is an integer, then $\lfloor x \rfloor = \lceil x \rceil$.

Therefore, this statement fails when x is an integer.

Final Answer: The statement that is **NOT correct** for all possible values of x is **(D)**, because when x is an integer, $\lfloor x \rfloor = \lceil x \rceil$.

Year: GATE ME 2025

Question 11: Two cars, P and Q, start from a point X in India at 10 AM. Car P travels North with a speed of 25 km/h and car Q travels East with a speed of 30 km/h . Car P travels continuously but car Q stops for some time after travelling for one hour. If both the cars are at the same distance from X at 11:30 AM, for how long (in minutes) did car Q stop?

A: 10**B: 12****C: 15****D: 18****Answer: C****Solution: Given:**

Car P travels North at 25 km/h.

Car Q travels East at 30 km/h.

Both start at 10:00 AM from point X.

At 11:30 AM (1.5 hours later), both are at the same distance from point X.

Car P travels continuously, but Car Q stops after traveling for 1 hour.

Let's find how far Car P travels:Distance by P = $25 \times 1.5 = 37.5$ kmLet Car Q travel for t hours. Since Car Q stops after 1 hour, it travels for t hours where $t \leq 1.5$.Distance by Q = $30 \times t$ **Since both are at the same distance from point X, apply Pythagoras theorem:**

$$(37.5)^2 = (30t)^2$$

$$1406.25 = 900t^2$$

$$t^2 = \frac{1406.25}{900} = 1.5625$$

$$t = \sqrt{1.5625} = 1.25 \text{ hours}$$

Total time available = 1.5 hours, but Car Q travels for 1.25 hours.

So, the time Car Q stopped = $1.5 - 1.25 = 0.25$ hours = 15 minutes**Final Answer:**

15 minutes

Year: GATE ME 2024**Question 12:** Four equilateral triangles are used to form a regular closed three-dimensional object by joining along the edges. The angle between any two faces is

A: 30°

B: 60°

C: 45°

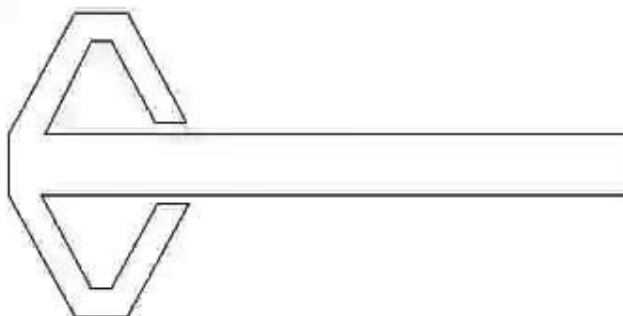
D: 90°

Answer: A

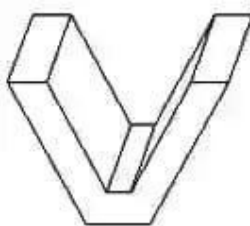
Solution: MTA-Marks to All

Year: GATE ME 2024

Question 13: A planar rectangular paper has two V-shaped pieces attached as shown below.



This piece of paper is folded to make the following closed three-dimensional object.



The number of folds required to form the above object is

A: 9

B: 7

C: 11

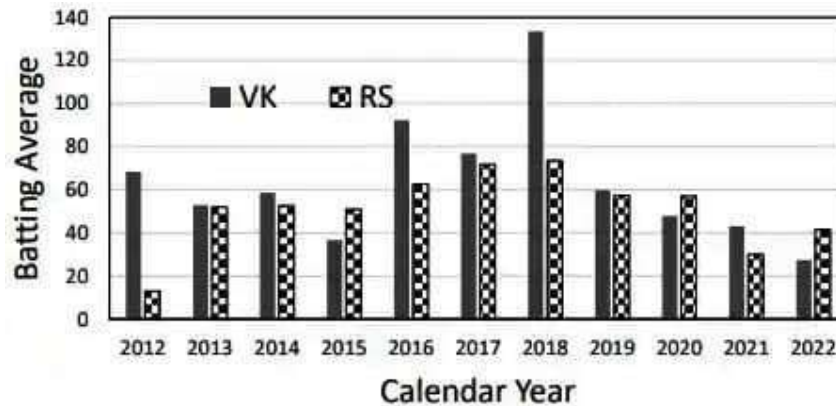
D: 8

Answer: A

Solution:

Year: GATE ME 2024

Question 14: The bar chart gives the batting averages of VK and RS for 11 calendar years from 2012 to 2022. Considering that 2015 and 2019 are world cup years, which one of the following options is true?



- A:** RS has a higher yearly batting average than that of VK in every world cup year.
- B:** VK has a higher yearly batting average than that of RS in every world cup year.
- C:** VK's yearly batting average is consistently higher than that of RS between the two world cup years.
- D:** RS's yearly batting average is consistently higher than that of VK in the last three years.

Answer: C

Solution: From graph

In between 2015 to 2019, VK batting average
 $= 35 + 90 + 75 + 130 + 60 = \frac{390}{5} = 78$

In between 2015 to 2019, RS batting average
 $= 50 + 65 + 70 + 70 + 55 = \frac{320}{5} = 64$

So, VK yearly batting average consistently higher than RS between two world cup years (2015 and 2019).

Year: GATE ME 2024

Question 15 How many combinations of non-null sets A, B, C are possible from the subsets of $\{2, 3, 5\}$ satisfying the conditions : (i) A is a subset of B , and (ii) B is a subset of C ?

A: 28

B: 27

C: 18

D: 19

Answer: A

Solution: MTA-Marks to All

Year: GATE ME 2024

Question 16: Take two long dice (rectangular parallelepiped), each having four rectangular faces labelled as 2, 3, 5, and 7. If thrown, the long dice cannot land on the square faces and has $1/4$ probability of landing on any of the four rectangular faces. The label on the top face of the dice is the score of the throw.

If thrown together, what is the probability of getting the sum of the two long dice scores greater than 11?

A: 03-Aug

B: 01-Aug

C: Jan-16

D: Mar-16

Answer: D

Solution: The combination of numbers on two long dice to get sum greater than 11.

$(5, 7), (7, 5)$ and $(7, 7)$

So, the probability

$$= \frac{1}{4} \times \frac{1}{4} + \frac{1}{4} \times \frac{1}{4} + \frac{1}{4} \times \frac{1}{4}$$

$$= \frac{1}{16} + \frac{1}{16} + \frac{1}{16} = \frac{3}{16}$$

Year: GATE ME 2024

Question 17: The real variable x, y, z and the real constants p, q, r satisfy.

$$\frac{x}{pq - r^2} = \frac{y}{qr - p^2} = \frac{z}{rp - q^2}$$

Given that the denominators are non-zero, the value of $px + qy + rz$ is

A: 0

B: 1

C: pqr

D: $p^2 + q^2 + r^2$

Answer: A

$$\text{Let } \frac{x}{pq - r^2} = \frac{y}{qr - p^2} = \frac{z}{rp - q^2} = K$$

$$\Rightarrow x = K(pq - r^2)$$

Solution:

$$y = K(qr - p^2)$$

$$z = K(rp - q^2)$$

$$\begin{aligned} \text{So, } px + qy + rz &= K \times p(pq - r^2) + K \times q(qr - p^2) + K \times r(rp - q^2) \\ &= K(p^2q - pr^2 + q^2r - qp^2 + r^2p - rq^2) \\ &= K \times 0 = 0 \end{aligned}$$

Year: GATE ME 2024

Question 18: In the following series, identify the number that needs to be changed to form the Fibonacci series.

1, 1, 2, 3, 6, 8, 13, 21, ...

A: 8

B: 21

C: 6

D: 13

Answer: C

Solution: The Fibonacci series is the series of numbers

1, 1, 2, 3, 5, 8, 13, 21,

The next number is determined by adding the two numbers before it.

$$1 + 1 = 2$$

$$2 + 1 = 3$$

$$2 + 3 = 5$$

$$3 + 5 = 8$$

$$5 + 8 = 13$$

$$8 + 13 = 21$$

So, number '6' needs to be changed to form the Fibonacci series.

Year: GATE ME 2024

Question 19: Find the odd one out in the set : {19, 37, 21, 17, 23, 29, 31, 11}

A: 21

B: 29

C: 37

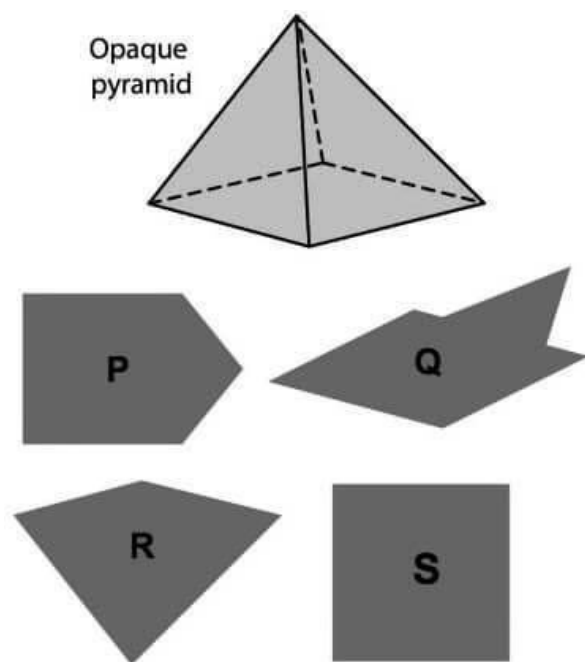
D: 23

Answer: A

Solution: This is the set of prime number. Here '21' is odd one. 21 is non prime number.

Year: GATE ME 2023

Question 20: An opaque pyramid (shown below), with a square base and isosceles faces, is suspended in the path of a parallel beam of light, such that its shadow is cast on a screen oriented perpendicular to the direction of the light beam. The pyramid can be reoriented in any direction within the light beam. Under these conditions, which one of the shadows P, Q, R, and S is NOT possible?



A: P

B: Q

C: R

D: S

Answer: B

Solution:

Year: GATE ME 2023

Question 21: How many pairs of sets (S,T) are possible among the subsets of $\{1, 2, 3, 4, 5, 6\}$ that satisfy the condition that S is a subset of T?

A: 729

B: 728

C: 665

D: 664

Answer: A

Solution: Take one element $\{1\}$

$$T = \phi, S = \phi \rightarrow (\phi, \phi) \Rightarrow 1 \text{ pair}$$

$$T = 1, S = \phi \rightarrow (\phi, 1), (1, 1) \Rightarrow 2 \text{ pair}$$

$$\text{For 1 element total pair} = 3^1$$

Similarly

$$\text{For 2 element total pair} = 3^2$$

$$\text{For 3 element total pair} = 3^3$$

$$\text{For 4 element total pair} = 3^4$$

$$\text{For 5 element total pair} = 3^5$$

$$\text{For 6 element total pair} = 3^6 = 729$$

Year: GATE ME 2023

Question 22: Consider the following inequalities

$$p^2 - 4q < 4$$

$$3p + 2q < 6$$

where p and q are positive integers.

The value of $(p + q)$ is ____.

A: 2

B: 1

C: 3

D: 4

Answer: A

$$p^2 - 4q < 4$$

$$p^2 - 4 < 4q \dots (i)$$

$$3p + 2 < 6$$

Solution: $6p - 12 < -4q \dots (ii)$

by equation (i) + (ii)

$$p^2 + 6p - 16 < 0$$

$$(p + 8)(p - 2) < 0$$

$$\therefore p \in (-8, 2)$$

Given p is positive integer

$$\therefore p = 1$$

Now, from equation (i), $1 - 4 < 4q$

$$q > \frac{-3}{4}$$

from equation (ii),

$$q < 3/2$$

$$\therefore \frac{-3}{4} < q < \frac{3}{2}$$

Given q is positive integer

$$\therefore q = 1$$

$$\text{Thus } p + q = 1 + 1 = 2$$

Year: GATE ME 2023

Question 23: The minute-hand and second-hand of a clock cross each other _____ times between 09:15:00 AM and 09:45:00 AM on a day.

A: 30

B: 15

C: 29

D: 31

Answer: A

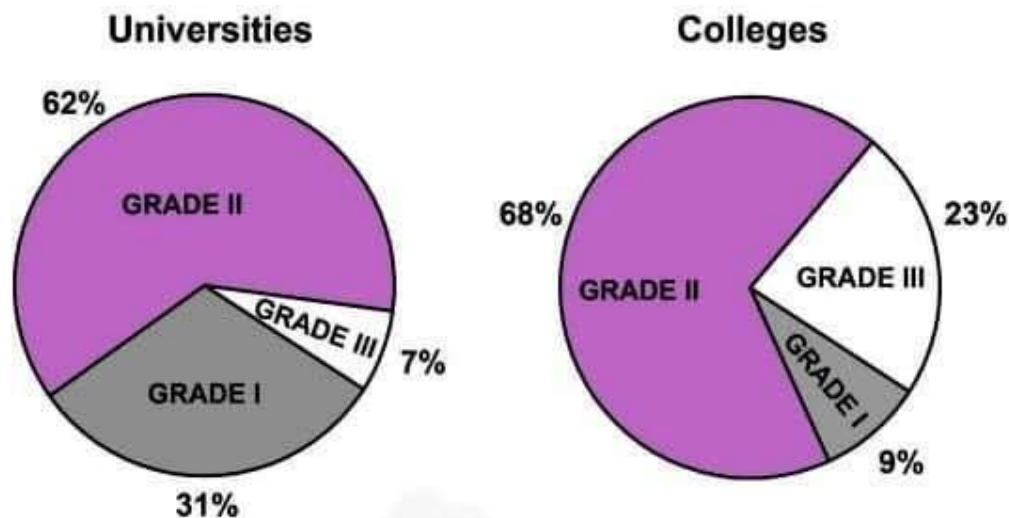
Solution: After 09:15:00 AM every minute, minute and second hand cross each other once (1) times.

So, 09:16:00 to 09:45:00 minute hand and second hand cross each other 30 times.

Year: GATE ME 2023

Question 24: A certain country has 504 universities and 25951 colleges. These are categorised into Grades I, II, and III as shown in the given pie charts.

What is the percentage, correct to one decimal place, of higher education institutions (colleges and universities) that fall into Grade III?



A: 22.7

B: 23.7

C: 15

D: 66.8

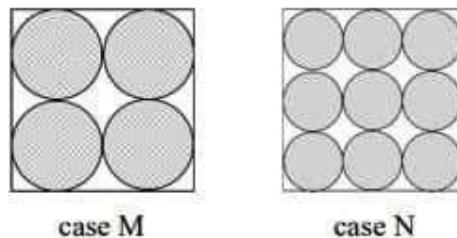
Answer: A

Solution: Percentage of grade III

$$\frac{7\% \text{ of } 504 + 23\% \text{ of } 25951}{504 + 25951} = 22.7\%$$

Year: GATE ME 2022 SET-2

Question 25: Equal sized circular regions are shaded in a square sheet of paper of 1 cm side length. Two cases, case M and case N, are considered as shown in the figures below. In the case M, four circles are shaded in the square sheet and in the case N, nine circles are shaded in the square sheet as shown.



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

A: 2: 3

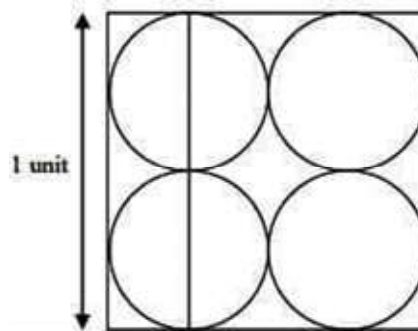
B: 1: 1

C: 3: 2

D: 2: 1

Answer: B

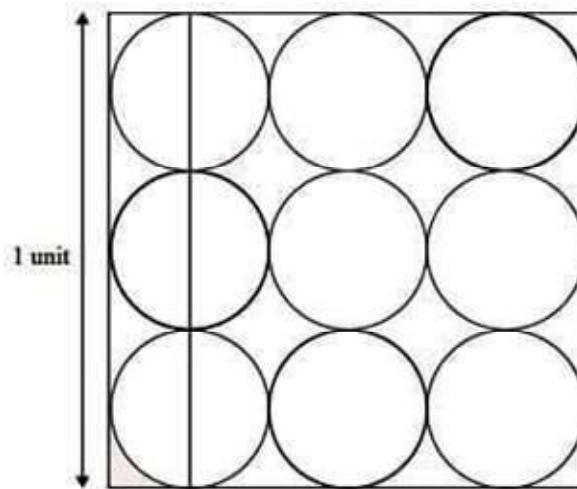
Solution:



$$2d = 1 \Rightarrow d = \frac{1}{2}$$

$$\text{Area of circle} = \frac{\pi d^2}{4} = \frac{\pi}{16}$$

$$\text{Total circle area} = 4 \times \frac{\pi}{16} = \frac{\pi}{4}$$



$$3d = 1 \Rightarrow d = \frac{1}{3}$$

$$\text{Area of circle} = \frac{\pi d^2}{4} = \frac{\pi}{36}$$

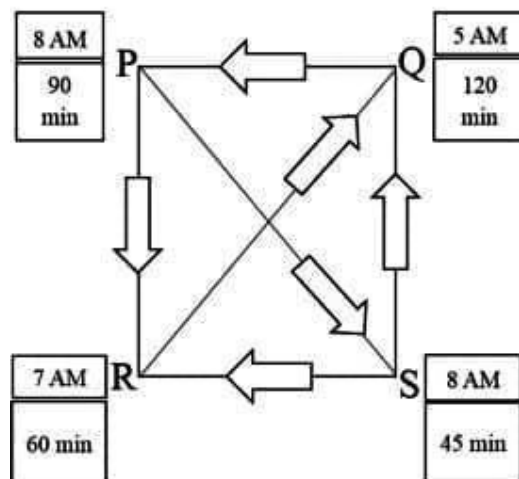
$$\text{Total circle area} = 9 \times \frac{\pi}{36} = \frac{\pi}{4}$$

$$\frac{\text{Unshaded area M}}{\text{Unshaded area N}} = \frac{1 - \frac{\pi}{4}}{1 - \frac{\pi}{4}} = \frac{1}{1} = 1:1$$

Year: GATE ME 2022 SET-2

Question 26: Four cities P, Q, R and S are connected through oneway routes as shown in the figure. The travel time between any two connected cities is one hour. The boxes

beside each city name describe the starting time of first train of the day and their frequency of operation. For example, from city P, the first trains of the day start at 8 AM with a frequency of 90 minutes to each of R and S. A person does not spend additional time at any city other than the waiting time for the next connecting train. If the person starts from R at 7 AM and is required to visit S and return to R, what is the minimum time required?



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

Answer: A

Solution: R at 7 am

1 hour journey

Reached Q at 8 am

At Q buses available timings are 5 am, 7am, 9 am ..

Person started at Q at 9 am

1 hour journey reached P at 10 am.

Buses timings at P are 8 am, 9:30am, 11 am, 12:30 pm...

Person started at P at 11 am

1 hour journey

Reached S at 12 noon.

Buses timings at S are

8am, 8:45 am, 9:30 am, 10:15 am, 11am, 11:45 am, 12:30pm

Person started at S at 12:30 pm

1 hour journey

Reached R at 1:30 pm

Minimum Total time = 1:30 pm - 7 am

= 6 hrs 30 min

Year: GATE ME 2022 SET-2

Question 27: Consider the following functions for non-zero positive integers, p and q

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

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

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

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

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

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

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

Answer: A

Solution: $f(2, 2) = 2 \times 2 = 4$

$g(2, 2) = 4$

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

Year: GATE ME 2022 SET-2

Question 28: For the past m days, the average daily production at a company was 100 units per day.

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

A: 18

B: 10

C: 7

D: 5

Answer: C

Solution: Total production = Average $\times$ No. of days

$P = 100m$

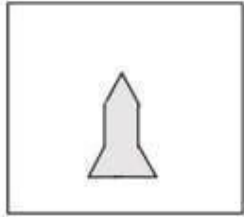
and

$P + 180 = 110(m+1)$

Solving, $m = 7$

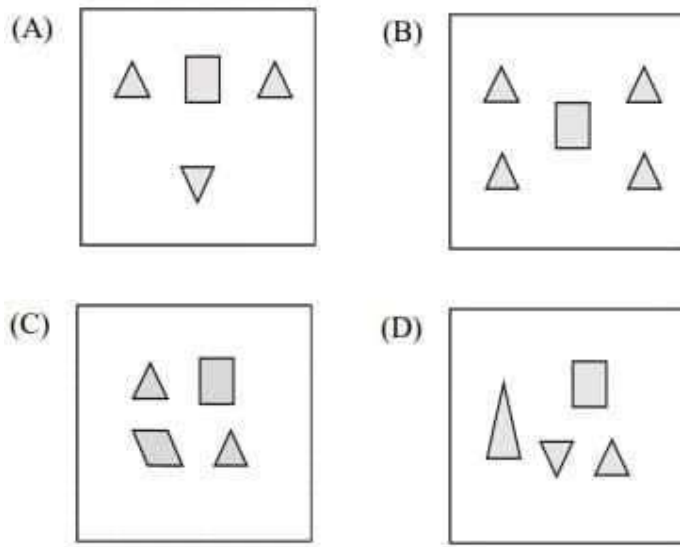
Year: GATE ME 2022 SET-2

Question 29:



Which one of the groups given below can be assembled to get the shape that is shown above using each piece only once without overlapping with each other?

(rotation and translation operations may be used).



A: A

B: B

C: C

D: D

Answer: B

Solution: Priority: Shape, position and size.

As per size point of view parallelogram is not suitable.

Year: GATE ME 2022 SET-2

Question 30: If $f(x) = 2\ln\sqrt{e^x}$ what is the area bounded by $f(x)$ for the interval $[0, 2]$ on the x - axis?

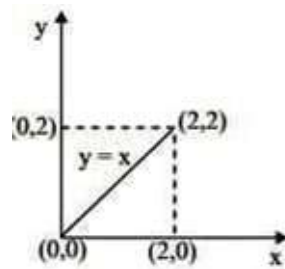
- A:** $\frac{1}{2}$
B: 1
C: 2
D: 4

Answer: C

$$f(x) = 2\ln(\sqrt{e^x})$$

Solution: $= 2\ln(e^{x/2}) = 2\log_e e^{x/2}$

$$f(x) = 2\left(\frac{x}{2}\right) = x$$



$$\text{Area} = \left(\frac{1}{2}\right) \times 2 \times 2 = 2$$

Year: GATE ME 2022 SET-2

Question 31: Which one of the following is a representation (not to scale and in bold) of all values of x satisfying the inequality $2 - 5x \leq -\frac{6x-5}{3}$ on the real number line?

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

A: A**B: B****C: C****D: D****Answer: C**

$$2 - 5x \leq -\frac{6x - 5}{3}$$

Solution: $1 - 9x \leq 0$
 $\Rightarrow 1 \leq 9x \Rightarrow x \geq \frac{1}{9}$

Year: GATE ME 2022 SET-1

Question 32: In a 12-hour clock that runs correctly, how many times do the second, minute, and hour hands of the clock coincide, in a 12-hour duration from 3 PM in a day to 3 AM the next day?

A: 11**B: 12****C: 144****D: 2****Answer: A****Solution:** 3 pm - 3am = 12 hrs

Coincide is

11 times in 12 hours

Year: GATE ME 2022 SET-1

Question 33: An equilateral triangle, a square and a circle have equal areas. What is the ratio of the perimeters of the equilateral triangle to square to circle?

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

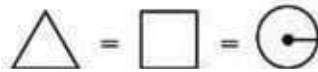
B: $\sqrt{3}\sqrt{3}: 2: \sqrt{\pi}$

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

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

Answer: B

Solution:



$$\frac{\sqrt{3}}{4}a^2 = s^2 = \pi r^2 = k$$

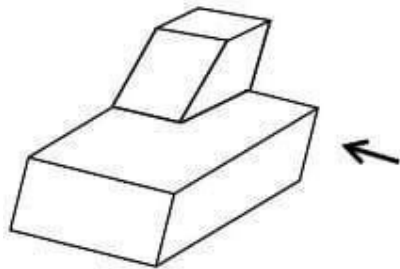
$$a = \sqrt{\frac{4k}{\sqrt{3}}} \quad s = \sqrt{k} \quad r = \sqrt{\frac{\pi}{k}}$$

Perimeters:

$3a$	:	$4a$	:	$2\pi^2$
$3\frac{2\sqrt{k}}{3^{1/4}}$	:	$4\sqrt{k}$	:	$2\pi\frac{\sqrt{k}}{\sqrt{\pi}}$
$3^{3/4}$	:	2	:	$\sqrt{\pi}$

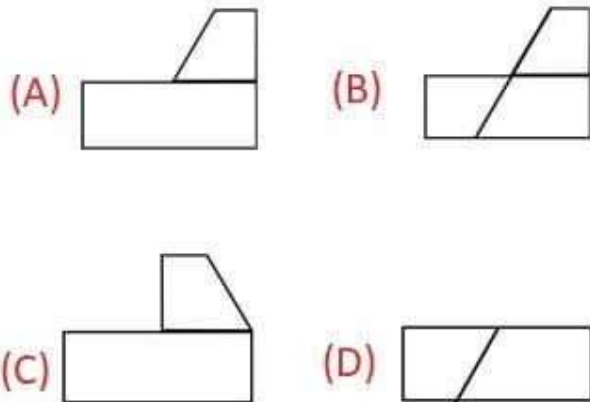
Year: GATE ME 2022 SET-1

Question 34:



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

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



A: A

B: B

C: C

D: D

Answer: A

Solution: View from arrow direction is

Year: GATE ME 2022 SET-1

Question 35: A person travelled 80 km in 6 hours. If the person travelled the first part with a uniform speed of 10 kmph and the remaining part with a uniform speed of 18 kmph.

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

A: 28.25

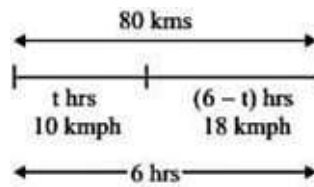
B: 37.25

C: 43.75

D: 50

Answer: C

Solution:



$$D = S \times T \quad 80 = 10t + 18(6-t) \quad \Rightarrow t = 3.5 \text{ hrs}$$

$$D_{10 \text{ kmph}} = 3.5 \times 10 = 35 \text{ km}$$

35 km is what % of 80 kms?

$$\frac{35}{80} \times 100 = 43.75\%$$

Year: GATE ME 2022 SET-1

Question 36: The average of the monthly salaries of M, N and S is Rs. 4000. The average of the monthly salaries of N, S and P is Rs. 5000. The monthly salary of P is Rs. 6000.

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

A: 50%

B: 75%

C: 100%

D: 125%

Answer: A

Solution: Sum of terms = Average x No. of terms

$$M + N + S = 4000 \times 3 = 12000$$

$$N + S + P = 5000 \times 3 = 15000$$

$$P - M = 3000$$

$$M = 6000 - 3000 = 3000$$

$$M \text{ is } 50\% \text{ of } P$$

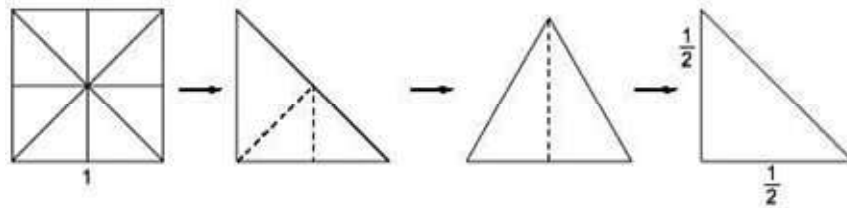
Year: GATE ME 2021 SET-2

Question 37: Consider a square sheet of side 1 unit. The sheet is first folded along the main diagonal. This is followed by a fold along its line of symmetry. The resulting folded shape is again folded along its line of symmetry. The area of each face of the final folded shape, in square units, equal to _____

- A: $\frac{1}{4}$
 B: $\frac{1}{8}$
 C: $\frac{1}{16}$
 D: $\frac{1}{32}$

Answer: B

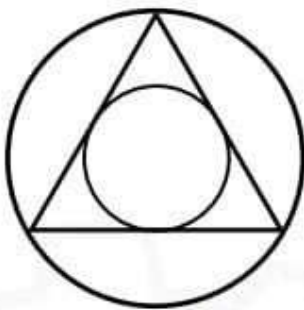
Solution:



$$\text{Area} = \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$$

Year: GATE ME 2021 SET-2

Question 38:



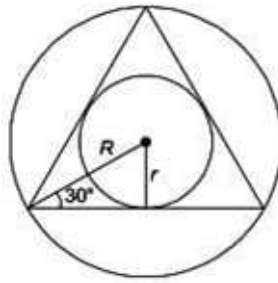
The ratio of the area of the inscribed circle to the area of the circumscribed circle of an equilateral triangle is

- A: $\frac{1}{8}$

- B: $\frac{1}{6}$
 C: $\frac{1}{4}$
 D: $\frac{1}{2}$

Answer: C

Solution:



$$\sin 30^\circ = \frac{r}{R}$$

$$\text{Area ratio} = \frac{\pi r^2}{\pi R^2} = \sin^2 30 = \frac{1}{4}$$

Year: GATE ME 2021 SET-2

Question 39: A box contains 15 blue balls and 45 black balls. If 2 balls are selected randomly, without replacement, the probability of an outcome in which the first selected is a blue ball and the second selected is a black ball, is ____

- A: $\frac{3}{16}$
 B: $\frac{45}{236}$
 C: $\frac{1}{4}$
 D: $\frac{3}{4}$

Answer: B

Solution: The probability of first ball is blue and second ball is black is given as,

$$P = \frac{15}{60} \times \frac{45}{59} = \frac{45}{236}$$

Year: GATE ME 2021 SET-2

Question 40: The front door of Mr. X's house faces East. Mr. X leaves the house, walking 50 m straight from the back door that is situated directly opposite to the front door. He then turns to his right, walks for another 50 m and stops. The direction of the point Mr. X is now located at with respect to the starting point is ____

A: South-East

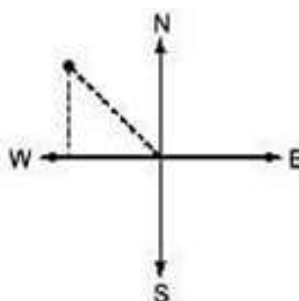
B: North-East

C: West

D: North-West

Answer: D

Solution:



Year: GATE ME 2021 SET-2

Question 41: If $\oplus \div \odot = 2$; $\oplus \div \triangle = 3$; $\odot + \triangle = 5$; $\triangle \times \otimes = 10$,

Then, the value of $(\otimes - \oplus)^2$ is

A: 0

B: 1

C: 4

D: 16

Answer: B

$$\begin{aligned} \frac{\oplus}{\odot} &= 2, \frac{\oplus}{\Delta} = 3 \\ \therefore \frac{\Delta}{\odot} &= \frac{2}{3} \quad \dots (1) \\ \odot + \Delta &= 5 \quad \dots (2) \end{aligned}$$

Solution: From (1) and (2)

$$\begin{aligned} \Delta &= 2, \odot = 3 \\ \text{and} \\ \oplus &= 6, 2 \times \otimes = 10 \\ \otimes &= 5 \\ \Rightarrow (\otimes - \oplus)^2 &= (5 - 6)^2 = 1 \end{aligned}$$

Year: GATE ME 2021 SET-2

Question 42: A digital watch X beeps every 30 seconds while watch Y beeps every 32 seconds. They beeped together at 10 AM. The immediate next time that they will beep together is _____

A: 10.08 AM

B: 10.42 AM

C: 11.00 AM

D: 10.00 PM

Answer: A

Solution: LCM of (30 and 32) is 480

480 seconds = 8 minutes

Hence, time will be 10.08 pm

Year: GATE ME 2021 SET-2

Question 43: Five persons P, Q, R, S and T are to be seated in a row, all facing the same direction, but not necessarily in the same order. P and T cannot be seated at either end of the row. P should not be seated adjacent to S. R is to be seated at the second position from the left end of the row. The number of distinct seating arrangements

possible is:

A: 2

B: 3

C: 4

D: 5

Answer: B

Solution: The possible distinct arrangement are

S R P T A, A R P T S, S R T P A

Hence, number of distinct sitting arrangement. = 3

Year: GATE ME 2021 SET-1

Question 44: Five persons P, Q, R, S and T are sitting in a row not necessarily in the same order. Q and R are separated by one person, and S should not be seated adjacent to Q.

The number of distinct seating arrangements possible is:

A: 4

B: 8

C: 10

D: 16

Answer: D

Solution: The possible seating arrangements are

QPRST, QTRSP

QPRTS, QTRPS

PQTRS, TQPRS

SPQTR, STQPR

RPQTS, RTQPS

SRPQT, SRTQP

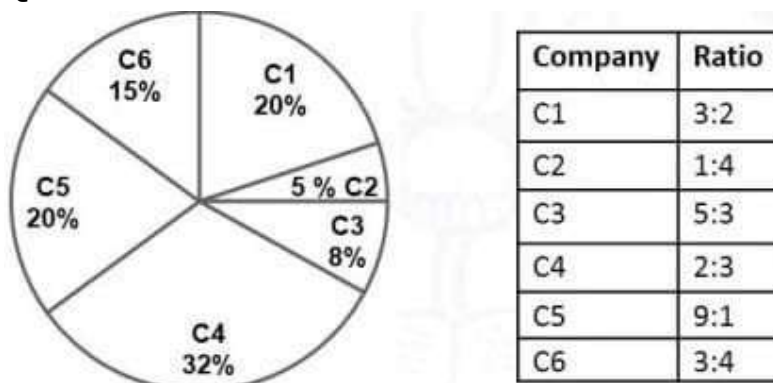
SPRTQ, STRPQ

PSRTQ, TSRPQ

Hence, total seating arrangements are 16

Year: GATE ME 2021 SET-1

Question 45:



The distribution of employees at the rank of executives, across different companies C1, C2,...,C6 is presented in the chart given above. The ratio of executives with a management degree to those without a management degree in each of these companies is provided in the table above. The total number of executives across all companies is 10,000.

The total number of management degree holders among the executives in companies C2 and C5 together is .

A: 225

B: 600

C: 1900

D: 2500

Answer: C

Solution: Number of employee in C2 company = $\frac{5}{100} \times 10000 = 500$

Number of management degree holder employee in C2 = $\frac{1}{5} \times 500 = 100$

Number of employee in C5 company = $\frac{20}{100} \times 10000 = 2000$

Number of management degree holder employee in C5 = $\frac{9}{10} \times 2000 = 1800$

Total management degree holder employee = $100 + 1800 = 1900$

Year: GATE ME 2021 SET-1

Question 46: The number of hens, ducks and goats in farm P are 65, 91 and 169, respectively. The total number of hens, ducks and goats in a nearby farm Q is 416. The ratio of hens:ducks:goats in farm Q is 5:14:13. All the hens, ducks and goats are sent from farm Q to farm P.

The new ratio of hens:ducks:goats in farm P is

A: 05:07:13

B: 05:14:13

C: 10:21:26

D: 21:10:26

Answer: C

Solution: In farm P,

Hens = 65, Ducks = 91, Goats = 169

In farm Q,

Hens : Ducks : Goats

5: 14: 13

$$\text{Hens} = \frac{5}{32} \times 416 = 65$$

$$\text{Ducks} = \frac{14}{32} \times 416 = 182$$

$$\text{Goats} = \frac{13}{32} \times 416 = 169$$

∴ From farm Q, hens, ducks and goats are sent to farm P.

$$\therefore \text{Total hens} = 65 + 65 = 130$$

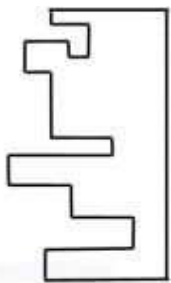
$$\text{Total ducks} = 91 + 182 = 273$$

$$\text{Total goats} = 169 + 169 = 338$$

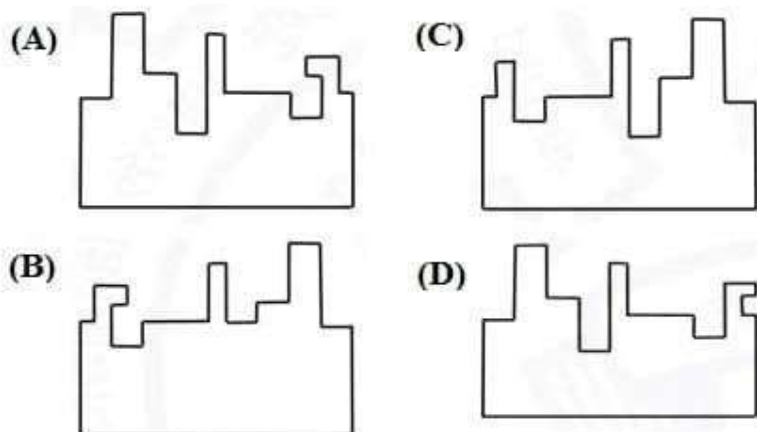
$$\begin{aligned} \text{New ratio} &= 130: 273: 338 \\ &= 10: 21: 26 \end{aligned}$$

Year: GATE ME 2021 SET-1

Question 47:



A jigsaw puzzle has 2 pieces. One of the pieces is shown above. Which one of the given options for the missing piece when assembled will form a rectangle? The piece can be moved, rotated or flipped to assemble with the above piece.



A: A

B: B

C: C

D: D

Answer: A

Solution:

Year: GATE ME 2021 SET-1

" $\oplus$ " means " $-$ "

" $\otimes$ " means " $\div$ "

Question 48: If {

" $\triangle$ " means " $+$ "

" ∇ " means " $\times$ "

then, the value of the expression $\triangle 2 \oplus 3 \triangle ((4 \otimes 2) \nabla 4) =$

A: -1

B: -0.5

C: 6

D: 7

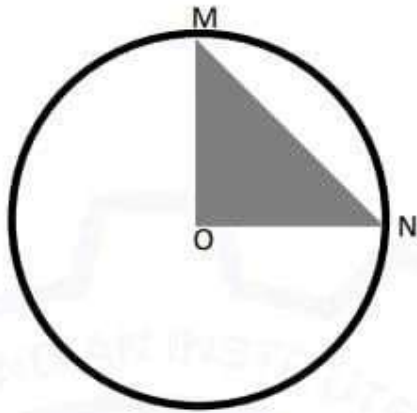
Answer: D

Solution:

$$\begin{aligned}
 \triangle 2 \oplus 3 \triangle ((4 \otimes 2) \nabla 4) &= + 2 - 3 + ((4 \div 2) \times 4) \\
 &= + 2 - 3 + (2 \times 4) \\
 &= + 2 - 3 + 8 \\
 &= 7
 \end{aligned}$$

Year: GATE ME 2021 SET-1

Question 49:



In the above figure, O is the center of the circle and, M and N lie on the circle.

The area of the right triangle MON is 50 cm^2 .

What is the area of the circle in cm^2 ?

A: 2π

B: 50π

C: 75π

D: 100π

Answer: D

$$\begin{aligned} \therefore \text{Area of } \triangle MON &= 50 \text{ cm}^2 \\ \frac{1}{2} \times r \times r &= 50 \end{aligned}$$

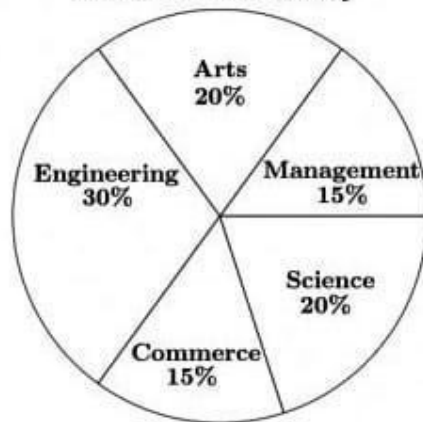
$$\begin{aligned} \text{Solution: } r^2 &= 100 \\ \text{Area of circle} &= \pi r^2 \\ &= \pi \times 100 \\ &= 100\pi \end{aligned}$$

Year: GATE ME 2020 SET-2

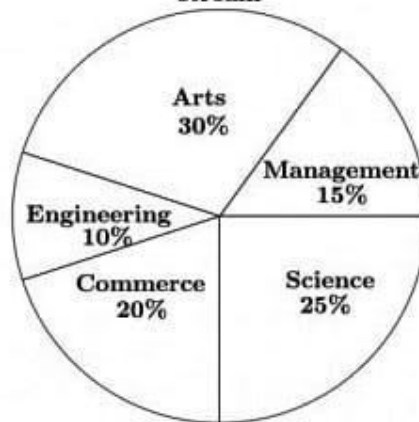
Question 50: The two pie-charts given below show the data of total students and only girls registered in different streams in a university. If the total number of students registered in the university is 5000, and the total number of the registered girls is

1500; then, the ratio of boys enrolled in Arts to the girls enrolled in Management is

Percentage of students enrolled in different stream in a University



Percentage of girls enrolled in different stream



A: 02:01

B: 09:22

C: 11:09

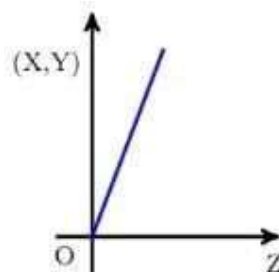
D: 22:09

Answer: D

Solution:

Year: GATE ME 2020 SET-2

Question 51: An engineer measures THREE quantities, X,Y and Z in an experiment. She finds that they follow a relationship that is represented in the figure below:(the product of X and Y linearly varies with Z)



Then, which of the following statements is FALSE?

A: For fixed Z; X is proportional to Y

B: For fixed Y; X is proportional to Z

C: For fixed X; Z is proportional to Y

D: XY/Z is constant

Answer: A

Solution:

Year: GATE ME 2020 SET-2

Question 52: IT was estimated that 52 men can complete a strip in a newly constructed highway connecting cities P and Q in 10 days, Due to an emergency, 12 men were sent to another project. How many number of days, more than the original estimate, will be required to complete the strip?

A: 3 days

B: 5 days

C: 10 days

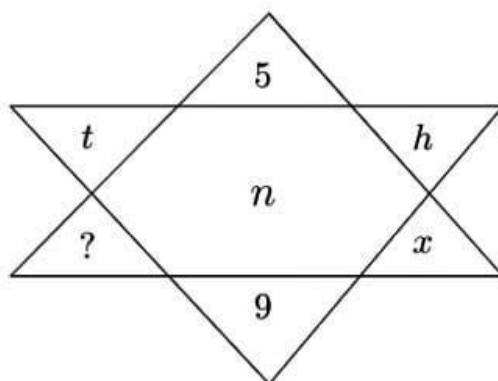
D: 13 days

Answer: A

Solution:

Year: GATE ME 2020 SET-2

Question 53: Find the missing element in the following figure.



A: d

B: e

C: w

D: y

Answer: A

Solution:

Year: GATE ME 2020 SET-2

Question 54: There are five levels {P,Q,R,S,T} in a linear supply chain before a product reaches customers, as shown in the figure.



At each of the five levels, the price of the product is increased by 25%. If the product is produced at level P at the cost of Rs. 120 per unit, what is the price paid (in rupees) by the customers?

A: 187.5

B: 234.38

C: 292.96

D: 366.21

Answer: D

Solution:

Year: GATE ME 2020 SET-2

Question 55: In one of the greatest innings ever seen in 142 years of Test history, Ben Stokes upped the tempo in a five-and-a-half hour long stay of 219 balls including 11 fours and 8 sixes that saw him finish on a 135 not out as England squared the five-match series.

Based on their connotations in the given passage, which one of the following meanings DOES NOT match?

A: upped = increased

B: squared = lost

C: tempo = enthusiasm

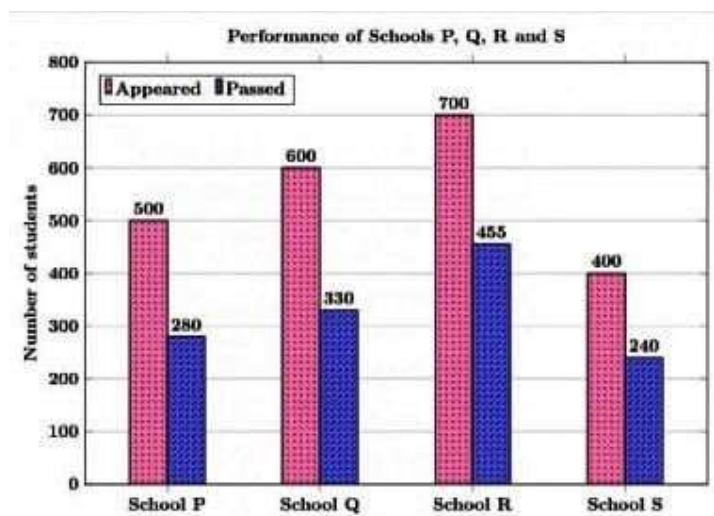
D: saw = resulted in

Answer: B

Solution:

Year: GATE ME 2020 SET-1

Question 56: The bar graph shows the data of the students who appeared and passed in an examination for four schools P, Q, R, and S. The average of success rates (in percentage) of these four schools is __.



A: 58.50%

B: 58.80%

C: 59.00%

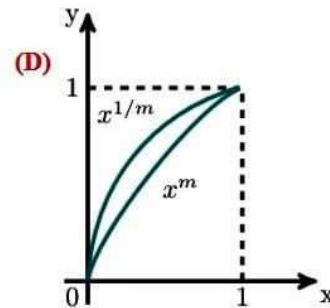
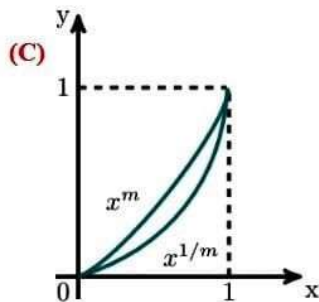
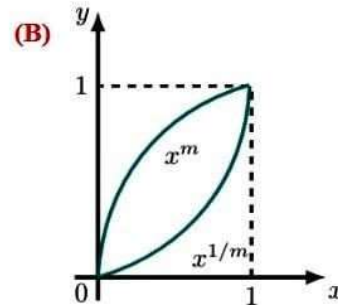
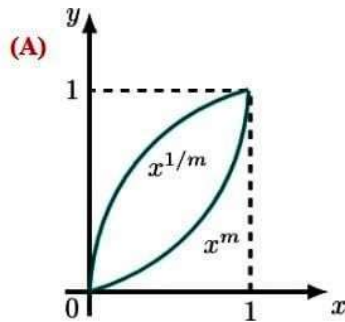
D: 59.30%

Answer: C

Solution:

Year: GATE ME 2020 SET-1

Question 57: Select the graph that schematically represents BOTH $y = x^m$ and $y = x^{1/m}$ properly in the interval $0 \leq x \leq 1$, for integer values of m , where $m > 1$.



A: A

B: B

C: C

D: D

Answer: A

Solution:

Year: GATE ME 2020 SET-1

Question 58: The sum of the first n terms in the sequence 8, 88, 888, 8888, ... is _____

A: $\frac{81}{80}(10^n - 1) + \frac{9}{n}$

B: $\frac{80}{81}(10^n - 1) - \frac{8}{n}$

C: $\frac{80}{81}(10^n - 1) + \frac{8}{n}$

D: $\frac{81}{80}(10^n - 1) - \frac{9}{n}$

Answer: D

Solution:

Year: GATE ME 2020 SET-1

Question 59: P, Q, R and S are to be uniquely coded using α and β . If P is coded as $\alpha\alpha$ and Q as $\alpha\beta$, then R and S, respectively, can be coded as _.

A: $\beta\alpha$ and $\alpha\beta$

B: $\beta\beta$ and $\alpha\alpha$

C: $\alpha\beta$ and $\beta\beta$

D: $\beta\alpha$ and $\beta\beta$

Answer: D

Solution:

Year: GATE ME 2020 SET-1

Question 60: Define $[x]$ as the greatest integer less than or equal to x , for each $x \in (-\infty, \infty)$. If $y = [x]$, then area under y for $x \in [1, 4]$ is ____.

A: 1

B: 3

C: 4

D: 6

Answer: D

Solution:

Year: GATE ME 2019 SET-2

Question 61: Mola is a digital platform for taxis in a city. It offers three types of rides - Pool, Mini and Prime. The table below presents the number of rides for the past four months. The platform earns one US dollar per ride. What is the percentage share of the revenue contributed by Prime to the total revenues of Mola, for the entire

duration?

Type	Month			
	January	February	March	April
Pool	170	320	215	190
Mini	110	220	180	70
Prime	75	180	120	90

A: 16.24

B: 23.97

C: 25.86

D: 38.74

Answer: B

Solution:

Year: GATE ME 2019 SET-2

Question 62: Two pipes P and Q can fill a tank in 6 hours and 9 hours respectively, while a third pipe R can empty the tank in 12 hours. Initially, P and R are open for 4 hours, Then P is closed and Q is opened. After 6 more hours R is closed. The total time taken to fill the tank (in hours) is _____

A: 13.5

B: 14.5

C: 15.5

D: 16.5

Answer: B

Solution:

Year: GATE ME 2019 SET-2

Question 63: Fiscal deficit was 4% of the GDP in 2015 and that increased to 5% in 2016. If the GDP increased by 10% from 2015 to 2016, the percentage increase in the actual fiscal deficit is _____

A: 37.5

B: 35.7

C: 25

D: 10

Answer: A

Solution:

Year: GATE ME 2019 SET-2

Question 64: The product of three integers X, Y and Z is 192. Z is equal to 4 and P is equal to the average of X and Y. What is the minimum possible value of P?

A: 6

B: 7

C: 8

D: 9.5

Answer: B

Solution:

Year: GATE ME 2019 SET-2

Question 65: If IMHO=JNIP; IDK=JEL; and SO=TP, then IDC=_____

A: JDE

B: JED

C: JDC

D: JCD

Answer: B

Solution:

Year: GATE ME 2019 SET-1

Question 66: M and N had four children P, Q, R and S. Of them, only P and R were married. They had children X and Y respectively. If Y is a legitimate child of W, which of the following statements is necessarily FALSE?

A: M is the grandmother of Y

B: R is the father of Y

C: W is the wife of R

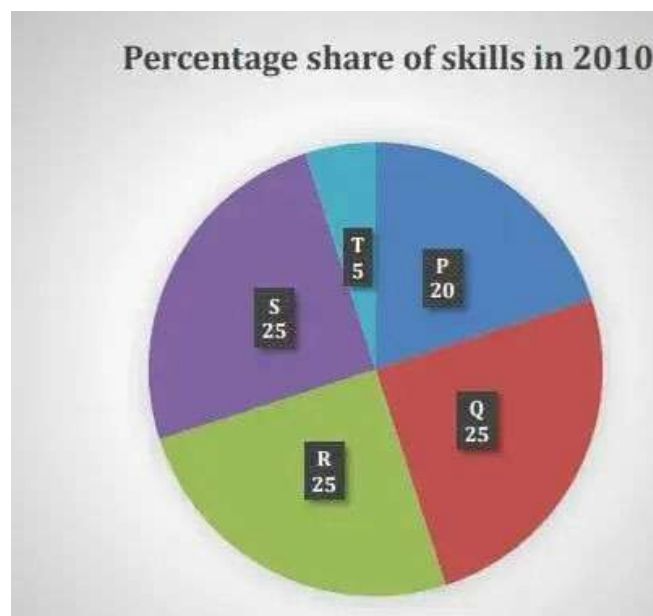
D: W is the wife of P

Answer: D

Solution:

Year: GATE ME 2019 SET-1

Question 67: A firm hires employees at five different skill levels P, Q, R, S, T. The shares of employment at these skills levels of total employment in 2010 is given in the pie chart as shown. There were a total of 600 employees in 2010 and the total employment increased by 15% from 2010 to 2016. The total employment at skill levels P, Q and R remained unchanged during this period. If the employment at skill level S increased by 40% from 2010 to 2016, how many employees were there at skill level T in 2016?



- A: 30**
B: 35
C: 60
D: 72

Answer: C

Solution:

Year: GATE ME 2019 SET-1

Question 68: A person divided an amount of Rs. 100,000 into two parts and invested in two different schemes. In one he got 10% profit and in the other he got 12%. If the profit percentages are interchanged with these investments he would have got Rs. 120 less. Find the ratio between his investments in the two schemes.

- A: 09:16**
B: 11:14
C: 37:63
D: 47:53:00

Answer: D

Solution:

Year: GATE ME 2019 SET-1

Question 69: The sum and product of two integers are 26 and 165 respectively. The difference between these two integers is _____

- A: 2**
B: 3
C: 4
D: 6

Answer: C

Solution:

Year: GATE ME 2019 SET-1

Question 70: A worker noticed that the hour hand on the factory clock had moved by 225 degrees during her stay at the factory. For how long did she stay in the factory?

A: 3.75 hours

B: 4 hours and 15 mins

C: 8.5 hours

D: 7.5 hours

Answer: D

Solution:

Year: GATE ME 2018 SET-2

Question 71: An unbiased coin is tossed six times in a row and four different such trials are conducted. One trial implies six tosses of the coin. If H stands for head and T stands for tail, the following are the observations from the four trials.

1. HTHTHT

2. TTHHHT

3. HTTHHT

4. HHHT__

Which statement describing the last two coin tosses of the fourth trial has the highest probability of being correct?

A: Two T will occur.

B: One H and one T will occur.

C: Two H will occur.

D: One H will be followed by one T.

Answer: B

Solution:

Year: GATE ME 2018 SET-2

Question 72: A contract is to be completed in 52 days and 125 identical robots were employed, each operational for 7 hours a day. After 39 days, five-seventh of the work was completed. How many additional robots would be required to complete the work on time, if each robot is now operational for 8 hours a day?

A: 50

B: 89

C: 146

D: 175

Answer:

Solution: Marks to All As per IIT Key

Year: GATE ME 2018 SET-2

Question 73: A wire would enclose an area of $1936m^2$, if it is bent to a square. The wire is cut into two pieces. The longer piece is thrice as long as the shorter piece. The long and the short pieces are bent into a square and a circle, respectively. Which of the following choices is closest to the sum of the areas enclosed by the two pieces in square meters?

A: 1096

B: 1111

C: 1243

D: 2486

Answer: C

Solution:

Year: GATE ME 2018 SET-2

Question 74: Forty students watched films A, B and C over a week. Each student watched either only one film or all three. Thirteen students watched film A, sixteen

students watched film B and nineteen students watched film C. How many students watched all three films?

A: 0

B: 2

C: 4

D: 8

Answer: C

Solution:

Year: GATE ME 2018 SET-2

Question 75: The value of the expression $\frac{1}{1 + \log_u vw} + \frac{1}{1 + \log_v wu} + \frac{1}{1 + \log_w uv}$

is _____

A: -1

B: 0

C: 1

D: 3

Answer: C

Solution:

Year: GATE ME 2018 SET-2

Question 76: The perimeters of a circle, a square, and an equilateral triangle are equal. Which one of the following statements is true?

A: The circle has the largest area

B: The square has the largest area

C: The equilateral triangle has the largest area

D: All the three shapes have the same area

Answer: A

Solution:

Year: GATE ME 2018 SET-2

Question 77: Find the missing group of letters in the following series:

BC, FCH, LMNO, ____

A: UVWXY

B: TUVWX

C: STUVW

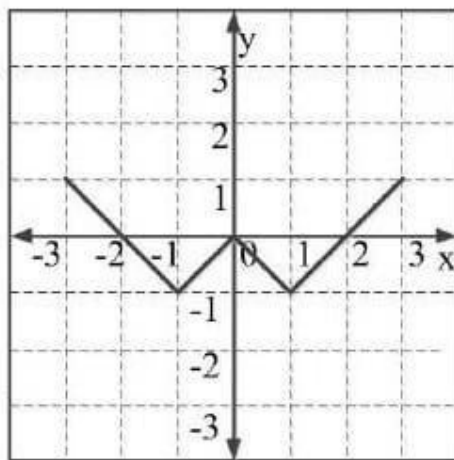
D: RSTUV

Answer: B

Solution:

Year: GATE ME 2018 SET-1

Question 78: Which of the following functions describe the graph shown in the below figure?



A: $y = ||x| + 1| - 2$

B: $y = ||x| - 1| - 1$

C: $y = ||x| + 1| - 1$

D: $y = ||x - 1| - 1|$

Answer: B

Solution:

Year: GATE ME 2018 SET-1

Question 79: From the time the front of a train enters a platform, it takes 25 seconds for the back of the train to leave the platform, while traveling at a constant speed of 54 km/h. At the same speed, it takes 14 seconds to pass a man running at 9 km/h in the same direction as the train. What is the length of the train and that of the platform in meters, respectively?

A: 210 and 140

B: 162.5 and 187.5

C: 245 and 130

D: 175 and 200

Answer: D

Solution:

Year: GATE ME 2018 SET-1

Question 80: Given that a and b are integers and $a + a^2 b^3$ is odd, which of the following statements is correct?

A: a and b are both odd

B: a and b are both even

C: a is even and b is odd

D: a is odd and b is even

Answer: D

Solution:

Year: GATE ME 2018 SET-1

Question 81: For integers, a , b and c , what would be the minimum and maximum values respectively of $a + b + c$ if $\log a + \log b + \log c = 0$?

A: -3 and 3

B: -1 and 1

C: -1 and 3

D: 1 and 3

Answer: A

Solution:

Year: GATE ME 2018 SET-1

Question 82: A number consists of two digits. The sum of the digits is 9. If 45 is subtracted from the number, its digits are interchanged. What is the number?

A: 63

B: 72

C: 81

D: 90

Answer: B

Solution:

Year: GATE ME 2018 SET-1

Question 83: A rectangle becomes a square when its length and breadth are reduced by $10m$ and $5m$, respectively. During this process, the rectangle loses $650m^2$ of area. What is the area of the original rectangle in square meters?

A: 1125

B: 2250

C: 2924

D: 4500

Answer: B

Solution:

Year: GATE ME 2018 SET-1

Question 84: Seven machines take 7 minutes to make 7 identical toys. At the same rate, how many minutes would it take for 100 machine to make 100 toys?

A: 1

B: 7

C: 100

D: 700

Answer: B

Solution:

Year: GATE ME 2017 SET-2

Question 85: There are 4 women P, Q, R, S and 5 men V, W, X, Y, Z in a group. We are required to form pairs each consisting of one woman and one man. P is not to be paired with Z, and Y must necessarily be paired with someone. In how many ways can 4 such pairs be formed?

A: 74

B: 76

C: 78

D: 80

Answer: C

Solution:

Year: GATE ME 2017 SET-2

Question 86: X bullocks and Y tractors take 8 days to plough a field. If we have the number of bullocks and double the number of tractors, it takes 5 days to plough the

same field. How many days will it take X bullocks alone to plough the field?

A: 30

B: 35

C: 40

D: 45

Answer: A

Solution:

Year: GATE ME 2017 SET-2

Question 87: P looks at Q while Q looks at R. P is married, R is not. The number of pairs of people in which a married person is looking at an unmarried person is

A: 0

B: 1

C: 2

D: Cannot be determined.

Answer: B

Solution:

Year: GATE ME 2017 SET-2

Question 88: A couple has 2 children. The probability that both children are boys if the older one is a boy is

A: 01-Apr

B: 01-Mar

C: 01-Feb

D: 1

Answer: C

Solution:

Year: GATE ME 2017 SET-2

Question 89: If a and b are integers and $a - b$ is even, which of the following must always be even?

A: $a^2 + b^2 + 1$

B: $a^2 + b + 1$

C: $ab - b$

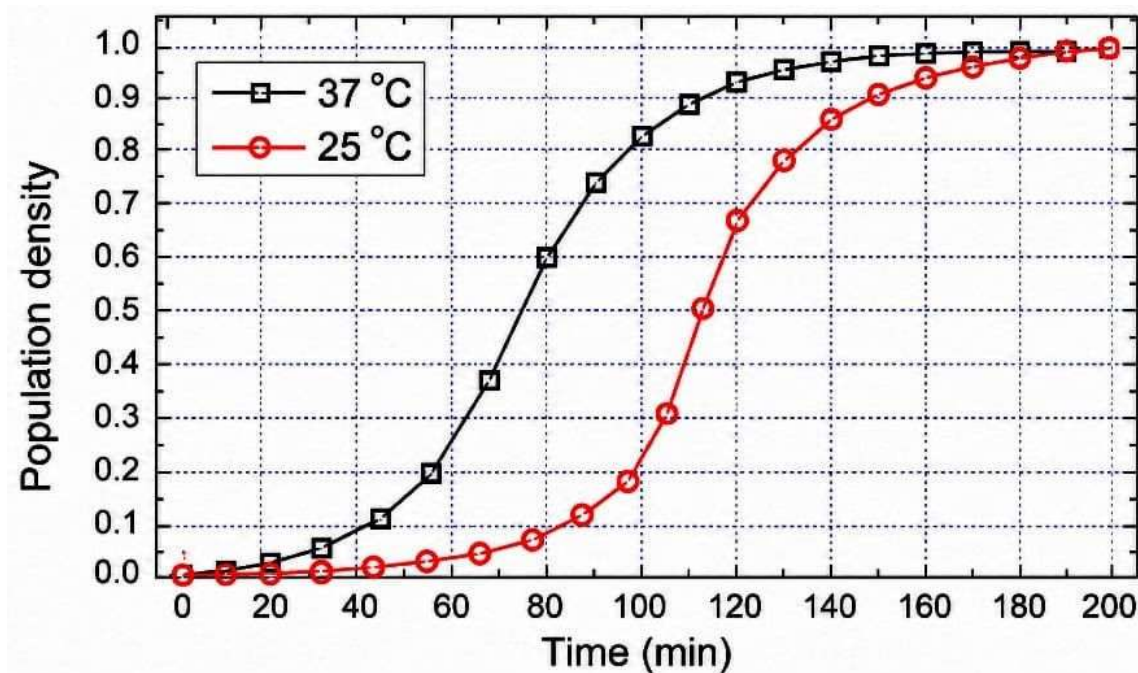
D: ab

Answer: C

Solution:

Year: GATE ME 2017 SET-1

Question 90: The growth of bacteria (lactobacillus) in milk leads to curd formation. A minimum bacterial population density of 0.8 (in suitable units) is needed to form curd. In the graph below, the population density of lactobacillus in 1 litre of milk is plotted as a function of time, at two different temperatures, 25°C and 37°C .



Consider the following statements based on the data shown above:

- The growth in bacterial population stops earlier at 37°C as compared to 25°C
- The time taken for curd formation at 25°C is twice the time taken at 37°C

Which one of the following options is correct?

A: only i.

B: Only ii.

C: Both i and ii.

D: Neither i nor ii

Answer: A

Solution:

Year: GATE ME 2017 SET-1

Question 91: Let S_1 be the plane figure consisting of the points (x, y) given by the inequalities $|x - 1| \leq 2$ and $|y + 3| \leq 3$. Let S_2 be the plane figure given by the inequalities $x - y \geq -2$, $y \geq 1$ and $x \leq 3$. Let S be the union of S_1 and S_2 . The area of S is.

A: 26

B: 28

C: 32

D: 34

Answer: C

Solution:

Year: GATE ME 2017 SET-1

Question 92: What is the sum of the missing digits in the subtraction problem below?

$$\begin{array}{r}
 5 \quad _ \quad _ \quad _ \quad _ \\
 - \quad 4 \quad 8 \quad _ \quad 8 \quad 9 \\
 \hline
 \quad \quad 1 \quad 1 \quad 1 \quad 1
 \end{array}$$

A: 8

B: 10

C: 11

D: Cannot be determined.

Answer: D

Solution:

Year: GATE ME 2017 SET-1

Question 93: P , Q and R talk about S's car collection. P states that S has at least 3 cars. Q believes that S has less than 3 cars. R indicates that to its knowledge, S has at least one car. Only one of P,Q and R is right. The number of cars owned by S is.

A: 0

B: 1

C: 3

D: Cannot be determined.

Answer: A

Solution:

Year: GATE ME 2017 SET-1

Question 94: In a company with 100 employees, 45 earn Rs.20,000 per month, 25 earn Rs.30000, 20 earn Rs.40000, 8 earn Rs.60000, and 2 earn Rs.150,000. The median of the salaries is

A: Rs.20,000

B: Rs.30,000

C: Rs.32,300

D: Rs. 40,000

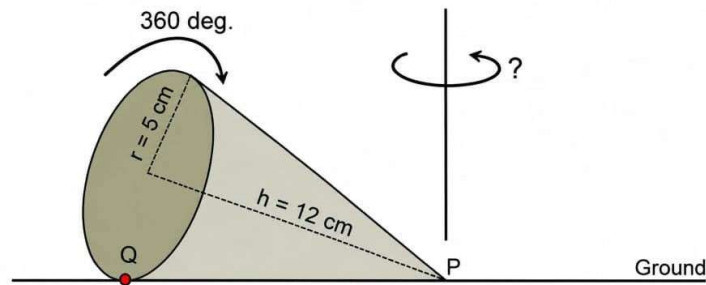
Answer: B

Solution:

Year: GATE ME 2017 SET-1

Question 95: A right-angled cone (with base radius 5 cm and height 12 cm), as shown in the figure below, is rolled on the ground keeping the point P fixed until the point Q

(at the base of the cone, as shown) touches the ground again.



By what angle (in radians) about P does the cone travel?

- A: $\frac{5\pi}{12}$
- B: $\frac{5\pi}{24}$
- C: $\frac{24\pi}{5}$
- D: $\frac{10\pi}{13}$

Answer: D

Solution:

Year: GATE ME 2016 SET-3

Question 96: A wire of length 340 mm is to be cut into two parts. One of the parts is to be made into a square and the other into a rectangle where sides are in the ratio of 1:2. What is the length of the side of the square (in mm) such that the combined area of the square and the rectangle is a MINIMUM?

- A: 30
- B: 40
- C: 120
- D: 180

Answer: B

Solution:

Year: GATE ME 2016 SET-3

Question 97: M and N starts from same location.M travels 10 km East then 10 km North-East. N travels 5 km South then 4 km South-East.What is the shortest distance (in km) between M and N at the end of their travel?

A: 18.6

B: 22.5

C: 20.61

D: 25

Answer: C

Solution:

Year: GATE ME 2016 SET-3

Question 98: Two and a quarter hours back, when seen in the mirror, the reflection of the wall clock without number marking seemed to show 1:30. What is the actual current time shown by the clock?

A: 08:15

B: 11:15

C: 12:15

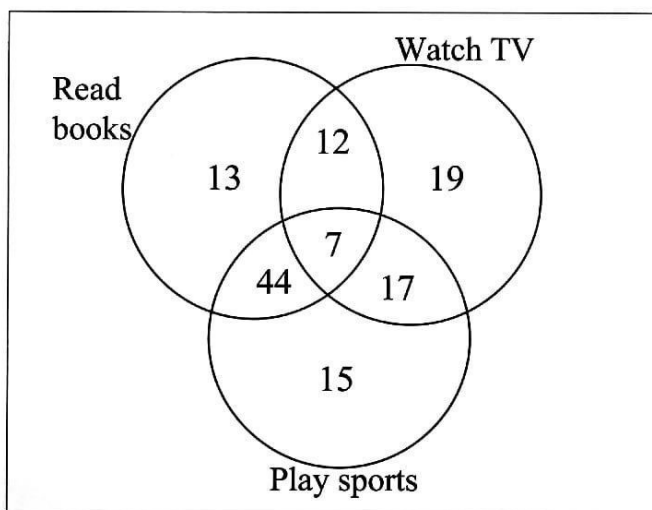
D: 12:45

Answer: D

Solution:

Year: GATE ME 2016 SET-3

Question 99: The Venn diagram shows the preference of the student population for leisure activities.



From the data given, the number of students who like to read books or play sports is _____

A: 44

B: 51

C: 79

D: 108

Answer: D

Solution:

Year: GATE ME 2016 SET-3

Question 100: S, M, E and F are working in shifts in a team to finish a project. M works with twice the efficiency of others but for half as many days as E worked. S and M have 6 hour shifts in a day, whereas E and F have 12 hours shifts. What is the ratio of contribution of M to contribution of E in the project?

A: 01:01

B: 01:02

C: 01:04

D: 02:01

Answer: B

Solution:

Year: GATE ME 2016 SET-3

Question 101: Given $(9 \text{ inches})^{1/2} = (0.25 \text{ yards})^{1/2}$, which one of the following statements is TRUE?

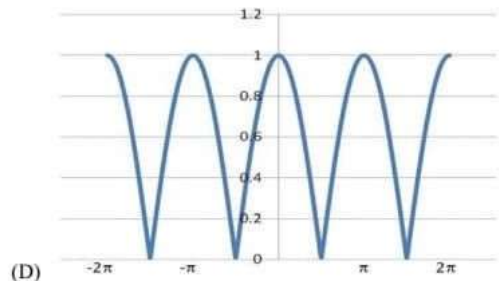
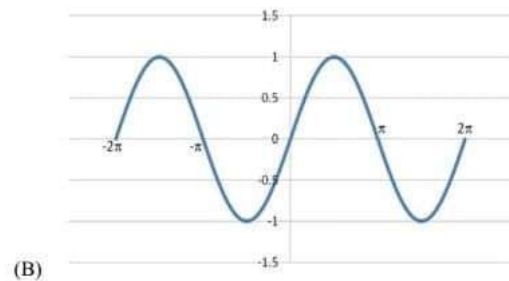
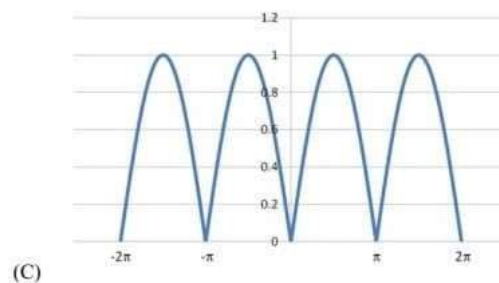
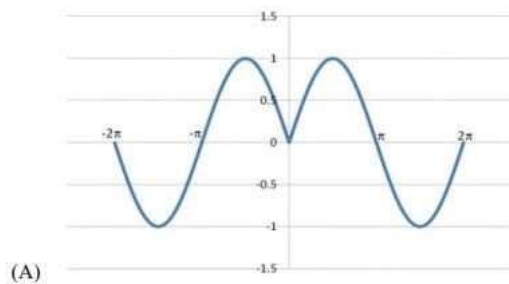
- A: 3 inches = 0.5 yards
- B: 9 inches = 1.5 yards
- C: 9 inches = 0.25 yards
- D: 81 inches = 0.0625 yards

Answer: C

Solution:

Year: GATE ME 2016 SET-2

Question 102: Which of the following curves represents the function $\ln(e^{[\sin(|x|)]})$ for $|x| < 2\pi$? Here, x represents the abscissa and y represents the ordinate.



A: A

B: B

C: C

D: D

Answer: C

Solution:

Year: GATE ME 2016 SET-2

Question 103: The binary operation $\square$ is defined as $a \square b = ab + (a + b)$, where a and b are any two real numbers. The value of the identity element of this operation, defined as the number x such that $a \square x = a$, for any a , is

A: 0

B: 1

C: 2

D: 10

Answer: A

Solution:

Year: GATE ME 2016 SET-2

Question 104: Find the missing sequence in the letter series.

B, FH, LNP, ____.

A: SUWY

B: TUVW

C: TVXZ

D: TWXZ

Answer: C

Solution:

Year: GATE ME 2016 SET-2

Question 105: Students taking an exam are divided into two groups, P and Q such that each group has the same number of students. The performance of each of the students in a test was evaluated out of 200 marks. It was observed that the mean of

group P was 105, while that of group Q was 85. The standard deviation of group P was 25, while that of group Q was 5. Assuming that the marks were distributed on a normal distribution, which of the following statements will have the highest probability of being TRUE?

- A: No student in group Q scored less marks than any student in group P.
- B: No student in group P scored less marks than any student in group Q.
- C: Most students of group Q scored marks in a narrower range than students in group P.
- D: The median of the marks of group P is 100.

Answer: C

Solution:

Year: GATE ME 2016 SET-2

Question 106: A window is made up of a square portion and an equilateral triangle portion above it. The base of the triangular portion coincides with the upper side of the square. If the perimeter of the window is 6 m, the area of the window in m^2 is ____

- A: 1.43
- B: 2.06
- C: 2.68
- D: 2.88

Answer: B

Solution:

Year: GATE ME 2016 SET-1

Question 107: P, Q, R and S are working on a project. Q can finish the task in 25 days, working alone for 12 hours a day. R can finish the task in 50 days, working alone for 12 hours per day. Q worked 12 hours a day but took sick leave in the beginning for two days. R worked 18 hours a day on all days. What is the ratio of work done by Q and R

after 7 days from the start of the project?

A: 10:11

B: 11:10

C: 20:21

D: 21:20

Answer: C

Solution:

Year: GATE ME 2016 SET-1

Question 108: If $q^{-a} = \frac{1}{r}$, $r^{-b} = \frac{1}{s}$ and $s^{-c} = \frac{1}{q}$, the value of abc is

A: $(rqs)^{-1}$

B: 0

C: 1

D: $(r + q + s)$

Answer: C

Solution:

Year: GATE ME 2016 SET-1

Question 109: A person moving through a tuberculosis prone zone has a 50% probability of becoming infected. However, only 30% of infected people develop the disease. What percentage of people moving through a tuberculosis prone zone remains infected but does not show symptoms of disease?

A: 15

B: 33

C: 35

D: 37

Answer: C

Solution:

Year: GATE ME 2016 SET-1

Question 110: Michael lives 10 km away from where I live. Ahmed lives 5 km away and Susan lives 7 km away from where I live. Arun is farther away than Ahmed but closer than Susan from where I live. From the information provided here, what is one possible distance (in km) at which I live from Arun's place?

A: 3

B: 4.99

C: 6.02

D: 7.01

Answer: C

Solution:

Year: GATE ME 2016 SET-1

Question 111: In a huge pile of apples and oranges, both ripe and unripe mixed together, 15% are unripe fruits. Of the unripe fruits, 45% are apples. Of the ripe ones, 66% are oranges. If the pile contains a total of 5692000 fruits, how many of them are apples?

A: 2029198

B: 2467482

C: 2789080

D: 3577422

Answer: A

Solution:

Year: GATE ME 2015 SET-3

Question 112: A coin is tossed thrice. Let C be the event that head occurs in each of first two tosses. Let Y be the event that tails occurs in third toss. Let Z be the event that two tails occur in three tosses. Based on the above information, which one of the

following statement is TRUE?

A: X and Y are not independent

B: Y and Z are dependent

C: Y and Z are independent

D: X and Z are independent

Answer: B

Solution:

Year: GATE ME 2015 SET-3

Question 113: Right triangle PQR is to be constructed in xy-plane so that the right angle is at P and line PR is parallel to x-axis. The x and y coordinates of P, Q and R are to be integers that satisfies the inequalities: $-4 \leq x \leq 5$ and $6 \leq y \leq 16$. How many different triangles could be constructed with these properties?

A: 110

B: 1100

C: 9900

D: 10000

Answer: C

Solution:

Year: GATE ME 2015 SET-3

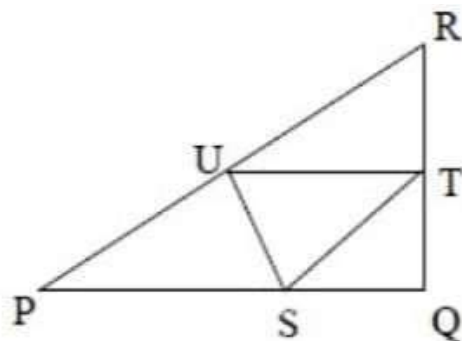
Question 114: In the given figure Q is a right triangle,

$$PS: QS = 3: 1$$

$$RT: QT = 5: 2$$

$$PU:UR = 1:1$$

If area of triangle QTS is 20cm^2 , then the area of triangle PQR in cm^2 is_____



A: 80

B: 280

C: 160

D: 240

Answer: B

Solution:

Year: GATE ME 2015 SET-3

Question 115: Five teams have to compete in a league, with every team playing every other team exactly once, before going to the next round. How many matches will have to held to complete the league round of matches?

A: 20

B: 10

C: 8

D: 5

Answer: B

Solution:

Year: GATE ME 2015 SET-2

Question 116: $\log \tan 1^\circ + \log \tan 2^\circ + \dots + \log \tan 89^\circ$ is

A: 1

B: $1/\sqrt{2}$

C: -1

D: 0

Answer: D

Solution:

Year: GATE ME 2015 SET-2

Question 117: From a circular sheet of paper of radius 30 cm, a sector of 10% area is removed. If the remaining part is used to make a conical surface, then the ratio of radius and height of cone is _____

A: 1

B: 2

C: 3

D: 4

Answer: B

Solution:

Year: GATE ME 2015 SET-2

Question 118: If $x > y > 1$, Which of the following must be true?

i. $\ln x > \ln y$

ii. $e^x > e^y$

iii. $y^x > x^y$

iv. $\cos x > \cos y$

A: (i) and (ii)

B: (i) and (iii)

C: (iii) and (iv)

D: (ii) and (iv)

Answer: A

Solution:

Year: GATE ME 2015 SET-2

Question 119: Find the missing sequence in letter series below:

A, CD, DHI, ?, UVWXY

A: LMN

B: MNO

C: MNOP

D: NOPQ

Answer: C

Solution:

Year: GATE ME 2015 SET-1

Question 120: If $a^2 + b^2 + c^2 = 1$ then $ab + bc + ac$ lies in the interval

A: $[1, 2/3]$

B: $[-1/2, 1]$

C: $[-1, 1/2]$

D: $[2, -4]$

Answer: B

Solution:

Year: GATE ME 2015 SET-1

Question 121: A tiger is 50 leaps of its own behind a tree. The tiger takes 5 leaps per minute to the deer's 4. If the tiger and the deer covers 8 meter and 5 meter per leap

respectively, what distance in meters will the tiger have to run before it catches the deer?

A: 100

B: 400

C: 800

D: 1600

Answer: C

Solution:

Year: GATE ME 2015 SET-1

Question 122: Ram and Ramesh appeared in an interview for two vacancies in the same department. The probability of Ram's selection is $\frac{1}{6}$ and of Ramesh is $\frac{1}{8}$. What is the probability that only one of them will be selected?

A: $\frac{47}{48}$

B: 04-Jan

C: $\frac{13}{48}$

D: $\frac{35}{48}$

Answer: B

Solution:

Year: GATE ME 2015 SET-1

Question 123: An electric bulb has onboard instruments that report the total electricity consumed since the start of the trip as well as the total distance covered. During a single day of operation, the bus travels on stretches M, N, O, and P, in that order. The cumulative distance travelled and the corresponding electricity consumption are shown in the table below:

Stretch	Cumulative distance (km)	Electricity used (kWh)
<i>M</i>	20	12
<i>N</i>	45	25
<i>O</i>	75	45
<i>P</i>	100	57

The stretches where the electricity consumption per km is minimum is

A: M

B: N

C: O

D: P

Answer: D

Solution:

Year: GATE ME 2014 SET-4

Question 124: A five digit number is formed using the digits 1, 3, 5, 7 and 9 without repeating any of them. What is the sum of all such possible five digit numbers?

A: 6666660

B: 6666600

C: 6666666

D: 6666606

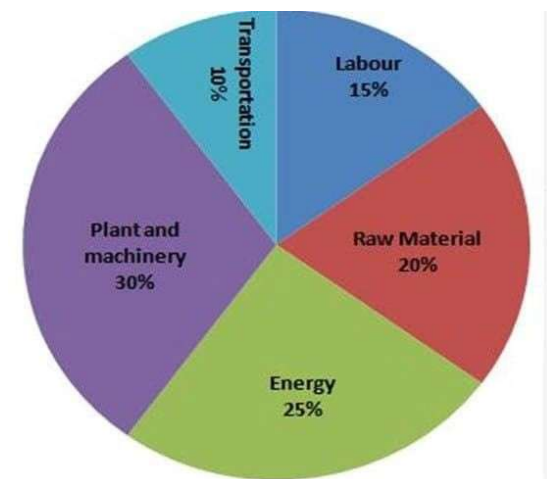
Answer: B

Solution:

Year: GATE ME 2014 SET-4

Question 125: A firm producing air purifiers sold 200 units in 2012. The following pie chart presents the share of raw material, labour, energy, plant & machinery, and transportation costs in the total manufacturing cost of the firm in 2012. The expenditure on labour in 2012 is Rs. 4,50,000. In 2013, the raw material expenses

increased by 30% and all other expenses increased by 20%. What is the percentage increase in total cost for the company in 2013?



Answer: 22

Solution:

Year: GATE ME 2014 SET-4

Question 126: Industrial consumption of power doubled from 2000-2001 to 2010-2011. Find the annual rate of increase in percent assuming it to be uniform over the years.

A: 5.6

B: 7.2

C: 10

D: 12.2

Answer: B

Solution:

Year: GATE ME 2014 SET-4

Question 127: Find the next term in the sequence: 13M, 17Q, 19S, ____

A: 21W

B: 21V

C: 23W

D: 23V

Answer: C

Solution:

Year: GATE ME 2014 SET-4

Question 128: In a sequence of 12 consecutive odd numbers, the sum of the first 5 numbers is 425. What is the sum of the last 5 numbers in the sequence?

Answer: 495

Solution:

Year: GATE ME 2014 SET-4

Question 129: Let $f(x, y) = x^n y^m = P$ If x is doubled and y is halved, the new value of f is

A: $2^{n-m} P$

B: $2^{m-n} P$

C: $2(n-m)P$

D: $2(m-n)P$

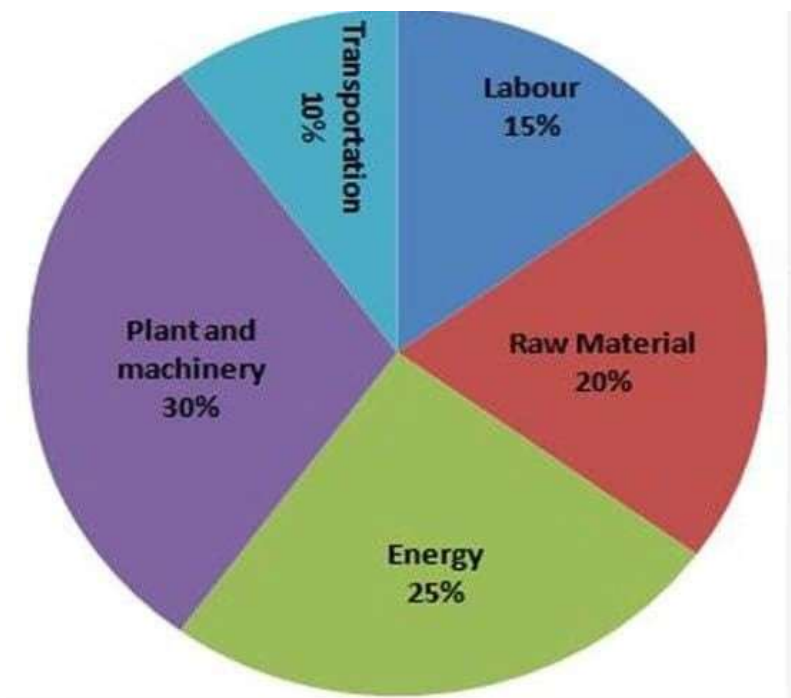
Answer: A

Solution:

Year: GATE ME 2014 SET-3

Question 130: A firm producing air purifiers sold 200 units in 2012. The following pie chart presents the share of raw material, labour, energy, plant & machinery, and transportation costs in the total manufacturing cost of the firm in 2012. The expenditure on labour in 2012 is Rs. 4,50,000. In 2013, the raw material expenses

increased by 30% and all other expenses increased by 20%. If the company registered a profit of Rs. 10 lakhs in 2012, at what price (in Rs.) was each air purifier sold?



Answer: 20000

Solution:

Year: GATE ME 2014 SET-3

Question 131: A man can row at 8 km per hour in still water. If it takes him thrice as long to row upstream, as to row downstream, then find the stream velocity in km per hour.

Answer: 4

Solution:

Year: GATE ME 2014 SET-3

Question 132: Find the next term in the sequence:

7G, 11K, 13M, _____

A: 15Q

B: 17Q

C: 15P

D: 17P

Answer: B

Solution:

Year: GATE ME 2014 SET-3

Question 133: In which of the following options will the expression $P < M$ be definitely true?

A: $M < R > P > S$

B: $M > S < P < F$

C: $Q < M < F = PQ < M < F = P$

D: $P = A < R < M$

Answer: D

Solution:

Year: GATE ME 2014 SET-3

Question 134: The next term in the series 81, 54, 36, 24, .. is ____

Answer: 16

Solution:

Year: GATE ME 2014 SET-2

Question 135: It takes 30 minutes to empty a half-full tank by draining it at a constant rate. It is decided to simultaneously pump water into the half-full tank while draining it. What is the rate at which water has to be pumped in so that it gets fully filled in 10 minutes?

A: 4 times the draining rate

B: 3 times the draining rate

C: 2.5 times the draining rate

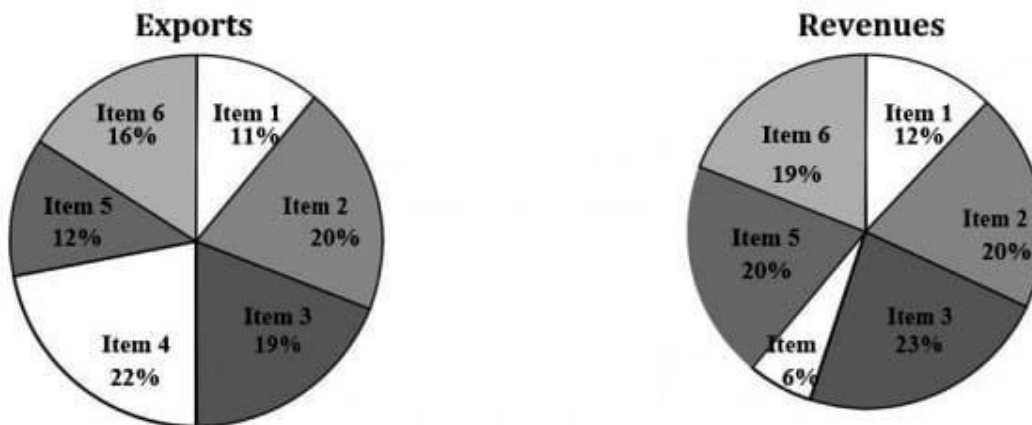
D: 2 times the draining rate

Answer: A

Solution:

Year: GATE ME 2014 SET-2

Question 136: The total exports and revenues from the exports of a country are given in the two charts shown below. The pie chart for exports shows the quantity of each item exported 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 exports of all the items is 500 thousand tonnes and the total revenues are 250 crore rupees. Which item among the following has generated the maximum revenue per kg?



A: Item 2

B: Item 3

C: Item 6

D: Item 5

Answer: D

Solution:

Year: GATE ME 2014 SET-2

Question 137: The sum of eight consecutive odd numbers is 656. The average of four consecutive even numbers is 87. What is the sum of the smallest odd number and second largest even number?

Answer: 163

Solution:

Year: GATE ME 2014 SET-2

Question 138: Find the odd one in the following group:

Q,W,Z,B

B,H,K,M

W,C,G,J

M,S,V,X

A: Q,W,Z,B

B: B,H,K,M

C: W,C,G,J

D: M,S,V,X

Answer: C

Solution:

Year: GATE ME 2014 SET-2

Question 139: Fill in the missing number in the series.

2 3 6 15 _____ 157.5 630

Answer: 45

Solution:

Year: GATE ME 2014 SET-2

Question 140: A regular die has six sides with numbers 1 to 6 marked on its sides. If a very large number of throws show the following frequencies of occurrence:

$1 \rightarrow 0.167; 2 \rightarrow 0.167; 3 \rightarrow 0.152; 4 \rightarrow 0.166; 5 \rightarrow 0.168; 6 \rightarrow 0.180$

We call this die

A: irregular

B: biased

C: Gaussian

D: insufficient

Answer: B

Solution:

Year: GATE ME 2014 SET-1

Question 141: You are given three coins: one has heads on both faces, the second has tails on both faces, and the third has a head on one face and a tail on the other. You choose a coin at random and toss it, and it comes up heads. The probability that the other face is tails is

A: 01-Apr

B: 01-Mar

C: 01-Feb

D: 02-Mar

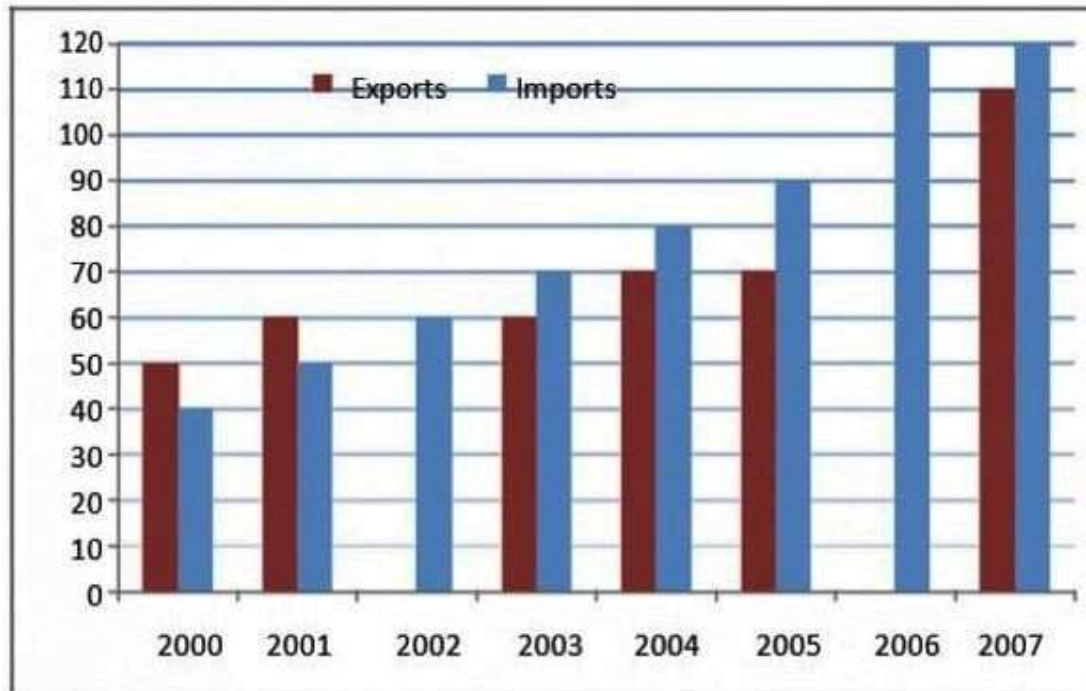
Answer: B

Solution:

Year: GATE ME 2014 SET-1

Question 142: The exports and imports (in crores of Rs.) of a country from 2000 to 2007 are given in the following bar chart. If the trade deficit is defined as excess of

imports over exports, in which year is the trade deficit 1/5th of the exports?



A: 2005

B: 2004

C: 2007

D: 2006

Answer: D

Solution:

Year: GATE ME 2014 SET-1

Question 143: A train that is 280 meters long, traveling at a uniform speed, crosses a platform in 60 seconds and passes a man standing on the platform in 20 seconds. What is the length of the platform in meters?

Answer: 560

Solution:

Year: GATE ME 2014 SET-1

Question 144: For submitting tax returns, all resident males with annual income below Rs 10 lakh should fill up

Form P and all resident females with income below Rs 8 lakh should fill up Form Q. All people with incomes above Rs 10 lakh should fill up Form R, except non residents with income above Rs 15 lakhs, who should fill up Form S. All others should fill Form T. An example of a person who should fill Form T is

A: a resident male with annual income Rs9 lakh

B: a resident female with annual income Rs 9 lakh

C: a non-resident male with annual income Rs 16 lakh

D: a non-resident female with annual income Rs 16 lakh

Answer: B

Solution:

Year: GATE ME 2014 SET-1

Question 145: Find the odd one from the following group:

W,E,K,O

I,Q,W,A

F,N,T,X

N,V,B,D

A: W,E,K,O

B: I,Q,W,A

C: F,N,T,X

D: N,V,B,D

Answer: D

Solution:

Year: GATE ME 2014 SET-1

Question 146: What is the next number in the series?

12 35 81 173 357 ,

Answer: 725

Solution:

Year: GATE ME 2014 SET-1

Question 147: The statistics of runs scored in a series by four batsmen are provided in the following table. Who is the most consistent batsman of these four?

Batsman	Average	Standard Deviation
<i>K</i>	31.2	5.21
<i>L</i>	46.0	6.35
<i>M</i>	54.4	6.22
<i>N</i>	17.9	5.90

A: K

B: L

C: M

D: N

Answer: A

Solution:

Year: GATE ME 2013

Question 148: The current erection cost of a structure is Rs. 13,200. If the labour wages per day increase by $\frac{1}{5}$ of the current wages and the working hours decrease by $\frac{1}{24}$ of the current period, then the new cost of erection in Rs. Is

A: 16,500

B: 15,180

C: 11,000

D: 10,120

Answer: B

Solution:

Year: GATE ME 2013

Question 149: Find the sum of the expression

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

A: 7

B: 8

C: 9

D: 10

Answer: B

Solution:

Year: GATE ME 2013

Question 150: A tourist covers half of his journey by train at 60 km/h, half of the remainder by bus at 30 km/h and the rest by cycle at 10 km/h. The average speed of the tourist in km/h during his entire journey is

A: 36

B: 30

C: 24

D: 18

Answer: C

Solution:

Year: GATE ME 2013

Question 151: Out of all the 2-digit integers between 1 and 100, a 2-digit number has to be selected at random. What is the probability that the selected number is not divisible by 7?

A: 13/90

B: 12/90

C: 78/90

D: 77/90

Answer: D

Solution:

Year: GATE ME 2013

Question 152: What will be the maximum sum of 44, 42, 40, ... ?

A: 502

B: 504

C: 506

D: 500

Answer: C

Solution:

Year: GATE ME 2012

Question 153: 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

Answer: C

Solution:

Year: GATE ME 2012

Question 154: 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: 0.72

Answer: B

Solution:

Year: GATE ME 2012

Question 155: 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 $y = 2x - 0.1x^2$ 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

Answer: B

Solution:

Year: GATE ME 2012

Question 156: Given the sequence of terms, AD CG FK JP, the next terms is

A: OV

B: OW

C: PV

D: PW

Answer: A

Solution:

Year: GATE ME 2012

Question 157: 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 INR 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

Answer: A

Solution:

Year: GATE ME 2011

Question 158: 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

Answer: C

Solution:

Year: GATE ME 2011

Question 159: 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

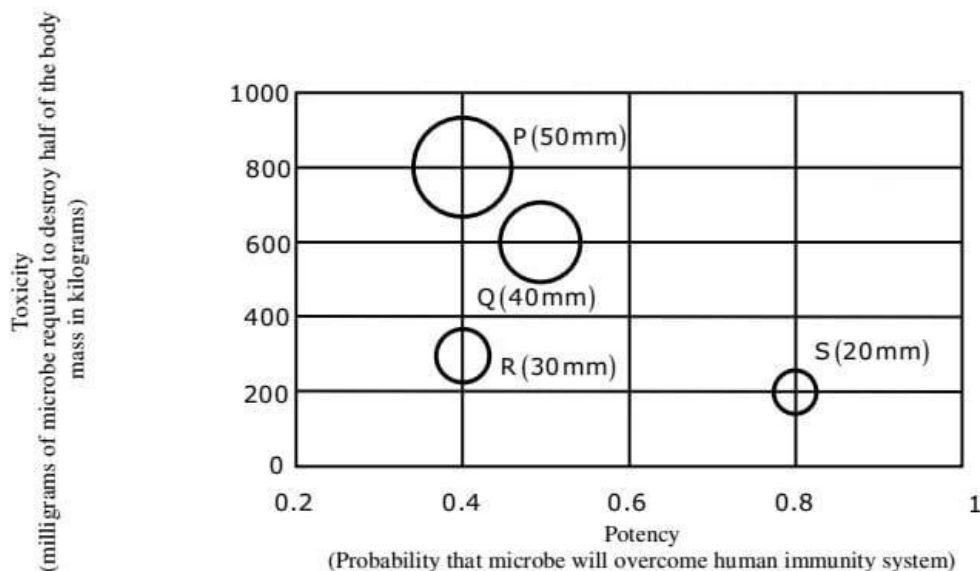
Answer: A

Solution: Checking with all options in formula: $(4q+100/q)$ i.e. $(V+F)$. Option A gives the minimum cost.

Year: GATE ME 2011

Question 160: P, Q, R and S are four types of dangerous microbes recently found in a human habitat. The area of each circle with its diameter printed in brackets represents 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

Answer: D

Solution: By observation of the table, we can say S

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

Year: GATE ME 2011

Question 161: 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

Answer: D

Solution: $10\left(\frac{10-1}{10}\right) = 10\left(\frac{9}{10}\right)^3 = \frac{729}{1000} = 7.29 \text{ litres}$

Year: GATE ME 2011

Question 162: If $\log(P) = (1/2)\log(Q) = (1/3)\log(R)$, then which of the following options is TRUE?

A: $P^2 = Q^3 R^2$

B: $Q^2 = PR$

C: $Q^2 = R^3 P$

D: $R = P^2 Q^2$

Answer: B

$$\log P = \frac{1}{2}\log Q = \frac{1}{3}\log(R) = k$$

Solution: $\therefore P = b^k, Q = b^{2k}, R = b^{3k}$

$$\text{Now, } Q^2 = b^{4k} = PR$$