

Banking (Recurring Deposit Accounts)

Question 1.

Manish opens a Recurring Deposit Account with the Bank of Rajasthan and deposits ₹ 600 per month for 20 months. Calculate the maturity value of this account, if the bank pays interest at the rate of 10% per annum.

Solution:

Installment per month(P) = ₹ 600

Number of months(n) = 20

Rate of interest(r) = 10% p.a.

$$\begin{aligned} \therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\ &= 600 \times \frac{20(20+1)}{2 \times 12} \times \frac{10}{100} \\ &= 600 \times \frac{420}{24} \times \frac{10}{100} = \text{Rs}1,050 \end{aligned}$$

The amount that Manish will get at the time of maturity

$$= ₹ (600 \times 20) + ₹ 1,050$$

$$= ₹ 12,000 + ₹ 1,050$$

$$= ₹ 13,050$$

Question 2.

Mrs. Mathew opened a Recurring Deposit Account in a certain bank and deposited ₹ 640 per month for 4 ½ years. Find the maturity value of this account, if the bank pays interest at the rate of 12% per year.

Solution:

Installment per month(P) = ₹ 640

Number of months(n) = 54

Rate of interest(r) = 12% p.a.

$$\begin{aligned} \therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\ &= 640 \times \frac{54(54+1)}{2 \times 12} \times \frac{12}{100} \\ &= 640 \times \frac{2970}{24} \times \frac{12}{100} = \text{Rs}9,504 \end{aligned}$$

The amount that Manish will get at the time of maturity
 $= ₹ (640 \times 54) + ₹ 9,504$
 $= ₹ 34,560 + ₹ 9,504$
 $= ₹ 44,064$

Question 3.

Each of A and B both opened recurring deposit accounts in a bank. If A deposited ₹ 1,200 per month for 3 years and B deposited ₹ 1,500 per month for 2 ½ years; find, on maturity, who will get more amount and by how much? The rate of interest paid by the bank is 10% per annum.

Solution:

For A

Installment per month(P) = ₹ 1,200

Number of months(n) = 36

Rate of interest(r) = 10% p.a.

$$\begin{aligned} \therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\ &= 1,200 \times \frac{36(36+1)}{2 \times 12} \times \frac{10}{100} \\ &= 1,200 \times \frac{1332}{24} \times \frac{10}{100} = \text{Rs} 6,660 \end{aligned}$$

The amount that A will get at the time of maturity
 $= ₹ (1,200 \times 36) + ₹ 6,660$
 $= ₹ 43,200 + ₹ 6,660$
 $= ₹ 49,860$

For B

Instalment per month(P) = ₹ 1,500

Number of months(n) = 30

Rate of interest(r) = 10% p.a.

$$\begin{aligned} \therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\ &= 1,500 \times \frac{30(30+1)}{2 \times 12} \times \frac{10}{100} \\ &= 1,500 \times \frac{930}{24} \times \frac{10}{100} = \text{Rs} 5,812.50 \end{aligned}$$

The amount that B will get at the time of maturity

$$\begin{aligned}
&= ₹ (1,500 \times 30) + ₹ 5,812.50 \\
&= ₹ 45,000 + ₹ 5,812.50 \\
&= ₹ 50,812.50
\end{aligned}$$

$$\begin{aligned}
\text{Difference between both amounts} &= ₹ 50,812.50 - ₹ 49,860 \\
&= ₹ 952.50
\end{aligned}$$

Then B will get more money than A by ₹ 952.50.

Question 4.

Ashish deposits a certain sum of money every month in a Recurring Deposit Account for a period of 12 months. If the bank pays interest at the rate of 11% p.a. and Ashish gets ₹ 12,715 as the maturity value of this account, what sum of money did he pay every month?

Solution:

Let Installment per month(P) = ₹ y

Number of months(n) = 12

Rate of interest(r) = 11% p.a.

$$\begin{aligned}
\therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\
&= y \times \frac{12(12+1)}{2 \times 12} \times \frac{11}{100} \\
&= y \times \frac{156}{24} \times \frac{11}{100} = ₹ 0.715y
\end{aligned}$$

$$\text{Maturity value} = ₹ (y \times 12) + ₹ 0.715y = ₹ 12.715y$$

$$\text{Given maturity value} = ₹ 12,715$$

$$\text{Then } ₹ 12.715y = ₹ 12,715$$

$$\Rightarrow y = \frac{12,715}{12.715} = ₹ 1,000$$

Question 5.

A man has a Recurring Deposit Account in a bank for 3 ½ years. If the rate of interest is 12% per annum and the man gets ₹ 10,206 on maturity, find the value of monthly instalments.

Solution:

Let Installment per month(P) = ₹ y

Number of months(n) = 42

Rate of interest(r) = 12% p.a.

$$\begin{aligned}\therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\ &= y \times \frac{42(42+1)}{2 \times 12} \times \frac{12}{100} \\ &= y \times \frac{1806}{24} \times \frac{12}{100} = \text{Rs}9.03y\end{aligned}$$

Maturity value = ₹ ($y \times 42$) + ₹ $9.03y$ = ₹ $51.03y$

Given maturity value = ₹ 10,206

Then ₹ $51.03y$ = ₹ 10206

$$\Rightarrow y = \frac{10206}{51.03} = \text{Rs}200$$

Question 6.

(i) Puneet has a Recurring Deposit Account in the Bank of Baroda and deposits ₹ 140 per month for 4 years. If he gets ₹ 8,092 on maturity, find the rate of interest given by the bank.

(ii) David opened a Recurring Deposit Account in a bank and deposited ₹ 300 per month for two years. If he received ₹ 7,725 at the time of maturity, find the rate of interest per annum.

Solution:

(a)

Installment per month(P) = ₹ 140

Number of months(n) = 48

Let rate of interest(r) = $r\%$ p.a.

$$\begin{aligned}\therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\ &= 140 \times \frac{48(48+1)}{2 \times 12} \times \frac{r}{100} \\ &= 140 \times \frac{2352}{24} \times \frac{r}{100} = \text{Rs}(137.20)r\end{aligned}$$

Maturity value = ₹ (140×48) + ₹ $(137.20)r$

Given maturity value = ₹ 8,092

Then ₹ (140×48) + ₹ $(137.20)r$ = ₹ 8,092

$$\Rightarrow 137.20r = ₹ 8,092 - ₹ 6,720$$

$$\Rightarrow r = \frac{1,372}{137.20} = 10\%$$

(b)

Instalment per month(P) = ₹ 300

Number of months(n) = 24

Let rate of interest(r)= r% p.a.

$$\begin{aligned} \therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\ &= 300 \times \frac{24(24+1)}{2 \times 12} \times \frac{r}{100} \\ &= 300 \times \frac{600}{24} \times \frac{r}{100} = \text{Rs}(75)r \end{aligned}$$

Maturity value = ₹ (300 × 24) + ₹ (75)r

Given maturity value = ₹ 7,725

Then ₹ (300 × 24) + ₹ (75)r = ₹ 7,725

$\Rightarrow 75r = ₹ 7,725 - ₹ 7,200$

$$\Rightarrow r = \frac{525}{75} = 7\%$$

Question 7.

Amit deposited ₹ 150 per month in a bank for 8 months under the Recurring Deposit Scheme. What will be the maturity value of his deposits, if the rate of interest is 8% per annum and interest is calculated at the end of every month?

Solution:

Installment per month(P) = ₹ 150

Number of months(n) = 8

Rate of interest(r) = 8% p.a.

$$\begin{aligned} \therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\ &= 150 \times \frac{8(8+1)}{2 \times 12} \times \frac{8}{100} \\ &= 150 \times \frac{72}{24} \times \frac{8}{100} = \text{Rs}36 \end{aligned}$$

The amount that Manish will get at the time of maturity

$$\begin{aligned}
&= ₹ (150 \times 8) + ₹ 36 \\
&= ₹ 1,200 + ₹ 36 \\
&= ₹ 1,236
\end{aligned}$$

Question 8.

Mrs. Geeta deposited ₹ 350 per month in a bank for 1 year and 3 months under the Recurring Deposit Scheme. If the maturity value of her deposits is ₹ 5,565; find the rate of interest per annum.

Solution:

Installment per month(P) = ₹ 350

Number of months(n) = 15

Let rate of interest(r)= r% p.a.

$$\begin{aligned}
\therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\
&= 350 \times \frac{15(15+1)}{2 \times 12} \times \frac{r}{100} \\
&= 350 \times \frac{240}{24} \times \frac{r}{100} = ₹ (35)r
\end{aligned}$$

Maturity value= ₹ (350 × 15) + ₹ (35)r

Given maturity value = ₹ 5,565

Then ₹ (350 × 15) + ₹ (35)r = ₹ 5,565

⇒ 35r = ₹ 5,565 – ₹ 5,250

$$\Rightarrow r = \frac{315}{35} = 9\%$$

Question 9.

A recurring deposit account of ₹ 1,200 per month has a maturity value of ₹ 12,440. If the rate of interest is 8% and the interest is calculated at the end of every month; find the time (in months) of this Recurring Deposit Account.

Solution:

Installment per month(P) = ₹ 1,200

Number of months(n) = n

Let rate of interest(r) = 8% p.a.

$$\begin{aligned}
 \therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\
 &= 1,200 \times \frac{n(n+1)}{2 \times 12} \times \frac{8}{100} \\
 &= 1,200 \times \frac{n(n+1)}{24} \times \frac{8}{100} = \text{Rs } 4n(n+1)
 \end{aligned}$$

Maturity value = ₹ (1,200 × n) + ₹ 4n(n+1) = ₹ (1200n+4n²+4n)

Given maturity value= ₹ 12,440

Then 1200n+4n²+4n = 12,440

$$\Rightarrow 4n^2 + 1204n - 12440 = 0$$

$$\Rightarrow n^2 + 301n - 3110 = 0$$

$$\Rightarrow (n + 311)(n - 10) = 0$$

$$\Rightarrow n = -311 \text{ or } n = 10 \text{ months}$$

Then number of months = 10

Question 10.

Mr. Gulati has a Recurring Deposit Account of ₹ 300 per month. If the rate of interest is 12% and the maturity value of this account is ₹ 8,100; find the time (in years) of this Recurring Deposit Account.

Solution:

Installment per month(P) = ₹ 300

Number of months(n) = n

Let rate of interest(r)= 12% p.a.

$$\begin{aligned}
 \therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\
 &= 300 \times \frac{n(n+1)}{2 \times 12} \times \frac{12}{100} \\
 &= 300 \times \frac{n(n+1)}{24} \times \frac{12}{100} = \text{Rs } 1.5n(n+1)
 \end{aligned}$$

Maturity value= ₹ (300 × n)+ ₹ 1.5n(n+1)

= ₹ (300n+1.5n²+1.5n)

Given maturity value= ₹ 8,100

Then 300n+1.5n²+1.5n = 8,100

$$\Rightarrow 1.5n^2 + 301.5n - 8100 = 0$$

$$\Rightarrow n^2 + 201n - 5400 = 0$$

$$\Rightarrow (n + 225)(n - 24) = 0$$

$$\Rightarrow n = -225 \text{ or } n = 24 \text{ months}$$

Then time = 2 years.

Question 11.

Mr. Gupta opened a recurring deposit account in a bank. He deposited ₹ 2,500 per month for two years. At the time of maturity he got ₹ 67,500. Find:

- (i) the total interest earned by Mr. Gupta
- (ii) the rate of interest per annum.

Solution:

(i)

Maturity value = ₹ 67,500

Money deposited = ₹ 2,500 × 24 = ₹ 60,000

Then total interest earned = ₹ 67,500 – ₹ 60,000 = ₹ 7,500 Ans.

(ii)

Installment per month(P) = ₹ 2,500

Number of months(n) = 24

Let rate of interest(r)= r% p.a.

$$\begin{aligned} \therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\ &= 2500 \times \frac{24(24+1)}{2 \times 12} \times \frac{r}{100} \\ &= 2500 \times \frac{600}{24} \times \frac{r}{100} = \text{Rs}(625)r \end{aligned}$$

Then 625 r = 7500

$$\Rightarrow r = \frac{7500}{625} = 12\%$$

Exercise 2B

Question 1.

Pramod deposits ₹ 600 per month in a Recurring Deposit Account for 4 years. If the rate of interest is 8% per year; calculate the maturity value of his account.

Solution:

Installment per month(P) = ₹ 600

Number of months(n) = 48

Rate of interest(r)= 8% p.a.

$$\begin{aligned} \therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\ &= 600 \times \frac{48(48+1)}{2 \times 12} \times \frac{8}{100} \\ &= 600 \times \frac{2352}{24} \times \frac{8}{100} = \text{Rs}4,704 \end{aligned}$$

The amount that Manish will get at the time of maturity

= ₹ (600 × 48) + ₹ 4,704

= ₹ 28,800 + ₹ 4,704

= ₹ 33,504

Question 2.

Ritu has a Recurring Deposit Account in a bank and deposits ₹ 80 per month for 18 months. Find the rate of interest paid by the bank if the maturity value of account is ₹ 1,554.

Solution:

Installment per month(P) = ₹ 80

Number of months(n) = 18

Let rate of interest(r) = r% p.a.

$$\begin{aligned} \therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\ &= 80 \times \frac{18(18+1)}{2 \times 12} \times \frac{r}{100} \\ &= 80 \times \frac{342}{24} \times \frac{r}{100} = \text{Rs}(11.4r) \end{aligned}$$

Maturity value = ₹ (80 × 18) + ₹ (11.4r)

Given maturity value = ₹ 1,554

Then ₹ (80 × 18) + ₹ (11.4r) = ₹ 1,554

⇒ 11.4r = ₹ 1,554 – ₹ 1,440

$$\Rightarrow r = \frac{114}{11.4} = 10\%$$

Question 3.

The maturity value of a R.D. Account is ₹ 16,176. If the monthly installment is ₹ 400 and the rate of interest is 8%; find the time (period) of this R.D Account.

Solution:

Installment per month(P) = ₹ 400

Number of months(n) = n

Let rate of interest(r)= 8% p.a.

$$\begin{aligned} \therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\ &= 400 \times \frac{n(n+1)}{2 \times 12} \times \frac{8}{100} \\ &= 400 \times \frac{n(n+1)}{24} \times \frac{8}{100} = \text{Rs } \frac{4n(n+1)}{3} \end{aligned}$$

$$\text{Maturity value} = \text{Rs}(400 \times n) + \text{Rs } \frac{4n(n+1)}{3}$$

Given maturity value = Rs16,176

$$\text{Then } \text{Rs}(400 \times n) + \text{Rs } \frac{4n(n+1)}{3} = \text{Rs}16,176$$

$$\Rightarrow 1200n + 4n^2 + 4n = ₹ 48,528$$

$$\Rightarrow 4n^2 + 1204n = ₹ 48,528$$

$$\Rightarrow n^2 + 301n - 12132 = 0$$

$$\Rightarrow (n+337)(n-36) = 0$$

$$\Rightarrow n = -337 \text{ or } n = 36$$

Then number of months = 36 months = 3 years

Question 4.

Mr. Bajaj needs ₹ 30,000 after 2 years. What least money (in multiple of 5) must he deposit every month in a recurring deposit account to get required money after 2 years, the rate of interest being 8% p.a.?

Solution:

Let installment per month = ₹ P

Number of months(n) = 24

Rate of interest = 8% p.a.

$$\begin{aligned}
 \therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\
 &= P \times \frac{24(24+1)}{2 \times 12} \times \frac{8}{100} \\
 &= P \times \frac{600}{24} \times \frac{8}{100} = \text{Rs}(2)P
 \end{aligned}$$

Maturity value = ₹ (P × 24) + ₹ 2P = ₹ 26P

Given maturity value = ₹ 30,000

Then 26P = Rs30,000

$$\Rightarrow P = \text{Rs} \frac{30,000}{26} = \text{Rs}1153.84 = \text{Rs}1155 (\text{multiple of } 5)$$

Question 5.

Rishabh has recurring deposit account in a post office for 3 years at 8% p.a. simple interest. If he gets ₹ 9,990 as interest at the time of maturity, find:

- The monthly installment.
- The amount of maturity.

Solution:

Let Installment per month = ₹ P

Number of months(n) = 36

Rate of interest(r) = 8% p.a.

$$\begin{aligned}
 \therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\
 &= P \times \frac{36(36+1)}{2 \times 12} \times \frac{8}{100} \\
 &= P \times \frac{1332}{24} \times \frac{8}{100} = \text{Rs}(4.44)P
 \end{aligned}$$

Given interest = ₹ 9,990

Then 4.44P = Rs9,990

$$\Rightarrow P = \text{Rs} \frac{9,990}{4.44} = \text{Rs}2,250$$

(ii) Maturity value = ₹ (2,250 × 36) + ₹ 9,990 = ₹ 90,990

Question 6.

Gopal has a cumulative deposit account and deposits ₹ 900 per month for a period of 4 years he gets ₹ 52,020 at the time of maturity, find the rate of interest.

Solution:

Installment per month(P) = ₹ 900

Number of months(n) = 48

Let rate of interest(r)= r% p.a.

$$\begin{aligned} \therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\ &= 900 \times \frac{48(48+1)}{2 \times 12} \times \frac{r}{100} \\ &= 900 \times \frac{2352}{24} \times \frac{r}{100} = \text{Rs}(882)r \end{aligned}$$

Maturity value= ₹ (900 × 48) + ₹ (882)r

Given maturity value = ₹ 52,020

Then ₹ (900 × 48) + ₹ (882)r = ₹ 52,020

⇒ 882r = ₹ 52,020 – ₹ 43,200

$$\Rightarrow r = \frac{8820}{882} = 10\%$$

Question 7.

Deepa has a 4-year recurring deposit account in a bank and deposits ₹ 1,800 per month. If she gets ₹ 1,08,450 at the time of maturity, find the rate of interest.

Solution:

Installment per month(P) = ₹ 1,800

Number of months(n) = 48

Let rate of interest(r)= r% p.a.

$$\begin{aligned} \therefore \text{S.I.} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\ &= 1,800 \times \frac{48(48+1)}{2 \times 12} \times \frac{r}{100} \\ &= 1,800 \times \frac{2352}{24} \times \frac{r}{100} = \text{Rs}(1,764)r \end{aligned}$$

Maturity value = ₹ (1,800 × 48) + ₹ (1,764)r

Given maturity value = ₹ 1,08,450

Then ₹ $(1,800 \times 48) + ₹ (1764)r = ₹ 1,08,450$

$\Rightarrow 1764r = ₹ 1,08,450 - ₹ 86,400$

$$\Rightarrow r = \frac{22,050}{1,764} = 12.5\%$$

Question 8.

Mr. Britto deposits a certain sum of money each month in a Recurring Deposit Account of a bank. If the rate of interest is of 8% per annum and Mr. Britto gets Rs. 8,088 from the bank after 3 years, find the value of his monthly instalment.

Solution:

Let the value of the monthly instalment be Rs. P.

Since rate of interest (r) = 8%,

Number of months, $n = 3 \times 12 = 36$

Maturity value (M.V.) = Rs. 8088

$$\therefore \text{M.V.} = P \times n + P \times \frac{n(n+1)}{2} \times \frac{r}{12 \times 100}$$

$$\Rightarrow 8088 = P \times 36 + P \times \frac{36 \times 37}{2} \times \frac{8}{12 \times 100}$$

$$\Rightarrow 8088 = 36P + 4.44P$$

$$\Rightarrow 8088 = 40.44P$$

$$\Rightarrow P = \frac{8088}{40.44} = 200$$

Thus, the value of his monthly instalment is Rs. 200.

Question 9.

Shahrukh opened a Recurring Deposit Account in a bank and deposited Rs. 800 per month for $1\frac{1}{2}$ years. If he received Rs. 15,084 at the time of maturity, find the rate of interest per annum.

Solution:

Monthly deposit (P) = Rs. 800

$$n = \frac{3}{2} \times 12 \text{ months} = 18 \text{ months}$$

Maturity value (M.V.) = Rs. 15084

$$\text{Now, M.V.} = P \times n + P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$\Rightarrow 15084 = 800 \times 18 + 800 \times \frac{18 \times 19}{24} \times \frac{r}{100}$$

$$\Rightarrow 15084 = 14400 + 114r$$

$$\Rightarrow 114r = 684$$

$$\Rightarrow r = \frac{684}{114} = 6\%$$

Thus, the rate of interest per annum is 6%.

Question 10.

Katrina opened a recurring deposit account with a Nationalised Bank for a period of 2 years. If the bank pays interest at the rate of 6% per annum and the monthly installment is ₹ 1,000, find the :

(i) interest earned in 2 years

(ii) maturity value

Solution:

(i) Monthly instalment (P) = Rs. 1000

Number of instalments (n) = 2 years = 2×12 months = 24 months

Rate of interest (r) = 6%

Interest = Rs. 6370

$$\begin{aligned}\text{Now, Interest} &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\ &= 1000 \times \frac{24 \times 25}{24} \times \frac{6}{100} \\ &= \text{Rs. 1500}\end{aligned}$$

Thus, the interest earned in 2 years is Rs. 1500.

(ii) Total money deposited in the bank = $24 \times \text{Rs. 1000}$ = Rs. 24000

$$\begin{aligned}\therefore \text{Maturity value} &= \text{Total money deposited} + \text{Interest} \\ &= \text{Rs. (24000 + 1500)} \\ &= \text{Rs. 25500}\end{aligned}$$

Question 11.

Mohan has a recurring deposit account in a bank for 2 years at 6% p.a. simple interest. If he gets Rs. 1200 as interest at the time of maturity, find

- (i) the monthly installment
- (ii) the amount of maturity

Solution:

Interest, $I = \text{Rs. } 1,200$

Time, $n = 2 \text{ years} = 2 \times 12 = 24 \text{ months}$

Rate, $r = 6\%$

(i) To find: Monthly instalment, P

Now,

$$\begin{aligned} I &= P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \\ \Rightarrow 1,200 &= P \times \frac{24 \times 25}{24} \times \frac{6}{100} \\ \Rightarrow 1,200 &= P \times \frac{3}{2} \\ \Rightarrow P &= \frac{1,200 \times 2}{3} \\ \Rightarrow P &= \text{Rs. } 800 \end{aligned}$$

So, the monthly instalment is Rs. 800.

(ii) Total sum deposited $= P \times n = \text{Rs. } 800 \times 24 = \text{Rs. } 19,200$
 $\therefore$ Amount of maturity $= \text{Total sum deposited} + \text{Interest on it}$
 $= \text{Rs. } (19,200 + 1,200)$
 $= \text{Rs. } 20,400$

Question 11.

Peter has a recurring deposit account in Punjab National Bank at Sadar Bazar, Delhi for 4 years at 10% p.a. He will get ₹ 6,370 as interest on maturity. Find :

- (i) monthly installment,
- (ii) the maturity value of the account.

Solution:

(i) Let the monthly instalment be Rs. P.

$$n = 4 \text{ years} = 4 \times 12 \text{ months} = 48 \text{ months}$$

$$\text{Rate of interest, } r = 10\%$$

$$\text{Interest} = \text{Rs. } 6370$$

$$\text{Now, Interest} = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$\Rightarrow 6370 = P \times \frac{48 \times 49}{24} \times \frac{10}{100}$$

$$\Rightarrow 6370 = P \times \frac{49}{5}$$

$$\Rightarrow P = \frac{6370 \times 5}{49} = \text{Rs. } 650$$

Thus, the monthly instalment is Rs. 650.

(ii) Total money deposited in the bank = $48 \times \text{Rs. } 650 = \text{Rs. } 31200$

$$\therefore \text{Maturity value} = \text{Total money deposited} + \text{Interest}$$

$$= \text{Rs. } (31200 + 6370)$$

$$= \text{Rs. } 37570$$