Mock Test 7

Quantitative Aptitude Set-7

Question 1

Kapre is standing 1500 meters away from the base of a tree such that his line of sight towards the top of the tree makes an angle of 30 degrees with the ground. Suddenly, the tree starts growing at 5 meters per second. Kapre starts running towards the tree at a speed of 10 meters per second. After how many seconds does his angle of sight towards the top of the tree make 60 degrees with the ground?

A) (1200 − 200√3)/11
B) (1200 + 200√3)/11
C) (1200 − 200√3)/13
D) (1200 + 200√3)/13

Question 2

A rhombus of side 8 cm has an angle equal to the external angle of a regular hexagon. Find the area of the rhombus.

A) 16√3 cm²
B) 48√3 cm²
C) 24√3 cm²
D) 32√3 cm²

Question 3

Find the remainder when $\frac{(109)^{32^{06}}}{13}$

A) 7
B) 5
C) 1
D) 3

Question 4

Find the number of integer solutions satisfying the equation.

$|3^x - 1| + |9 - 3^x| < 8.$

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

Question 5

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An alloy of steel contains 3 different grades of iron. The first alloy has the 3 grades in the ratio 5:3:6, and the second alloy has them in the ratio 2:3:1. If the two alloys are mixed and the final ratio of 3 grades of iron is x:3:5, find x, if the weight of the first alloy is 280 kgs.

A) 22/3
B) 25/3
C) 22/5
D) 25/4

Question 6

There are 9 points which form a nonagon. 3 points are chosen at random. What is the probability that they form 2 sides of the nonagon?

A) 5/84
B) 1/28
C) 1/56
D) 3/28

Question 7

There are three friends: Aman, Bablu and Charan. Aman's age is one-third of that of Bablu, and Bablu's age is twice that of Charan. If the average age of Aman and Bablu is two less than the average age of Bablu and Charan, what is the sum of the ages of all three friends?

A) 42
B) 44
C) 48
D) 46

Question 8

There are 4 stations on a rectangular railway track: P, Q, R, and S. Two trains, A and B, run round trips on this track. Train A is thrice as fast as Train B. On a particular day, Train A starts from station P in a clockwise direction, and Train B starts from station R in an anti-clockwise direction. After completing 6 round trips, Train A arrives at station Q at the same time as Train B arrives there after completing 2 round trips. Find the ratio of the length and breadth of the railway track.

A) 3:1
B) 5:2
C) 4:3
D) 7:2

Question 9

Ram and Shyam participated in a 1000-metre marathon race, in which Ram could give Shyam a head start of 150 metres, and they finished the race at the same time. Similarly, in a 1500-metre marathon race, Shyam can give Mohan a head start of 200 metres, and they complete the race simultaneously. Who will win a 3000-metre marathon between Ram and Mohan, and by how much distance?

A) Ram wins by 450 metres
B) Mohan wins by 540 metres
C) Ram wins by 790 metres
D) Mohan wins by 970 metres

Question 10

Mr. Khanna owns an electronics shop. To boost his sales, he decided to offer a 30% discount on each TV. Additionally, he offered one free TV for every three TVs purchased to clear out his stock. Find the price above the cost price at which the TV was marked (in percentage) if he made an overall profit of 32% in selling the entire stock of TVs.

A) 158.2%
B) 155%
C) 151.4%
D) 149.2%

Question 11

Residents of Isthara were provided with four different types of newspapers, ensuring that each resident received at least one newspaper. Among the residents, 60% received Deccan Chronicles, 65% received Indian Express, 70% received Hindustan Times, and 75% received The Hindu. Furthermore, it is known that 20% of the residents received precisely one newspaper. What is the highest possible percentage of residents who received exactly three types of newspapers?

A) 60%
B) 65%
C) 70%
D) 75%

Question 12

A is one-fifth as efficient as B, and C is one-sixth as efficient as B. To complete a project, B initially works for n days, and then A and C work together for $n + 4$ days. A will complete the remaining 30% of the work in 9 days. Which combination of A, B, and C will complete the work in $n + 8$ days?

A) A and B work for three days; only C works for four days. Finally, A and C work for five days.
B) B works for four days, and then A and C work for five days. Finally, only C works for one day.
C) A works for four days, and B and C work for five days. Finally, only B works for one day.
D) A and C work for three days, then only B works for four days. Finally, A and C work for five days.

Question 13

In an Arithmetic Progression, the n^{th} term of the series is p and the $(2n-1)^{th}$ term of the series is q. Which of the following represents the $(4n-3)^{th}$ term of the series?

A) 2p − 3q
B) 3p − 2q
C) 3q − 2p
D) 2q − 3p

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Question 14

Find the sum of integral values of 'x' which satisfy both the given equalities:

1) $(x+2)^2 > 13x - 16$

2) $(x+1)^2 < 12x - 15$

A) 16
B) 13
C) 10
D) 18

Question 15

The average ages of employees in the Sales, Marketing, and Tech departments are 50 years, 40 years, and 42 years respectively. When combining the employees from the Sales and Tech departments, the average age is 48 years, and for all three departments combined, it is 45 years. What is the average age of the employees in the Marketing and Tech departments combined?

A) 690/17
B) 700/17
C) 710/17
D) 720/17

Question 16

If x and y are two real numbers such that $x^5y^7 = 1$, what is the value of the expression $\frac{1+\log_x(x^4y^5)}{3+\log_y(x^6y^5)}$?

A) −27/7
B) −25/7
C) −23/9
D) −29/9

Question 17

In a right-angled triangle, if one of the angles is 30°, find the ratio of the inradius to the circumradius.

A) √3 / 2
B) 1 / 2
C) (√3 + 1) / 2
D) (√3 − 1) / 2

Question 18

15 men can complete a work in 108 days. 12 women will take 60 days to do the same work. How many days will it take for 6 men and 4 women to complete 3/4th of the work?

A) 70
B) 81

C) 90
D) 75

Question 19

What is the ratio of the number of diagonals in a polygon with 18 sides to the number of diagonals in a polygon with 24 sides?

A) 3 : 4
B) 2 : 3
C) 27 : 28
D) 15 : 28

Question 20

Surbhi took a loan of an amount *P* for 3 years at a 20% compound interest rate per annum. ₹14,400 is the installment paid at the end of each year, starting from the first year. Find the approximate value of the loan amount *P*.

A) ₹30,333
B) ₹31,333
C) ₹32,333
D) ₹33,333

Question 21

Six concentric circles are drawn whose circumferences are in the ratio 3 : 4 : 7 : 9 : 11 : 16. What is the ratio of the area of the third innermost circle to the fifth innermost circle?

A) 7 : 11
B) 117
C) 49 : 121
D) 121 : 49

Question 22

There are two friends, Arun and Balu, who sell fridges. Both friends bought a fridge from the same manufacturer. It is known that the manufacturer gives a discount of 30% to Arun and 40% to Balu. Arun and Balu mark up the prices by 50% and 60% respectively when selling them to the final customer. If the difference between the prices at which the customers bought the fridges from the two friends is ₹720, find the price at which Arun purchased the fridge from the manufacturer.

A) ₹5600
B) ₹6300
C) ₹7000
D) ₹6000

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Answer Key

1. **(a) (1200 – 200√3)/11**
2. **(d) 32√3 cm²**
3. **(c) 1**
4. **0**
5. **(c) 22/5**
6. **(d) 3/28**
7. **(b) 44**
8. **(a) 3:1**
9. **(c) Ram wins by 790 m**
10. **(c) 151.4%**
11. **(c) 70%**
12. **(b) B works for 4 days, then A & C for 5 days, finally C works 1 day**
13. **(c) 3q – 2p**
14. **(a) 16**
15. **(a) 690/17**
16. **(b) -25/7**
17. **(d) (√3 – 1)/2**
18. **(b) 81**
19. **(d) 15:28**
20. **(a) ₹30,333**
21. **(c) 49:121**
22. **(a) ₹5600**