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Compound Interest Questions Quiz for Bank Clerk Mains and PO Pre Exams.

Compound Interest Quiz 9

Directions: Kindly study the following Questions carefully and choose the right answer:

1. Pankaj borrowed a total amount of Rs.32500 from his three friends Raj, Akash and Suresh. All of his friends apply different rates of interest in such a way that Raj applies 12%, Akash applies 16% and Suresh applies 18% interest rate respectively and total he gives Rs.5090 as interest. If the amount that Pankaj had taken from Raj is 18/25 of the amount taken from Suresh, then find that what amount Pankaj has taken from Akash?

A. Rs. 13000   B. Rs. 12000   C. Rs. 11000   D. Rs. 10000   E. None of these

2. Mr. Bede wins Rs. 120000 on Kaun Banega Crorepati. He has to pay 25% as gift tax to the government. He places remaining money in fixed deposit @ 10% compounded annually. However, he has to pay 20% tax on the interest. How much money does Mr. Bede has after 4 years?

A. Rs. 122444   B. Rs. 112880   C. Rs. 116440   D. Rs. 118660   E. None of these

3. A person closes his account in an investment scheme by withdrawing Rs 10000. One year ago, he had withdrawn Rs 6000. Two years ago he had withdrawn Rs 5000. Three years ago he had not withdrawn any money. How much money had he deposited approximately at the time of opening the account 4 years ago, if the annual rate of compound interest is 10%.

A. Rs. 15470   B. Rs. 16680   C. Rs. 14250   D. Rs. 15200   E. None of these

4. A lent an amount of Rs. 1100 to B. This is to be paid back to A in two instalments. If the rate of interest, which A charges to B, be 20% compounded annually, then what is the value of each instalment?

A. Rs. 730   B. Rs. 780   C. Rs. 750   D. Rs. 720   E. None of these

5. The simple interest accrued on an amount of Rs. 18,500 at the end of three years is Rs. 7770. What would be the compound interest accrued on the same amount at the same rate in the same period?

A. Rs. 8908.56   B. Rs. 8218.27   C. Rs. 7754.82   D. Rs. 9537.47   E. None of these

6. Parvati deposited Rs. 5,000 at a newly opended branch of Bharitya Mahila Bank at 10% rate of interest for 2 years presuming the interest to be calculated on the principal sum only once a year. How much more money will Parvati have in her account at the end of two years, if the interest is compounded semi-annually?

A. Rs. 50   B. Rs. 40   C. Rs. 77.50   D. Rs. 85.50   E. None of these

7. Shahrukh took a loan of Rs. 15,000 from Salman. The condition that Salman set for Shahrukh was that for the first three years the rate of interest would be at 8% simple interest per year and at 10% compound interest (compounded annually) from the fourth years onwards. Shahrukh played foul and did not pay anything until the end of the fifth year. How much would he have to repay if he is to clear the entire amount only at the end of the fifth year? (in Rupees)

A. Rs. 22506   B. Rs. 22105   C. Rs. 22900   D. Rs. 22500   E. Rs. 22450

8. Divide Rs. 841 between X and Y so that the amount of X after 5 yr is equal to the amount of Y after 7 yr, the interest being compounded at 5% pa.

A. 400 , 441   B. 610 , 231   C. 414 , 441   D. 480, 361   E. None of these

9. Murli Vijay took money from the micro finance company Mountsoft Nidhi at lower rate of interest and saved in a scheme, which gave him a compound interest of 20%, compounded annually. Find the least number of complete years after which his sum will be more than double.

A. 4 years   B. 2 years   C. 6 years   D. 8 years   E. None of these

10. Alia invests Rs. x in insurance which gives her returns at 21% annually and Rs. y in Mutual Funds which gives her returns of 10% compounded half-yearly. If Alia gets the same returns from both the investments after 1 year, then what is the square root of the ratio of x to y?

A. 12 : 13   B. 15 : 17   C. 18 : 19   D. 20 : 21   E. None of these

Correct Answers:

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

Explanations:

1.

Let the amount taken from Suresh is x and amount taken from Raj = $\dfrac{18x}{25}$

Amount taken from Akash = $32500 - x - \dfrac{18x}{25} = 32500 - \dfrac{43x}{25}$

Total interest he gives -

$$\Rightarrow \frac{\left(\dfrac{18x}{25}\right) \times 12}{100} + \frac{\left(32500 - \dfrac{43x}{25}\right) \times 16}{100} + \frac{x \times 18}{100} = 5090 \text{ (Given)}$$

$216x - 688x + 450x = 12725000 - 13000000$
$22x = 275000$
$x = 12500$

Amount taken from Akash $= 32500 - 43 \times \dfrac{12500}{25} = 32500 - 21500 = Rs.11000$

Hence, option (C) is correct.

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2. Bede has Rs 90000 with him after paying 25% as gift tax.

	Amount Invested	Interest	Tax
Year 1	90000	9000	1800
Year 2	97200	9720	1944
Year 3	104976	10497.60	2099.52
Year 4	113374.08	11337.408	2267.4816

So, Bede has Rs. (113374.08 + 11337.408 – 2267.4816) = Rs. 122444 at the end of 4th year.

Hence, option (A) is correct.

3. Suppose the person has deposited Rs. X at the time of opening account.

After one year, he had = Rs. $\left(x + \dfrac{x \times 10 \times 1}{100}\right)$ = Rs. $\dfrac{11x}{10}$

After two years, he had = Rs. $\left(\dfrac{11x}{10} + \dfrac{11x}{10} \times \dfrac{10 \times 1}{100}\right) = \dfrac{121x}{100}$

After withdrawing Rs 5000 from Rs. $\dfrac{121x}{100}$, the balance

= Rs. $\dfrac{121x - 500000}{100}$

After 3 years, he had = $\dfrac{121x - 500000}{100} + \dfrac{121x - 500000}{100} \times \dfrac{10 \times 1}{100}$

= $\dfrac{11(121x - 500000)}{1000}$

After withdrawing 6000 from above, the balance = Rs. $\left(\dfrac{1331x}{1000} - 11500\right)$

After 4 years, he had = Rs. $\dfrac{11}{10}\left(\dfrac{1331x}{1000} - 11500\right) - 10000 = 0$

⇒ Rs 15470
Hence, option (A) is correct.

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4. Let x = equal instalment at the end of each year
Now 1st year,
P = Rs. 1100

Interest at the end of 1st year = $\dfrac{1100 \times 20 \times 1}{100}$ = Rs. 220

Now, at the beginning of 2nd year,
P = Rs. (1100 + 220 − x) = Rs. (1320 − x)

Interest at the end of 2nd year = $\dfrac{(1320 - x) \times 20 \times 1}{100}$ = $264 - \dfrac{x}{5}$

Now amount remaining after 2 years = $(1320 - x) + \left(264 - \dfrac{x}{5}\right) - x = 0$

⇒ $2x + \dfrac{x}{5}$ = 1320 + 264

⇒ $\dfrac{11x}{5}$ = 1584

⇒ X = 720
Hence, option (D) is correct.

5. Amount at the end of 2nd year

$= Rs7500\left(1 + \dfrac{8}{100}\right)\left(1 + \dfrac{10}{100}\right)$

= Rs7500 × 1.08 × 1.10 = Rs 8910
Thus C.I. for two years = amount – principal
=   Rs8910 – Rs 7500 = Rs 1410
Hence, option A is correct.

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6. If the interest is calculated only once a year, it must be a case of Simple Interest.
Net % rate of interest at SI for 2 years = 10 × 2 = 20%
Now, as in the 2nd scenario the sum is calculated at CI on half-yearly basis, we can find the overall rate of interest approximately by applying the net % effect formula thrice.
Net % rate for 1st two half-years

$= 5 + 5 + \dfrac{5 \times 5}{100} = 10.25\%$

Net % rate till next half-year

$= 10.25 + 5 + \dfrac{10.25 \times 5}{100}$

= 15.25 + 0.5125 ≈ 15.76%

Net % rate till the last half year = $15.76 + 5 + \dfrac{15.76 \times 5}{100}$

= 20.76 + 0.788 ≈ 21.55
∴   Difference in CI and SI = 21.55 ~ 20 = 1.55%
∴   1.55% of 5000 = 77.5
Hence, option C is correct.

7.

The simple interest for first three years = $\dfrac{15000 \times 8 \times 3}{100}$ = Rs. 3600

∴   Amount after three years 15000 + 3600 = Rs. 18600
Now, on this amount he pays 10% interest CI for 2 years
∴   Effective compound interest% for 2 years

Net% effect = $x + y + \dfrac{xy}{100}$

Here, x = y = 10%
Putting the values, we get

Rate% = $10 + 10 + \dfrac{10 \times 10}{100}$ = 20 + 1 = 21%

∴   Amount = 21% of 18600 + 18600 = 3906 +18600 = 22506/-
Hence, option A is correct.

8. Let the first part = x.

Then, second part = (841 – x)

According to the question,

$$x\left(1 + \frac{5}{100}\right)^5 = (841 - x)\left(1 + \frac{5}{100}\right)^7$$

$$\Rightarrow \frac{x}{(841-x)} = \frac{\left(1 + \frac{5}{100}\right)^7}{\left(1 + \frac{5}{100}\right)^5}$$

$$\Rightarrow \frac{x}{(841-x)} = \left(1 + \frac{5}{100}\right)^2$$

$$\Rightarrow \frac{x}{(841-x)} = \left(\frac{21}{20}\right)^2$$

⇒ 400x = (841 – x) 441

⇒ 400x = 841 × 441 – 441x

⇒ 841x = 841 × 441

⇒ x = 441.

Hence, option A is correct.

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9. To solve such questions, we can apply the net% effect

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

For first 2 years, the amount will be increased by

x = y = 20%

$$= 20 + 20 + \frac{20 \times 20}{100} = 40 + 4 = 44\%$$

For 3rd year,

x = 44%, y = 20%

$$= 44 + 20 + \frac{44 \times 20}{100} = 64 + 8.8 = 72.8\%$$

For 4th year,

x = 72.8, y = 20%

$$= 72.8 + 20 + \frac{72.8 \times 20}{100} = 92.8 + 14.56 = 107.36\%$$

Hence, it will take minimum 4 years to make sum more than double.

Hence, option A is correct.

10. As we know that for the first year, SI and CI remain the same.

Therefore, the amount of Insurance at the end of first year = (100 + 21) % of x = 1.21x

In case of Mutual funds, the effective rate of interest compounded half-yearly = 5%

Therefore, net% effective rate of interest

$= 5 + 5 + \dfrac{5 \times 5}{100} = 10 + 0.25 = 10.25\%$

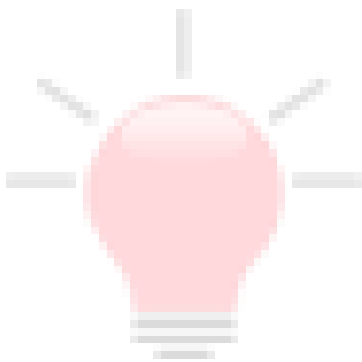Therefore, the amount of Mutual funds at the end of first year = (100 + 10.25) % of y = 1.1025y

Now, as per the question both the amounts are equal

$\Rightarrow 1.21 \times x = 1.1025 \times y$

$\therefore \quad x : y = 1.1025 : 1.21 = 11025 : 12100 = \dfrac{441}{484}$

$\therefore \quad$ Reqd. square root $= \sqrt{\dfrac{441}{484}} = \dfrac{21}{22} = 21 : 22$

Hence, option E is correct.