CUET (UG) Question Paper - 2024

National Testing Agency

15th MAY 2024 – SHIFT 1

Section - III (General Test)

Quantitative Aptitude

Examination Duration: 60 Minutes **Maximum Marks - 250**

General Instructions:

Marking scheme of the test:

(a) *There are 60 questions asked in the section- III. Attempt only 50 questions.*

(b) *Correct answer or the most appropriate answer will be given five marks (+5).*

(c) *Any incorrect option marked will be given minus one mark (–1).*

(d) *Unanswered/Marked for review will be given no mark (0).*

1. Simplify : $24 \div 4 \times 2 + 8 - 4 = ?$

(A) 1 **(B)** 7 **(C)** 16 **(D)** 56

Ans. Option (C) is correct.

Explanation:

Value of expression by using BODMAS rule

$24 \div 4 \times 2 + 8 - 4 = 6 \times 2 + 8 - 4$

$= 12 + 8 - 4$

$= 16$

2. The difference of the greatest and the smallest of the fractions $\frac{1}{2}, \frac{8}{11}, \frac{7}{8}, \frac{7}{9}, \frac{5}{6}$ is:

(A) $\frac{3}{8}$ **(B)** $\frac{6}{7}$ **(C)** $\frac{7}{9}$ **(D)** $\frac{1}{3}$

Ans. Option (A) is correct.

Explanation:

Given fractions are $\frac{1}{2}, \frac{8}{11}, \frac{7}{8}, \frac{7}{9}, \frac{5}{6}$

Now, $\frac{1}{2} = 0.5$, $\frac{8}{11} = 0.72$,

$\frac{7}{8} = 0.87$, $\frac{7}{9} = 0.777$,

$\frac{5}{6} = 0.86$

So, required difference

$= \frac{7}{8} - \frac{1}{2} = \frac{7-4}{8} = \frac{3}{8}$

3. The sum of the LCM and HCF of two numbers is 854. If the LCM is 60 times the HCF and one of the numbers is 70, then the other number is.

(A) 160 **(B)** 164 **(C)** 168 **(D)** 172

Ans. Option (C) is correct.

Explanation:

Let the HCF of given numbers $= x$

Then LCM $= 60x$

According to the question,

$x + 60x = 854$

$\Rightarrow 61x = 854$

$\Rightarrow x = 14$

So, HCF $= 14$

and LCM $= 60 \times 14 = 840$

Using, LCM $\times$ HCF $= 1^{st}$ No. $\times 2^{nd}$ No.

$\Rightarrow 14 \times 840 = 70 \times 2^{nd}$ No.

$\Rightarrow 2^{nd}$ No. $= 168$

4. The present age of Harish is 8 times the sum of the ages of his two sons. After 8 years, his age will be 2 times the sum of the ages of his two sons. The present age of Harish (in years) is:

(A) 31 **(B)** 32 **(C)** 33 **(D)** 34

Ans. Option (B) is correct.

Explanation:

Let the sum of the ages of his two sons at present $= x$ year

So, present age of Harish $= 8x$ years

According to the question, after 8 years,

$8x + 8 = 2(x + 8 + 8)$

$8x + 8 = 2x + 32$

$\Rightarrow 6x = 24$

$\Rightarrow x = 4$

So, present age of Harish $= 8 \times 4$

$= 32$ years

5. In an examination, it is required to get 300 marks to pass. A students gets 225 marks and is declared fail by 10% marks. What are the maximum marks of the examination?

(A) 700 **(B)** 750 **(C)** 800 **(D)** 850

Ans. Option (B) is correct.

Explanation:

Given that passing marks $= 300$

Let the total marks $= x$

According to the question,

$225 + \frac{10}{100} \times x = 300$

$\Rightarrow x = 750$

So, maximum marks $= 750$

6. In a class of 40 students, ratio of boys and girls is 3 : 2 and the average marks scored by boys is 42 and the average marks scored by girls is 46. Then the average marks scored by the whole class is:

(A) 43.4 **(B)** 43.6 **(C)** 43.8 **(D)** 44

Ans. Option (B) is correct.

Explanation:

The average marks scored by boys = 42

The average marks scored by boys = 46

And ratio of boys to girls $(n_1, n_2) = 3 : 2$

using the formulae

$$\text{Average} = \frac{(n_1x_1 + n_2x_2)}{(n_1 + n_2)}$$

So, $$\text{required average} = \frac{42\times3 + 46\times2}{2+3}$$

$$= 43.6$$

7. The sum of three numbers is 136. If the ratio between the first number and the second number is 2 : 3 and the ratio between the second and the third number is 5 : 3 then the first number is:

(A) 42 **(B)** 40 **(C)** 36 **(D)** 32

Ans. Option (B) is correct.

Explanation:

Since ratio of first and second number is given, and ratio of second and third number is given so to make ratio of second number equal, multiply each ratio by 5 to make the ratio of the second number equal.

Given that ratio 1st and 2nd no.

$$= 2 : 3 = 10 : 15$$

And ratio 2nd and 3rd no.

$$= 5 : 3 = 15 : 9$$

So, ratio of 1st, 2nd and 3rd no.

$$= 10 : 15 : 9$$

Let 1st, 2nd and 3rd no. are $10x$, $15x$ and $9x$.

According to the question,

$$10x + 15x + 9x = 136$$

$$\Rightarrow \quad 34x = 136$$

$$\Rightarrow \quad x = 4$$

So, the 1st number $= 10 \times 4 = 40$

8. An item is sold for ₹ 504 after allowing 20% discount and still a profit of 5% has been earned. The marked price is how much more than the cost price?

(A) ₹ 120 **(B)** ₹ 135 **(C)** ₹ 150 **(D)** ₹ 160

Ans. Option (C) is correct.

Explanation:

Let the marked price = ₹ x

According to the question,

$$x \times \frac{100-20}{100} = 504$$

$$\Rightarrow \quad x = 630$$

So, marked price = ₹ 630

Let the cost price = ₹ y

Again, according to the question,

$$y \times \frac{105}{100} = 504$$

$$\Rightarrow \quad y = 480$$

So, cost price = ₹ 480

Now, required difference

$$= 630 - 480 = ₹\ 150$$

9. A certain sum becomes ₹ 2,356 in 3 years and 2,660 in 5 years on simple interest. The value of sum is :

(A) ₹ 1,800 **(B)** ₹ 1,880 **(C)** ₹ 1,900 **(D)** ₹ 1,980

Ans. Option (C) is correct.

Explanation:

According to the question, SI earned in two years

$$= 2660 - 2356$$

$$= ₹\ 304$$

So, SI earned per year $= \frac{304}{2} = ₹\ 152$

Now, SI earned in 3 years

$$= 152 \times 3 = ₹\ 456$$

Principal = Amount – simple interest

So, $$= 2356 - 456$$

$$= ₹\ 1,900$$

10. In a square, lengths of the diagonals are (4k + 6) cm and (7k – 3) cm. The area of the square (in cm^2) is :

(A) 144 **(B)** 162 **(C)** 169 **(D)** 172

Ans. Option (B) is correct.

Explanation:

We know that both the diagonals of square are equal length.

According to the question,

$$4k + 6 = 7k - 3$$

$$\Rightarrow \quad 3k = 9$$

$$\Rightarrow \quad k = 3$$

So, length of diagonal $= 4 \times 3 + 6$

$$= 18 \text{ cm}$$

Using, length of diagonal of square

$$= \sqrt{2} \times \text{side}$$

$$\Rightarrow \quad \text{side} = \frac{18}{\sqrt{2}} = 9\sqrt{2}$$

So, area of square $= \text{side}^2$

$$= 9\sqrt{2} \times 9\sqrt{2}$$

$$= 162 \text{ cm}^2$$

11. The volume of a cylinder having base radius 3 cm is 396 cm^3. Find its curved surface area (in cm^2).

$\left(\text{Use } \pi = \frac{22}{7}\right)$

(A) 280 **(B)** 301.5 **(C)** 264 **(D)** 320.6

Ans. Option (C) is correct.

Explanation:

Given that,

Radius of base of cylinder = 3 cm

Let the height of cylinder = h cm

Using, volume $= \pi r^2 h$

$$\Rightarrow \quad 396 = \frac{22}{7} \times 3 \times 3 \times h$$

$$\Rightarrow \quad h = 14 \text{ cm}$$

So, curved surface area $= 2\pi rh$

$$= 2 \times \frac{22}{7} \times 3 \times 14$$

$$= 264 \text{ cm}^2$$

12. A tap can fill a tank in 6 hours. After half the task is filled, three more similar taps are opened. What is the total time taken to fill the tank completely?

(A) 4 hours
(B) 5 hours
(C) 3 hours 30 minutes
(D) 3 hours 45 minutes

Ans. Option (D) is correct.

Explanation:

Given that half the tank is filled.
So, given tap can fill the remaining tank in
$= 3$ h
Hence, time taken by 4 similar taps to fill half the tank

$$= \frac{3}{4} \text{ h} = \frac{3}{4} \times 60 \text{ min}$$

$$= 45 \text{ min}$$

So, total time taken to fill the tank
$= 3$ h 45 min

13. A train running at the speed of 80 km/h crosses a 350 m long tunnel in 36 seconds. The length of the train (in m) is

(A) 350 (B) 380
(C) 420 **(D)** 450

Ans. Option (D) is correct.

Explanation:

Speed of the train = 80 kmph

$$= 80 \times \frac{5}{18} \text{ m/s}$$

$$= \frac{200}{9} \text{ m/s}$$

Length of tunnel = 350 m
Let the length of train = l m
Using, distance = speed × time

$$\Rightarrow \quad 350 + l = \frac{200}{9} \times 36$$

$$\Rightarrow \quad l = 800 - 350 = 450$$

So, the length of train = 450 m

14. If the mean of 3, 4, 9, $2k$, 10, 8, 6 and $(k + 6)$ is 8, and mode of 2, 2, 3, $2p$, $(2p + 1)$, 4, 4, 5 and 6 (p is a natural number) is 4, then the value of $(k - 2p)$ is:

(A) 0 (B) 1
(C) 2 **(D)** 3

Ans. Option (D) is correct.

Explanation:

$$\text{Mean} = \frac{\text{sum of all observations}}{\text{total number of observations}}$$

Given that the mean of 3, 4, 9, $2k$, 10, 8, 6 and $k + 6 = 8$

$$\Rightarrow \frac{3+4+9+2k+10+8+6+k+6}{8}$$

$$= 8$$

$$\Rightarrow \quad 46 + 3k = 64$$

$$\Rightarrow \quad k = 6$$

Also given that the mode of 2, 2, 3, $2p$, $(2p + 1)$, 4, 4, 5, $6 = 4$
Means $2p + 1 = 4$

$$\Rightarrow \quad p = \frac{3}{2}$$

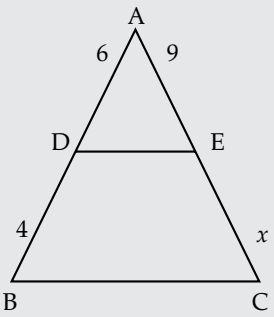
So, $k - 2p = 6 - 2 \times \frac{3}{2} = 3$

15. In triangle ABC, points D and E are on AB and AC, respectively such that DE is parallel to BC. If AD = 6 cm, DB = 4 cm, AE = 9 cm, then the length of EC (in cm) is:

(A) 7 **(B)** 6.4 **(C)** 6 **(D)** 5.5

Ans. Option (C) is correct.

Explanation:



According to the given conditions,

$$\Delta ABC \sim \Delta ADE.$$

So, $\frac{AD}{AB} = \frac{AE}{AC}$

$$\Rightarrow \quad \frac{6}{10} = \frac{6}{9+x}$$

$$\Rightarrow \quad 54 + 6x = 90$$

$$\Rightarrow \quad x = 6$$

So, EC = 6 cm

16. If $\sin A = \frac{4}{5}$ then $(3 - \tan A)(2 + \cos A) =$

(A) $\frac{12}{5}$ **(B)** $\frac{13}{3}$ **(C)** $\frac{13}{5}$ **(D)** 3

Ans. Option (B) is correct.

Explanation:

Given that $\sin A = \frac{4}{5}$

So, $\cos A = \sqrt{1 - \sin^2 A}$

$$= \sqrt{1 - \frac{16}{25}} = \frac{3}{5}$$

Hence, $\tan A = \frac{(\sin A)}{(\cos A)} = \frac{4}{3}$

So, the value of $(3 - \tan A)(2 + \cos A)$

$$= \left(3 - \frac{4}{3}\right)\left(2 + \frac{3}{5}\right)$$

$$= \frac{5}{3} \times \frac{13}{5} = \frac{13}{3}$$

17. A man can row a boat at 8 km/h in still water. If the speed of the water current is 2 km/h and it taken him 2 hours to row to a place and come back, then how far off (in km) is the place?

(A) 7.5 **(B)** 6 **(C)** 9.5 **(D)** 10

Ans. Option (A) is correct.

Explanation:

Given that speed of boat = 8 km/h

And speed of stream = 2 km/h

So, downstream speed = 8 + 2

= 10 km/h

And upstream speed = 8 – 2

= 6 km/h

Let the distance is x km from starting point.

According to the question,

$$\frac{x}{10}+\frac{x}{6}=2$$

$$\Rightarrow \quad 8x = 60$$

$$\Rightarrow \quad x = 7.5 \text{ km}$$

◆◆◆