Aptitude Shortcuts and Mind Tricks for Simple Interest Problems

QUESTION

Arun deposited a certain sum in a bank. He gets 4% per annum interest for 1st 3 years, 5% for next 2 years and 6% beyond that. If he gets Rs. 2000 as simple interest for 8 years, how much money did he deposit in the bank?

GIVEN

Rate of interest, R1 = 4% for Number of years, N1 = 3 years

Rate of interest, R2 = 5% for N2 = 2 years

R3 = 6% for N3 = 3 years (because total number of years = 8 years)

Simple Interest, S.I. = Rs. 2000

SOLUTION

NORMAL METHOD

Let the sum deposited i.e., Principle, **P = Rs. Y**

Now **S.I. = [PNR] / 100**

Here we have three different rates of interest R1, R2 and R3 and three different number of years N1, N2 and N3

Therefore, **S.I. = ([P×N1×R1] / 100) + ([P×N2×R2] / 100) + ([P×N3×R3] / 100)**

2000 = ([Y×3×4] / 100) + ([Y×2×5] / 100) + ([Y×3×6] / 100)

2000 = (Y/100) × (12 + 10 + 18)

200000 = Y × 40

40Y = 200000

Y = [200000/40] = Rs. 5000

Therefore, Principle, **Y = Rs. 5000**

ALTERNATE METHOD

The total rate of interest = (R1×N1) + (R2×N2) + (R3×N3)

= (4%×3) + (5%×2) + (6%×3)

= 12% + 10% + 18%

R% = 40%

Now, 40% → Rs. 2000 (S.I.)

Then, 100% → ? (Principle)

Principle = [2000×100] / 40 = 5000

Therefore, **P = Rs. 5000**