

## Compound Interest Questions Quiz for CDS, CLAT, SSC and Bank Clerk Pre Exams.

### **Compound Interest Quiz 4**

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

1. Sanjay purchased a hotel worth rupees 10 lakhs and Anita purchased a car worth Rs. 16 lakh. The value of hotel every year increase by 20% of the previous value and the value of car every depreciates by 25%. What is the difference between the price of hotel and car after 3 years?

A.10,53,000	B. 10,63,000	C. 11,53,000	D. 10,43,000					
2. C.I. Rs. 5000 for 3 years at 8% for 1st year and 10% for 2nd year and 12% for 3rd year will be-								
A. 1325.6	B. 1652.8	C. 1734.9	D. 1263.8					
3. A has lent some money to B at 6% p.a. and C at 10% at the end of the year he has gain the overall interest at 8% p.a. in what ratio has he lent the money to A and B?								
A. 1 : 2	B. 2 : 1	C.1:1	D. 2 : 3					
4. Loan of 10,000 was lent to a person at for 3 years @ 10% for 1st year, 15% for rest 2 years. Find the amount?								
A. 14537.5	B. 14547.5	C. 14647.5	D. 14537.8					
5. The difference between C.I. and S.I. on a sum of money lent for 2 years at 10% is Rs. 40. The sum is:								
A. 2,000	B. 3,500	C. 3,700	D. 4,000					
6. If P is the principal amount and the rate of interest is r% per annum and the compound interest is calculated k times in a year, what is the amount at the end of n year?								
A. P $(1 + \frac{r}{100k})^{nk}$	B. P ( $1 + \frac{kr}{100}$ ) <sup>nk</sup>	C. P ( $1 + \frac{kr}{100}$ ) <sup>n/k</sup>	D. P $(1 + \frac{kr}{100k})^{n/k}$					

7. An amount of Rs. X at compound interest at 20% per annum for 3 year becomes y. what is y : x?							
A. 3 : 1	B. 36 : 25	C. 216 : 125	D. 125 : 216				
8. What is the least number of complete year in which a sum of money at 20% compound interest will be more than doubled?							
A. 7	B. 6	C. 5	D. 4				
9. What is the compound interest on Rs. 1600 at 25% per annum of 2 year compounded annually?							
A. Rs. 700	B. Rs. 750	C. Rs. 800	D. Rs. 900				
10. On what sum of money will the difference between simple interest and compound interest for 2 years at 5% pa be equal to Rs. 63?							
interest for 2 years at A. Rs. 25,200	5% pa be equal to Rs. 63? B. Rs. 24,800 The Quess	C. Rs. 25,500	D. Rs. 24,600				

#### **Correct Answers:**

1	2	3	4	5	6	7	8	9	10
А	В	С	В	D	А	С	D	D	Α

#### **Explanations:**

#### 1.

Amount of the hotel after 3 years =10 lakh  $\left(1 + \frac{20}{100}\right)^3$ .

= 10 lakh 
$$\left(\frac{6}{5}\right)^3$$
 = 10,00,000 ×  $\frac{216}{125}$ 

⇒ 1728000.

Amount of the car after 3 years =16 lakh  $\left(1-\frac{25}{100}\right)^3$ .

= 16 lakh 
$$\left(\frac{3}{4}\right)^3$$

 $= 16,00,000 \times \frac{27}{64}$ 

## = 6,75,000.

Difference = 17,28,000 – 6,75,000 = 10,53,000. Hence, option A is correct.

#### 2.

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Rate of interest for 1st, 2nd and 3rd year = 8%, 10% and 12% Now, P = 5000, T = 3 years By the net% effect we would calculate the effective compound rate of interest for 3 years = 33.056% (Refer to sub-details) Therefore, CI = 33.056% of 5000

 $CI = \frac{33.056 \times 5000}{100} = Rs.\ 1652.8$ 

#### Sub-details:

Calculation of effective compound rate of interest for 3 years will be as follows. For the first 2 years, let's apply the net% effect. Here, x = 8 and y = 10%

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

$$= 8 + 10 + \frac{8 \times 10}{100} = 18 + 0.8 = 18.8\%$$

Now let's take this 18.8% as x and 12% as y for the calculation of 3rd year.



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P = 10000, T = 3 years,
By the net% effect we would calculate the effective compound rate of interest for 3 years = 45.475% (Refer to
sub-details)
Principal = 100%; Amount (P + Cl) = 100 + 45.475 = 145.475%
100% = Rs. 10000
145.475% = Rs. x
By the cross multiplication, we get
x = \frac{10000 \times 145.475}{100} = Rs. 14547.5
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#### Sub-details:

Calculation of effective compound rate of interest for 3 years will be as follows. For the first 2 years, let's apply the net% effect. Here, x = 10 and y = 15%

Net% effect = x + y = 
$$\frac{xy}{100}$$
  
= 10 + 15 +  $\frac{10 \times 15}{100}$  = 25 + 1.5 = 26.5%  
Now let's take this 26.5% as x and 15% as y for the calculation of 3rd year.  
= 26.5 + 15 +  $\frac{26.5 \times 15}{100}$  = 41.5 + 3.975 = 45.475%  
Traditional Method:  
A = 10,000( $\frac{11}{10}$ )( $\frac{20 + 3}{20}$ )<sup>2</sup>  
A = 10,000( $\frac{11}{10}$ )( $\frac{20}{20}$ )( $\frac{23}{20}$ ).  
 $\Rightarrow 10 \times \frac{11 \times 23 \times 23}{4} \Rightarrow Rs. 14547.5.$   
Hence, option B is correct.  
5. Method I:  
To solve this question, we can apply a short trick approach  
Sum =  $\frac{10 + 100^2}{10^2}$  = 4000/-  
Wethod II:  
We can solve it by the net% formula,  
Rate % of Si for 2 yr at 10%, pa = 10 \times 2 = 20%  
Rate % of Cl for 2 yr at 10%,  
= 10 + 10 +  $\frac{10 \times 10}{100}$  = 21%  
% rate difference of Cl and SI = 21% - 20 = 1%  
Let the sum be x, then  
1% of x = 40  
 $x = \frac{40 \times 100}{10} = Rs. 4,000$ 

6. Given, principal amount = Rs. P Rate of interest,  $r = \frac{r}{k}$ % and Time, t = nk  $\therefore A = P\left(1 + \frac{r}{100 \text{ k}}\right)^{nk}$ Hence, option A is correct. **7.** Let P = Rs. x, r = 20%, t = 3 year, A = Rs. y  $\therefore A = P\left(1 + \frac{r}{100}\right)^{t}$  $\Rightarrow$  y = x  $\left(1 + \frac{20}{100}\right)^3$  $\Rightarrow y = x \left(\frac{6}{5}\right)^3$ nartKeed  $\Rightarrow \frac{\gamma}{x} = \left(\frac{6}{5}\right)^3 = \frac{216}{125}$ ∴ y:x = 216:125. Hence, option C is correct.

#### 8. Method I:

Let the sum of money = Rs. P ∴ Amount = 2P

$$\therefore A = P\left(1 + \frac{r}{100}\right)^{t} \Rightarrow 2P = P\left(1 + \frac{20}{100}\right)^{t}$$
$$\Rightarrow \frac{2P}{P} = \left(\frac{6}{5}\right)^{t} \Rightarrow 2 = \left(\frac{6}{5}\right)^{t}$$

On putting t = 4, we get

$$\Rightarrow \left(\frac{6}{5}\right)^4 = \frac{1296}{625} = 2 \text{ (approx.)}$$

∴ Least number of year = 4.

#### Method II:

A sum will get double of itself at an overall interest rate of 100%

Let's apply the net% effect formula to get to know how many years would it take for interest to go beyond 100%

Net% effect for 1st 2 yrs =  $20 + 20 + \frac{20 \times 20}{100} = 44\%$ 

Again, for next 1 yr =  $44 + 20 + \frac{44 \times 20}{100} = 72.8\%$ 

Again, for next 1 yr = 72.8 + 20 +  $\frac{72.8 \times 20}{100}$  = 107.36%

Here, we can see that in 4 yrs the given compound rate of interest is occurring to more than 100%. Therefore, 4 yrs is the correct answer.

Hence, option D is correct.



#### 10. Method I:

To solve this question, we can apply a short trick approach

Sum =  $\frac{\text{Difference} \times 100^2}{r^2}$ Given, Difference = 63, r = 5% By the short trick approach, we get Sum =  $\frac{63 \times 100^2}{5^2}$  = 25200/-

#### Method II:

We can solve it by the net% effect formula, Rate % of SI for 2 yr at 5% pa =  $5 \times 2 = 10\%$ Rate % of CI for 2 yr at 5% pa

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

% rate difference of CI and SI = 10.25% - 10% = .25%Let the sum be x, then 0.25% of x = 63  $x = \frac{63 \times 100}{0.25} = Rs. 25,200$ 

Hence, option A is correct.

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