

$$\Rightarrow 120 = P \left[\frac{(P^2 + 2500 + 100P)}{P^2} - 1 \right]$$

$$\frac{120P^2}{P} = P^2 + 2500 + 100P - P^2$$

$$120P - 100P = 2500$$

$$20P = 2500$$

$$P = \frac{2500}{120}$$

$$P = ₹ 125$$

$$4. R = \frac{5000}{P}$$

$$\Rightarrow R = \frac{5000}{125} = 40$$

$$R = 40\%$$

Compound Interest

Case Study

1. Formulae -

$$(i) SI = \frac{PRT}{100}$$

$$(ii) CI = P \left[\left(1 + \frac{R}{100} \right)^T - 1 \right]$$

$$2. SI = \frac{PRT}{100}$$

$$100 = \frac{PR \times 2}{\cancel{100} 50}$$

$$\boxed{5000 = PR}$$

3. We know that

$$PR = 5000$$

$$\therefore R = \frac{5000}{P} \quad \text{--- (2)}$$

Using equation (i) in CI,
we get,

$$CI = P \left[\left(1 + \frac{R}{100} \right)^T - 1 \right]$$

$$\Rightarrow 120 = P \left[\left(1 + \frac{5000}{\cancel{100} P} \right)^2 - 1 \right]$$

$$\Rightarrow 120 = P \left[\left(\frac{P+50}{P} \right)^2 - 1 \right]$$