SSC CGL Maths Questions and Answers PDF

Instructions

For the following questions answer them individually

Question 1

The greatest number, which when subtracted from 5834, gives a number exactly divisible by each of 20, 28, 32 and 35, is

A 1120

B 4714

C 5200

D 5600

Answer: B

Explanation:

Given: Numbers- First = 5834

Second = x (Suppose)

And number (5834 - x) is divisible by each of 20,28,32,35

Let's say it is y

Hence 5834 - x = y

or x = 5834 - y

Now for x to be greatest y should be least

hence y should be least common multiple of 20,28,32,35

y = 1120

now x = 5834 - 1120

x = 4714

Question 2

A number, when divided by 114, leaves remainder 21. If the same number is divided by 19, then the remainder will be

A 1

B 2

C 7

D 17

Answer: B

Explanation:

Let the given number be x

Let a be the quotient when x is divided by 114

So $\frac{x}{114}$ = a $\frac{21}{114}$

so x = 114a + 21

when x is divided by 19 it can be written as

$\frac{x}{19} = \frac{114a+21}{19}$

114 is divisible by 19 and 21 leaves a remainder of 2.

Question 3

A manufacturer marked an article at Rs. 50 and sold it allowing 20% discount. If his profit was 25%, then the cost price of the article was

A Rs. 40

B Rs. 35

C Rs. 32

D Rs. 30

Answer: C

Explanation:
Given: Marked Price = 50
Discount = 20%of 50 = 50×0.5 = 10
Hence sold price = 50 - 10 = 40
Let's say cost price is x
Profit = 25% of x (Always remember profit and loss applicable only on cost price) = $\frac{x}{4}$
Hence sold price will be $x + \frac{x}{4} = \frac{5x}{4}$
or $\frac{5x}{4}$ = 40
x = 32

Question 4

At what rate per cent per annum will a sum of Rs. 1,000 amount to Rs. 1,102.50 in 2 years at compound interest ?

A 5

B 5.5

C 6

D 6.5

Answer: A

Explanation:
Let's say rate is r
hence $1000 \times (1 + \frac{r}{100})^2$ = 1102.5
now on solving the we will get r = 5

Question 5

In how many years will a sum of Rs. 800 at 10% per annum compound interest, compounded semiannually becomes Rs. 926.10 ?

A $1\frac{1}{2}$

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

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

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

Answer: A

Explanation:
When we are compounding it semiannually its rate becomes 5% and number of years will 2n
so for compound interest:
926.10=$800 \times (1 + \frac{10}{100})^{2n}$
solve for n.

Question 6

A copper wire of length 36 m and diameter 2 mm is melted to form a sphere. The radius of the sphere (in cm) is:

A 2.5

B 3

C 3.5

D 4

Answer: B

Explanation:
since we know volume will remain same while melting
$\pi r_1^2 h = \frac{4}{3}\pi r_2^3$
where r_1 is radius of cylinderical wire and r_2 is radius of sphere and h is length of wire
putting values we will get r_2 = 3 cm.

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Question 7

$$\sqrt{8+\sqrt{57+\sqrt{38+\sqrt{108+\sqrt{169}}}}}$$

A 4

B 6

C 8

D 10

Answer: A

Explanation:
Start from the root of 169 then second root will reduce to 11, thrid root will reduce to 7, fourth root will reduce to 8, and finally it reduce to value 4

Question 8

The unit digit in the product 122^{173} is

A 2

B 4

C 6

D 8

Answer: A

Explanation:
As we know a number with unit digit 2 have repeating cycle of 2,4,8,6 after every fourth power
as power is 173 or (172+1) where till 172 , 43rd cycle will get complete and next unit digit will be 2.

Question 9

A copper wire is bent in the form of an equilateral triangle, and has an area $121\sqrt{3}$ cm^2. If the same wire is bent into the form of a circle, the area(in cm^2) enclosed by the wire in(Take $\pi = \frac{22}{7}$)

A 364.5

B 693.5

C 346.5

D 639.5

Answer: C

Explanation:

Area of equilateral triangle is $\frac{\sqrt{3}}{4}a^2$ where a is side of triangle
which is equals to $121\sqrt{3}$
or a = 22 and whole length of wire will be 66
from here when it is bend to make a circle, circumference will be $2\pi r$ = 66
r = 10.5
hence area of circle will be πr^2 = 346.5

Question 10

At present, the ratio of the ages of Maya and Chhaya is 6:5 and fifteen years from now, the ratio will get changed to 9:8. Maya's present age is

A 21 years

B 24 years

C 30 years

D 40 years

Answer: C

Explanation:

Let's say maya's age is $6x$ and chaya's age is $5x$.
after 15 years ages will be $6x + 15$ and $5x + 15$.
New ratio will be $\frac{6x+15}{5x+15} = \frac{9}{8}$.
After solving above equation we will get x equals to 5
So maya's age will be 30.

Question 11

Which one of the following will completely divide $5^{71} + 5^{72} + 5^{73}$?

A 150

B 160

C 155

D 30

Answer: C

Explanation:
Among all options only option C has unit digit 5, and in given equation unit digit will also be 5.
So only 155 can divide the given equation completely.

Question 12

A student was asked to divide a number by 6 and add 12 to the quotient. He, however, first added 12 to the number and then divided it by 6, getting 112 as the answer. The correct answer should have been

A 124

B 122

C 118

D 114

Answer: B

Explanation:
Let's say number is N
So according to student result is $112 = \frac{N+12}{6}$
or N = 660
Correct answer will be = $\frac{660}{6} + 12 = 110 + 12 = 122$

Question 13

The difference between the compound interest and simple interest for the amount Rs. 5,000 in 2 years is Rs.32. The rate of interest is

A 5%

B 8%

C 10%

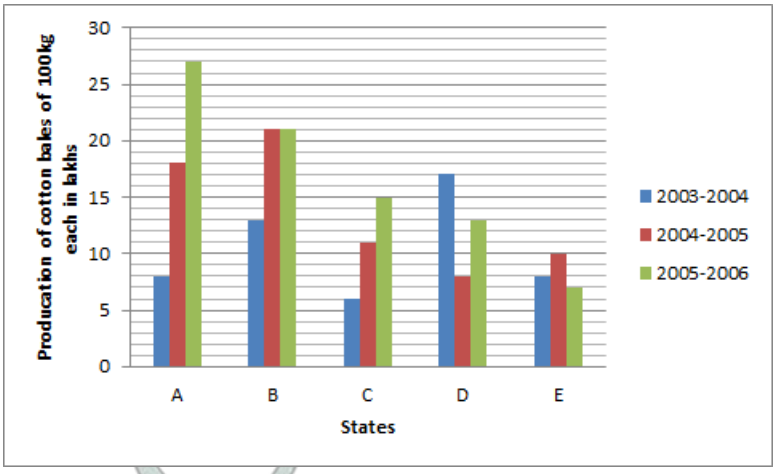
D 12%

Answer: B

Explanation:
Difference between compound interest and simple interest for 2 years will be
= $(P((1+\frac{r}{100})^2) - P) - 2P\frac{r}{100} = 32$ (where P is principal amount 5000 and r is rate)
after solving above equation we will get r = 8%

Instructions

Directions : The following graph shows the production of cotton bales of 100 kg each in lakhs by different states A, B, C, D and E over the years. Study the graph and answer the following Questions.



Question 14

In which State(s) is there a steady increase in the production of cotton during the given period?

A A and B

B B and D

C A and C

D D and E

Answer: C

Explanation:
Only in A and C there is a steady increment in production of cotton as in D and E , It is decresed and in B production is equal for two years. Hence answer will be C).

Instructions
For the following questions answer them individually

Question 15

If $x = 1 + \sqrt{2} + \sqrt{3}$, then the value of $(2x^4 - 8x^3 - 5x^2 + 26x - 28)$ is __?

A $6\sqrt{6}$

B 0

C $3\sqrt{6}$

D $2\sqrt{6}$

Answer: A

Explanation:
x = 1+ $\sqrt{2} + \sqrt{3}$
$(x-1)^2 = (\sqrt{2} + \sqrt{3})^2$
$x^2 + 1 - 2x = 5 + 2\sqrt{6}$
$x^2 - 2x = 4 + 2\sqrt{6}$ (eq. (1))
$(x^2 - 2x)^2 = x^4 + 4x^2 - 4x^3 = 40 + 16\sqrt{6}$ eq (2)
Now in $2x^4 - 8x^3 - 5x^2 + 26x - 28$
or $2(x^4 - 4x^3) - 5x^2 + 26x - 28$ (putting values from eq (1) and eq (2))
After solving we will get it reduced to $6\sqrt{6}$