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# Mixed Maths Questions for SBI PO Pre, IBPS PO Pre, IBPS Clerk Mains and SBI Clerk Mains Exams.

## Bank PO Maths Quiz 20

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

1. In a chemical experiment five identical vessels are partially filled with  $H_2SO_4$ . The ratio of the quantities of  $H_2SO_4$  in the five vessels is 3 : 4 : 5 : 6 : 7. The total quantity of  $H_2SO_4$  in the vessels is equal to 60% of the total volume of the five vessels. How many vessels are filled with  $H_2SO_4$  to at least 50% of their volume?

- A. 1                      B. 2                      C. 3                      D. 4                      E. 5

2. P is an alloy of steel and aluminium and Q is an alloy of aluminium and copper. P has 30% aluminium while Q has 50% aluminium. 't' gms of P is mixed with 30 gms of B to form another alloy which has 45% aluminium. What is the value of 't' ?

- A. 15                      B. 11                      C. 10                      D. 13                      E. None of these

3. The MS Dhoni friend chittu bought 250 Bats at the rate of Rs. 350 per Bat in Delhi. Chittu spent Rs. 3500 on transportation and packing from Delhi to Ranchi. If the marked price of Bat is Rs. 450 per Bat and the Chittu gives a discount of 10% on the marked price then what will be the percentage profit gained by the Chittu, if all bats sold?

- A. 11.26%                      B. 14.05%                      C. 15.95%                      D. 16.01%                      E. None of these

4. Rohit Shetty borrowed Rs. 950 from Sanjeev Sharma at 14% p.a. Simple interest for 4 years. He then added some more money to the borrowed sum and lent it to Rajesh Kapoor for the same period of time at 15% p.a. Simple interest. If Rohit Shetty gains Rs. 104 in the whole transaction, how much money did he add from his side?

- A. Rs. 85                      B. Rs. 100                      C. Rs. 105                      D. Rs. 110                      E. None of these

5. Two cars start running simultaneously from point A at 1 PM. The difference between the times taken by the cars to travel a distance of 162 km from point A to point B is 1 hours 30 minutes. If the difference between their speeds is 18 km/h, at what time will the faster car reach the point B?

- A. 2 PM                      B. 5 PM                      C. 4 : 30 PM                      D. 4 : 00 PM                      E. None of these

6. 10 men, 6 women and 9 boys are employed to plant 2000 trees in 5 days. All of them planted trees on the first day. On the second day 2 women and 3 boys are absent. On the third day, 3 men and 5 boys are absent. If the ratio of the number of plants planted them is in the ratio 3 : 2 : 1 respectively. Then find the number of plants planted by them on the second day (approx.)?

- A. 620                      B. 600                      C. 667                      D. 650                      E. None of these

7. When Jyoti Lohani invested Rs. 8000 in LIC for 8 years at  $x\%$  simple interest per annum it gives Rs 960 more interest as compared to the interest earned when the same principal is invested in Punjab National Bank for 6 years at  $(x + 3)\%$  simple interest per annum. Find the value of  $x$ .

- A. 15%                      B. 20%                      C. 25%                      D. 30%                      E. None of these

8. In a cricket team squad, there are 7 bowlers and 8 batsmen. Four players are to be kept in Tier-I and another four players are to be kept in Tier-2. A selection committee chooses players for Tier-1 first and then chooses players for Tier-2. What is the probability that players in each Tier comprises of either bowlers or batsmen only?

- A.  $\frac{493}{45045}$                       B.  $\frac{497}{45045}$                       C.  $\frac{49}{435}$                       D.  $\frac{97}{945}$                       E. None of these

9. Pot  $P_1$  and  $P_2$  contain mixtures of kerosene and petrol. The kerosene concentrations of the mixture in  $P_1$  and in  $P_2$  are  $x\%$  and  $y\%$  respectively. When  $x\%$  of the contents of  $P_1$  are mixed with  $(100 - y)\%$  of the contents of  $P_2$  or when  $y\%$  of the contents of  $P_2$  are mixed with  $(100 - x)\%$  of the contents of  $P_1$ , the kerosene concentrations in the resulting mixtures are equal. If  $P_1$  and  $P_2$  have  $x$  liters and  $y$  liters of the mixture respectively and  $x \neq y$ , find the value of  $(x + y)$ ?

- A. 130                      B. 120                      C. 60                      D. 100                      E. None of these

10. The company of BMW gives offer on Diwali. The BMW is available for Rs 30 lakh cash payment or for Rs 10 lakh cash down payment and 3 equal Yearly installments. If Company of BMW charges interest at the rate of 10 % per annum compounded as installment plan, calculate the amount of each installment.

- A. Rs. 755000                      B. Rs. 802500                      C. Rs. 804000                      D. Rs. 804505                      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>
C	C	A	D	D	C	A	B	D	D

## Explanations:

1. Let the capacity at each vessel be 100 ml.  
The sum of the capacities of all the vessels = 500 ml.  
The total quantity of  $H_2SO_4$  in the five vessels = 60% (500) = 300 ml.  
Let the quantities of  $H_2SO_4$  in the vessels (in ml) be  $3x$ ,  $4x$ ,  $5x$ ,  $6x$  and  $7x$ .

According to question,

$$3x + 4x + 5x + 6x + 7x = 300 \Rightarrow 25x = 300 \Rightarrow x = 12$$

The quantities of  $H_2SO_4$  in the vessels are  $3x$ ,  $4x$ ,  $5x$ ,  $6x$  and  $7x$  i.e. 36 ml, 48 ml, 60 ml, 72 ml and 84 ml.

The vessels filled with at least 50%  $H_2SO_4$  must be filled with at least 50 ml.

So, 3 vessels are filled with at least 50% of  $H_2SO_4$ .

Hence, option (C) is correct.

2. As per the given condition

$$\frac{30}{100} \times t + \frac{50}{100} \times 30 = \frac{45}{100} \times (t + 30)$$

$$\Rightarrow 30t + 1500 = 45t + 1350$$

$$\Rightarrow 15t = 150$$

$$\Rightarrow t = 10$$

Hence, option C is correct.

3. Total cost price of bats =  $250 \times 350 = \text{Rs. } 87500$   
Total transportation and packing cost = Rs. 3500  
After transportation and packing final cost price of bats = Rs. 87500 + Rs. 3500 = Rs. 91000

$$\text{After transportation and packing final cost price per bat} = \text{Rs. } \frac{91000}{250} = \text{Rs. } 364$$

Marked price of bat = Rs. 450

$$\text{Selling price of per bat} = 450 - \frac{450 \times 10}{100} = \text{Rs. } 405$$

Total selling Price of bats =  $405 \times 250 = \text{Rs. } 101250$

Total profit = Rs. 101250 – Rs. 91000 = Rs. 10250

$$\text{Since, reqd. profit \%} = \frac{10250}{91000} \times 100 = 11.26\%$$

Hence, option A is correct.

4. Rohit Shetty borrowed Rs. 950 from Sanjeev Sharma at 14% p.a. Simple interest for 4 years

$$\text{Since, Simple interest after 4 years} = \frac{950 \times 14 \times 4}{100}$$

Let the added money be Rs. x

$$\text{Since now Simple interest} = \frac{(950 + x) \times 15 \times 4}{100}$$

Now from question,

$$\frac{(950 + x) \times 15 \times 4}{100} - \frac{950 \times 14 \times 4}{100} = 104$$

$$57000 + 60x - 53200 = 10400$$

$$60x = 10400 - 3800 = \text{Rs.}110$$

Hence, Rs. 110 Rohit added from his side.

Therefore, option (D) is correct.

5. Speed of slower car = x km/h, Speed of faster car = x + 18 km/h

$$\frac{162}{x} - \frac{162}{x + 18} = \frac{3}{2}$$

$$162(x + 18) - \frac{162x}{x(x + 18)} = \frac{3}{2}$$

$$162x + 162 \times 18 - 162x = (x^2 + 18x) \times \frac{3}{2}$$

$$162 \times 18 \times \frac{2}{3} = x^2 + 18x$$

$$x^2 + 18x - 1944 = 0$$

$$x^2 + 54x - 36x - 1944 = 0$$

$$x(x + 54) - 36(x + 54) = 0$$

$$(x + 54)(x - 36) = 0$$

$$x = -54, 36$$

Speed of faster car = 36 + 18 = 54 km/h

$$\text{Time} = \frac{162}{54} = 3 \text{ hours}$$

The faster car will reach point B at (1 + 3) = 4 PM.

Hence, option D is correct.

6. Let the ratio be  $3x : 2x : 1x$   
 Planting of trees on the first day =  $10 \times 3x + 6 \times 2x + 9 \times x = 51x$   
 On the second day =  $10 \times 3x + 4 \times 2x + 6 \times x = 44x$   
 On the third day =  $7 \times 3x + 6 \times 2x + 4 \times x = 37x$   
 Now,  $51x + 44x + 37x = 2000$   
 $\Rightarrow 132x = 2000$

Therefore,  $\frac{2000}{132} \times 44 = 666.66 = 667$  (approx.)

Hence, option (C) is correct.

7. When Jyoti Lohani invested Rs. 8000 in LIC for 8 years at  $x\%$  simple interest per annum then total interest

$$= \frac{(8000 \times x \times 8)}{100}$$

When Jyoti Lohani invested Rs. 8000 in Panjab National Bank for 6 years at  $(x+3)\%$  simple interest per annum then total interest

$$= \frac{(8000 \times (x+3) \times 6)}{100}$$

From question,

$$\frac{(8000 \times x \times 8)}{100} - \frac{(8000 \times (x+3) \times 6)}{100} = 960$$

$$64000x - 48000x - 144000 = 96000$$

$$16000x = 144000 + 96000$$

$$x = \frac{240000}{16000} = 15\%$$

Hence option A is correct.

8. Total number of ways =  ${}^{15}C_4 \times {}^{11}C_4 = 450450$

When Tier-1 comprises bowlers only and Tier-2 comprises batsmen only

$$\text{Number of ways} = {}^7C_4 \times {}^8C_4$$

When Tier-1 comprises batsmen only and Tier-2 comprises bowlers only

$$\text{Number of ways} = {}^8C_4 \times {}^7C_4$$

When both Tier-1 and Tier-2 comprises of batsmen only

$$\text{Number of ways} = {}^8C_4 \times {}^4C_4$$

$$\text{Total number of ways} = {}^7C_4 \times {}^8C_4 + {}^8C_4 \times {}^7C_4 + {}^8C_4 \times {}^4C_4 = 4970$$

$$\text{Reqd. probability} = \frac{4970}{450450} = \frac{497}{45045}$$

Hence, option (B) is correct.

9. After using concept of allegation

$$\frac{\left(\frac{x}{100}\right)x}{\left(\frac{100-y}{100}\right)y} = \frac{z-y}{x-z}$$

and

$$\frac{(100-x)x}{100} = \frac{z-y}{x-z}$$
$$\left(\frac{y}{100}\right)y$$

i.e.

$$\frac{\left(\frac{x}{100}\right)x}{\left(\frac{100-y}{100}\right)y} = \frac{\left(\frac{100-x}{100}\right)x}{\left(\frac{y}{100}\right)y}$$

$$\Rightarrow \frac{x^2}{(100-y)y} = \frac{x(100-x)}{y^2}$$

$$\Rightarrow xy(100^2 - 100x - 100y) = 0$$

$$xy \neq 0$$

$$\text{So } 100^2 - 100x - 100y = 0$$

$$\Rightarrow x + y = 100$$

Hence, option D is correct.

10. Let the amount of each installment = Rs. x

Total amount after down payment of Rs. 10 lakh = 30 - 10 = Rs. 20 lakh.

We know,

$$P = \frac{x}{\left(1 + \frac{r}{100}\right)} + \frac{x}{\left(1 + \frac{r}{100}\right)^2} + \frac{x}{\left(1 + \frac{r}{100}\right)^3}$$

Where, P = principal, r = annual interest

According to question,

$$2000000 = \frac{x}{\left(1 + \frac{10}{100}\right)} + \frac{x}{\left(1 + \frac{10}{100}\right)^2} + \frac{x}{\left(1 + \frac{10}{100}\right)^3}$$

$$2.486x = 2000000$$

$$x = \frac{2000000}{2.486}$$

$$x = 804505$$

Hence., The amount of each installment = Rs. 804505

Therefore, option (D) is correct.



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