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# Mixed Maths Questions for LIC AAO Exam.

## LIC AAO Maths Quiz 15

Direction: Study the following questions carefully and choose the right answer.

1. Two swimmers Ankita and Anamika are swimming in a stream, heading towards each other. When they started swimming the distance between them was 35 kms. The speed of stream is 5 km/hr, the speed of each of the swimmer is 15 km/hr. Find the time taken by them to meet each other.

- A. 70 min                      B. 61 min.                      C. 58 min.                      D. 102 min.                      E. None of these

2. A father distributes his monthly income among his four sons A, B, C and D in the proportion 7 : 2 : 3 : 4 respectively. If the sum of the amount received by B and C is 550 more than the amount received by D, then what is the total income of the father if the ratio of the amount distributed by him to his total income is 2 : 7?

- A. 30800                      B. 41200                      C. 36800                      D. 31400                      E. None of these

3. From the July 1, the government of India has changed the method of calculating the tax amount from a flat tax of 10% on the taxable income to a fixed charge of Rs. 20,000 plus 5% tax on the taxable income exceeding Rs. 2,00,000. If an individual's tax amount as per the new calculation is Rs. 5,000 less than that found by using the old formula, what is his taxable income?

- A. Rs. 288000                      B. Rs. 292000                      C. Rs. 300000                      D. Rs. 278000                      E. None of these

4. An RRB mock test is conducted in three batches A, B, C of a class. The average marks of batch A are 42, that of batch B are 50 and that of batch C are 62. The average marks of batches A and B combined are 45 and that of batches B and C combined are 55. What are the average marks of all three batches combined?

- A. 51.50                      B. 52                      C. 54                      D. 48.60                      E. None of these

5. There are 5 black, 5 blue, 5 red and 5 green T-shirts and all T-shirts of same colours are same in all aspects. What is the probability of selecting 5 T-shirts of 2 colours only?

- A. 3/7                      B. 2/7                      C. 1/7                      D. 5/7                      E. None of these

6. Shyam bought two mobile phones for Rs. 40,000. By selling one at a loss of 16% and other at a profit of 20%, he found that selling price of both mobile phones is the same. Find the C.P of each.

- A. Rs. 17000 & Rs. 13000                      B. Rs. 23529 & Rs. 16471                      C. Rs. 19000 & Rs. 11000  
D. Rs. 23529 & Rs. 12000                      E. None of these

7. A certain amount of money is lent out at compound interest at the rate of 20% per annum for two years, compounded annually. It would give Rs. 482 more if the amount is compounded half yearly. Find the principle.

- A. Rs. 30000      B. Rs. 10000      C. Rs. 15000      D. Rs. 25000      E. None of these

8. Kavita's father was 28 years of age when her sister was born while her mother was 26 years of age when Kavita was born. Kavita's sister was 4 years of age when her brother was born. If Kavita's brother is 3 years elder to her, then what was the age of her father when her brother was born?

- A. 29 years      B. 30 years      C. 32 years      D. 35 years      E. None of these

9. An Auditorium with length, breadth and height as 43 m, 7 m and 11 m respectively has two doors - each measuring 2 m × 6 m - and 8 windows - each measuring 1 m × 2 m. What will be the cost of sticking wall paper on the inner walls, excluding the doors and windows, if the wall paper costs Rs. 19.5 per sq.m?

- A. Less than Rs. 20,600      B. More than Rs. 20,700      C. More than Rs. 20,600  
D. Less than Rs. 20,500      E. None of these

10. If a light flashes every 9 seconds, how many times it will flash in three-fourths of an hour? Assume that the first flash was just as the hour began.

- A. 300      B. 301      C. 666      D. 540      E./ None of these

**Correct Answers:**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
A	A	C	D	A	B	E	C	C	B

## Explanations:

1. The relative speed of the swimmer swimming along with the stream is  $(15 + 5) = 20$  km/hr =  $(1/3)$  km/min

The relative speed of the other swimmer swimming against the stream is  $(15 - 5) = 10$  km/hr =  $(1/6)$  km/min

Their relative speed with respect to each other is

$$\frac{1}{3} + \frac{1}{6} = \frac{1}{2} \text{ km/min}$$

Distance between them = 35 km

$$\therefore \text{Time taken by them to meet (cover 35 km)} = \frac{35}{1/2} = 70 \text{ min}$$

Hence, option A is correct.

2. Let the amount received by A, B, C and D be  $7x$ ,  $2x$ ,  $3x$  and  $4x$  respectively.

$$\therefore (2x + 3x) - 4x = 550$$

$$\therefore x = 550$$

$$\therefore \text{Total amount distributed among the 4 sons} = (7 \times 550) + (2 \times 550) + (3 \times 550) + (4 \times 550) = 8800$$

As per the question

$$\frac{\text{Amount distributed}}{\text{total income}} = \frac{2}{7}$$

$$\frac{8800}{\text{total income}} = \frac{2}{7}$$

$$\text{Total income of the father} = \frac{7 \times 8800}{2} = \text{Rs } 30800$$

Hence, option A is correct.

3. Let the taxable income be Rs.  $x$ .

Tax amount (in Rs.) as per old calculation =  $0.1x$

Tax amount (in Rs.) as per new calculation =  $20000 + 0.05(x - 200000) = 0.05x + 20000 - 10000 = 0.05x + 10000$

The tax amount as per the new calculation is Rs. 5,000 less than that found by the old calculation.

$$\therefore 0.05x + 10000 = 0.1x - 5000$$

$$\therefore 0.05x = 15000$$

$$\therefore x = 300000$$

Hence, option C is correct.

4. Let the total aspirants in batches A, B and C be  $a$ ,  $b$  and  $c$  respectively.

Hence, marks of batches A, B and C individually are  $42a$ ,  $50b$  and  $62c$  respectively.

Since the average marks of batches A and B combined are 45, combined marks of batches A and B are  $45(a + b)$

$$\therefore 42a + 50b = 45a + 45b$$

$$\therefore 3a = 5b$$

$$\therefore a : b = 5 : 3$$

Similarly, for batches B and C,  $50b + 62c = 55b + 55c$

$$\therefore 5b = 7c$$

$$\therefore b : c = 7 : 5$$

$$\therefore a : b : c = 35 : 21 : 15$$

Let the common ratio be  $k$ .

Hence, total number of students =  $a + b + c = 35k + 21k + 15k = 71k$

and total marks =  $42a + 50b + 62c$

$$= 42(35k) + 50(21k) + 62(15k) = 1470k + 1050k + 930k = 3450k$$

$$\therefore \text{Required average} = \frac{3450k}{71k} = 48.6$$

Hence, option D is correct.

5. No. of ways selecting 2 colour =  ${}^4C_2 = 6$

And No. of combinations of the T-shirts of 2 colours = 4

Combinations can be  $\{(4, 1), (3, 2), (2, 3), (1, 4)\}$

$\therefore$  No. of ways =  $6 \times 4 = 24$

Now for total no. of ways:

The no. of ways of distributing  $n$  identical object to  $r$  people such that each people such that each person gets 0 or more is given by  $n + r - {}^1C_r - 1$

$\therefore$   $x$  black +  $x$  blue +  $x$  red +  $x$  green = 5

$\therefore$  No. of Ways =  $5 + 4 - {}^1C_4 - 1 = {}^8C_3 = 56$

$\therefore$  Probability =  $\frac{24}{56} = \frac{3}{7}$

Hence, option A is correct.

6. Let the C.P of 1st mobile phone =  $x$

$\therefore$  C.P of 2nd mobile phone =  $40,000 - x$

S.P. of 1st mobile phone =  $x - 16\%$  of  $x$

S.P of 2nd mobile phone =  $(40000 - x) + 20\%$  of  $(40000 - x)$

S.P of 1st mobile phone = S.P of 2nd mobile phone

$$\frac{84x}{100} = 120\left(\frac{40,000 - x}{100}\right)$$

$$\Rightarrow 84x = 120(40,000 - x)$$

$$\Rightarrow 84x = 4800000 - 120x$$

$$\Rightarrow 84x + 120x = 4800000$$

$$\Rightarrow 204x = 4800000$$

$$\Rightarrow x = \frac{4800000}{204}$$

$$\Rightarrow x = \text{Rs.} 23,529$$

C.P of 1st mobile phone = Rs. 23529

C.P of 2nd mobile phone =  $40,000 - 23529 = \text{Rs. } 16471$

Hence, option B is correct.

7. **Approach I:** To solve this question, we can apply the net % effect formula

$$x + y + \frac{xy}{100}\%$$

Compounded annually at rate 20% per annum for 2 years, we get =  $20 + 20 + \frac{20 \times 20}{100} = 44\%$

Similarly, compounded half yearly at rate 10%, we get

$$= 10 + 10 + \frac{10 \times 10}{100} = 21\%$$

$$\text{And, } 21 + 10 + \frac{21 \times 10}{100} = 33.1\%$$

$$\text{And, } 33.1 + 10 + \frac{33.1 \times 10}{100} = 46.41\%$$

Now as per the question,

Difference between compound interest yearly and half yearly =  $46.41 - 44 = 2.41\%$

Given,  $2.41\% \equiv 482$

$$100\% \equiv x$$

$$\Rightarrow x = \frac{482 \times 100}{2.41} = 20,000$$

**Approach II:**

When compounded annually, the amount received at the end of the period is

$$A = P \left[ 1 + \frac{r}{100} \right]^n$$

When compounded half yearly, the amount received at the end of the period is

$$A = P \left[ 1 + \frac{r/2}{100} \right]^{2n}$$

Let the principle be P.

Interest on this amount when compounded annually at the rate of 20% per annum =  $P [(1.20)^2 - 1]$

Interest on this amount when compounded half yearly =  $P [(1.10)^4 - 1]$

The difference between the two is Rs. 482

$$\therefore P [(1.10)^4 - 1] - P [(1.20)^2 - 1] = 482$$

$$\therefore P [1.4641 - 1.44] = 482$$

$$\therefore P = \text{Rs. } 20,000$$

Hence, option E is correct.

**8.** Let the age of Kavita be  $x$  years.

As given in question, Kavita's brother's age =  $x + 3$ .

So, Sister's age =  $(x + 3) + 4 = x + 7$ ; Mother's age =  $x + 26$  and Father's age =  $(x + 7) + 28 = x + 35$  years.

Thus, required age = difference between the age of Kavita's brother and age of Kavita's father.

$$= (x + 35) - (x + 3) = 32 \text{ years.}$$

Hence, option C is correct.

**9.** Since the wall paper has to be stuck on the inner walls,

$$\text{lateral surface area} = 2(lh + bh) = 2[(43 \times 11) + (7 \times 11)] = 1100 \text{ sq.m}$$

$$\text{Area to be excluded} = 2 \times (2 \times 6) + 8 \times (1 \times 2) = 24 + 16 = 40 \text{ sq.m}$$

$$\therefore \text{Area to be covered with wallpaper} = 1100 - 40 = 1060 \text{ sq.m}$$

$$\therefore \text{Total cost} = 1060 \times 19.5 = \text{Rs. } 20,670$$

Hence, option C is correct.

**10.** Three-fourths of an hour (in terms of seconds) =  $(3/4) \times 60 \times 60 = 2700$  seconds.

$$\text{Number of times the light will flash} = 2700/9 = 300$$

This count starts after the first flash, which was just after the hour began.

$$\therefore \text{Total count} = 300 + 1 = 301.$$

Hence, option B is correct.





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