Compound Interest And Simple Interest

① Let Principal = P

Time = 2yrs

Rate = 10%

C.I = ₹525

$$P\left[\left(1+\frac{R}{100}\right)^2-1\right]=525$$

$$\Rightarrow P\left[\frac{10000+R^2+2\times100R}{100^2}\right]$$

$$\Rightarrow P\left[\frac{110}{100}\times\frac{110}{100}-1\right]=525$$

$$\Rightarrow P\left[\frac{121}{100}-1\right]=525 \Rightarrow P\left[\frac{121-100}{100}\right]=525$$

$$\Rightarrow P=\frac{525\times100}{21}=₹2500$$

Principal = ₹2500 Time = 4yrs

Rate = 5%

$$S.I=\frac{2500\times4\times5}{100}=₹500$$

② $$\frac{2\times PRT}{100}=4000\left[\left(1+\frac{r}{100}\right)^2-1\right]$$

$$\Rightarrow \frac{2PRT}{100}=4000\left[\left(1+\frac{10}{100}\right)^2-1\right]$$

$$\Rightarrow \frac{2PRT}{50}=4000\left[\left(1+\frac{10}{100}\right)^2-1\right]$$

$$\Rightarrow \frac{12P}{25}=4000\left[\frac{121}{100}-1\right]$$

$$\Rightarrow \frac{12P}{25}=4000\times\frac{21}{100} \Rightarrow P=\frac{40\times21\times25}{12}=₹1750$$

(3). Let Principal = P

Time = 6yrs

Amount: $P + \frac{60P}{100} = \frac{16P}{10}$

$P + \frac{PRT}{100} = \frac{16P}{10} \Rightarrow \frac{100P + 6PR}{100} = \frac{16P}{10} \Rightarrow 1000P + 60PR = 1600P$

$\Rightarrow 600P = 60PR$

$\Rightarrow \frac{600P}{60P} = 10 = R = R$

Principal for C.I = ₹12,000

Rate = 10%

Time = 3yrs

Compound Interest $= 12000\left[\left(1 + \frac{10}{100}\right)^3 - 1\right]$

$= 12000\left[\frac{110}{100} \times \frac{110}{100} \times \frac{110}{100} - 1\right]$

$= 12000 \times \left[\frac{1331}{1000} - 1\right] = 12000 \times \left[\frac{1331 - 1000}{1000}\right]$

$= 120 \times 331 = ₹3972$

(4) $\frac{15000 \times 2R}{100} - 15000\left[\left(1 + \frac{R}{100}\right)^2 - 1\right] = 96$

$\Rightarrow 300R - 15000\left[\frac{10000 + R^2 + 200R - 1}{10000}\right] = 96$

$\Rightarrow 300R - 15000\left[\frac{10000 + R^2 + 200R - 10000}{10000}\right] = 96$

$\Rightarrow 300R - \frac{15R^2 = 3000R = 96}{10} \Rightarrow 3000R - 15R^2 - 3000R = 960$

$\Rightarrow R^2 = \frac{960}{15} = 64 \Rightarrow R = \sqrt{64} = 8\%$