EPEA516
Analytical Skills II

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Learning Outcomes

After this lecture, you will be able to

- solve problems based on rate computation.

Problem 1

- At what interest rate p.a. the simple interest accrued on an amount of Rs. 1500 at the end of 2 years is Rs. 600?

- P = Rs. 1500

- T = 2 years

- S.I. = Rs. 600

- R = $\dfrac{\text{S.I. x 100}}{\text{P x T}}$

- R = $\dfrac{600 \text{ x } 100}{1500 \text{ x } 2}$

Problem 1

- $R = \dfrac{\text{S.I. x 100}}{\text{P x T}}$

- $R = \dfrac{600 \text{ x } 100}{1500 \text{ x } 2}$

- $R = \dfrac{600 \text{ x } 100}{1500 \text{ x } 2}$

- R = 20%

Problem 2

- At what interest rate p.a., in 4 years, a sum of Rs. 2000 will become Rs. 4000?

- P = Rs. 2000

- A = Rs. 4000

- T = 4 years

- S.I.   = A − P

- S.I.   = Rs. (4000 − 2000)

- S.I.   = Rs. 2000

Problem 2

- S.I. = Rs. 2000, T = 4 years, P = Rs. 2000, and R = ?

- R = $\dfrac{\text{S.I. x 100}}{\text{P x T}}$

- R = $\dfrac{\overset{25}{\cancel{2000}} \times \cancel{100}}{\cancel{2000} \times \cancel{4}}$

- R = 25 % p.a.

Problem 3

- Calculate rate per cent p.a. if a sum of money trebles (increase three times) itself in 4 years simple interest.

- n = 3

- T = 4 years

- R = ?

- R = $\dfrac{(n-1) \times 100}{T}$

Problem 3

- n = 3, T = 4 years, and R = ?

- $R = \dfrac{(n-1) \times 100}{T}$

- $R = \dfrac{(3-1) \times 100}{4}$

- $R = \dfrac{(2) \times \cancel{100}^{50}}{\cancel{4}^{2}}$

- R = 50 % p.a.

Problem 4

- Calculate rate of interest if a sum of money at simple interest amounts to Rs. 5000 in 2 years and to Rs. 6000 in 3 years.

- A_1 =Rs.5000, A_2= Rs.6000, T_1= 2 years, T_2 = 3 years, and R = ?

- R $= \dfrac{[A_2 - A_1]}{[A_2 T_1 - A_1 T_2]}$

$\quad = \dfrac{[6000 - 5000]}{[5000 \times 3 - 6000 \times 2]}$

Problem 4

- A_1 = 5000, A_2 = 6000, T_1 = 2 years, and T_2 = 3 years

- R $\quad = \dfrac{[A_2 - A_1]}{[A_2 T_1 - A_1 T_2]}$

$\quad = \dfrac{[6000 - 5000]}{[5000 \times 3 - 6000 \times 2]}$

$\quad = \dfrac{[1000]}{[15000 - 12000]}$

$\quad = \dfrac{[1000]^{\,1}}{[3000]_{\,3}}$

$\quad = \dfrac{1}{3}\,\%$

Problem 5

- A person 'X' deposits Rs. 1000 and Rs. 500 in saving at 3.5% p.a. & 5% p.a. respectively. Compute the rate of interest for the whole sum.

- P_1 = Rs. 1000

- P_2 = Rs. 500

- R_1 = 3.5% p.a.

- R_2 = 5% p.a.

- R = ?

Problem 5

- P_1 = 1000, P_2 = 500, R_1 = 3.5% p.a., R_2 = 5% p.a., and R = ?

- R $\quad = \dfrac{[P_1 R_1 + P_2 R_2]}{[P_1 + P_2]}$

$\quad = \dfrac{[1000 \times 3.5 + 500 \times 5]}{[1000 + 500]}$

$\quad = \dfrac{[6000]^{\,4}}{[1500]^{\,1}}$

$\quad = 4 \text{ \% p.a.}$

Conclusion

- $R = \dfrac{\text{S.I.} \times 100}{P \times T}$

- If a certain sum of money becomes n times itself in T years at simple interest, then the rate of interest per annum is $R = \dfrac{(n-1) \times 100}{T}$

Conclusion

- If a certain sum of money P lent out at S.I. amounts to A_1 in T_1 years and to A_2 in T_2 years, then

$$R = \frac{[A_2 - A_1]}{[A_2 T_1 - A_1 T_2]}$$

- If an amount P_1 lent at simple interest rate of R_1% per annum, and another amount P_2 at simple interest rate of R_2 % per annum, then the rate of interest for the whole sum

is

$$R = \frac{[P_1 R_1 + P_2 R_2]}{[P_1 + P_2]}$$

Summary

- Computation of Rate

That's all for now...