

Banking

Chapter-2 Banking.

Solution-01:

In this recurring deposit account, ₹350 will earn interest for 12 months, 8%

Here, P = money deposited per month = ₹350

n = number of months for which the money to be deposited = $1 \times 12 = 12$ and

r = Simple interest rate Percent Per annum = 8

(i) using the formula: $I = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$

$$I = 350 \times \frac{12(12+1)}{2 \times 12} \times \frac{8}{100}$$

$$I = \frac{35 \times 13 \times 4}{10}$$

$$I = ₹182.$$

(ii) Using the formula:

$$\text{Matured Value} = P \times n + I$$

$$= ₹350 \times 12 + ₹182$$

$$= ₹4200 + ₹182$$

$$= ₹4,382.$$

Solution-03:

In this recurring deposit account.

Here, P = money deposited per month = ₹1,000

n = number of months for which the money to be deposited = $3 \times 12 = 36$

r = rate of Interest = 8%

(i) using formula

$$I = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$\begin{aligned}
 I &= 1,000 \times \frac{3}{12} \frac{(36+1)}{2} \times \frac{8}{100} \\
 &= 10 \times 37 \times 3 \times 4 \\
 &= 370 \times 12 \\
 &= ₹ 4,440
 \end{aligned}$$

$$\begin{aligned}
 \text{(ii) Maturity Value} &= P \times n + I \\
 &= ₹ 10,000 \times 36 + I \\
 &= ₹ 36,000 + ₹ 4,440 \\
 &= ₹ 40,440.
 \end{aligned}$$

Solution-02:-

Here

P = money deposited per month = ₹ 150.

n = number of months for which the money to be deposited = 8.

r = rate of interest = 8%.

(i) By using formulae

$$\begin{aligned}
 I &= P \times \frac{(n)(n+1)}{2 \times 12} \times \frac{r}{100} \\
 &= 150 \times \frac{8(8+1)}{2 \times 12} \times \frac{8}{100} \\
 &= \frac{15 \times 8 \times 3}{10} \\
 &= \frac{360}{10} \\
 &= ₹ 36.
 \end{aligned}$$

$$\begin{aligned}
 \text{(ii) Maturity Value} &= P \times n + I \\
 &= ₹ 150 \times 8 + ₹ 36 \\
 &= ₹ 1,200 + ₹ 36 \\
 &= ₹ 1,236.
 \end{aligned}$$

Solution-04:-

Here,

P = money deposited per month = ₹ 200.

n = number of months for which the money to be deposited = 36.

r = rate of interest = 11%.

(i) By using formula

$$\begin{aligned} I &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\ &= 200 \times \frac{36(36+1)}{2 \times 12} \times \frac{11}{100} \\ &= 33 \times 37 \\ &= 1221 \end{aligned}$$

(ii) By using formula.

$$\begin{aligned} \text{Matured value} &= ₹ P \times n + I \\ &= ₹ 200 \times 36 + ₹ 1221 \\ &= ₹ 7,200 + ₹ 1221 \\ &= ₹ 8,421. \end{aligned}$$

Solution-05:-

Here,

P = money deposited per month = ₹ 600.

n = number of months for which the money to be deposited = $4 \times 12 = 48$

r = rate of interest = 9.

(i) By using formula

$$I = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$\begin{aligned}
 r &= \frac{I \times 24 \times 100}{P \times (n)(n+1)} \\
 &= \frac{5,880 \times 24 \times 100}{600 \times \frac{48 \times 49}{2}} \\
 &= \frac{5880}{12 \times 49} \\
 &= \frac{5880}{588} \\
 r &= 10\% \text{ P.a.}
 \end{aligned}$$

Solution-06:

Here,

P = money deposited per month = ₹300

n = number of months for which the money to be deposited = $2 \times 12 = 24$

r = rate of interest = ?

(i) By using formula

$$r = \frac{I \times 24 \times 100}{P \times n \times (n+1)}$$

Matured value = ₹ $P \times n + I$

$$\Rightarrow 7725 = ₹300 \times 24 + I$$

$$\Rightarrow I = -7200 + 7725$$

$$\Rightarrow I = 7725 - 7200$$

$$\Rightarrow I = 525$$

$$\therefore r = \frac{525 \times 24 \times 100}{300 \times 24 \times 25} = \frac{21}{3} = 7$$

\therefore rate of interest = 7% P.a.

Solution-07:-

Here,

P = money deposited per month = ₹ 2,500

n = number of months for which money to be deposited = $2 \times 12 = 24$.

r = rate of interest = ?

(i) By using formula

Matured Value = ₹ $P \times n + ₹ I$

Given that Matured value = ₹ 67,500

$$\Rightarrow 67,500 = 2500 \times 24 + I$$

$$\Rightarrow I = 67,500 - 60,000$$

$$\Rightarrow I = 7,500$$

\therefore The total interest earned by Mr. Gupta = 7,500.

(ii) rate of interest per annum = ?

Here,

By using formula

$$\begin{aligned} r &= \frac{I \times 24 \times 100}{P \times n \times (n+1)} \\ &= \frac{7,500 \times 24 \times 100}{2500 \times 24 \times 25} \\ &= 12\% \end{aligned}$$

\therefore rate of interest 12% P.a.

P = money to be deposited = ?

I = Interest = ₹ 1200.

(i) By using formula

$$I = \frac{P \times n \times (n+1)}{2 \times 12 \times 100} \times r$$

$$\Rightarrow 1200 = \frac{P \times 24 \times 25}{24 \times 100} \times 8$$

$$\Rightarrow P = 800.$$

∴ monthly instalment = ₹ 800

(ii) the amount of maturity = $P \times n + I$

$$\Rightarrow \text{matured value} = ₹ 800 \times 24 + 1200$$

$$= ₹ 19,200 + ₹ 1200$$

$$= ₹ 20,400.$$

$$\therefore \text{Matured value} = ₹ 20,400.$$

Solution-10:

Here,

$$\text{Matured value} = ₹ 6,455.$$

rate of interest = 14% p.a

n = number of months which he has to deposit
money = $1 \times 12 = 12$ months.

(i) By using formula.

Let 'P' be x

$$I = \frac{P \times n \times (n+1)}{2 \times 12 \times 100} \times r$$

$$\Rightarrow I = \frac{x \times 12 \times 13 \times 14}{2 \times 12 \times 100}$$

$$\Rightarrow I = 0.91x$$

$$\text{Matured value} = ₹ 6,455.$$

$$\Rightarrow P \times n + I = ₹6,455$$

$$\Rightarrow 12x + 0.91x = ₹6,455 \quad [\because P = x \text{ \& } I = 0.91x]$$

$$\Rightarrow x = \frac{₹6,455}{12.91}$$

$$\Rightarrow x = ₹500$$

Solution - 11:-

P = money to be deposited per month = ₹2,000.

r = rate of interest = 10% p.a.

Let the amount be held for x months, then

$$2000x + 2000 \times \frac{x(x+1)}{2 \times 12} \times \frac{10}{100} = 83100$$

$$\Rightarrow 2000x + 2000 \times \frac{x(x+1)}{24} \times \frac{1}{10} = 83,100.$$

$$\Rightarrow 2000x(240) + 2000x(x+1) = 83,100 \times 240$$

$$\Rightarrow 2000x(240 + x + 1) = 83,100 \times 240$$

$$\Rightarrow x(241 + x) = 831 \times 12$$

$$\Rightarrow x^2 + 241x - 9972 = 0$$

$$\Rightarrow (x - 36)(x + 205) = 0$$

$$\Rightarrow x = 36.$$

\therefore total time account was held 36 months

- 3 years.