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Mixed Maths Questions for LIC AAO Exam.

LIC AAO Maths Quiz 5

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

1. A company hired some trainee employees, the ratio of number of female to male is 2 : 3 and all of them have appeared in an employment test. In the employment test 35% of female and 40% of male had passed. Each female scored 280 marks and each male scored 320 marks. If the number of passed female is 50 less than the number of passed male. Then what is the total number of marks scored by passed male and female together?

- A. 58000 B. 56000 C. 57000 D. 56500 E. 54850

2. Arjun is 2 years younger to Bhuvan whose age is 12 years. When 10 years are subtracted from the present age of Shanju and then the result is divided by 6, the present age of his grandson Arjun is obtained. Then what is the ratio of ages of Arjun, Bhuvan and shanju?

- A. 5 : 6 : 35 B. 7 : 2 : 23 C. 7 : 2 : 35 D. 5 : 6 : 23 E. None of these

3. There are two mixtures of alcohol and water. In 48 L of first mixture 32 L is alcohol while in 32 L of second mixture 20 L is alcohol. If these mixtures are mixed in a large container in such a way that per cent of water in final mixture becomes 36.8%, then find that in what ratio these two mixtures are mixed to form final mixture?

- A. 2 : 5 B. 21 : 104 C. 201 : 104 D. 201 : 14 E. None of these

4. A work is started by a man and it is assumed that he will finish the work in 11 days if working alone. Each subsequent day a new man joined the work. In how many days the four times the original work will be completed, if after the 8th day from the starting of the work no new man will be further added?

- A. 11 B. 10 C. 9 D. 8 E. None of these

5. Ajeet purchased 100 books of quantitative aptitude for his book store. He sold 20% of total books at a profit of 10%, 37.5% of remaining at a profit of 15%, 80% of the remaining at a profit of 8% and remaining at a profit of 20%. If he sold all the books at a profit of 16% he would have gained Rs.1505 more, then find the cost price of each book.

- A. Rs. 250 B. Rs. 375 C. Rs. 350 D. Rs. 450 E. None of these

6. A milkman makes 80% profit by selling milk mixed with water at Rs. 2/- litre. Compute the ratio of milk and water in the sold mixture if the cost price of Re. 1/- litre pure milk is $100/9$.

- A. 9 : 1 B. 1 : 9 C. 7 : 8 D. 8 : 7 E. None of these

7. Rohit can row a boat 65Km upstream and 130Km downstream in 23 hours, whereas he can swim 45Km upstream and 104Km downstream in 17 hours. Find the speed of boat in still water and the speed of stream.

A. 4 kmph, 9 kmph B. 8 kmph, 5 kmph C. 9 kmph, 4 kmph D. 5 kmph, 8 kmph E. None of these

8. A group contains 12 males and 15 females out of which 5 males and 7 females are dancers and rest are singers.

A committee of 9 members is to be formed such that the committee contains 4 females and 5 male singers. Find the number of ways in which this can be done.

A. 26988 B. 28665 C. 26868 D. 25668 E. None of these

9. A group contains 12 males and 15 females out of which 5 males and 7 females are dancers and rest are singers.

A committee of 5 members is to be formed. Find the number of ways in which this can be done such that the committee contains at least 3 female singers.

A. 10256 B. 10765 C. 10962 D. 10453 E. None of these

10. If the difference between the compound interest (compounded annually) and the simple interest accrued in one and a half years at 8% per annum is Rs. 80. What is the simple interest in three years on the same amount and at the same rate of interest?

A. Rs. 6400 B. Rs. 7200 C. Rs. 5600 D. Rs. 4800 E. None of these

Correct Answers:

1	2	3	4	5	6	7	8	9	10
A	A	B	C	C	B	C	B	C	E

Explanations:

1. Let total female are $200x$ and total male are $300x$.
Passed female = 35% of $200x = 70x$ and passed male = 40% of $300x = 120x$
Difference between passed male and female = $120x - 70x = 50$
 $\Rightarrow x = 1$
Total marks scored by passed candidates = $(70 \times 1 \times 280) + (120 \times 1 \times 320) = 58000$
Hence, option (A) is correct.

2. Bhuvan's age = 12 years

Arjun's age = $12 - 2 = 10$ years

Let Shanju's age be 'x' years

Then, according to question-

$$\Rightarrow \frac{x - 10}{6} = 10$$

$$\Rightarrow x - 10 = 60$$

$$\Rightarrow x = 70$$

Required ratio = Arjun: Bhuvan: Shanju

$$\Rightarrow 10 : 12 : 70$$

$$\Rightarrow 5 : 6 : 35$$

Hence, option A is correct.'

3. Let the ratio in which 2 mixtures are mixed = x : y.

Per cent of water in the final mixture = 36.8%

$$\text{Per cent of water in first mixture} = \frac{48 - 32}{48} \times 100 = \frac{100}{3} \%$$

$$\text{Per cent of water in second mixture} = \frac{32 - 20}{32} \times 100 = 37.5\%$$

By the rule of allegation-

$$\Rightarrow \text{Ratio} = \frac{\text{Water in second} - \text{Water in final}}{\text{Water in final} - \text{Water in first}}$$

$$\Rightarrow x : y = \frac{37.5 - 36.8}{36.8 - \frac{100}{3}}$$

$$\Rightarrow x : y = \frac{0.7}{\frac{10.4}{3}}$$

$$= 2.1 : 10.4 = 21 : 104$$

Hence, option B is correct.

4. One day work of a man = 1 unit

Total work = $4 \times 11 = 44$ units

If on each subsequent day a new man joined -

The work on 2nd day = 2 unit

The work on 3rd day = 3 unit

So on....

Than for the first 8 days the total work = $1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 = 36$ units

Remaining work = $44 - 36 = 8$ units

This remaining 8 unit of work will be completed in 1 more day as 8 men are employed in the work.

Hence total time taken = $8 + 1 = 9$ days.

Therefore, option C is correct.

5. Let cost price of each book = 'P'.

Books sold at 10% profit = 20% of 100 = 20

Books sold at 15% profit = 37.50% of 80 = 30

Books sold at 8% profit = 80% of 50 = 40

Books sold at 20% profit = $100 - 20 - 30 - 40 = 10$

Total SP of books = $[20 \times 1.1P] + [30 \times 1.15P] + [40 \times 1.08P] + [10 \times 1.2P] = 22P + 34.5P + 43.2P + 12P = 111.7P$

Total SP when all the books are sold at 16% profit = 116% of $100 \times P = 116P$

Difference = $116P - 111.7P = 1505$ (Given)

$\Rightarrow 4.3P = 1505$

$\Rightarrow P = 350$

Hence CP of each book = Rs.350

Therefore, option C is correct.

6. It is given that selling price of mixture is $S_{\text{mix}} = \text{Rs } 2$

And Profit percentage on this $S_{\text{mix}} = 80\%$

$$\text{So, cost price of mixture } C_{\text{mix}} = \frac{100 \times 2}{180} = \frac{10}{9}$$

Cost of milk given is $\frac{100}{9}$

and we find that cost of mixture is 10% of cost of pure milk

$$\begin{aligned} & \frac{10}{9} \\ &= \frac{10}{100} \times 100 = 10\% \end{aligned}$$

Also, cost of mixture is proportional to the quantity of milk in mixture. Therefore, we can say that lot of water is mixed in milk to form a mixture due to which price has gone down to 10% of pure milk, which means 90% is water and 10% milk.

So, the ratio of milk to water is 1 : 9.

Hence, option (B) is correct.

7. Upstream, $U = \text{Speed of boat} - \text{speed of stream}$

Downstream, $D = \text{Speed of boat} + \text{speed of stream}$

$$\frac{65}{U} + \frac{130}{D} = 23$$

$$\frac{45}{U} + \frac{104}{D} = 17$$

On solving the above two equations, we will get

$$U = \text{Speed of boat} - \text{speed of stream} = 5$$

$$D = \text{Speed of boat} + \text{speed of stream} = 13$$

Thus, Speed of boat = 9 and speed of stream = 4

Hence, option C is correct.

8. Total number of males = 12

Male dancers = 5

Male singers = 7

Total number of females = 15

Female dancers = 7

Female singers = 8

Required number of ways = ${}^{15}C_4 \times {}^7C_5 = 1365 \times 21 = 28665$

Hence, option B is correct.

9. Total number of males = 12

Male dancers = 5

Male singers = 7

Total number of females = 15

Female dancers = 7

Female singers = 8

Required number of ways = ${}^8C_3 \times {}^{19}C_2 + {}^8C_4 \times {}^{19}C_1 + {}^8C_5$

= $56 \times 171 + 70 \times 19 + 56$

= $9576 + 1330 + 56$

= 10962

Hence, option C is correct.

10. Then CI of one and a half year

$$= \left[P \left(1 + \frac{8}{100} \right)^1 \left(1 + \frac{8}{2 \times 100} \right)^1 - P \right] \dots \dots \dots (i)$$

$$\text{SI of one and a half year} = P \times 3 \times \frac{8}{2 \times 100} \dots \dots \dots (ii)$$

According to the question, CI – SI = 80

Equation (i) – equation (ii) = 80

By solving, P = 25000

Time = 3 years and Rate of interest = 8% per annum

$$\text{Therefore SI} = 25000 \times 3 \times \frac{8}{100} = \text{Rs. 6000}$$

$$\text{Alternate method: CI of one and a half year} = 8 + 4 + 8 \times \frac{4}{100} = 12.32\%$$

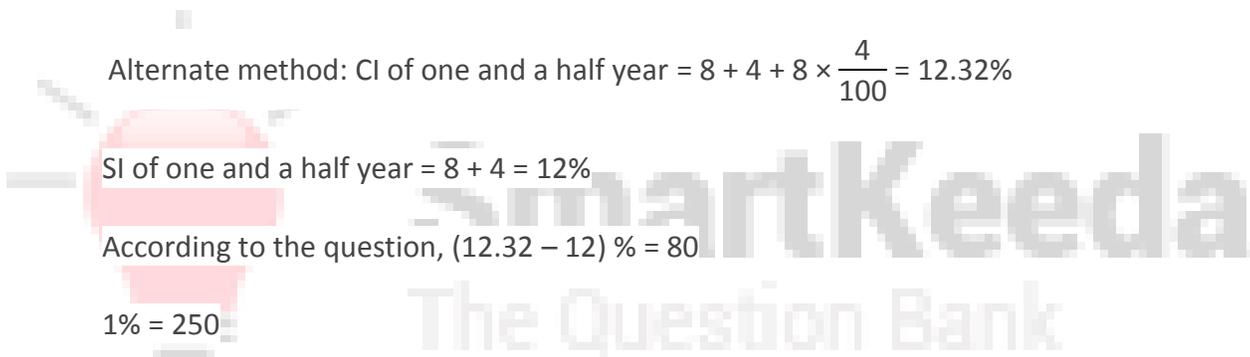
$$\text{SI of one and a half year} = 8 + 4 = 12\%$$

According to the question, (12.32 – 12) % = 80

$$1\% = 250$$

$$\text{SI of 3 years} = 8 \times 4 = 24\% = 250 \times 24 = \text{Rs. 6000}$$

Hence, option E is correct.





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