Maths Questions for CLAT Exam

CLAT Maths Quiz 16

Directions: Kindly study the following Questions carefully and choose the right answer:

1. 10 men and 15 women together can complete a work in 6 days. It takes 100 days for one man alone to complete the same work. How many days will be required for one woman alone to complete the same work?

A. 125 B. 150

C. 200 D. 225

2. A man can row 40 km upstream and 55 km downstream in 13 hours, also he can row 30 km upstream and 44 km downstream in 10 hours. Find the speed of the man in still water and the speed of the current.

A. 8 kmph and 2 kmph B. 8 kmph and 3 kmph

C. 7 kmph and 5 kmph D. 4 kmph and 7 kmph

3. The length of a chord of a circle is equal to the radius of the circle. The angle which this chord subtends in the major segment of the circle is equal to

A. 30° B. 45°

C. 60° D. 90°

4. The greatest number which can divide 1356, 1868 and 2764 leaving the same remainder 12 in each case is

A. 64 B. 124

C. 156 D. 260

5. A cone, a hemisphere and a cylinder stand on equal bases and have the same height. Find the ratio of their volumes.

A. 2: 3: 5 B. 1: 2: 3

C. 3: 5: 7 D. None of these

6. Two poles of heights 6 m and 11 m stand vertically upright on a plane ground. If the distance between their feet is 12 m, what is the distance between their tops?

A. 11 m B. 12 m

C. 13 m D. 14 m

7. In a regular polygon, the exterior and interior angles are in the ratio 1: 4. The number of sides of the polygon is

A. 10 B. 12

C. 15 D. 16

8. if x + $\frac{1}{x}$ = 99, find the value of $\frac{100x}{2x^2 + 102x + 2}$

A. $\frac{1}{6}$ B. $\frac{1}{2}$

C. $\frac{1}{3}$ D. $\frac{1}{4}$

9. A sum of money lent at CI for 2 yr at 20% pa would fetch Rs. 964 more, if the interest was payable half yearly than if it was payable annually. What is the sum?

A. Rs. 40000 B. Rs. 90000

C. Rs. 500000 D. Rs. 60000

10. The simple interest accrued on an amount of Rs. 12450 at the end of 6 years is Rs. 8964. What is the rate of interest per year?

A. 8% B. 14%

C. 10% D. 12%

Correct Answers:

1	2	3	4	5	6	7	8	9	10
D	B	A	A	B	C	A	C	A	D

Explanations:

1. 1 man's 1 day's work

$= \frac{1}{100}$, (10 men + 15 women)'s 1 day's work $= \frac{1}{6}$.

15 women's 1 day's work $= (\frac{1}{6} - \frac{10}{100}) = (\frac{1}{6} - \frac{1}{10}) = \frac{1}{15}$.

$\therefore$ 1 woman's 1 day's work $= \frac{1}{225}$.

Then, 1 woman alone can complete the work in 225 days.

Hence, option D is correct.

2. Let rate upstream = x km/hr and rate downstream = y km/hr.

Then, $\frac{40}{x} + \frac{55}{y} = 13$ ... (i) and

$\frac{30}{x} + \frac{44}{y} = 10$ .... (ii)

Multiplying (ii) by 4 and (i) by 3 and subtracting,

we get: $\frac{11}{y} = 1$ or y = 11.

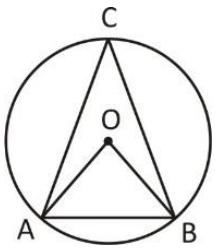
Substituting y = 11 in (i), we get: x = 5.

$\therefore$ Rate in still water $= \frac{1}{2}(11 + 5)$ kmph = 8 kmph.

Rate in current $= \frac{1}{2}(11 - 5)$ kmph = 3 kmph.

Hence, option B is correct.

3.



AO = OB = AB

$\Rightarrow$ $\angle AOB = 60°$ [$\because$ ΔAOB is equilateral]

Note: The angle subtended by an arc of a circle at the centre is double the angle subtended by it at any point on the remaining part of the circle.

$\therefore$ $\angle ACB = 30°$

Hence, option A is correct.

4. Required number = HCF of (1356 – 12) , (1868 – 12), (2764 – 12)

HCF of 1344, 1856 and 2752 = 64.

Hence, option A is correct.

5. Let R be the radius of each.

Height of hemisphere = Its radius = R.

$\therefore$ Height of each = R .

Ratio of volumes $= \frac{1}{3}\pi R^2 \times R : \frac{2}{3}\pi R^3 : \pi R^2 \times R = 1 : 2 : 3.$

Hence, option B is correct.

6.

Given that there are two poles

AE = 11 m

And, CD = 6 m

$\therefore$ BE = 6 m [$\because$ CD = BE]

$\therefore$ AB = AE – BE

= 11 – 6 = 5 m

distance between their feet

ED = 12 m

$\therefore$ BC = 12 m [$\because$ ED = BC]

Now, AC = ?

In ΔABC,

From Pythagorus Theorum,

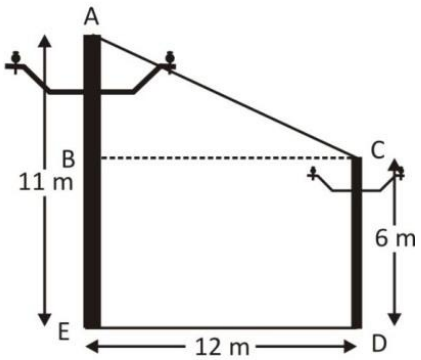
$AC^2 = AB^2 + BC^2$

$AC^2 = 5^2 + 12^2$

$AC^2 = 25 + 144 = 169$

$AC = \sqrt{169}$

AC = 13



Hence, option C is correct.

7. Let the number sides of a polygon be n, then

Exterior angle: Interior angle = 1: 4

$\frac{360°}{n}$: $(180° - \frac{360°}{n}) = 1: 4$

$\frac{360°}{n} \times \frac{n}{180° \times n - 360°} = \frac{1}{4}$

$180° \times n = 1440° + 360° = 1800°$

n = 10

Hence, option A is correct.

8.

$$x + \frac{1}{x} = 99$$

$$\therefore \frac{100x}{2x^2 + 102x + 2} = \frac{100x}{2x^2 + 2 + 102x}$$

On dividing by x,

$$= \frac{100x}{2x + \frac{2}{x} + 102} = \frac{100}{2(x + \frac{1}{x}) + 102}$$

$$= \frac{100}{2 \times 99 + 102} = \frac{100}{300} = \frac{1}{3}$$

Hence, option C is correct.

9. Case I: When CI compounded half-yearly, rate of interest = 10%

Frequency of interest occurring in 2 yrs = 4

Applying the net% effect formula of 1st yr, (1st two frequencies)

$$\text{Net\% effect} = 10 + 10 + \frac{10 \times 10}{100} = 21\%$$

$$\text{For next half a year,} = 21 + 10 + \frac{21 \times 10}{100} = 33.1\%$$

$$\text{Fore next half a year} = 33.1 + 10 + \frac{33.1 \times 10}{100} = 46.41\%$$

Case II: When CI compounded yearly, Rate of interest = 20%

Frequency of interest occurring in 2 yrs = 2

$$\text{Applying the net\% effect formula of 2 yrs, we get} = 20 + 20 + \frac{20 \times 20}{100} = 44\%$$

Now, difference in % rate = 46.41% – 44%

2.41% ≡ 964, 100% ≡ x

$\therefore \quad x = \frac{964 \times 100}{2.41} = 40{,}000/-$

Hence, option A is correct.

10. SI = 8964 and T = 6 yrs, P = 12450

Then, rate = $\frac{8964 \times 100}{12450 \times 6} = 12\%$

Hence, option D is correct.