# CAT Exam 2024 Quant MCQs Test 3

Q.1. The income of Amala is 20% more than that of Bimala and 20% less than that of Kamala. If Kamala's income goes down by 4% and Bimala's goes up by 10%, then the percentage by which Kamala's income would exceed Bimala's is nearest to

A. 31 B. 28 C. 32 D. 29

Q.2. On selling a pen at 5% loss and a book at 15% gain, Karim gains Rs. 7. If he sells the pen at 5% gain and the book at 10% gain, he gains Rs. 13. What is the cost price of the book in Rupees?

A. 80 B. 85 C. 95 D. 100

Q.3. At their usual efficiency levels, A and B together finish a task in 12 days. If A had worked half as efficiently as she usually does, and B had worked thrice as efficiently as he usually does, the task would have been completed in 9 days. How many days would A take to finish the task if she works alone at her usual efficiency?

A. 24 B. 18 C. 12 D. 36

Q.4. Amala, Bina, and Gouri invest money in the ratio 3 : 4 : 5 in fixed deposits having respective annual interest rates in the ratio 6 : 5 : 4. What is their total interest income (in Rs) after a year, if Bina's interest income exceeds Amala's by Rs 250?

A. 6350 B. 7250 C. 7000 D. 6000

Q.5. Three men and eight machines can finish a job in half the time taken by three machines and eight men to finish the same job. If two machines can finish the job in 13 days, then how many men can finish the job in 13 days?

A. 12 B. 13 C. 14 D. 15

Q.6. For any positive integer n, let f(n) = n(n + 1) if n is even, and f(n) = n + 3 if n is odd. If m is a positive integer such that 8f(m + 1) - f(m) = 2, then m equals

A. 10 B. 20 C. 30 D. 40

Q.7. A chemist mixes two liquids 1 and 2. One litre of liquid 1 weighs 1 kg and one litre of liquid 2 weighs 800 gm. If half litre of the mixture weighs 480 gm, then the percentage of liquid 1 in the mixture, in terms of volume, is

A. 85 B. 70 C. 75 D. 80

Q.8. The product of two positive numbers is 616. If the ratio of the difference of their cubes to the cube of their difference is 157:3, then the sum of the two numbers is

A. 58 B. 50 C. 95 D. 85

Q.9. In a race of three horses, the first beat the second by 11 metres and the third by 90 metres. If the second beat the third by 80 metres, what was the length, in metres, of the racecourse?

A. 880 B. 900 C. 920 D. 860

Q.10. A person invested a total amount of Rs 15 lakh. A part of it was invested in a fixed deposit earning 6% annual interest, and the remaining amount was invested in two other deposits in the ratio 2 : 1, earning annual interest at the rates of 4% and 3%, respectively. If the total annual interest income is Rs 76000 then the amount (in Rs lakh) invested in the fixed deposit was

A. 7 B. 8 C. 9 D. 10

#### **Answer Key**

1. (A), 2. (A), 3. (B), 4. (B), 5. (B), 6. (A), 7. (D), 8. (B), 9. (A), 10. (C)

#### **Q1: Explanation**

Let the income of Bimla be Rs. 100

Amla's income = 1.2\*100 = Rs. 120

Also, Amla's income = 45 ×

Kamla's income

Therefore, Kamla's income = 54 × 120

= Rs. 150

Kamala's new income with 4% decrease = 0.96 × 150 = Rs. 144

Bimla's new income with 10% increase =  $1.1 \times 100$  = Rs. 110

Required percentage increase =  $(144-110110) \times 100 \approx 31$ 

## **Q2: Explanation**

Let the cost prices of a pen and a books be x and y respectively.

From 1st condition,

 $0.95x + 1.15y = x + y + 7 \dots (1)$ 

From 2nd condition,

 $1.05x + 1.1y = x + y + 13 \dots (2)$ 

Solving both (1) and (2) for y, we get y = 80.

# Q3: Explanation

Let the work be LCM of (9 and 12) = 36 units.

Let the amount of work done in one day with their normal efficiencies by A and B be x and y units respectively.

Therefore, (x+y)×12=36

Or x+y =3 ... (1)

Similarly,

 $(x/2+3y) \times 9=36$ 

Or x/2 +3y = 4 ... (2)

Solving (1) and (2) for x, we get x = 2 units

Hence, A alone would take 36/x = 36/2 = 18 days to complete the work with her normal efficiency.

## **Q4: Explanation**

Ratio of their incomes = 3:4:5

Ratio of their interests = 6:5:4

Therefore, the ratio of their interest income =  $(3 \times 6)$  :  $(4 \times 5)$  :  $(5 \times 4)$  = 18:20:20

Let the interest incomes of Amala, Bina, and Gouri be 18x, 20x, and 20x respectively.

Given,

Bina's interest income exceeds Amala's by Rs 250

Therefore, 20x - 18x = 2x = 250

Or x = 125.

Total interest incomes =  $18x + 20x + 20x = 58x = 58 \times 125 = 7250$ 

## **Q5: Explanation**

Let one machine completes 1 unit of work per day.

Given, two machines can finish the job in 13 days

Therefore, the work of  $2 \times 1 \times 13 = 26$  units.

Also, let on man completes m units of work per day.

From the given condition:

 $3m + 8 \times 1 = 2(8m + 3 \times 1)$ 

Or m = 213 units

Let it require 'x' number of men to complete the work in 13 days.

Therefore, xm × 13 = 26 units

Or x = 13 men

## **Q6: Explanation**

Case 1: m is even.

Given, 8f (m+1) - f(m) = 2

 $\Rightarrow$  8(m+1+3) - m(m+1) = 2

 $\Rightarrow$  8m + 32 - m2 - m = 2

⇒ m2 – 7m + 30 = 0

 $\Rightarrow$  (m-10) (m+3) = 0

 $\Rightarrow$  m = 10 or -3

As m is positive integer, the only possible value of m = 10.

Case 2:

If m is odd, then we would not be getting positive solution.

## **Q7: Explanation**

Weight of liquid 1 per litre = 1000 gm Weight of liquid 2 per litre = 800 gm Weight of mixture per litre = 2 × 480 = 960 gm Applying alligation rule Quantity of liquid 1Quantity of liquid 2 = 960 – 8001000 – 960 = 41 Therefore, the liquids are mixed in 4:1.

Hence, the percentage of liquid  $1 = (44+1) \times 100 = 80$ 

#### **Q8: Explanation**

Let the two numbers be x and y

Given,

x × y = 616

Also, x3 – y3(x–y)3 = 1573

Let x3 – y3 = 157k

and (x-y)3 = 3k

we know that

(x-y)3 = x3 - y3 - 3xy(x-y)  $\Rightarrow (3k)3 = 157k - 3 \times 616(3k)1/3$   $\Rightarrow 154k = 3 \times 616 \times (3k)1/3$   $\Rightarrow k = 3 \times 616154 \times (3k)1/3$   $\Rightarrow k = 12 \times (3k)1/3$   $\Rightarrow k3 = 123 \times 3 \times k$   $\Rightarrow k2 = 3 \times 123$   $\Rightarrow k = 72$ Therefore,  $x - y = (3k)1/3 = (3 \times 72)1/3 = 6$ Also, (x+y)2 = (x-y)2 + 4xy  $\Rightarrow (x+y)2 = 62 + 3 \times 616 = 2500$  $\Rightarrow (x+y) = 50$ 

#### **Q9: Explanation**

Α	в	С	
×	(x-11)	(x-90)	{from 1 <sup>st</sup> condition}
	×	(x-80)	{from 2 <sup>nd</sup> condition}

Therefore,

(x-11) (x) = (x-90) (x-80)  $\Rightarrow x2 - 91x + 880 = x2 + 90x$  $\Rightarrow x = 880$ 

# Q10: Explanation

Let the amount invested in fixed deposit be x lakhs.

As per the condition:

x × 6100 + 23 × (15-x) × 4100 + 13 × (15-x) × 3100 = 76000105

 $\Rightarrow 6x - 83x - x = 76 - 83 \times 15 - 15$ 

 $\Rightarrow 73x = 76 \times 3 - 11 \times 153$ 

 $\Rightarrow$  73x = 633

 $\Rightarrow$  x = 9