Prime CAT 04 2022 QA

Q 1. Two buses leave from A to B at an interval of 40 minutes. They reach B simultaneously and leave for C which is 160 km away from B. The second bus, having reached C, immediately turns back and travels towards B. If the first and second buses meet at a point 40 km away from C, then find the time taken by the first bus from A to B.

1) 1 hour

2) 1 hour 20 minutes

3) 2 hours 40 minutes

4) 1 hour 40 minutes

Q 2. A square ABCD is inscribed in a circle of center O. (1, 2) and (5, 8) are the co-ordinates of vertices A and C respectively of the square. The number of paths from A to C via center O of the circle, where each step from any point (x, y) is either to (x + 1, y) or to (x, y + 1) is

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Q 3. In an arithmetic progression, the 10th term is 12 and the 11th term is 10. How many consecutive terms (starting from the first term) of the arithmetic progression should be considered so as to make their sum equal to zero?

Q 4.

If $\frac{1}{2}+\frac{1}{3}+\frac{1}{7}+\frac{1}{n}$ is an integer for a positive integer 'n', then which of the following statements is not true?

1) 2 divides n

2) 3 divides n

3) n > 40

4) 81 < n < 98

Q 5. In a ΔABC, AB = 12 cm, AC = 20 cm and BC = 16 cm. There is a point D between B and C on BC. If a circle is drawn BD as diameter such that AB and AC are tangents to it, then the length (in cm) of BD is

Q 6. A woman does two-thirds of the work in a day as a man and a child does one-fourths of the work in a day as a man. If a farmer hires 30 pairs of hands - men, women and children in the ratio 7 : 5 : 3 and pays them in all Rs. 23,940 at the end of the day's work. If the wages are proportional to the work done, then what must be the daily wages (in Rs.) of a child?

1) 180

2) 720

3) 270

4) 540

Q 7. Two trains have lengths of 220 m and 260 m. When they run in the same direction, the faster train will take 60 seconds to cross the slower train. When they run in the opposite directions, they will take 10 seconds to cross each other. If the longer train is the faster one, then find the time (in sec.) taken by it to cross a 132 m long tunnel.

1) 14

2) 12.5

3) 19.6

4) 17

Q 8. P, Q, R and S bought a certain number of Mangoes. S bought 1/2 the number of mangoes bought by the other three. R bought 1/3rd the number of mangoes bought by the other three, while P bought 2/5th the number of mangoes bought by the other three. If each of them bought a distinct number of mangoes, find the ratio of the number of mangoes bought by Q to the total number of mangoes bought by all four.

1) 11 : 84

2) 1 : 12

3) 11 : 73

4) Data inconsistent

Q 9. Two quadratic equations have a common positive root. The equation satisfied by the other two roots is $x^2 - 5x + 6 = 0$. The sum of all possible products of the four roots, taken two at a time is 150. Find the absolute difference between the products of the roots of the two equations.

1) 18

2) 16

3) 8

4) 12

Q 10. When 15 is added to a list of integers, the average is increased by 2. When 1 is added to the enlarged list, the average of the enlarged list is decreased by 1. How many integers were in the original list?

Q 11. Aman purchased two items A and B and invested Rs. 50 and Rs. 75 on their maintenance respectively. If he suffers a loss of 10% on A and 12% on B, overall loss suffered by him is Rs. 84. But if he earns 20% on A and 10% on B, overall profit earned by him is 14% of total price of items. Find initial total purchasing price (in Rs.) of both the items.

1) 675

2) 725

3) 750

4) 625

Q 12. If [x] denotes the greatest integer function less than or equal to x, then the value of x for which $5(x - 1)[x - 1] = 259$ is

1) 7.4

2) 8.6

3) 8.4

4) 7.6

Q 13. A road roller is 3 m long and has a diameter of 0.28 m. It takes exactly 2000 rotations of the road to level a mud path. If the cost of using the roller is Rs.5 per m^2, then find the total cost (in Rs.) of leveling the path.

1) 24,300

2) 25,800

3) 22,480

4) 26,400

Q 14. A fuel merchant purchased 30 litres of petrol at Rs.50 per litre and sold 22 litres of it at Rs.55 per litre. To the remaining petrol, he added 40% kerosene, the cost of which is Rs.15 per litre. If he sold this new mixture at the same rate at which he sold the first 22 litres, the total profit (in Rs.) made by him would be

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Q 15. A person deposited a sum of Rs.50,000 in a bank for a period of t1 years at a rate of 20% p.a. compounded annually. The same person deposited a sum of Rs.57,600 in another bank for a period of t2 years at a rate of 25% p.a. simple interest. The amounts received from the two banks are equal and the total amount is Rs.1,72,800. Find the difference between t1 and t2 (in years).

Q 16. In triangle ABC, AE is the median from A to BC. In triangles AEB and AEC, AD and AF are the medians to EB and CE, respectively. In triangle ACE, EG is the median to AC. What is the ratio of the area of triangle ACF to that of quadrilateral GEDA?

1) 3 : 2

2) 4 : 3

3) 3 : 1

4) 1 : 2

Q 17. Let abc10 and abc12 be two 5-digit numbers such that abc10 + abc12 = 123422, then what is the value of a + b + c?

Q 18. Nina was to get a 50% hike in her pay but the computer operator wrongly typed the figure as 80% and printed the new pay slip. She received this revised salary for 3 months before the mistake was rectified. What percentage of her correct new salary will she get in the 4th month, if the excess paid to her in the previous 3 months is to be deducted from her 4th month?

Q 19.

If $\log_4 a + \log_8 a = \frac{1}{3}\log_{0.5}\sqrt{10}$ and $a > 0$, then the value of 'a' is

1) $10^{-1/5}$

2) $10^{1/5}$

3) $5^{-1/2}$

4) $10^{-3/5}$

Q 20. If a regular hexagon is formed by cutting the corners of an equilateral triangle, then the ratio of the area of the 3 cut corners to the area of the equilateral triangle is

1) 1 : 3

2) 1 : 2

3) 1 : 6

4) 1 : 9

Q 21. A certain tank has two pipes A and B that can either fill it or empty it at the same respective rates depending on the requirements. If pipe A alone is used to fill the tank for the time that both pipes together take to fill the tank, then 3/4th of the tank would be full. On a certain day, the tank is empty and pipe A is used to fill it while B is used to empty it. What percent of the tank will be empty in half the time it takes to fill the tank by both pipes together when they are used for filling?

1) 25%

2) 80%

3) 45%

4) 75%

Q 22. If $w + x + y + z = 1$, where w, x, y, z are non-negative, then the maximum value of $wxyz/(1 - w)(1 - x)(1 - y)(1 - z)$ is

1) 81/256

2) 1/81

3) 1/27

4) 64/27
