Foundation Questions on Quantitative Aptitude - Part II

Course on General Aptitude and Engineering Mathematics for GATE 2023-24

Shreyas A • Lesson 6 • Feb 15, 2022

General Aptitude

PYQ’S on Quantitative Aptitude - I

Question 1

Shaquille O' Neal is a 60% career free throw shooter, meaning that he successfully makes 60 free throws out of 100 attempts on average. What is the probability that he will successfully make exactly 6 free throws in 10 attempts?

A. 0.2508

B. 0.2816

C. 0.2934

D. 0.6000

Answer

- Option A)

Question 2

The numeral in the units position of $211^{870} + 146^{127} * 3^{124}$ is _____

Answer

7

Question 3

- 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

Option A)

Question 4

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 shows symptoms of disease?

A. 15

B. 33

C. 35

D. 37

Answer

Option C)

Question 5

If $q^{-a} = 1/r$, $r^{-b} = 1/s$, $s^{-c} = 1/q$, the value of abc is =

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

B. 0

C. 1

D. r+q+s

Answer

- Option C)

Question 6

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

- Option C)

Time = $\frac{\text{Work}}{\text{Efficiency}}$.

Work done = Efficiency × Time

Question 7

6 | 12, 6
2, 1

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?

$\boxed{12:24}$ $\boxed{1:2}$

A. 1:1

B. 1:2

C. 1:4

D. 2:1

M = 2 = 1 day.

S = 1

E = 1 = 2 days.

F = 1

S = M = 6 hours/day.

E = F = 12 hours/day.

1 day

24 ← M = 2 = 6 hours

12 ← E = 1 = 12 hours

×2

12

M : E

12 : 24 = 1 : 2

Answer

- Option B)

Question 8

$2\frac{1}{4}$ hours past

2:15

WI

18:30
−6:1

$\frac{1}{4}$

1=60

$\frac{1}{4}$ = 15.

15 mins.

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

A. 8:15

B. 11:15

C. 12:15

D. 12:45

mirror image =

12:00

− Given time

formula

11:60.
1:30
10:30

2hr 15mins back

10:30
+ 2:15
12:45

Answer

- Option D)

Question 9

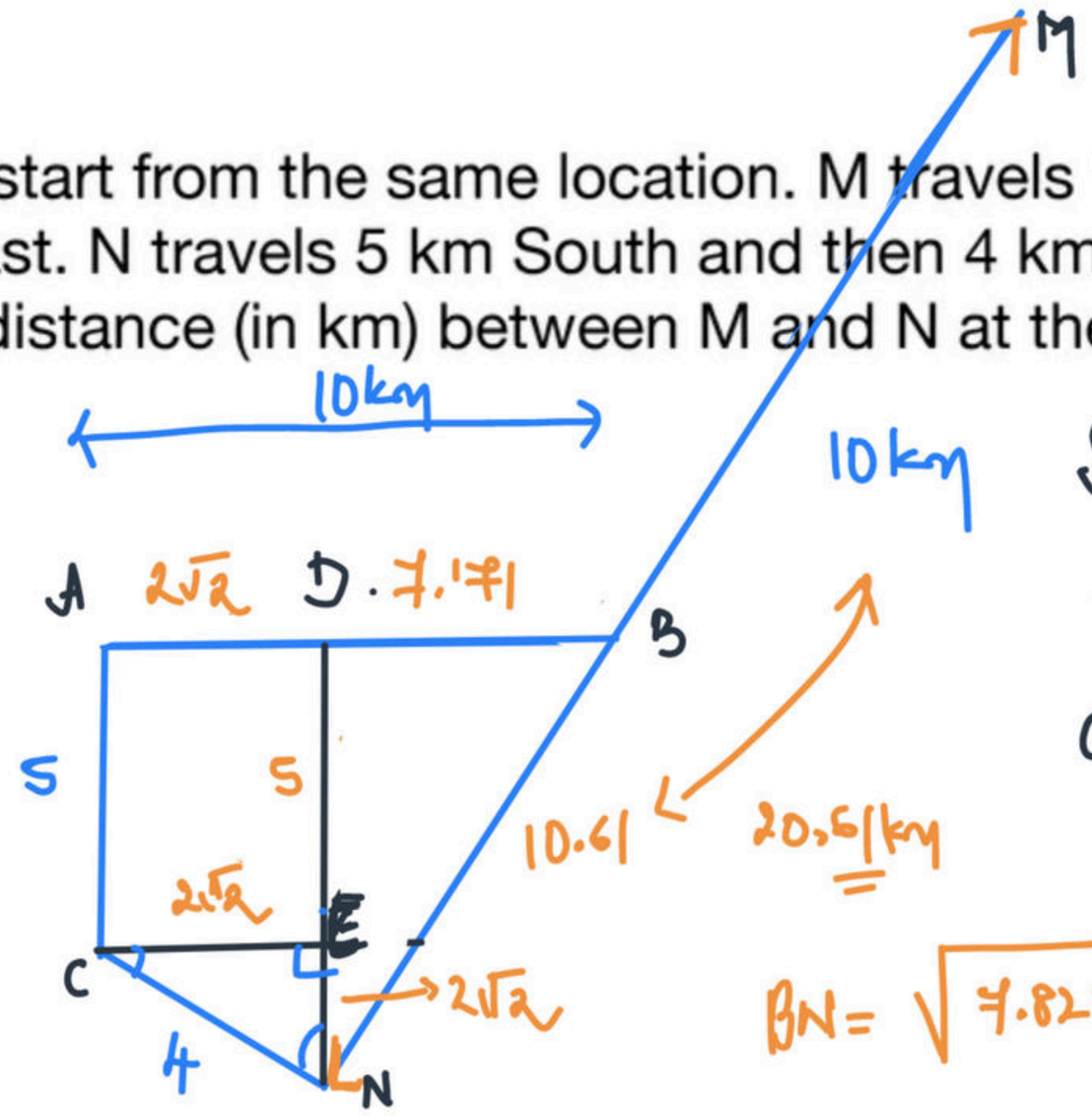
M and N start from the same location. M travels 10 km East and then 10 km North- East. N travels 5 km South and then 4 km South-East. What is the shortest distance (in km) between M and N at the end of their travel?

A. 18.60

B. 22.50

C. 20.61

D. 25.00



$\sin 45° = \frac{EN}{4}$

$EN = 2\sqrt{2} = 2.828$ km

$\cos 45° = \frac{CE}{4}$

$CE = 2\sqrt{2} = 2.828$ km

$BN = \sqrt{7.828^2 + 7.171^2} = BN = 10.61$

Answer

Option C)

$2(l+b)$

2D - mensuration

Perimeter

Question 10

maxima

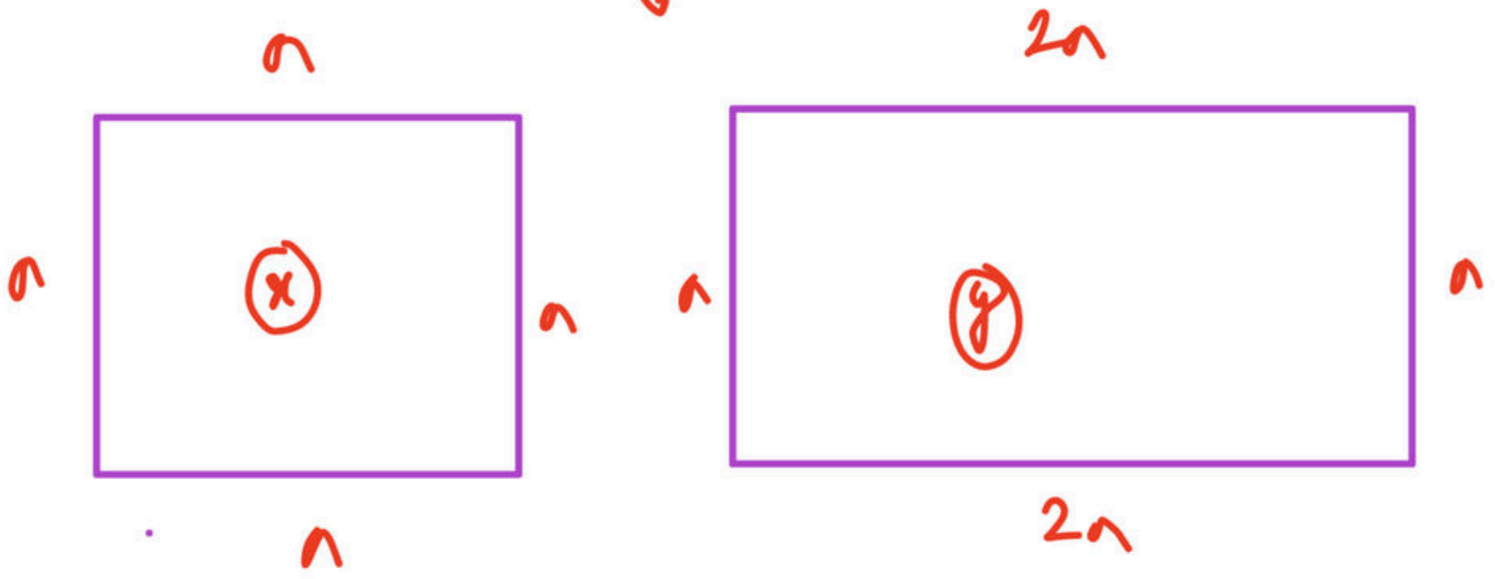
A wire of length 340 mm is to be cut into two parts. One of the parts is to be made into a square and the other into a rectangle where sides are in the ratio of 1:2. What is the length of the side of the square (in mm) such that the combined area of the square and the rectangle is a MINIMUM?

A. 30

B. 40

C. 120

D. 180



34

34

$a(24)(16) = 1156 \times 2$

2

$2a \times a = 2 \times 34 \times 34$

$a^2 = 34 \times 34$

$a^2 = 1156$

$2a^2 = 2312$

Answer

- Option B)

Question 11

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

A. 324

B. 441

C. 97

D. 64

324, 441, 97, 64

18^2 21^2 8^2

Answer

- Option C)

Problems on trains :-

Question 12

Speed = $\frac{\text{Distance}}{\text{Time}}$.

- It takes 10s and 15s, respectively, for two trains travelling at different constant speeds to completely pass a telegraph post. The length of the first train is 120 m and that of the second train is 150 m. The magnitude of the difference in the speeds of the two trains (in m/s) is _____.

A. 2.0

B.10.0

C.12.0

D.22.0

$S_1 = \frac{L_1}{T_1}$ $\quad S_2 = \frac{L_2}{T_2}$

$= \frac{120}{10}$ $\quad \frac{150}{15}$

$= 12\,m/s - 10\,m/s = 2\,m/s$.

Answer

- Option A)

$y = mx + c$

Question 13

$x = \ln 0.1$

$m = -0.02$

3216

0.3216

$= 0.030$

$0.02 \times 100 = 2$

$0.002 \times 1000 = 2$

$1.609 \times 1000 = 1609$

A straight line is fit to a data set (ln x, y). This line intercepts the abscissa at ln x = 0.1 and has a slope of –0.02. What is the value of y at x =5 from the fit?

A. -0.030

B. -0.014

C. 0.014

D. 0.030

$y = -0.02(\ln x) + c \rightarrow ①$

$y = 0, \ \ln x = 0.1$

$0 = -0.02(0.1) + c.$

$c = 0.002 \rightarrow ②.$

$y = -0.02(\ln x) + 0.002$

$y = -0.02(\ln 5) + 0.002$

$= (-0.02)(1.609) + 0.002$

$= -0.030.$

Answer

- Option A)

$= 12\times12 + \frac{\sqrt{3}}{4}\times\cancel{12}^{3}\times12$

$= 144 + 62.35$

Question 14

$= 1.44 + 0.36\sqrt{3} = 2.06\,m^2$

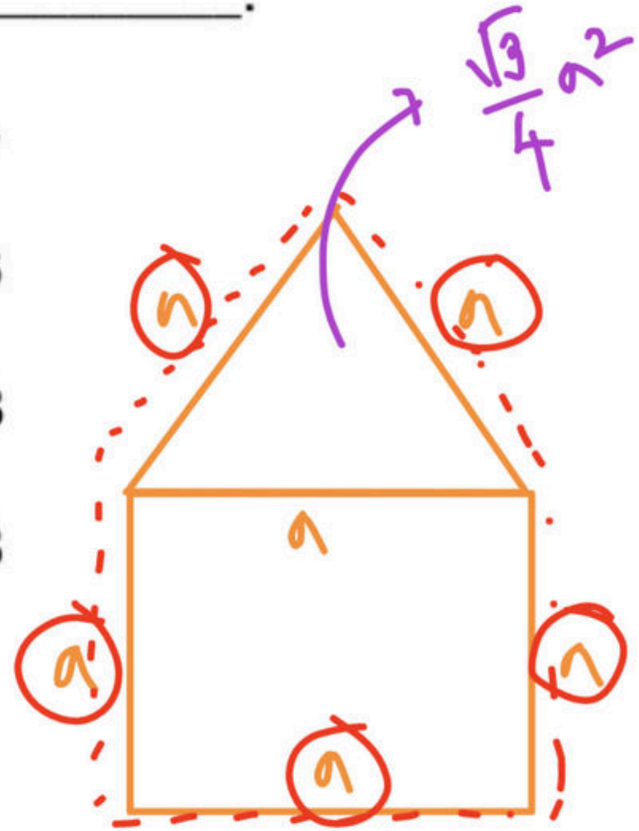
- A window is made up of a square portion and an equilateral triangle portion above it. The base of the triangular portion coincides with the upper side of the square. If the perimeter of the window is 6 m, the area of the window in m is _____.

A. 1.43

B. 2.06

C. 2.68

D. 2.88



Perimeter $= 5a = 6m$

$= a = \frac{6}{5}m$

$a = 1.2m$

Area (window) = Square Area + Δ^{le} Area

$= a^2 + \frac{\sqrt{3}}{4}a^2$

$= 1.2\times1.2 + \frac{\sqrt{3}}{4}\times1.2\times1.2$

Answer

- Option B)

Question 15

The binary operation $\boxed{?}$ is defined as a $\boxed{?}$ b = a b+(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 $\boxed{?}$ x=a, for any a,is.

A. 0

$a \boxed{?} 0 = 0 + a + 0 = a$

B. 1 $a+1$

C. 2 $a+2$

D. 10 $a+10$

Answer

- Option A)

93 − 39 = 54

75 − 57 = 18

Question 16

10A + B = 10B + A

9A − 9B.

11A + 11B.

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

A. 39

B. 57

C. 66

D. 93

9(A − B) = 54

(A − B) = 6

1 7

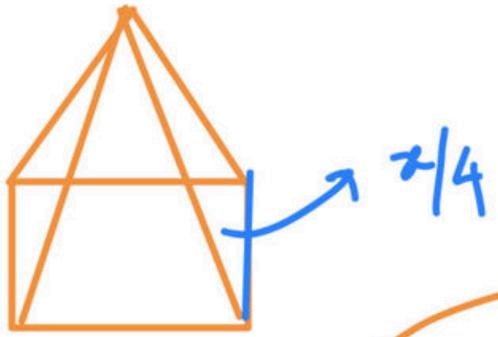
2 8

3 9

4 0 = 04 · (A)

Answer

- Option A)



Question 17

$\frac{1}{2} \times b \times h$

$h = l$

Square

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

$4a = x$.

$a = x/4$

$l = x/2$

A. x^2

B. $0.75x^2$

C. $0.50x^2$

D. $0.25x^2$

LSA = 4 × Area of 1 triangle

Perimeter = 4a

$4 \times \frac{1}{2} \times \frac{x}{4} \times \frac{x}{2}$

$= \left(\frac{x}{4}\right)^2 = \left(\frac{1}{4}\right)x^2 = 0.25x^2$

Answer

- Option A)

Time & Work Concept

Question 18

Unread

Time

Time.

read

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

Hour

LCM

A. 1

B. 2

C. 3

D. 4

2 ← A → 6 ×2

3 ← B → 4 ×3

12 = TNP

Ananth

Bharath

1h	2	10	3	9	1h
2h	4	8	6	6	2h
3h	6	6 → NA	9	3	R. 3h.

3×2=6.

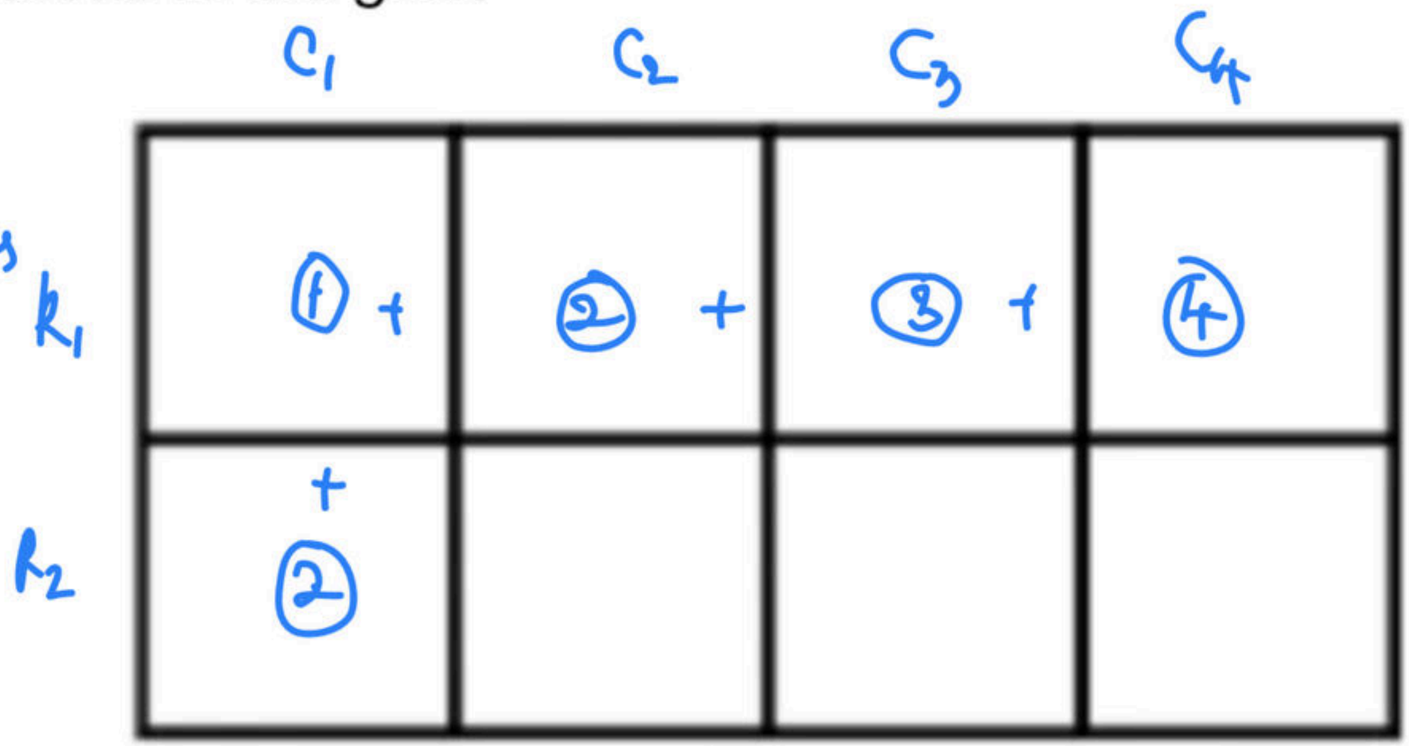
Answer

- Option C)

Question 19

- In a 2 × 4 rectangle grid shown below, each cell is a rectangle. How many rectangles can be observed in the grid?
- A. 21
- B. 27
- C. 30
- D. 36

$10 \times 3 = 30$ ☐les



Answer

- Option C)

52 Cards, 4 Cards = Kings.
- 2 -2
= 50 Cards, 2 kings.

Question 20

52

1 2

$\frac{1}{51}$ $\frac{2}{50}$ $\frac{3}{49}$ $\frac{4}{48}$.

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

A. 4/52

B. 2/50

C. 1/52 * 1/52

D. 1/52 * 1/52 * 1/52

$P = \frac{C}{E} = \frac{2}{50} = \frac{1}{25}.$

General Aptitude

PYQ’S on Quantitative Aptitude - III

$5 \times 4 = 20$

Question 1

Given set A = {2, 3, 4, 5} and Set B = {11, 12, 13, 14, 15}, two numbers are randomly selected, one from each set. What is probability that the sum of the two numbers equals 16?

A. 0.20

B. 0.25

C. 0.30

D. 0.33

$A = \{2, 3, 4, 5\}$ $B = \{11, 12, 13, 14, 15\}$.

$\{14, 2\}$ $\{11, 5\}$.

$\{13, 3\}$

$\{12, 4\}$.

$= \frac{4}{20} = \frac{1}{5} = 20\%$

Answer

- Option A)

Question 2

Ram and Ramesh appeared in an interview for two vacancies in the same department. The probability of Ram's selection is 1/6 and that of Ramesh is 1/8. What is the probability that only one of them will be selected?

OR

Ram Selected × Ramesh NS + Ram NS × Ramesh S.

$\frac{1}{6} \times \frac{7}{8} + \frac{5}{6} \times \frac{1}{8}$.

$= \frac{7}{48} + \frac{5}{48} = \frac{12}{48} = \frac{1}{4}$

A. 47/48

B. 1/4

C. 13/48

D. 35/48

Answer

Option B)

Question 3

easy

$$\begin{array}{r} 27 \\ \underline{27} \\ 729 \end{array}$$

$10\% = 3\,cm$

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

A. 3.14

B. 2.06

C. 1.5

D. 3

$R = 30\,cm$

$r = 27\,cm$

$h = \sqrt{R^2 - r^2}$

$= \sqrt{30^2 - 27^2}$

$= \sqrt{900 - 729} = \sqrt{171} = 13.08$

$\frac{r}{h} = \frac{27}{13.08} = 2.06$

Rot

Thursday = DI

Friday = Eth

Answer

Option B)

Question 4

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?

A. 425

B. 495

C. 625

D. 575

Answer

Option B)

Question 5

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. 10.0

D. 12.2

Answer

- Option B)

Question 6

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

- Option B)

Question 7

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.

A. 4 km/hr

B. 6 km/hr

C. 2 km/hr

D. 8 km/hr

Answer

- Option A)

Question 8

A car travels 8 km in the quarter of an hour, 6 km in the second quarter and 16 km in the third quarter. The average speed of the car in km per hour over the entire journey is

A. 30

B. 36

C. 40

D. 24

Answer

- Option C)

Question 9

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

Option D)

Question 10

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

- Option C)

Question 11

The current erection cost of a structure is Rs. 13,200. If the labour wages per day increase by 1/5 of the current wages and the working hours decrease by 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

- Option B)

Question 12

Raju has 14 currency notes in his pocket consisting of only Rs. 20 notes and Rs.10 notes. total money value of the notes is Rs. 230. The number of Rs.10 notes that Raju has in

A. 5

B. 6

C. 9

D. 10

Answer

- Option A)

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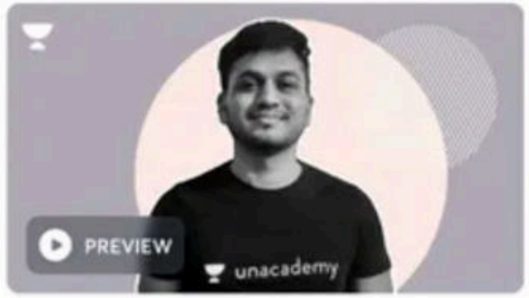

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Answer

- Option B)

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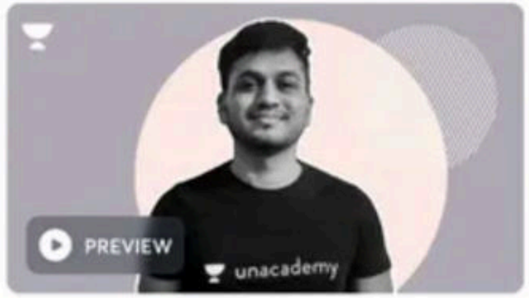

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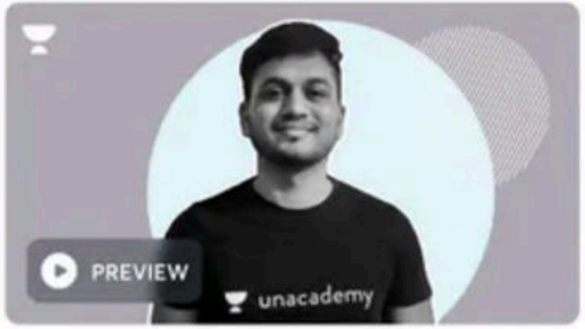

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