Compound Interest Formula

A. Choose the correct answer:

1. The general formula for amount in compound interest when compounded annually is;

a) $A = P\left(1 + \frac{r}{100}\right)^t$ b) $A = P\left(1 - \frac{r}{100}\right)^t$

c) $A = P\left(1 + \frac{rt}{100}\right)$ d) $A = P\left(1 - \frac{rt}{100}\right)$

2. If principal is ₹5000, rate is 10% per annum and time is 2 years, then amount is;

a) ₹6050 b) ₹6100

c) ₹6200 d) ₹6150

3. Which of the following shows the correct relation?

a) Compound Interest = Amount + Principal

b) Compound Interest = Principal - Amount

c) Compound Interest = Amount - Principal

d) Compound Interest = Principal × Rate × Time

4. For half-yearly compounding, the formula for amount is;

a) $A = P\left(1 + \frac{r}{200}\right)^{2t}$ b) $A = P\left(1 + \frac{r}{100}\right)^{\frac{t}{2}}$

c) $A = P\left(1 + \frac{2r}{100}\right)^t$ d) $A = P\left(1 + \frac{r}{100}\right)^{2t}$

5. If principal is ₹4000, rate is 5% per annum, and time is 2 years, amount is;

a) ₹4410 b) ₹4400

c) ₹4420 d) ₹4430

B. Write the Missing Terms to Complete the Sentences:

1. In the formula $A = P\left(1 + \frac{r}{100}\right)^t$ P stands for ____.
2. In compound interest, amount after 2 years is calculated by applying the formula ____.
3. Compound Interest = Amount - ____.
4. In half-yearly compounding, the time is multiplied by ____.
5. For quarterly compounding, rate is divided by ____.

C. Figure out the answers to these questions:

1. Derive the formula for compound interest when compounded annually.
2. A sum of ₹10000 is invested at 5% per annum compounded annually. Find the amount after 2 years using the formula.
3. Find the amount on ₹5000 at 8% per annum compounded half-yearly for 1.5 years.
4. Using the compound interest formula, find the compound interest for ₹6400 at 5% per annum for 3 years.
5. Find the principal if amount after 2 years at 10% compounded annually is ₹12100.

D. Mark each sentence with a True (✔) or False (✗):

1. In the formula A = $P\left(1 + \frac{r}{100}\right)^t$, r represents the principal. ____
2. Compound Interest is always calculated using the final amount and initial principal. ____
3. If interest is compounded half-yearly, rate becomes half and time becomes double. ____
4. For annual compounding, we apply the formula A = $P\left(1 + \frac{r}{100}\right)^t$. ____
5. If the rate is 5% and time is 2 years, A = $P\left(1 + \frac{5}{100}\right)^2$. ____

E. Challenge yourself with these questions:

1. Find the amount and compound interest on ₹12000 for 2 years at 6% per annum compounded annually.
2. A man invested ₹8000 at 10% per annum compounded annually. Find the amount after 3 years using the formula.
3. Find the amount and compound interest on ₹15000 at 12% per annum compounded half-yearly for 1 year.
4. A sum becomes ₹13310 in 2 years at 10% per annum compounded annually. Find the principal.
5. Find the compound interest and amount when ₹6000 is invested for 2 years at 5% per annum compounded annually.