

Solution 13:

Exercise 2(C)

Solution 1:

$$\begin{aligned} \text{Rate of interest} &= \frac{\text{Difference in the interest of the two consecutive periods} \times 100}{\text{C.I. of preceding year} \times \text{Time}} \% \\ &= \frac{(7410 - 5700) \times 100}{5700 \times 1} \% \\ &= 30\% \end{aligned}$$

Solution 2:

∴ Difference between the C.I. of two successive half-years
= Rs760.50 - Rs650 = Rs110.50
⇒ Rs110.50 is the interest of one half-year on Rs650

$$\therefore \text{Rate of interest} = \text{Rs} \frac{100 \times I}{P \times T} \% = \frac{100 \times 110.50}{650 \times \frac{1}{2}} \% = 34\%$$

Solution 3:

(i) Amount in two years = Rs5,292

Amount in three years = Rs5,556.60

∴ Difference between the amounts of two successive years

= Rs5,556.60 - Rs5,292 = Rs264.60

⇒ Rs264.60 is the interest of one year on Rs5,292

$$\therefore \text{Rate of interest} = \text{Rs} \frac{100 \times I}{P \times T} \% = \frac{100 \times 264.60}{5,292 \times 1} \% = 5\%$$

(ii) Let the sum of money = Rs100

∴ Interest on it for 1st year = 5% of Rs100 = Rs5

⇒ Amount in one year = Rs100 + Rs5 = Rs105

Similarly, amount in two years = Rs105 + 5% of Rs105

= Rs105 + Rs5.25

= Rs110.25

When amount in two years is Rs110.25, sum = Rs100

$$\Rightarrow \text{When amount in two years is Rs5,292, sum} = \text{Rs} \frac{100 \times 5,292}{110.25}$$

= Rs4,800

Solution 4:

(i) C.I. for second year = Rs1,089

C.I. for third year = Rs 1,197.90

∴ Difference between the C.I. of two successive years

= Rs1,197.90 - Rs1089 = Rs108.90

⇒ Rs108.90 is the interest of one year on Rs1089

$$\therefore \text{Rate of interest} = \text{Rs} \frac{100 \times I}{P \times T} \% = \frac{100 \times 108.90}{1089 \times 1} \% = 10\%$$

(ii) Let the sum of money = Rs100

∴ Interest on it for 1st year = 10% of Rs100 = Rs10

⇒ Amount in one year = Rs100 + Rs10 = Rs110

Similarly, C.I. for 2nd year = 10% of Rs110

= Rs11

When C.I. for 2nd year is Rs11, sum = Rs100

$$\Rightarrow \text{When C.I. for 2nd year is Rs1089, sum} = \text{Rs} \frac{100 \times 1089}{11} = \text{Rs}9,900$$

Solution 5:

For 1st year

P = Rs8,000; A = 9,440 and T = 1 year

Interest = Rs9,440 - Rs8,000 = Rs1,440

$$\text{Rate} = \frac{I \times 100}{P \times T} \% = \frac{1,440 \times 100}{8,000 \times 1} \% = 18\%$$

For 2nd year

P = Rs9,440; R = 18% and T = 1 year

$$\text{Interest} = \text{Rs} \frac{9,440 \times 18 \times 1}{100} = \text{Rs}1,699.20$$

Amount = Rs9,440 + Rs1,699.20 = Rs11,139.20

For 3rd year

P = Rs11,139.20; R = 18% and T = 1 year

$$\text{Interest} = \text{Rs} \frac{11,139.20 \times 18 \times 1}{100} = \text{Rs}2,005.06$$

Solution 6:

For 1st half-year

P = Rs15,000; A = Rs15,600 and T = $\frac{1}{2}$ year

Interest = Rs15,600 - Rs15,000 = Rs600

$$\text{Rate} = \frac{I \times 100}{P \times T} \% = \frac{600 \times 100}{15,000 \times \frac{1}{2}} \% = 8\% \text{ Ans.}$$

For 2nd half-year

P = Rs15,600; R = 8% and T = $\frac{1}{2}$ year

$$\text{Interest} = \text{Rs} \frac{15,600 \times 8 \times \frac{1}{2}}{100} = \text{Rs}624$$

Amount = Rs15,600 + Rs624 = Rs16,224

For 3rd half-year

P = Rs16,224; R = 8% and T = $\frac{1}{2}$ year

$$\text{Interest} = \text{Rs} \frac{16,224 \times 8 \times \frac{1}{2}}{100} = \text{Rs}648.96$$

Amount = Rs16,224 + Rs648.96 = Rs16,872.96 Ans.

Solution 7:

For 1st year

P=Rs12,800; R=10% and T= 1year

$$\text{Interest} = \text{Rs} \frac{12,800 \times 10 \times 1}{100} = \text{Rs}1,280$$

$$\text{Amount} = \text{Rs}12,800 + \text{Rs}1,280 = \text{Rs}14,080$$

For 2nd year

P=Rs14,080; R=10% and T= 1 year

$$\text{Interest} = \text{Rs} \frac{14,080 \times 10 \times 1}{100} = \text{Rs}1,408$$

$$\text{Amount} = \text{Rs}14,080 + \text{Rs}1,408 = \text{Rs}15,488$$

For 3rd year

P=Rs15,488; R=10% and T= 1year

$$\text{Interest} = \text{Rs} \frac{15,488 \times 10 \times 1}{100} = \text{Rs}1,548.80$$

$$\text{Amount} = \text{Rs}15,488 + \text{Rs}1,548.80 = \text{Rs}17,036.80$$

Solution 8:

(i) C.I. for second year = Rs864

C.I. for third year = Rs933.12

∴ Difference between the C.I. of two successive years

$$= \text{Rs}933.12 - \text{Rs}864 = \text{Rs}69.12$$

⇒ Rs69.12 is the interest of one year on Rs864

$$\therefore \text{Rate of interest} = \text{Rs} \frac{100 \times I}{P \times T} \% = \frac{100 \times 69.12}{864 \times 1} \% = 8\% \text{ Ans.}$$

(ii) Let the sum of money = Rs100

∴ Interest on it for 1st year = 8% of Rs100 = Rs8

⇒ Amount in one year = Rs100 + Rs8 = Rs108

Similarly, C.I. for 2nd year = 8% of Rs108

$$= \text{Rs}8.64$$

When C.I. for 2nd year is Rs8.64, sum = Rs100

$$\Rightarrow \text{When C.I. for 2nd year is Rs864, sum} = \text{Rs} \frac{100 \times 864}{8.64} = \text{Rs}10,000$$

$$\text{Interest for 1st year} = \text{Rs} \frac{10,000 \times 8 \times 1}{100} = \text{Rs}800$$

Principal for 4th year = Rs10,000 + Rs800 + Rs864 + Rs933.12

$$= \text{Rs}12,597.12$$

∴ Interest for 4th year = 8% of Rs12,597.12

$$= \text{Rs}1,007.77 \text{ Ans.}$$

Solution 9:

(i) Amount in three years = Rs20,160

Amount in four years = Rs24,192

∴ Difference between the amounts of two successive years

= Rs24,192 - Rs20,160 = Rs4,032

⇒ Rs4,032 is the interest of one year on Rs20,160

∴ Rate of interest = $\text{Rs} \frac{100 \times I}{P \times T} \% = \frac{100 \times 4032}{20,160 \times 1} \% = 20\%$

(ii) Let amount in two years = Rs100

And amount in three years = Rs100 + 20% of Rs100

= Rs100 + Rs20

= Rs120

When amount in 3 years is Rs120, amount in two years = Rs100

⇒ When amount in 3 years is Rs20,160, sum = $\text{Rs} \frac{100 \times 20,160}{120} = \text{Rs}16,800$ Ans.

(iii) Amount in 5 years = Rs24,192 + 20% of Rs24,192

= Rs24,192 + Rs4,838.40

= Rs29,030.40

Solution 10:

(i) For 1st year

P = Rs8,000; R = 7% and T = 1 year

Interest = $\text{Rs} \frac{8,000 \times 7 \times 1}{100} = \text{Rs}560$

Amount = Rs8,000 + Rs560 = Rs8,560

Money returned = Rs3,560

Balance money for 2nd year = Rs8,560 - Rs3,560 = Rs5,000

For 2nd year

P = Rs5,000; R = 7% and T = 1 year

Interest paid for the second year = $\text{Rs} \frac{5,000 \times 7 \times 1}{100} = \text{Rs}350$ Ans.

(ii) The total interest paid in two years = Rs350 + Rs560

= Rs910 Ans.

(iii) The total amount of money paid in two years to clear the debt

= Rs8,000 + Rs910

= Rs8,910 Ans.

Solution 11:

(i)

Difference between depreciation in value between the first and second years

$$₹4,000 - ₹3,600 = ₹400$$

$$\Rightarrow \text{Depreciation of one year on ₹4,000} = ₹400$$

$$\Rightarrow \text{Rate of depreciation} = \frac{400}{4000} \times 100\% = 10\%$$

(ii)

Let ₹100 be the original cost of the machine.

$$\text{Depreciation during the 1}^{\text{st}} \text{ year} = 10\% \text{ of ₹100} = ₹10$$

When the value depreciates by ₹10 during the 1st year, Original cost = ₹100

$$\Rightarrow \text{When the depreciation during 1}^{\text{st}} \text{ year} = ₹4,000,$$

$$\text{Original cost} = \frac{100}{10} \times 4000 = 40000$$

The original cost of the machine is ₹40,000.

(iii)

Total depreciation during all the three years

$$= \text{Depreciation in value during (1}^{\text{st}} \text{ year} + 2^{\text{nd}} \text{ year} + 3^{\text{rd}} \text{ year)}$$

$$= ₹4,000 + ₹3,600 + 10\% \text{ of } (₹40,000 - ₹7,600)$$

$$= ₹4,000 + ₹3,600 + ₹3,240$$

$$= ₹10,840$$

The cost of the machine at the end of the third year

$$= ₹40,000 - ₹10,840 = ₹29,160$$

Solution 12:

Cost of machine = Rs32,000

Depreciation rate every year = 5%

$$\therefore \text{Cost of machine after one year} = \text{Rs}32,000 - 5\% \text{ of Rs}32,000$$

$$= \text{Rs}32,000 - \text{Rs}1,600$$

$$= \text{Rs}30,400$$

$$\therefore \text{Cost of machine after two years} = \text{Rs}30,400 - 5\% \text{ of Rs}30,400$$

$$= \text{Rs}30,400 - \text{Rs}1,520$$

$$= \text{Rs}28,880$$

$$\therefore \text{Total depreciation in two years} = \text{Rs}32,000 - \text{Rs}28,880$$

$$= \text{Rs}3,120 \text{ Ans.}$$

Solution 1:

Let the sum of money be Rs 100

Rate of interest= 10%p.a.

Interest at the end of 1st year= 10% of Rs100= Rs10

Amount at the end of 1st year= Rs100 + Rs10= Rs110

Interest at the end of 2nd year= 10% of Rs110 = Rs11

Amount at the end of 2nd year= Rs110 + Rs11= Rs121

Interest at the end of 3rd year=10% of Rs121= Rs12.10

∴ Difference between interest of 3rd year and 1st year

=Rs12.10- Rs10=Rs2.10

When difference is Rs2.10, principal is Rs100

When difference is Rs252, principal = $\frac{100 \times 252}{2.10}$ =Rs12,000 Ans.

Solution 14:

For 1st year

P= Rs10,000; R=10% and T= 1year

Interest= Rs $\frac{10,000 \times 10 \times 1}{100}$ =Rs1,000

Amount at the end of 1st year=Rs10,000+Rs1,000=Rs11,000

Money paid at the end of 1st year=30% of Rs10,000=Rs3,000

∴ Principal for 2nd year=Rs11,000- Rs3,000=Rs8,000

For 2nd year

P=Rs8,000; R=10% and T= 1year

Interest= Rs $\frac{8,000 \times 10 \times 1}{100}$ = Rs800

Amount at the end of 2nd year=Rs8,000+Rs800= Rs8,800

Money paid at the end of 2nd year=30% of Rs10,000= Rs3,000

∴ Principal for 3rd year=Rs8,800- Rs3,000=Rs5,800 Ans.

Solution 15:

For 1st year

P= Rs10,000; R=10% and T= 1year

Interest= Rs $\frac{10,000 \times 10 \times 1}{100}$ =Rs1,000

Amount at the end of 1st year=Rs10,000+Rs1,000=Rs11,000

Money paid at the end of 1st year=20% of Rs11,000=Rs2,200

∴ Principal for 2nd year=Rs11,000- Rs2,200=Rs8,800

For 2nd year

P=Rs8,800; R=10% and T= 1year

Interest= Rs $\frac{8,800 \times 10 \times 1}{100}$ = Rs880

Amount at the end of 2nd year=Rs8,800+Rs880= Rs9,680

Money paid at the end of 2nd year=20% of Rs9,680= Rs1,936

∴ Principal for 3rd year=Rs9,680- Rs1,936=Rs7,744 Ans.