



SSC CGL Tier-2 25-October-2015 Maths

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SSC CGL Tier-2 25-October-2015 Maths

Instructions

For the following questions answer them individually

Question 1

$6^2 + 7^2 + 8^2 + 9^2 + 10^2$
 $\sqrt{7} + 4\sqrt{3} - \sqrt{4} + 2\sqrt{3}$ is equal to

- A 305
- B 355
- C 366
- D 330

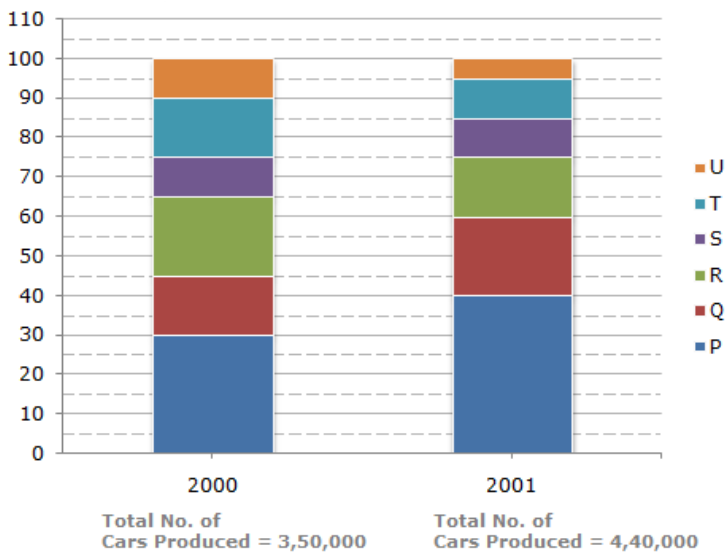
Answer: D

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Instructions

The bar graph given below shows the percentage distribution of the total production of a car manufacturing company into various models over two years.

Percentage of Six different types of Cars manufactured by a Company over Two Years



Question 2

The total production of Type P vehicles in the years 2008 and 2011 is what percent of total production of Type Q vehicles in 2010 and 2014?

- A 80
- B 68.25
- C 81.25
- D 75

Answer: A

Question 3

The total production of Type P vehicles in the years 2008 and 2011 is what percent of total production of Type Q vehicles in 2010 and 2014?

- A 75
- B 60
- C 45.5
- D 54.5

Answer: D

Question 4

Approximate percentage decrease in production of Type Q vehicles from 2010 to 2011 is

- A 16.7
- B 14.3
- C 10.1
- D 12.5

Answer: A

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Question 5

The ratio of total production of Type P vehicles to total production of Type Q vehicles over the years is

- A 8:5
- B 48:41
- C 41:48
- D 5:8

Answer: B

Question 6

In how many of the given years, was the production of Type P vehicles of the company more than the average production of this type vehicles in the given years?

- A 5
- B 4
- C 3
- D 2

Answer: C

Explanation:

$$\text{average of Type p production} = \frac{\text{total production}}{\text{no of years}} = \frac{100+125+200+225+275+275}{6} = \frac{1200}{6} = 200$$

years when production of type p is greater than average

2012 = 225

2013 = 275

2014 = 275

hence 3 years

Instructions

For the following questions answer them individually

Question 7

If $3(a^2 + b^2 + c^2) = (a + b + c)^2$, then the relation between a,b and c is

A $a \neq b = c$

B $a = b = c$

C $a \neq b \neq c$

D $a = b \neq c$

Answer: B

Explanation:

solution

$$3(a^2 + b^2 + c^2) = (a + b + c)^2$$

we know

$$(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$$

$$3(a^2 + b^2 + c^2) = a^2 + b^2 + c^2 + 2(ab + bc + ca)$$

$$2(a^2 + b^2 + c^2) = 2(ab + bc + ca)$$

$$(a^2 + b^2 + c^2) = (ab + bc + ca)$$

as we can observe the symmetry

$$a = b = c$$

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Question 8

A car covers four successive 7 km distances at speeds of 10 km/hour, 20 km/hour, 60 km/hour respectively. Its average speed over this distance is

A 40 km/hour

B 20 km/hour

C 60 km/hour

D 30 km/hour

Answer: B

Question 9

A cylinder with base radius 8 cm and height 2 cm is melted to form a cone of height 6 cm, The radius of the cone will be

A 6 cm

B 5 cm

C 4 cm

D 8 cm

Answer: D

Explanation:

solution

base radius $r = 8$

height of cylinder = 2

height of cone = 6

volume of the cylinder and cone remains the same

volume of cylinder = volume of cone

$$\pi r^2 h = \frac{1}{3} \pi r^2 h \text{ (substituting the values)}$$

$$\pi 8^2 \times 2 = \frac{1}{3} \pi r^2 \times 6$$

$$8^2 \times 2 = \frac{1}{3} r^2 \times 6$$

$$8^2 = r^2$$

radius of cone = 8cm

Question 10

A dealer fixed the price of an article 40% above the cost of production. While selling it he allows a discount of 20% and makes a profit of 48. The cost of production (in %) of the article is

A 420

B 360

C 400

D 320

Answer: C

SSC CGL Tier-2 Previous Papers PDF

Question 11

Average of n numbers is a . The first number is increased by 2, second one is increased by 4, the third one is increased by 8 and so on. The average of the new number is

A $a + 2 \frac{2^n - 1}{n}$

B $a + \frac{2^n - 1}{n}$

C $a + 2 \frac{2^n + 1}{n}$

D $a + 2 \frac{2^{n+1} - 1}{n}$

Answer: A

Question 12

If $x = a \sin \theta - b \cos \theta$, $y = a \cos \theta + b \sin \theta$, then which of the following is true?

A $x^2 + y^2 = a^2 + b^2$

B $\frac{x^2}{y^2} + \frac{a^2}{b^2} = 1$

C $x^2 + y^2 = a^2 - b^2$

D $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$

Answer: A

Explanation:

solution

$$x = a \sin\theta - b \cos\theta \text{ {squaring x}}$$

$$y = a \cos\theta + b \sin\theta \text{ {squaring y}}$$

$$x^2 = a^2 \sin^2\theta + b^2 \cos^2\theta - 2ab \sin\theta \cos\theta$$

$$y^2 = a^2 \sin^2\theta + b^2 \cos^2\theta + 2ab \sin\theta \cos\theta$$

adding both

we get

$$x^2 + y^2 = a^2 \sin^2\theta + b^2 \cos^2\theta - 2ab \sin\theta \cos\theta + a^2 \sin^2\theta + b^2 \cos^2\theta + 2ab \sin\theta \cos\theta$$

$$x^2 + y^2 = a^2 \sin^2\theta + b^2 \cos^2\theta + a^2 \sin^2\theta + b^2 \cos^2\theta \text{ { } \because \cos^2\theta + \sin^2\theta = 1}$$

$$x^2 + y^2 = a^2(\sin^2\theta + \sin^2\theta) + b^2(\cos^2\theta + \cos^2\theta)$$

$$x^2 + y^2 = a^2 + b^2$$

Question 13

Let $x = \frac{\sqrt{13} + \sqrt{11}}{\sqrt{13} - \sqrt{11}}$ and $y = \frac{1}{x}$, then the value of $3x^2 - 5xy + 3y^2$ is

A 1717

B 1771

C 1171

D 1177

Answer: A

Explanation:

$$x = \frac{\sqrt{13} + \sqrt{11}}{\sqrt{13} - \sqrt{11}} \text{ and } y = \frac{1}{x}$$

So, clearly from the above $xy = 1$

$$x + y = \frac{\sqrt{13} + \sqrt{11}}{\sqrt{13} - \sqrt{11}} + \frac{\sqrt{13} - \sqrt{11}}{\sqrt{13} + \sqrt{11}}$$

$$= \frac{(\sqrt{13} + \sqrt{11})^2 + (\sqrt{13} - \sqrt{11})^2}{13 - 11}$$

$$= \frac{13 + 11 + 2\sqrt{143} + 13 + 11 - 2\sqrt{143}}{2}$$

$$= \frac{48}{2}$$

$$= 24$$

So, $x + y = 24$

$$3x^2 - 5xy + 3y^2 = 3(x + y)^2 - 11xy$$

$$= 3(24)^2 - 11(1)$$

$$= 3 \times 576 - 11$$

$$= 1728 - 11$$

$$= 1717$$

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Question 14

If 64 buckets of water are removed from a cubical shaped water tank completely filled with water, $\frac{1}{3}$ of the tank remains filled with water. The length of each side of the tank is 1.2 m. Assuming that all buckets are of the same measures then the volume (in litres) of water contained by each bucket is

- A 16
- B 18
- C 12
- D 15

Answer: B

Explanation:

It is given that ,

$\frac{2}{3}$ of tank is emptied using 64 buckets ,

$$\frac{2}{3}V = 64 \text{ buckets}$$

$$V = 96 \text{ buckets}$$

Volume of each bucket

$$= \frac{1.2 \times 1.2 \times 1.2 \times 1000}{96} = 18 \text{ litres}$$

So , the answer would be option b)18

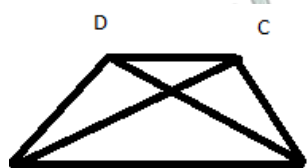
Question 15

In trapezium ABCD, $AB \parallel CD$ and $AB = 2CD$. Its diagonals intersect at O. If the area of $\triangle AOB = 84 \text{ cm}^2$, then the area of $\triangle COD$ is equal to

- A 42 cm^2
- B 21 cm^2
- C 72 cm^2
- D 26 cm^2

Answer: B

Explanation:



$$\frac{\text{area of } \triangle COD}{\text{area of } \triangle AOB} = \frac{CD^2}{AB^2}$$

$$\frac{\text{area of } \triangle COD}{84} = \left(\frac{1}{2}\right)^2 = \frac{1}{4}$$

$$\text{area of } \triangle COD = 21\text{cm}^2$$

So, the answer would be option b) 21cm^2

Question 16

Water tax is increased by 20% but its consumption is decreased by 20%. Then the increase or decrease in the expenditure of the money is

- A 5% decrease
- B 4% decrease
- C No change
- D 4% increase

Answer: B

Explanation:

Expenditure = Price \times Consumption

$$e = pc$$

When price is increased by 20% but its consumption is decreased by 20%,

$$p' = 1.2p$$

$$c' = .8c$$

$$e' = .96pc$$

$$\text{Decrease \% in expenditure} = \frac{.04pc}{pc} \times 100 = 4\%$$

So, the answer would be option b) 4% decrease

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Question 17

A number when divided by 361 gives a remainder 47. If the same number is divided by 19, the remainder obtained is

- A 1
- B 3
- C 9
- D 8

Answer: C

Explanation:

Let the number be N.

$$N = 361 \times q + 47, \text{ where } q \text{ is the quotient.}$$

$$N = 19^2 \times q + 47$$

First part is divisible by 19. Divide 47 by 19, you will get remainder as 9.

So, the answer would be option d) 9.

Question 18

If $\left(\frac{p^{-1}q^2}{p^3q^{-2}}\right) + \left(\frac{p^5q^{-3}}{p^{-2}q^3}\right)^{\frac{1}{3}} = p^a q^b$, then the value of $a + b$, where p and q are different positive primes, is

- A 1
- B 2
- C 0
- D -1

Answer: E

Explanation:

The second term will have p^7 raised to power $\frac{1}{3}$.

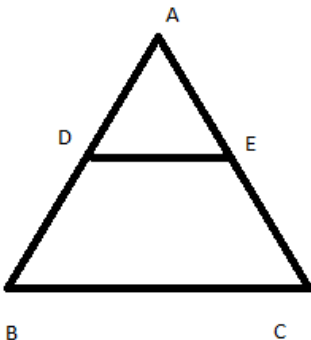
Question 19

In triangle ABC, DE || BC where D is a point on AB and E is a point on AC. DE divides the area of A ABC into two equal parts. Then DB : AB is equal to

- A $(\sqrt{2} + 1) : \sqrt{2}$
- B $\sqrt{2} : (\sqrt{2} + 1)$
- C $\sqrt{2} : (\sqrt{2} - 1)$
- D $(\sqrt{2} - 1) : \sqrt{2}$

Answer: D

Explanation:



DE || BC

DE divides the area of $\triangle ABC$ into two equal parts \Rightarrow D and E are midpoints of AB and AC.

$\triangle ADE$ and $\triangle ABC$ are similar.

$$\frac{\text{area of } \triangle ABC}{\text{area of } \triangle ADE} = \frac{AB^2}{AD^2}$$

$$\Rightarrow \frac{AB^2}{AD^2} = 2$$

$$\Rightarrow AB = \sqrt{2}AD$$

$$\Rightarrow AB = \sqrt{2}(AB - BD)$$

$$\Rightarrow (\sqrt{2} - 1)AB = \sqrt{2}BD$$

$$\Rightarrow \frac{BD}{AB} = \frac{(\sqrt{2}-1)}{\sqrt{2}}$$

So, the answer would be option d) $(\sqrt{2} - 1) : \sqrt{2}$

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Question 20

A and B have their monthly incomes in the ratio 8:S, While their monthly expenditures are in the ratio S : 3. If they have saved = 12,000 and & 10,000 monthly respectively, then the difference in their monthly income is

- A Rs.42,000
- B Rs.44,000
- C Rs.46,000
- D Rs.52,000

Answer: A

Explanation:

Given that A and B have their monthly incomes in the ratio & | 5S

Not sure what & represents. Please provide correct data.

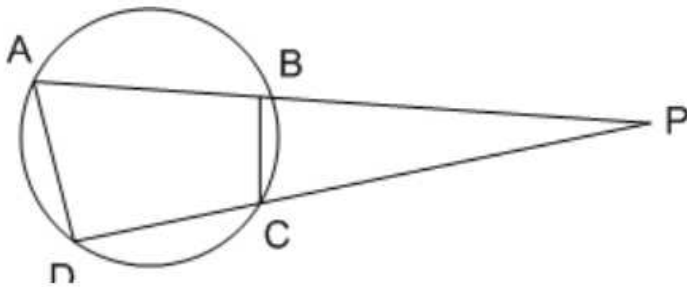
Question 21

ABCD is a cyclic quadrilateral, AB and DC when produced meet at P, if PA = 8 cm, PB = 6 cm, PC = 4 cm, then the length (in cm) of PD is

- A 6
- B 12
- C 8
- D 10

Answer: B

Explanation:



Given that, PA = 8 cm, PB = 6 cm, PC = 4 cm

As per tangent & secant rule,

$$PA \times PB = PD \times PC$$

$$\Rightarrow PD = \frac{8 \times 6}{4} = 12 \text{ cm}$$

Question 22

In a school there were 1554 students and the ratio of the number of the boys and girls was 4 : 3, After few days, 30 girls joined the school but few boys left; as a result the ratio of the boys and girls became 7 : 6. The number of boys who left the school is

- A 84
- B 76
- C 86

D 74

Answer: B

Explanation:

Given that, In a school there were 1554 students and the ratio of the number of the boys and girls was 4 : 3.

If we consider number of boys as x and number of girls as y

$$\Rightarrow x:y = 4:3$$

From the ratio and total number of students, we can determine that $x=888$ & $y=666$

If 30 girls joined the school and number of boys left is considered as "a"

$$\Rightarrow 888 - a : 666 + 30 = 7 : 6$$

$$\Rightarrow 888 - a = \frac{7}{6} \times 696$$

$$\Rightarrow 888 - a = 812$$

$$\Rightarrow a = 76$$

Therefore, Number of boys left the school are 76.

SSC CGL Important Questions PDF

Question 23

If $7\sin^2\theta + 3\cos^2\theta = 4$, then the value of $\tan\theta$ is (θ is acute)

A $\frac{1}{\sqrt{3}}$

B $\frac{1}{\sqrt{2}}$

C 1

D $\sqrt{3}$

Answer: A

Explanation:

$$\text{Given that } 7\sin^2\theta + 3\cos^2\theta = 4$$

$$\Rightarrow 3\sin^2\theta + 3\cos^2\theta + 4\sin^2\theta = 4$$

$$\Rightarrow 3(\sin^2\theta + \cos^2\theta) + 4\sin^2\theta = 4$$

$$\Rightarrow 3 + 4\sin^2\theta = 4$$

$$\Rightarrow 4\sin^2\theta = \frac{4}{3}$$

$$\Rightarrow \sin^2\theta = \frac{1}{3}$$

$$\Rightarrow \sin\theta = \frac{1}{\sqrt{3}}$$

$$\Rightarrow \theta = 30^\circ$$

$$\text{Therefore, } \tan 30^\circ = \frac{1}{\sqrt{3}}$$

Question 24

If $(Bx - 2y) : (2x + 3y) = 5 : 6$, then one of value of $\left(\frac{\sqrt[3]{x} + \sqrt[3]{y}}{\sqrt[3]{x} - \sqrt[3]{y}}\right)^2$ is?

- A 25
- B $\frac{1}{5}$
- C $\frac{1}{25}$
- D 5

Answer: A

Explanation:

value of b should be given .

Question 25

If $\tan A = n \tan B$ and $\sin A = m \sin B$, then the value of $\cos^2 A$ is

- A $\frac{m^2+1}{n^2+1}$
- B $\frac{m^2-1}{n^2-1}$
- C $\frac{m^2+1}{n^2-1}$
- D $\frac{m^2-1}{n^2+1}$

Answer: B

Explanation:

Given that $\tan A = n \tan B$ and $\sin A = m \sin B$ --- (1)

$$\Rightarrow \frac{\sin A}{\cos A} = n \frac{\sin B}{\cos B}$$

$$\Rightarrow \frac{m \sin B}{\cos A} = n \frac{\sin B}{\cos B}$$

$$\Rightarrow \frac{\cos A}{\cos B} = \frac{m}{n} \text{ --- (2)}$$

Squaring equation (1), we get

$$\Rightarrow \sin^2 A = m^2 \sin^2 B$$

$$\Rightarrow 1 - \cos^2 A = m^2(1 - \cos^2 B)$$

$$\Rightarrow \cos^2 B = \frac{m^2 - 1 + \cos^2 A}{m^2} \text{ --- (3)}$$

Squaring equation (2) and substituting equation (3) in equation (2), we get

$$\Rightarrow \cos^2 A = \left[\frac{m^2}{n^2} \right] \left[\frac{m^2 - 1 + \cos^2 A}{m^2} \right]$$

$$\Rightarrow n^2 \cos^2 A = m^2 - 1 + \cos^2 A$$

$$\Rightarrow \cos^2 A = \frac{m^2 - 1}{n^2 - 1}$$

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Question 26

In an office, 40% of the staff is female. 70% of the female staff and 50% of the male staff are married, The percentage of the unmarried staff in the office is

- A 42

- B 60
- C 54
- D 64

Answer: A

Explanation:

Here, let's consider total number of staff as 100.

Given that 40% of staff is female. i.e., female staff count=40

Therefore, male staff count=60

Given that, 70% of female staff is married. i.e., married female staff= $40 \times \frac{70}{100} = 28$

50% of male staff are married i.e., married male staff=30

Therefore, Unmarried staff = $100 - 30 - 28 = 42$. i.e., 42%

Question 27

In an examination average mark obtained by the girls of a class is 85 and the average mark obtained by the boys of the same class is 87. If the girls and boys are in the ratio 4 : 5, average marks of the whole class (approx.) is closest to

- A 86.4
- B 86.1
- C 85.9
- D 86.5

Answer: B

Explanation:

Given that, Average mark obtained by girls in a class = 85

and average mark obtained by boys in a class = 87

If number of boys & number of girls is considered as x & y respectively, given that $x:y=4:5 \Rightarrow x = \frac{4y}{5}$

Also, Sum of marks obtained by girls = $85x$ and sum of marks obtained by boys = $87y$

Therefore,

$$\text{Average of whole class} = \frac{85x + 87y}{x + y}$$

$$= \frac{85 \times \frac{4y}{5} + 87y}{\frac{4y}{5} + y}$$

$$= 86.1$$

Question 28

Articles are marked at a price which gives a profit of 25%. After allowing a certain discount the profit reduces to $12\frac{1}{2}\%$. The discount percent is

- A $12\frac{1}{2}\%$
- B 10%
- C 12%
- D 11.1%

Answer: B

Explanation:

Let the cost price be Rs.100.

So, the marked price will be Rs.125.

After allowing a certain discount the profit reduces to $12\frac{1}{2}\%$,
price would be Rs.112.5

$$\text{Discount percent offered} = \frac{12.5}{125} \times 100 = 10$$

So, the answer would be option b)10%.

General Science Notes for SSC CGL

Question 29

If $\sin A + \sin^2 A = 1$, then the value of $\cos^2 A + \cos^4 A$ is

A $\frac{2}{3}$

B 2

C $\frac{1}{2}$

D 1

Answer: D

Explanation:

Information provided in the question is not in a understandable format. Please review and provide correct data.

Question 30

A manufacturer fixes his selling price at 33% over the cost of production. If cost of production goes up by 12% and manufacturer raises his selling price by 10%, his percentage profit is

A 35

B $36\frac{5}{9}\%$

C $28\frac{3}{8}\%$

D $30\frac{5}{8}\%$

Answer: D

Explanation:

If we consider cost price as 100, then selling price is 133.

If cost price is increased by 12% and selling price is increased by 10%, then,

new cost price is 112 & new selling price is 143.3

$$\text{Percentage profit} = \frac{143.3 - 112}{112} \times 100$$

$$= \frac{31.3}{112}$$

$$= 30\frac{5}{8}\%$$

Question 31

A boat moves downstream at the rate of 1 km in $7\frac{1}{2}$ minutes and upstream at the rate of 5 km an hour, What is the speed (in km/hour) of the boat in the still water?

A 8

B 4

C $3\frac{1}{2}$

D $6\frac{1}{2}$

Answer: D

Explanation:

$$\text{Downstream speed} = \frac{15}{2 \times 60} = 8 \text{ km/hr}$$

$$\text{Upstream speed} = 5 \text{ km/hr}$$

$$\text{Speed of boat in still water} = \frac{8+5}{2} = 6.5 \text{ km/hr}$$

So, the answer would be option d) $6\frac{1}{2}$

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Question 32

The greatest number among 3^{50} , 4^{40} , 5^{30} , 6^{20} is

A 4^{40}

B 5^{30}

C 6^{20}

D 3^{50}

Answer: A

Explanation:

$$3^{50} = 243^{10}$$

$$4^{40} = 1024^{10}$$

$$5^{30} = 125^{10}$$

$$6^{20} = 36^{10}$$

So, the greatest would be 4^{40} .

So, the answer would be option a) 4^{40} .

Question 33

Give that the ratio of altitudes of two triangles is 4 : 5, ratio of their areas is 3 : 2. The ratio of their corresponding bases is

A 8:15

B 5:8

C 15:8

D 8:5

Answer: C

Explanation:

Given that ratio of altitudes of two triangles is 4:5

$$\frac{h_1}{h_2} = \frac{4}{5}$$

Also, Given that, ratio of areas of two triangles is 3:2

$$\frac{\frac{1}{2} \times b_1 \times h_1}{\frac{1}{2} \times b_2 \times h_2} = \frac{3}{2}$$

$$\frac{b_1 \times 4}{b_2 \times 5} = \frac{3}{2}$$

$$\frac{b_1}{b_2} = \frac{15}{8}$$

Therefore, ratios of the bases is 15:8

Question 34

If $\sec \theta - \tan \theta = \frac{1}{\sqrt{3}}$ then value of $\sec \theta \tan \theta$ is

A $\frac{2}{3}$

B $\frac{2}{\sqrt{3}}$

C $\frac{1}{\sqrt{3}}$

D $\frac{4}{\sqrt{3}}$

Answer: A

Explanation:

Given that $\sec \theta - \tan \theta = \frac{1}{\sqrt{3}} \rightarrow (1)$

We know that $\sec^2 \theta - \tan^2 \theta = 1$

$$\Rightarrow (\sec \theta - \tan \theta)(\sec \theta + \tan \theta) = 1$$

$$\Rightarrow \sec \theta + \tan \theta = \sqrt{3} \rightarrow (2)$$

Solving equations (1) and (2), we get

$$\sec \theta = \frac{2}{\sqrt{3}} \text{ and } \tan \theta = \frac{1}{\sqrt{3}}$$

$$\text{Therefore } \sec \theta \tan \theta = \frac{2}{3}$$

SSC CHSL Free Mock Test

Question 35

A man sells an article at 5% above its cost price. If he had bought it at 5% less than what he had paid for it and sold it at 2% less, he would have gained 10%. The cost price of the article is

A Rs.100

B Rs.300

C Rs.200

D Rs.400

Answer: D

Explanation:

Let the cost price be Rs.x

Then Selling price = Rs. 1.05 x

If he had bought it at 5% less than what he had paid for it and sold it at 2 less, he would have gained 10%,

new cost price = $.95x$

new selling price = $1.05x - 2$

$$\frac{1.05x - 2 - .95x}{.95x} \times 100 = 10$$

$x = 400$

So, the answer would be option d) Rs.400

Question 36

The value of $\frac{(0.67 \times 0.67 \times 0.67) \times (0.33 \times 0.33 \times 0.33)}{(0.67 \times 0.67) \div (0.67 \times 0.33) \div (0.33 \times 0.33)}$

- A 11
- B 0.34
- C 1.1
- D 3.4

Answer: B

Explanation:

Mathematical Operators provided in the question seems to be incorrect. Please review the question again and provide correct data.

Question 37

If $a + b = 1$, find the value of $a^3 + b^3 - ab - (a^2 - b^2)^2$

- A 0
- B 1
- C -1
- D 2

Answer: A

Explanation:

$$a^3 + b^3 - ab - (a^2 - b^2)^2$$

$$= (a + b)^3 - 3ab(a + b) - ab - [(a - b)(a + b)]^2$$

$$= 1 - 3ab - ab - (a - b)^2$$

$$= 1 - 4ab - (a^2 + b^2 - 2ab)$$

$$= 1 - 4ab - a^2 - b^2 + 2ab$$

$$= 1 - (a^2 + b^2 + 2ab)$$

$$= 1 - (a + b)^2$$

$$\Rightarrow 1 - 1 = 0$$

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Question 38

AB and CD are two parallel chords of a circle of lengths 10 cm and 4 cm respectively. If the chords are on the same side of the centre and the distance between them is 3 cm, then the diameter of the circle is

A $2\sqrt{29} \text{ cm}$

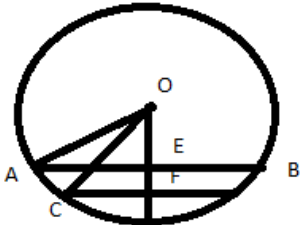
B $\sqrt{21} \text{ cm}$

C $2\sqrt{21} \text{ cm}$

D $\sqrt{29} \text{ cm}$

Answer: A

Explanation:



$OA = OC = \text{radius}$

OE and OF are perpendicular to AB and CD .

$AE = EB = 5\text{cm}$

$CF = CD = 2\text{cm}$

Let $OE = x$

In $\triangle OAE$,

$$OA^2 = AE^2 + OE^2$$

$$OA^2 = 5^2 + x^2$$

In $\triangle OCF$,

$$OC^2 = 2^2 + (x + 3)^2$$

$$5^2 + x^2 = 2^2 + (x + 3)^2$$

$$25 + x^2 = 4 + x^2 + 6x + 9$$

$$x = \frac{12}{6} = 2\text{cm}$$

$$OA^2 = 5^2 + x^2 = 25 + 4 = 29$$

$$OA = \sqrt{29}$$

$$\text{Diameter} = 2\sqrt{29}$$

So, the answer would be option b) $2\sqrt{29}\text{cm}$

Question 39

Let x be the least number, which when divided by 5, 6, 7 and 8 leaves a remainder 3 in each case but when divided by 9 leaves no remainder. The sum of digits of x is

A 22

B 21

C 18

D 24

Answer: C

Explanation:

Given that , Let x be the least number, which when divided by 5, 6, 7 and 8 leaves a remainder 3. Not sure what & represents.

Please provide correct data.

Question 40

Three science classes A, B and C take a Life Science test. The average score of class A is 83. The average score of class B is 76. The average score of class C is 85. The average score of class A and B is 79 and average score of class B and CG is 81. Then the average score of classes A, B and C is.

- A 80.5
- B 81.5
- C 80
- D 81

Answer: B

Explanation:

Given that average score of class A is 83. Let's consider number of students in class A as "x"

$$\Rightarrow \frac{\text{sum of scores of class A}}{x} = 83$$

$$\Rightarrow \text{sum of scores of class A} = 83x$$

Given that average score of class B is 76. Let's consider number of students in class B as "y"

$$\Rightarrow \frac{\text{sum of scores of class B}}{y} = 76$$

$$\Rightarrow \text{sum of scores of class B} = 76y$$

Given that average score of class C is 85. Let's consider number of students in class C as "z"

$$\Rightarrow \frac{\text{sum of scores of class C}}{z} = 85$$

$$\Rightarrow \text{sum of scores of class C} = 85z$$

Similarly from other given statements,

$$\frac{\text{sum of scores of classes A, B}}{x+y} = 79$$

$$\Rightarrow \frac{83x+76y}{x+y} = 79$$

$$\Rightarrow 83x+76y=79x+79y$$

$$\Rightarrow 4x=3y \Rightarrow x = \frac{3y}{4}$$

$$\text{and } \frac{\text{sum of scores of classes B, C}}{y+z} = 81$$

$$\Rightarrow \frac{76y+85z}{y+z} = 81$$

$$\Rightarrow 76y+85z=81y+81z$$

$$\Rightarrow 4z=5y \Rightarrow z = \frac{5y}{4}$$

Therefore, average score of classes A, B & C is

$$\frac{83x+76y+85z}{x+y+z} = \frac{83\left(\frac{3y}{4}\right)+76y+85\left(\frac{5y}{4}\right)}{\frac{3y}{4}+y+\frac{5y}{4}} = \frac{978}{12} = 81.5$$

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Question 41

Two blends of a commodity costing ₹35 and ₹40 per kg respectively are mixed in the ratio 2:3 by weight. If one-fifth of the mixture is sold at ₹46 per kg and the remaining at the rate of ₹55 per kg, the profit percent is

- A 50

- B 20
- C 30
- D 40

Answer: D

Explanation:

Let the amount for first blend be 2 kg and second blend be 3 kg.

$$\text{Total cost price} = 35 \times 2 + 3 \times 40 = 190$$

Now, 1 kg will be sold at Rs 46 and remaining 4 kg at 55, then total selling price will be

$$\text{Total selling price} = 46 \times 1 + 4 \times 55 = 266$$

$$\text{Profit} = 266 - 190 = 76$$

$$\text{Profit \%} = \frac{76}{190} \times 100 = 40$$

So, the answer would be option d)40.

Question 42

If $x^2 + y^2 + z^2 = xy + yx + zx$, then the value of $\frac{3x^4 + 7y^4 + 5z^4}{5x^2y^2 + 7y^2z^2 + 3z^2x^2}$

- A 1
- B 2
- C -1
- D 0

Answer: A

Explanation:

We know that if $x^2 + y^2 + z^2 = xy + yx + zx$, Then $x=y=z$

Therefore, substituting $x=y=z$ in given expression $\frac{3x^4 + 7y^4 + 5z^4}{5x^2y^2 + 7y^2z^2 + 3z^2x^2}$, we get

$$= \frac{15x^4}{15x^4}$$

$$= 1$$

Question 43

Ram sold two horses at the same price, In one he gets a profit 10% and in the other he gets a loss of 10%. Then Ram gets

- A no loss or profit
- B 1%profit
- C 2%loss
- D 1% loss

Answer: D

Explanation:

Shortcut Formula :In this kind of situation,

$$\text{There is always loss of } \frac{x^2}{100} = \frac{10^2}{100} = 1,$$

where $x = \text{Profit/loss \%}$

So, the answer would be option d) 1% loss

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Question 44

A and B can do a given piece of work in 8 days, Band C can do the same work in 12 days and A, B, C together complete it in 6 days. Number of days required to finish the work by A and C is

- A 8
- B 16
- C 24
- D 12

Answer: A

Explanation:

Given that A and B can do a given piece of work in 8 days. Not sure what & means. Please provide correct data.

Question 45

Pipe A can fill an empty tank in 6 hours and pipe B in 8 hours. If both the pipes are opened and after 2 hours pipe A is closed, how much time B will take to fill the remaining tank?

- A $2\frac{2}{5}$ hours
- B $7\frac{1}{2}$ hours
- C $2\frac{1}{3}$ hours
- D $3\frac{1}{3}$ hours

Answer: D

Explanation:

Given that Pipe B in 8 hours. Please provide correct data.

Question 46

There is a number consisting of two digits, the digit in the units place is twice that in the tens place and if 2 be subtracted from the sum of the digits, the difference is equal to $\frac{1}{6}$ th of the number. The number is

- A 26
- B 23
- C 25
- D 24

Answer: D

Explanation:

Let the two digit number be ab,

Where $ab = 10a + b$, and $b = 2*a$,

According to the Question,

$$a+b - 2 = \frac{1}{6}(10a+b)$$

Multiply both side by 6,

$$6a + 6b - 12 = 10a + b$$

$$5b = 4a + 12,$$

Subtracting $(b + 6a - 12)$ on both sides,

Substituting $b = 2*a$,

$$5(2a) = 4a + 12,$$

$$10a = 4a + 12,$$

Subtract $4a$ on both sides,

$$6a = 12,$$

Divide 6 on both sides,

$$a = 2,$$

$$b = 2*2 = 4,$$

Therefore, the number is 24

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Question 47

The value of

$$\cot 41^\circ \cdot \cot 42^\circ \cdot \cot 43^\circ \cdot \cot 44^\circ \cdot \cot 45^\circ \cdot \cot 46^\circ \cdot \cot 47^\circ \cdot \cot 48^\circ \cdot \cot 49^\circ$$

A 0

B 1

C $\frac{\sqrt{3}}{2}$

D $\frac{1}{\sqrt{2}}$

Answer: B

Question 48

A man purchases some oranges at the rate of 3 for 40 and the same quantity at 5 for £60. If he sells all the oranges at the rate of 3 for %50, find his gain or loss percent (to the nearest integer).

A 32% profit

B 34% loss

C 31% profit

D 33% profit

Answer: A

Question 49

The perimeter of a rhombus is 60 cm and one of its diagonals is 24 cm. The area (in sq.cm) of the rhombus is

A 206

B 432

C 108

D 216

Answer: D

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Question 50

A sum of money is paid back in two annual instalments of ₹17,640 each, allowing 5% compound interest compounded annually. The sum borrowed was

- A ₹32400
- B ₹32800
- C ₹32000
- D ₹32200

Answer: B

Question 51

A man starts from a place P and reaches the place Q in 7 hours. He travels $\frac{1}{4}$ th of the distance at 10 km/hour and the remaining distance at 12 km/hour. The distance, in kilometre, between P and Q is

- A 72
- B 80
- C 90
- D 70

Answer: B

Explanation:

let the total distance be $4x$ km

$$T = D/S$$

as per question ,

$$(x/10) + (3x/12) = 7$$

$$(x/10) + (x/4) = 7$$

$$(2x+5x)/20 = 7$$

$$x = (7 \cdot 20) / 7$$

$$x = 20 \text{ km}$$

$$\text{total dist. traveled} = 4x = 4 \cdot 20 = 80 \text{ km}$$

Question 52

If O is the circumcentre of a triangle ABC lying inside the triangle, then $\angle AOC$ is equal to

- A 110°
- B 90°
- C 120°
- D 60°

Answer: B

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Question 53

The simple interest on a sum of money is $\frac{8}{25}$ of the sum. If the number of years is numerically half the rate percent per annum, then the rate percent per annum is

- A 8
- B 5
- C $\frac{1}{64}$
- D 4

Answer: A

Explanation:

given,

Time = $\frac{R}{2}$, Rate = R

Now $8 = \frac{(25 \times R \times R)}{100 \times 2}$

As, $SI = \frac{(P \times R \times T)}{100}$

$8 = \frac{(R^2)}{(4 \times 2)} = 64 = R^2$

$R = 8\%$

Question 54

In $\triangle ABC$, $\angle BAC = 90^\circ$ and $AD \perp BC$. If $BD = 3$ cm and $CD = 4$ cm then the length (in cms) of AD is

- A $2\sqrt{3}$
- B 6
- C 3.5
- D 5

Answer: A

Question 55

Three glasses of equal volume contains acid mixed with water, The ratio of acid and water are 2:3, 3:4 and 4:5 respectively. Contents of these glasses are poured in a large vessel. The ratio of acid and water in the large vessel is

- A 407:560
- B 417:564
- C 411:540
- D 401:544

Answer: D

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Question 56

If A : B = 2 : 3 and B : C = 3 : 7 then A : B : C = ?

- A 4:8:9
- B 5:8:9
- C 4:10:9
- D 5:10:9

Answer: D

Question 57

The numerical values of the volume and the area of the lateral surface of a right circular cone are equal. If the height of the cone be h and radius, be r, then the value of $\frac{1}{h^2} + \frac{1}{r^2}$ is

- A 3/1
- B 9/1
- C 1/9
- D 1/3

Answer: C

Question 58

Two places P and Q are 162 km apart. A train leaves P for Q and simultaneously another train leaves Q for P. They meet at the end of 6 hours. If the former train travels 8 km/hour faster than the other, then speed of train from Q is

- A $9\frac{1}{2}$ km/hr
- B $10\frac{5}{6}$ km/hr
- C $12\frac{5}{6}$ km/hr
- D $15\frac{1}{2}$ km/hr
- E $8\frac{1}{2}$ km/hr

Answer: A

Explanation:

Let the speed of the train from Q be X km/hr
Then the speed of the train from P is (X+8) km/hr
They meet each other at M after 6 hours travel
PM + MQ = 162 km
 $6 (X + 8) + 6X = 162$ km
 $12X + 48 = 162$
 $12X = 162 - 48$
 $12X = 114$
 $X = 114/12$
 $9\frac{1}{2}$ km/hr

Question 59

If $\tan\theta - \cot\theta = 0$ and θ is positive acute angle then the value of $\frac{\tan(\theta+15)}{\tan(\theta-15)}$

- A $\frac{1}{3}$
- B $\sqrt{3}$
- C $\frac{1}{\sqrt{3}}$
- D 3

Answer: D

Question 60

The portion of a ditch 48 m long, 16.5 m wide and 4 m deep that can be filled with stones and earth available during excavation of a tunnel, cylindrical in shape, of a diameter 4 m and length 56 m is

- A $\frac{1}{9}$ part
- B $\frac{2}{9}$ part
- C $\frac{1}{2}$ part
- D $\frac{1}{4}$ part

Answer: B

Explanation:

Volume of the earth dugout as a tunnel

$$= \pi r^2 h = \frac{22}{7} \times 2 \times 2 \times 56 = 704 \text{ m}^3$$

$$\text{Volume of the ditch} = 48 \times \frac{33}{2} \times 4$$

$$= 24 \times 33 \times 4 = 3168$$

$$\text{Therefore, Part required} = \frac{704}{3168} = \frac{2}{9}$$

Question 61

If $(x^3 - y^3) : (x^2 + xy + y^2) = 5:1$ and $(x^2 - y^2) : (x - y) = 7:1$ then the value of $2x:3y$ equals

- A 2:3
- B 4:1
- C 4:3
- D 3:2

Answer: B

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Question 62

If $x = a^{\frac{1}{2}} + a^{-\frac{1}{2}}$, $y = a^{\frac{1}{2}} - a^{-\frac{1}{2}}$ then the value of $(x^4 - x^2y^2 - 1) + (y^4 - x^2y^2 + 1)$

- A 16

B 14

C 12

D 13

Answer: B

Question 63

The marked price of a tape recorder is \$12,600. A festival discount of 5% is allowed on it. Further for cash payment, a second discount of 2% is given. The cash payment, in rupees, that is to be made for buying it is

A 11,780.60

B 11,073.60

C 11,703.60

D 11,370.60

Answer: A

Question 64

A man walks at the rate of S km/hour, he misses a train by 7 minutes. However, if he walks at the rate of G km/hour, he reaches the station 5 minutes before the arrival of the train. The distance covered by him to reach the station is

A 6 km

B 7 km

C 4 km

D 6.25 km

Answer: A

Explanation:

Lets assume the required distance = x km.

Difference in the times taken at two speeds = 12 mins = $\frac{1}{5}$ hr.

Therefore $(\frac{x}{5} - \frac{x}{6}) = \frac{1}{5}$ or $(6x - 5x) = 6$ or $x = 6$ km.

So required distance = 6 km

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Question 65

If $x - \sqrt{3} - \sqrt{2} = 0$ and $y - \sqrt{3} + \sqrt{2} = 0$ then the value of $(x^3 - 20\sqrt{2}) - (y^3 + 2\sqrt{2})$

A 3

B 2

C 0

D 1

Answer: C

Question 66

The radii of two solid iron spheres are 1 cm and 6 cm respectively. A hollow sphere is made by melting the two spheres. If the external radius of the hollow sphere is 3 cm, then its thickness (in cm) is

- A 0.5
- B 2
- C 1.5
- D 1

Answer: D

Question 67

There is a wooden sphere of radius $6\sqrt{3}$ cm. The surface area of the largest possible cube cut out from the sphere will be

- A $464\sqrt{3} \text{ cm}^2$
- B $646\sqrt{3} \text{ cm}^2$
- C 462 cm^2
- D 864 cm^2

Answer: D

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Question 68

If 60% of A = 30% of B, B = 40% of C and C = x% of A, then value of x is

- A 200
- B 500
- C 300
- D 800

Answer: B

Question 69

A and B can do a piece of work in 30 and 36 days respectively. They began the work together but A leaves after some days and B finished the remaining work in 25 days. After how many days did A leave?

- A 6 days
- B 5 days
- C 11 days
- D 10 days

Answer: B

Question 70

A sum of money placed at compound interest doubles itself in 5 years. It will amount to eight times itself at the same rate of interest in

- A 10
- B 20
- C 12
- D 15

Answer: D

Explanation:

Formula for this is $n_2 = n_1 \left(\frac{t_2}{t_1}\right)^2$

n_2 = Number of times

t = years

$$n_2 = 8 = 2^3$$

$$n_1 = 2 \text{ (doubles.....given)}$$

$$t_2 = ?$$

$$t_1 = 5$$

Applying this in formula

$$2^3 = 2^{\left(\frac{t_2}{5}\right)^2}$$

$$3 = \frac{t_2}{5}$$

$$t_2 = 15$$

General Science Notes for SSC CGL

Question 71

Quadrilateral ABCD is circumscribed about a circle. If the lengths of AB, BC, CD are 7 cm, 8.5 cm and 9.2 cm respectively, then the length (in cm) of DA is

- A 16.2
- B 7.2
- C 7.7
- D 10.7

Answer: C

Explanation:

$$AB + CD = BC + DA \text{ (Property)}$$

$$7 + 9.2 = x + 8.5$$

$$16.2 = x + 8.5$$

$$x = 7.7$$

Question 72

A right prism has a triangular base whose sides are 13 cm, 20 cm and 21 cm. If the altitude of the prism is 9 cm, then its volume is

- A 1134 cm^3

- B 1314 cm^3
- C 1413 cm^3
- D 1143 cm^3

Answer: A

Question 73

300 grams of sugar solution has 40% of sugar in it. How much sugar should be added to make it 50% in the solution?

- A 60 gms
- B 10 gms
- C 80 gms
- D 40 gms

Answer: A

Explanation:

Sugar Solution = 300 kg.

40% Sugar = $(40 \times 300) / 100 = 120 \text{ kg}$

Let the sugar added = x kg.

$120 + x = 180 \text{ kg}$

$x = 60 \text{ kg}$.

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Question 74

The area of isosceles trapezium is 176 cm^2 and the height h is $\frac{2}{11}$ th of the sum of its parallel sides if the ratio of the length of the parallel sides is 4:7, then the length of a diagonal (in cm) is

- A $2\sqrt{137}$
- B $\sqrt{137}$
- C 24
- D 28

Answer: A

Explanation:

Area = $12(\text{sum of parallel sides}) \times \text{distance between them}$

$12(7x + 4x) \times 2x = 176$

$11x^2 = 176 \times 216$

$x = 4$

$AB = 7 \times 4 = 28 \text{ cm}$

$CD = 4 \times 4 = 16 \text{ cm}$

$CM = 2 \times 4 = 8 \text{ cm}$

$AM = AN + NM$

$AN + 16$

$$6+16=22$$

$$(AN=BM \Rightarrow 12/2=6)$$

$$AC^2=CM^2+AM^2$$

$$AC^2=8^2+22^2$$

$$AC = \sqrt{64+484} = \sqrt{548} = 2\sqrt{137}$$

Question 75

A and B are centres of two circles of radii 11 cm and 6 cm, respectively. PQ is a direct common tangent to the circles. If $\overline{AB} = 13$ cm, then length of \overline{PQ} will be

- A 8.5 cm
- B 12 cm
- C 13 cm
- D 17 cm

Answer: B

Question 76

A, B and C can do work separately in 16, 32 and 48 days respectively. They started the work together but B leaving off & days and C six days before the completion of the work. In what time is the work finished?

- A 12
- B 10
- C 14
- D 9

Answer: A

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Question 77

AD is perpendicular to the internal bisector of $\angle ABC$ of $\triangle ABC$. DE is drawn through D and parallel to BC to meet AC at E. If the length of AC is 12 cm, then the length of AE (in cm) is

- A 3
- B 6
- C 8
- D 4

Answer: B

Explanation:

$$\angle ABD = \angle MBD = ? \text{ (angle bisector)}$$

$$BD \perp AM$$

$$\angle BDA = \angle BDM = 90^\circ$$

It happens only in equilateral and isosceles triangle

AD=DM

i.e. AD=AM/2

Given DE || BC

From Thales theorem

E will be mid point of AC.

AC=12cm.

So,

AE=6cm

Question 78

The average of five consecutive positive integers is n, If the next two integers are also included, the average of all these integers will

- A increase by 1
- B remains the same
- C increase by 2
- D increase by 1.5

Answer: A

Question 79

If $a^{-\frac{1}{a-3}} = 5$ then the value of $(a-3)^3 - (a-3)^{\frac{1}{a-3}}$

- A 14
- B 5
- C 2
- D 7

Answer: A

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Question 80

.A plane divides a right circular cone into two parts of equal volume. If the plane is parallel to the base, then the ratio, in which the height of the cone is divided, is

- A $1 : \sqrt[3]{2}$
- B $1 : \sqrt{2}$
- C $1 : \sqrt[3]{2} - 1$
- D $1 : \sqrt[3]{2} + 1$

Answer: C

Question 81

Let x be the smallest number, which when added to 2000 makes the resulting number divisible by 12, 16, 18 and 21. The sum of the digits of x is

- A 4
- B 7
- C 6
- D 5

Answer: B

Explanation:

L.C.M. of 12,16,18,21 is 1008

then multiply by 2 = $1008 \times 2 = 2016$

sum of the number of 16 is $1+6=7$

Question 82

The diameter of each wheel of a car is 70 cm. If each wheel rotates 400 times per minute, then the speed of the car(in km/hr)is

- A 52.8
- B 0.528
- C 528
- D 5.28

Answer: A

Explanation:

Circumference of wheel = $2 \times \pi \times r$

$$= (2 \times 3.14 \times 70) / 2 = 220 \text{ cm}$$

Speed per hour

$$= (220 \times 400 \times 60) / 1000 \times 100 = 52.8 \text{ km/h}$$

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Question 83

The average age of 30 students of a class is 14 years 4 months. After admission of 5 new students in the class the average becomes 13 years 9 months. The youngest one of the five new students is 9 years 11 months old. The average age of the remaining 4 new students is

- A 13 years 6 months
- B 10 years 4 months
- C 11 years 2 months
- D 12 years 4 months

Answer: B

Explanation:

According to the question,

$$\text{Total age of 30 students} = 30 \times (14 \text{ years } 4 \text{ months}) = 30 \times 1413$$

$$= 30 \times 433 = 430 \text{ years}$$

$$\text{Total age of } (30 + 5) \text{ students} = 35 \text{ (13 years 9 months)}$$

$$= 35 \times 1334 = 19254 \text{ years}$$

$$\text{Total age of 5 students} = 19254 - 430$$

$$= 2054 = 51 \text{ years 3 months}$$

$$\text{One of the new five student is} = 9 \text{ years 11 month old}$$

$$\text{Remaining 4 students age} = 41 \text{ years 4 months}$$

Question 84

P and Q together can do a job in 6 days. Q and R can finish the same job in $6\frac{6}{7}$ days. P started the work and worked for 3 days. Q and R continued for 6 days. Then the difference of days in which R and P can complete the job is

A 8

B 12

C 10

D 15

Answer: C

Question 85

Telegraph post is bent at a point above the ground due to storm. Its top just touches the ground at a distance of $10\sqrt{3}$ m from its foot and makes an angle of 30° with the horizontal. Then height (in metres) of the telegraph post is

A 24

B 20

C 25

D 30

Answer: D

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Question 86

If $5\cos\theta + 12\sin\theta = 13$, $0 < \theta < 90^\circ$ then value of $\sin\theta$

A $\frac{12}{13}$

B $\frac{5}{13}$

C $\frac{12}{13}$

D $\frac{6}{13}$

Answer: C

Question 87

if $\frac{1}{a+b} = \frac{1}{b+c} = \frac{1}{c+a}$ where as $a \neq b \neq c \neq 0$ then the value of $a^2b^2c^2$ is

- A -1
- B 1
- C abc
- D 0

Answer: B

Question 88

The H.C.F and L.C.M of two numbers are 21 and 84 respectively. If the ratio of the two numbers is 1: 4, then the larger of the two numbers is

- A 48
- B 108
- C 12
- D 84

Answer: D

Explanation:

Let the numbers be $x, 4x$.

given,

HCF=21

LCM=84

We know that , $LCM \times HCF = 1^{st} \text{ number} \times 2^{nd} \text{ number}$

$$84 \times 21 = x \times 4x$$

$$1764 = 4x^2$$

$$1764/4 = x^2$$

$$441 = x^2$$

$$x=21$$

therefore one number is 21 and other is $84(21 \times 4)$.

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Question 89

If 90 men can do a certain job in 16 days, working 12 hours/day, then the part of that work which can be completed by 70 men in 24 days, working 8 hours/day is

- A $\frac{2}{3}$
- B $\frac{7}{9}$
- C $\frac{1}{3}$
- D $\frac{5}{8}$

Answer: B

Question 90

A sum of 7,930 is divided into 3 parts and given on loan at 5% simple interest to A, B and C for 2,3 and 4 years respectively. If the amounts of all three are equal after their respective periods of loan, then the A received a loan of

- A Rs.2750
- B Rs.2800
- C Rs.2760
- D Rs.3050

Answer: C

Explanation:

given ,

$$A + \frac{(A \times 5 \times 2)}{100} = B + \frac{(B \times 5 \times 3)}{100} = C + \frac{(C \times 5 \times 4)}{100}$$

$$110A = 115B = 120C$$

$$22A = 23B = 24C$$

Ratio of amount(by using L.C.M. of 22, 23 and 24)

$$276 : 264 : 253$$

$$A's \text{ loan} = \frac{276}{793} \times 7930 = \text{Rs. } 2760$$

Question 91

The value of $(\operatorname{cosec} a - \sin a)(\operatorname{sec} a - \cos a)(\tan a + \cot a)$

- A 4
- B 2
- C 1
- D 6

Answer: C

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Question 92

There would be a 10% loss, if rice is sold at RS.54 per kg. To earn a profit of 20%, the price of rice per kg will be

- A Rs.65
- B Rs.63
- C Rs.70
- D Rs.72

Answer: D

Question 93

If a hemisphere is melted and four spheres of equal volume are made, the radius of each sphere will be equal to

- A radius of the hemisphere
- B $\frac{1}{6}$ th of the radius of the hemisphere
- C $\frac{1}{2}$ of the radius of the hemisphere

D $\frac{1}{4}$ th of the radius of the hemisphere

Answer: C

Question 94

60 kg of an alloy A is mixed with 100 kg of alloy B. If alloy A has lead and tin in the ratio 3 : 2 and alloy B has tin and copper in the ratio 1 : 4, the amount of tin in the new alloy is

A 53 kg

B 80 kg

C 44 kg

D 24 kg

Answer: C

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Question 95

Base of a right pyramid is a square of side 10cm. If the height of the pyramid is 12cm, then its total surface area is

A 260cm^2

B 460cm^2

C 400cm^2

D 360cm^2

Answer: D

Explanation:

Area of base = $10 \times 10 = 100\text{cm}^2$

Area of 4 Faces

$= (12 \times \text{Base} \times \text{slant height}) \times 4$

$(12 \times 10 \times 13) \times 4$ [Slant height = $\sqrt{(12^2 + 5^2)} = \sqrt{169} = 13$]

$= (64 \times 4) = 260$

Total Surface area

$260 + 100$

360cm^2

Question 96

If a shopkeeper wants to give 20% discount on toy, he has to sell it for RS.300. If he sells it at RS. 7405, then his gain percentage

A 6%

B 4%

C 8%

D 5%

Answer: C

Question 97

The unit digit in the product $(2467)^{153} \times (841)^{72}$ is

- A 1
- B 3
- C 7
- D 9

Answer: C

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Question 98

The interior angle of a regular polygon exceeds its exterior angle by 108° , The number of sides of the polygon is

- A 10
- B 16
- C 14
- D 12

Answer: A

Explanation:

Let the exterior angle be x

given, the interior angle of a regular polygon exceeds its exterior angle by 108° .

So, interior angle = $x + 108$

as, the sum of interior angle and exterior angle = 180°

So,

Hence, polygon has 10 sides

Question 99

The value of $4^{-1 + \frac{1}{3} + \frac{1}{5} + \frac{1}{2} + \frac{1}{4}}$ is

- A $\frac{1}{8}$
- B $\frac{1}{64}$
- C $\frac{1}{16}$
- D $\frac{1}{32}$

Answer: A

Question 100

The centroid of a $\triangle ABC$ is G. The area of $\triangle abc$ is 50cm^2 , The area of $\triangle GBC$ is

- A 40cm^2
- B 30cm^2
- C 20cm^2
- D 10cm^2

Answer: C

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