

CDC 03 2022 QA

Q 1. A basket has N balls of either Red or Blue colour. These balls are either Hard Tennis or Light Tennis balls. The percentage of Red balls is 65% and the number of Blue Hard Tennis balls is 15% of the Blue balls. What is the minimum number of Red Light Tennis balls, given that the percentage of Red Hard Tennis balls is 85% of the Red balls?

Q 2.

If $(c^{\log_d x})^3 - 8(c^{\log_d x})^2 + 17(c^{\log_d x}) - 8 = 2$ and $c, d > 1$, then which of the following can be the value of x ?

- 1) d
 - 2) $c^{\log_d 2}$
 - 3) $5^{\log_c d}$
 - 4) $c^{\log_d 3}$
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Q 3. In a triangle ABC, if $\angle B = 90^\circ$ and sides AB, BC and AC are in Geometric Progression in the same order, then which of the following is true?

- 1) $\frac{AC}{AB} = \frac{2}{\sqrt{5}-1}$
 - 2) $\frac{AC}{AB} = \frac{2}{\sqrt{5}+1}$
 - 3) $\frac{AC}{AB} = \frac{\sqrt{5}+1}{2}$
 - 4) Both (1) & (3)
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Q 4.

Let $f(x)$ be a real valued function for which $\frac{f(x) \times f(y)}{f(y) - x + 4} = f(xy + 3)$. If $f(2) = 3$, then what is $|f(6)|$?

Q 5. In a regular hexagon ABCDEF with side a , line joining the midpoints of AB which is X and DE which is Y is drawn. What is the area (in sq. units) of the triangle CXY?

1) $\frac{3\sqrt{3}}{4}a^2$

2) $\frac{3\sqrt{3}}{2}a^2$

3) $\frac{\sqrt{3}}{2}a^2$

4) $\sqrt{3}a^2$

Q 6. A person mixes coffee of 3 different qualities at prices Rs. 40, Rs. 50, Rs. 60 per kg in the ratio of 2 : 3 : 5. If he offers a discount of 20% on the marked price and incurs a loss of 4%. What is the marked price (in Rs.) of the mixture?

1) 53

2) 52.40

3) 63.60

4) 45

Q 7. Sandeep and Ganesh can complete a piece of work in 30 days and 20 days respectively. Both of them work for 6 days and then Ganesh leaves. Now Tezas, who can complete the same work in 15 days joins Sandeep to complete the remaining work. In how many total days was the total work completed?

1) 10

2) 11

3) 12

4) 13

Q 8. A quadratic equation $f(x) = ax^2 + bx + c$ has its minimum value at $x = 0$ and the minimum value is -5 , then what is the sum of roots for $f(x) + 3$?

Q 9. In a circle, a chord AB of length 48 cm is drawn. A line perpendicular from centre O to the circumference is drawn, meeting the chord and circumference at C and D respectively. If OC = 10 cm, then find the length (in cm) of AD.

1) $8\sqrt{13}$

2) $16\sqrt{13}$

3) 24

4) 26

Q 10. A motorcycle moving with a speed of 70 kmph is chasing a train moving with a speed of 60 kmph in the same direction. Initially the rear end of the train is at a distance of 200 km from the motorcycle. If the motorcycle chases down the train within 20 hours and 6 minutes, find the time taken (in seconds) by the same train moving at 18 kmph to cross a pole.

- 1) 160
 - 2) 240
 - 3) 200
 - 4) 360
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Q 11. Find the area (in sq. units) enclosed by the figure formed by $y - |x| - 2 = 0$, $|x| + y + 2 = 0$, $x = 2$ and $x = -2$.

Q 12. A person purchases 22 movie tickets, which include both first-class and second-class tickets. The total expense on purchasing first-class tickets is Rs. 180 and the total amount spent on purchasing second-class tickets is Rs. 208. If the cost of one ticket of first-class is Rs. 4 more than the cost of one ticket of second-class, then find the cost (in Rs.) of purchasing all the first-class tickets with at the price of second-class ticket.

- 1) 320
 - 2) 260
 - 3) 144
 - 4) 117
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Q 13. There is a series of natural numbers which are grouped as (1), (2, 3), (4, 5, 6), (7, 8, 9, 10), Then what would be the average of the numbers in the 19th group?

- 1) 180
 - 2) 179
 - 3) 181
 - 4) 183
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Q 14. How many pairs of integers exist such that the difference between their product and sum is 42?

Q 15. The average of scores of 20 students is 57. If 7 students have failed the exam with the same score and rest score distinct integral marks with the highest being 91. What is the minimum possible score of the failed students?

Q 16. In a $\triangle ABC$, D is a point on AB such that $AD : DB = 2 : 3$, E is a point on AC such that $AE : EC = 3 : 5$, F is a point on BC such that $BF : FC = 5 : 7$. If $AB = AC$, then what is the ratio of areas of $\triangle DBF$ to $\triangle ECF$?

- 1) 3 : 7
 - 2) 24 : 35
 - 3) 7 : 3
 - 4) 35 : 24
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Q 17. Aman spends a fixed amount for 2 consecutive months purchasing bread, and then spends half the amount in third month, also spends half the amount of third month in the fourth month. If bread is sold at Rs. 10, Rs. 20, Rs. 40 and Rs. 40 per kg for the 4 consecutive months, then the average expense for bread in rupees per kg for Aman is closest to

- 1) 18
 - 2) 20
 - 3) 16
 - 4) 19
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Q 18.

If $8a^2 + \frac{1}{b} = 6$ and $6b^2 + \frac{1}{a} = 8$, then what can be the value of $(ab)^2$?

- 1) 2
 - 2) 1
 - 3) 4
 - 4) 16
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Q 19.

If $x = i^{m^n}$ where i is an integer and m, n are whole numbers ($|i|, m, n < 5$), then in how many cases would x be equal to 1? (0^0 is undefined.)

- 1) 62
 - 2) 60
 - 3) 58
 - 4) 64
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Q 20. A cone of vertical height 36 cm and base radius 15 cm is sliced at two-thirds of height from the base to form a frustum. If the cost to wrap a cover along the curved surface area is Rs. 7 per cm^2 , then find the total cost (in Rs.) incurred in wrapping the curved surface of the frustum.

Q 21. Balu deposited some money in a bank at a rate of interest of 10% compounded annually. If the product of the interest accrued in the second year and the interest accrued in the third year is Rs. 1,197.90, then find the amount (in Rs.) invested by Balu.

Q 22. A 2 digit number ab when reversed (is also a 2 digit number) and added resulted in 66. Now, a 3 digit number abc is formed (which when reversed is also a 3 digit number) is reversed and subtracted from original number resulted in 297. Find the difference between the largest possible value of abc and the smallest possible value of abc .

- 1) 388
 - 2) 271
 - 3) 269
 - 4) 91
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