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Bank PO Maths Quiz 9

Direction: Study the following information carefully and answer the questions. [Set of 3 questions]

Four friends, Ram, Ghanshyam, Ravi, and Sham have taken up a typing project. The typing speed of Ram is 40% more the typing speed of Ghanshyam and the typing speed of Ravi is 37.5% less than the typing speed of Sham. The ratio between the typing speed of Ghanshyam and Ravi is 1 : 2. All of four works one by one each day in rotation, starting with Ghanshyam followed by Ram, Sham and Ravi respectively then they can complete the project in 173 days.

1. Find the difference between the number of days(approximately) taken by Ghanshyam alone and the number of days taken by Sham alone to complete the work?

A. 230 days   B. 225 days   C. 250 days   D. 325 days   E. 350 days

2. If all of them work together every day then in how many days can they finish the work?

A. $43\dfrac{5}{38}$ days   B. $42\dfrac{2}{19}$ days   C. $42\dfrac{5}{38}$ days   D. $43\dfrac{2}{19}$ days   E. None of these

3. If Ram works at 5/7th of his original efficiency and Ghanshyam works 25% more than his original efficiency then in how many days they all can complete the project? (All of them work one by one each day in rotation starting with Ghanshyam followed by Ram, Sham and Ravi respectively)

A. 180 days   B. 183 days   C. 172 days   D. 176 days   E. None of these

Direction: Study the following information carefully and answer the questions. [Set of 3 questions]

According to the new plan rolled out by Axis bank, the rate of simple interest on a sum of money is x% per annum for the first 4 years, y% per annum for the next 8 years and 10% per annum for the beyond the first 12 years. Ram invests some amount of money then the simple interest received by Ram at the end of 25 years is Rs. 29800. Other person, Mohan's investments sum is same as the Ram's investments then the simple interest revived by Mohan at the end of 32 years is Rs. 36800. If Ram invests only for 3 years then the total SI received by his is Rs. 3600 and Mohan invest only for 5 years then the total SI received by him is Rs. 6300.

4. If Mohan had invested the same amount of money at the rate of y% per annum simple interest for 32 years then how much more money, he would have received?

A. Rs. 12200   B. Rs. 12800   C. Rs. 11200   D. Rs. 11800   E. None of these

5. If Sanju invests some amount of money on the new plan rolled out by Axis bank then at the end of 50 years, he receives the total amount of Rs.14904 then find how much money had he invested in starting?

A. Rs. 2350   B. Rs. 2250   C. Rs. 2300   D. Rs. 2400   E. None of these

6. If Ram had invested the same amount of money only for 15 years then how much simple interest he would have received?

A. Rs. 18800   B. Rs. 27800   C. Rs. 20800   D. Rs. 19600   E. None of these

Direction: Study the following information carefully and answer the questions. [Set of 2 questions]

Ajay being a big businessman invests in several start-ups. In one of his start-ups in India he invested Rs. 2,16,00,000 for 15 months along with his friend Raman. Raman had invested Rs. 3,24,00,000 for 9 months only. Their start-up burnt (expenditure) Rs. 35,00,000 a month and made a revenue of Rs. 9,35,00,000 at the end of a cycle of 24 months. (Profit = Revenue – Expenditure)

7. Ajay invested the entire profit made (from his venture with Raman) in a US start-up along with a colleague Tom Hanx, for a whole year. Tom, however, invested $200,000 for 6 months only. If the US start-up made $ 45,990 as its net profit at the end of the year. What was Tom's share of profits? (Exchange rate – $1 = Rs. 50)

A. $ 22, 995   B. $ 23, 985   C. $ 24, 975   D. $ 21,675   E. None of these

8. Raman had already invested Rs. 35,00,000 since 4 months in another start-up with his brother-in-law. In addition he invested his gain from the venture with Ajay for 6 months. He kept invested with his initial amount for another 8 months after withdrawing his gain from venture with Ajay. His brother-in-law had invested Rs. 20,00,000 for a total of 16 months. What is the brother-in-law's approximate share of loss if their start-up's net loss was Rs. 54,00,000?

A. Rs. 1517400   B. Rs. 14,16, 400   C. Rs. 16,18,90   D. Rs. 1314500   E. Rs. 15, 27, 400

Direction: Study the following information carefully and answer the questions. [Set of 2 questions]

Shopkeeper 1 was dishonest, therefore, while purchasing 800g Dal he took 200g of Dal more instead of 800g Dal. Then, he mixed 10% of stones of the total quantity of Dal into the Dal and by using false weight which shows 20% higher weight he sold to Shopkeeper 2 keeping 15% discount on the market rate of Dal. Shopkeeper 2 noticed later on and took revenge by selling the same Dal by mixing 25% stone of the final quantity of mixture and at 10% higher rate on the market rate of Dal.

(Assume:- Market Rate of Dal is constant throughout)

9. What is the approximate Profit / loss % of shopkeeper 1 in the whole transaction ?

A. 22% loss   B. 25% loss   C. 43% gain   D. 52% loss   E. 62% loss

10. Find the profit or loss percentage of shopkeeper 2 in the whole transaction

A. 35% loss   B. 26% gain   C. 45% gain   D. 35% gain   E. 22.5% loss

Correct Answers:

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

Common Explanations: [Set 1]

Let the typing speed of Ghanshyam = 5x then the typing speed of Ram = 140% of 5x = 7x
Let the typing speed of Sham = 8y then the typing speed of Ravi = 62.5% of 8y = 5y
Ghanshyam : Ravi= 1 : 2 = 5x : 5y, x : y = 1 : 2
Therefore, Ghanshyam : Ram : Sham : Ravi = 5x : 7x : 8y : 5y
= 5 × 1 : 7 × 1 : 8 × 2: 5 × 2 = 5 : 7 : 16 : 10
Let it be 5a, 7a, 16a, 10a = their efficiency = typing speed

Therefore, all of four works one by one each day in rotation, starting with Ghanshyam then the total units of work done by them in 4 days (one rotational shift) = 5a + 7a + 16a + 10a = 38a

According to the question, they take 173 days it means 43 rotational shifts + Ghanshyam's 1-day work

Therefore, the total units of work done in 173 days = 43 × 38a + 5a = 1634a + 5a = 1639a

Answers :

1.   The number of days taken by Ghanshyam alone

$$= \frac{1639a}{5a} = \frac{1639}{5} \text{ days}$$

Number of days taken by Sham alone $= \frac{1639a}{16\,a} = \frac{1639}{16}$ days

Reqd. difference $= \frac{1639}{5}$ days $- \frac{1639}{16}$ days

$= 1639 \times \frac{11}{80} = 225.3625 =$ approximately 225 days

Hence, option B is correct.

2. The total units of work = 1639a

If all of them work together every day then the total units of work done in one day = = 5a + 7a + 16a + 10a = 38a

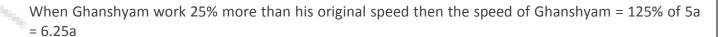The reqd. number of days = $\dfrac{1639a}{38a} = \dfrac{1639}{38} = 43\dfrac{5}{38}$ days

Hence, option A is correct.

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3. Ghanshyam: Ram: Sham: Ravi = 5x : 7x : 8y : 5y

= 5 × 1 : 7 × 1 : 8 × 2 : 5 × 2 = 5 : 7 : 16 : 10

Let it be 5a, 7a, 16a, 10a = there efficiency = typing speed

When Ram work 5/7th of his efficiency then $5 \times \dfrac{7a}{7} = 5a$,

When Ghanshyam work 25% more than his original speed then the speed of Ghanshyam = 125% of 5a = 6.25a

Therefore, all of four works one by one each day in rotation, starting with Sham then the total units of work done by them in 4 days (one rotational shift) = 6.25a + 5a + 16a + 10a = 37.25a The total number of shifts to do 1639a units of work

$= \dfrac{1639a}{37.25a} = 44$ shifts = 44 × 4 = 176 days

Hence, option D is correct.

Common Explanations: [Set 2]

Let the total number of mangoes, the fruit seller had in starting = x
Let the investments of Ram = Rs. p then the investments of Mohan = p

According to the question,
the simple interest received by Ram at the end of 25 years is Rs. 29800

$$SI = \dfrac{P \times R \times T}{100}$$

29800 = p × 4 × x% + p × 8 × y% + p × 13 × 10% ----- (i)

the simple interest revived by Mohan at the end of 32 years is Rs. 91000

36800 = p × 4 × x% + p × 8 × y% + p × 20 × 10% ----- (ii)

Equation (ii) – equation (i)

70% of p = 7000

P = 10,000

Now, when Ram invest only for 3 years then

$$\frac{10,000 \times 3 \times x}{100} = 3600$$

3x = 36

X = 12% per annum

If Mohan invests only for 5 years then the total SI received by him

10,000 × 4 × x% + 10000 × 1 × y% = 6300

10000 × 4 × 12% + 10000 × y% = 6300

By solving, y = 15%

Answers :

4.   y = 15% per annum

P = 10000

The total SI received @ 15% per annum SI in 32 years

$$= \frac{10000 \times 32 \times 15}{100} = Rs.\ 48000$$

the simple interest revived by Mohan at the end of 32 years is Rs. 36800

The required difference = 48000 – 36800 = 11200

Hence, option C is correct.

5. Let the total investments made by Sanju = Rs. q then

q + q × 4 × 12% + q × 8 × 15% + q × 38 × 10% = 14904

100q + 548q =14904 × 100

648q = 14904 × 100

By solving, q = 2300

Hence, option C is correct.

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6. The simple interest he would have received = 10,000 × 4 × 12% + 10000 × 8 × 15% + 10000 × 3 × 10% = 198% of 10000 = 19800

Hence, option E is correct.

Answers :

7. Money spent by Ajay and Raman's start-up = 35,00,000 × 24 = Rs. 8,40,00,000
Profit = Revenue − Expenditure = 9,35,00,000 − 8,40,00,000 = Rs. 95,00,000
Timed investment for Ajay – 2,16,00,000 × 15 = Rs. 32,40,00,000 months
Timed investment for Raman – 3,24,00,000 × 9 = Rs. 29,16,00,000 months
Ratio of timed capital invested by Ajay and Raman –
⇒ 32,40,00,000 : 29,16,00,000 = 10 : 9
Therefore, profit sharing –

$$Ajay = \frac{10}{10 + 9} \times 95,00,000 = 10 \times 5,00,000 = Rs. 50,00,000$$

Raman = 95,00,000 − 50,00,000 = Rs. 45,00,000

Investment in US start-up by Ajay

$$= Rs.\frac{50,00,000}{50} = \$ 1,00,000$$

Timed investment for Ajay in US start-up = $1,00,000 × 12 = 12,00,000
Times investment for Tom in US start-up = $2,00,000 × 6 = 12,00,000
As the investment of Ajay and Tom is same, so the profit is divided equally

$$Therefore, Tom's \ share \ of \ profit = \frac{45990}{2} = \$ 22,995$$

Hence, option A is correct

8. Profit = Revenue − Expenditure = 9,35,00,000 − 8,40,00,000 = Rs. 95,00,000

Timed investment for Ajay − 2,16,00,000 × 15 = Rs. 32,40,00,000 months

Timed investment for Raman − 3,24,00,000 × 9 = Rs. 29,16,00,000 months

Ratio of timed capital invested by Ajay and Raman −

⇒ 32,40,00,000:29,16,00,000 = 10:9

Therefore, profit sharing −

Ajay = $\dfrac{10}{10+9}$ × 95,00,000 = 10 × 5,00,000 = Rs. 50,00,000

Raman = 95,00,000 − 50,00,000 = Rs. 45,00,000 = Windfall gain invested in his start-up with his brother-in-law

Timed investment by Raman −

[35,00,000 × (4 + 6 + 8)] + [45,00,000 × 6] = 6,30,00,000 + 2,70,00,000 = Rs. 9,00,00,000 months

{Rs. 35,00,000 was kept invested even when the windfall was invested}

Timed investment by Raman's brother-in-law −

20,00,000 × 16 = Rs. 3,20,00,000 months

Ratio of investments (Raman: Raman's brother-in-law)−

⇒ 90 : 32 = 45 : 16

Raman's brother-in-law's share of loss −

⇒ $\dfrac{16}{45+16}$ × 54,00,000 = Rs. 14,16,393 . Rs. 14,16,400

Hence, option B is correct.

9. CP of the shopkeeper 1 for 1000g of dal = Rs. 0.8 x where x is per kg rate of dal.

Now, 10% stones are added, so dal becomes → 1000 × 1.1 = 1100g of dal

False weight shows 1.100 × 1.2 kg= 1.32 kg

SP of 1.32 kg as per CP rate = 1.32 x

Now after discount shopkeeper 2 purchases at = 1.32 × 0.85 = Rs. 1.122 x

Shopkeeper 2 noticed:

Add 25% stone further

So, amount of the dal becomes

According to question,

$$= 1.1 + \frac{1.1}{4} = \frac{5.5}{4} \text{ kg}$$

Shopkeeper 1 purchase it at

$$= \frac{5.5}{4} \times 1.1x = \frac{6.05}{4} x$$

In the whole transaction shopkeeper 1 spent

$$= 0.8x + \frac{6.05x}{4}$$

= 0.8x + 1.5125x = Rs. 2.3125x

Shopkeeper 1 gets = Rs. 1.122x

$$\text{Loss} = \frac{1.1905x}{2.3125x} \times 100 = 51.5\% \text{ approx}$$

If we consider the exact value 1.122 while calculating the amount of dal for shopkeeper 2 and then solve the question the loss % would be 52.1.

So the answer is 52% approx.

Hence, option D is correct.

10. As already solved in the previous question,

Shopkeeper 2 gets = Rs. 1.5125x

CP = Rs. 1.122x

$$\text{Profit} = \frac{0.3905}{1.122} = 35\% \text{ profit approx.}$$

Hence, option D is correct.