EXERCISE 2(A)

Question 1:

(a) Manu opened a savings bank account in the state bank of India on 3rd sept, 12 with Rs. 2,700. He withdrew Rs. 1,200 from the bank on 8th sept, 12 and deposited Rs. 500 on 17th sept, 12. If he did not make any further deposits or withdrawals during this month; find the amount on which he would receive interest for sept, 12.

(b) Geeta opened a savings bank account in a bank on 7th Nov., 08 and deposited Rs. 750. She withdrew Rs. 200 on 30th Nov., 08. If no other withdrawal or deposit was made by her during this month; find the amount on which she would receive interest for the month of Nov., 08.

SOLUTION 1:

a) Balance on 3rd Sept. = Rs. 2,700
   Balance on 8th Sept. = Rs. 2,700 – Rs. 1,200 = Rs. 1,500
   Balance on 17th Sept. = Rs. 1,500 + Rs. 500 = Rs. 2,000
   Then minimum balance for the month of sept = Rs. 1,500 Ans

b) Balance on 7th Nov. = Rs. 750
   Balance on 30th Nov. = Rs750 – Rs. 200 = Rs. 550
Then minimum balance for the month of Nov. = Rs. 550 Ans.

Question 2:

A man opened a savings bank account with a bank on 22nd Feb., 1998 and deposited Rs. 300. He further deposited Rs. 1,500 on 5th march 1998 and withdrew Rs. 500 on 12th April 1998. Assuming that he neither deposited not withdrew any money up to the last day of May 1998; write the amounts on which he would receive interest for:

(i) Feb., 1998 (ii) March, 98   (iii) April, 98   (iv) May, 98

SOLUTION 2:

Balance on 22nd Feb. = Rs. 300
Balance on 5th March = Rs. 300 + Rs. 1,500 = Rs. 1,800
Balance on 12th April = Rs. 1,800 – Rs. 500 = Rs. 1,300

(i)   Minimum balance for the month of Feb. = Nil since he opens the account after 10th of the month.

(ii)   Minimum balance for the month of March = Rs. 1,800

(iii) Minimum balance for the month of April = Rs. 1,300

(iv)   Minimum balance for the month of May = Rs. 1,300

Question 3:

John had a savings bank account in a bank. In the months of april, 97 and May, 97 He had the following entries in his passbook.

Date	Particulars	Withdrawals (In Rs)	Deposits (In Rs)	Balance (In Rs)
April 1	By Balance			4,600.00
April 7	By cash		1,200.00	5,800.00
April 24	To Cheque	800.00		5,000.00
May 16	By Cheque		2,000.00	7,000.00
May 29	To Cash	1,500.00		5,500.00

Find the amounts on which John will get interest for the months of April, 97 and May 97.

SOLUTION 3:

Since balance on 7th April = Rs. 5,800

and balance on 24th April = Rs. 5,000

Then minimum balance for the month of April = Rs. 5,000 Ans.

Since balance on 10th May = Rs. 5,000

Balance on 16th May = Rs. 7,000

Balance on 29th May = Rs. 5,500

Then minimum balance for the month of May = Rs. 5,000 Ans.

Question 4:

A page from the passbook of Asha is given below:

Date	Particulars	Amount Withdrawn (Dr) Rs P	Amount Deposits (Cr) Rs. P	Balance Rs. P
Jan 5	Balance B/F			3,750.00
March 7	To Cheque	1,200.00		
April 2	By Cheque		2,300.00	
April 10	By Cheque		820.00	
Oct , 6	By Cheque	950.00		
Dec, 8	By Cash		1,700.00	

Complete the passbook and then calculate the interest for the period January to December 5% per annum.

SOLUTION 4:

   i. Balance on 7th March = Rs. 3,750 – Rs. 1200 = Rs. 2,550

      Balance on 2nd April = Rs. 2,550 + Rs. 2,300 = Rs. 4,850

      Balance on 10th April = Rs. 4,850 + Rs. 820 = Rs. 5,670

      Balance on 6th Oct. = Rs. 5,670 – Rs. 950 = Rs. 4,720

Balance on 8th Dec.= Rs. 4,720 + Rs. 1,700 = Rs. 6,420

ii. Minimum balance for the month of Jan. = Rs. 3,750
     Minimum balance for the month of Feb. = Rs. 3,750
     Minimum balance for the month of Mar. = Rs. 2,550
     Minimum balance for the month of Apr. = Rs. 5,670
     Minimum balance for the month of May = Rs. 5,670
     Minimum balance for the month of June= Rs. 5,670
     Minimum balance for the month of July = Rs. 5,670
     Minimum balance for the month of Aug.= Rs. 5,670
     Minimum balance for the month of Sept.= Rs. 5,670
     Minimum balance for the month of Oct. = Rs. 4,720
     Minimum balance for the month of Nov. = Rs. 4,720
     Minimum balance for the month of Dec. = Rs. 6,420
     Total principal= Rs59,930

Rate = 5% p.a. and Time = $\frac{1}{12}$ $year$ ∴ Interest = $\frac{P \times R \times T}{100}$ = $\frac{59,930 \times 5 \times 1}{100 \times 12}$ = $Rs. 249.71$ Ans

Question 5:

The entires in a savings bank passbook are as given below:

Date	Particulars	Withdrawals (In Rs)	Deposits (In Rs)	Balance (In Rs)
01.01.03	B/F			14,000.00
01.02.03	By cash		11,500.00	25.500.00
12.02.03	To cheque	5,000.00		20,500.00
05.04.03	By Cash		3,750.00	24,250.00
15.04.03	To cheque	4,250.00		20,000.00
09.05.03	By cash		1,500	21,500.00
04.06.03	By Cash		1,500	23,000.00

Calculate the interest for six months (January to June) at 4% per annum on the minimum balance on or after the tenth day of each month.

SOLUTION 5:

Minimum balance for Jan. = Rs. 14,000
Minimum balance for Feb. = Rs. 20,500
Minimum balance for Mar. = Rs. 20,500
Minimum balance for Apr. = Rs. 20,000
Minimum balance for May = Rs. 21,500
Minimum balance for June = Rs. 23,000
Total principal = Rs. 1,19,500

Rate = 4% p.a. and Time = $\frac{1}{12}$ $year$

∴ Interest = $\frac{P \times R \times T}{100}$ = $\frac{1,19,500 \times 4 \times 1}{100 \times 12}$ = $Rs.\,398.33$ Ans

Question 6:

A page from the passbook of Mrs. Rama Bhalla is given below:

Date	Particulars	Withdrawals (In Rs)	Deposits (In Rs)	Balance (In Rs)
January 1	B/F			2,000.00
January 9	By Cash		200.00	2,200.00
February 10	To Cheque	500.00		1,700.00
February 24	By Cheque		300.00	2,000.00
July 29	To Cheque	200.00		1,800.00
November 7	By Cash		300.00	2,100.00
December 8	By Cash		200.00	2,300.00

Calculate the interest to Mrs. Bhalla for the period from January 2004 to December 2004, at the rate of 5% per annum.

SOLUTION 6:

Minimum balance for Jan = Rs. 2,200

Minimum balance for Feb = Rs. 1,700

Minimum balance for Mar.= Rs. 2,000

Minimum balance for Apr.= Rs. 2,000

Minimum balance for May = Rs. 2,000

Minimum balance for June = Rs. 2,000

Minimum balance for July = Rs. 1,800

Minimum balance for Aug.= Rs. 1,800

Minimum balance for Sept.= Rs. 1,800

Minimum balance for Oct. = Rs. 1,800

Minimum balance for Nov. = Rs. 2,100

Minimum balance for Dec. = Rs. 2,300

Total principal = Rs. 23,500

Rate = 5% p.a. and Time = $\frac{1}{12}$ $year$

∴ Interest = $\frac{P \times R \times T}{100}$ = $\frac{23,500 \times 5 \times 1}{100 \times 12}$ = $Rs.\,97.92$ Ans

Question 7:

Mr. Sen has a savings bank account with a post office.

(i) calculate the interest earned by Mr. Sen during the year 2010 at 6.5% per annum payable in December if the entries during the year in his passbook are as given below:

Date	Particulars	Withdrawals (Rs)	Deposits (Rs)
2.1.10	By cash		250.00
9.1.10	By Cheque		825.00
13.3.10	To Cash	325.00	
24.7.10	By Cash		1,237.00
6.10.10	To Cheque	250.00	
22.12.10	By Cheque		958.00

(ii) Also, calculate the interest when the principal for every month is taken as the nearest multiple of Rs. 10.

SOLUTION 7:

Balance on 2nd Jan = Rs. 250

Balance on 9th Jan.= Rs. 250 + Rs. 825 = Rs. 1,075

Balance on 13th Mar.= Rs. 1,075 – Rs. 325 = Rs. 750

Balance on 24th July = Rs. 750 + Rs. 1,237 = Rs. 1,987

Balance on 6th Oct. = Rs. 1,987 – Rs. 250 = Rs. 1,737

Balance on 22nd Dec. = Rs. 1,737 + Rs. 958 = Rs. 2,695

(i) Minimum balance for Jan.= Rs. 1,075

   Minimum balance for Feb. = Rs. 1,075

   Minimum balance for Mar. = Rs. 750

   Minimum balance for Apr. = Rs. 750

   Minimum balance for May = Rs. 750

   Minimum balance for June= Rs. 750

   Minimum balance for July = Rs. 750

   Minimum balance for Aug. = Rs. 1,987

   Minimum balance for Sept. = Rs. 1,987

   Minimum balance for Oct. = Rs. 1,737

   Minimum balance for Nov. = Rs. 1,737

   Minimum balance for Dec. = Rs. 1,737

   Total principal = Rs. 15,085

   Rate = 6.5%p.a. and time $= \frac{1}{12}$ year.

   $\therefore$ Interest $= \frac{P \times R \times T}{100} = \frac{15,085 \times 6.5 \times 1}{100 \times 12} = Rs.\, 81.71$ Ans

(ii)   Minimum balance for Jan.= Rs. 1,080

   Minimum balance for Feb. = Rs. 1,080

Minimum balance for Mar. = Rs. 750

Minimum balance for Apr. = Rs. 750

Minimum balance for May = Rs. 750

Minimum balance for June= Rs. 750

Minimum balance for July = Rs. 750

Minimum balance for Aug. = Rs. 1,990

Minimum balance for Sept. = Rs. 1,990

Minimum balance for Oct. = Rs. 1,740

Minimum balance for Nov. = Rs. 1,740

Minimum balance for Dec. = Rs. 1,740

Total principal = Rs. 15,110

Rate= 6.5%p.a. and time = $\frac{1}{12}$ year.

$\therefore$ Interest $= \frac{P \times R \times T}{100} = \frac{15,110 \times 6.5 \times 1}{100 \times 12} = Rs.\, 81.84$ Ans

Question 8:

A savings bank account was opened by Mrs. Roy on 3.7.12 and closed on 31.01.13. The entries in the passbook of Mrs. Roy were as given below:

Date	Particulars	Debit (In Rs)	Credit (In Rs)	Balance (In Rs)
3.7.12	By cash		690.00	
15.7.12	By cash		1,153.00	
27.8.12	By Cheque		2,468.00	
30.8.12	To cash	946.00		
12.9.12	To Cheque	1,000.00		
20.11.12	By Cheque		3,000.00	
26.11.12	By cash		750.00	
28.11.12	To Cash	1,570.00		

(i) By finding the balance on different dates of entries calculate the interest earned by Mrs. Roy, For the period she had this savings bank account, at the rate of 6% p.a.

(ii) Also, calculate the interest when the principal for every month is taken as the nearest multiple of 10.

Solution 8:

Balance on 3.7.12 = Rs. 690

Balance on 15.7.12 = Rs. 690 + Rs. 1,153 = Rs. 1,843

Balance on27.8.12 = Rs. 1,843 + Rs. 2,468 = Rs. 4,311

Balance on 30.8.12 = Rs. 4,311 – Rs. 946 = Rs. 3,365

Balance on12.9.12 = Rs. 3,365 – Rs. 1,000 = Rs. 2,365

Balance on 20.11.12 = Rs. 2,365 + Rs. 3,000 = Rs. 5,365

Balance on 26.11.12 = Rs. 5,365 + Rs750 = Rs. 6,115

Balance on28.11.12 = Rs. 6,115 – Rs. 1,570 = Rs. 4,545

(i)

Minimum balance for July = Rs.690

Minimum balance for Aug. = Rs. 1,843

Minimum balance for Sept.= Rs. 2,365

Minimum balance for Oct.= Rs. 2,365

Minimum balance for Nov.= Rs. 2,365

Minimum balance for Dec.= Rs. 4,545

Minimum balance for Jan. = Rs. 0

Total principal = Rs. 14,173

Rate = 6%p.a. and time = $\frac{1}{12}$ year.

∴ Interest = $\frac{P \times R \times T}{100}$ = $\frac{14,173 \times 6 \times 1}{100 \times 12}$ = $Rs.\,70.87$ Ans

(ii)

Minimum balance for July = Rs. 690

Minimum balance for Aug. = Rs. 1,840

Minimum balance for Sept.= Rs. 2,370

Minimum balance for Oct.= Rs. 2,370

Minimum balance for Nov.= Rs. 2,370

Minimum balance for Dec.= Rs. 4,550

Minimum balance for Jan. = Rs. 0

Total principal = Rs. 14,190

Rate = 6%p.a. and time = $\frac{1}{12}$ year.

∴ Interest = $\frac{P \times R \times T}{100}$ = $\frac{14,190 \times 6 \times 1}{100 \times 12}$ = $Rs.\,70.95$ Ans

Question 9:

Mrs. Swami had a savings bank account with the state bank of India, from 13th Feb 09 to 6th August 09. The following table shows the entries in her passbook for the above said periods. Calculate the interest earned by Mrs. Swami on her S.B. Account up to 31st July 09 at the rate of 5% per annum.

Date	Particulars	Amount Withdrawn (Dr) Rs P	Amount Deposits (Cr) Rs. P	Balance Rs. P
Feb 13	By Cash		500.00	500.00
March 3	By cheque		735.00	1,235.00
March 14	By cheque		1,040.00	2,275.00
May 10	To cheque	240.00		2.035.00
May 22	To cash	430.00		1,605.00
June 19	By cash		780.00	2,385.00
July 26	To cash	980.00		1,405.00

Solution 9:

Minimum balance for Feb. = Rs. 0

Minimum balance for Mar.= Rs. 1,235

Minimum balance for Apr. = Rs. 2,275

Minimum balance for May = Rs. 1,605

Minimum balance for June = Rs. 1,605

Minimum balance for July = Rs. 1,405

Total principal = Rs. 8,125

Rate = 5% p.a. and time = 1/12 year.

$\therefore$ Interest $= \dfrac{P \times R \times T}{100} = \dfrac{8,125 \times 5 \times 1}{100 \times 12} = Rs.\, 33.85$ Ans

Question 10:

A page from the passbook of a savings book account in a particular year is given below:

Date	Particulars	Debit (In Rs)	Credit (In Rs)	Balance (In Rs)
Jan 3	By cash		5,000.00	5,000.00
Feb 13	To self	500.00		
March 24	By cheque		2,000.00	
March 31	By Interest			
May 20	By cash		800.00	
July 7	To Cheque	1,400.00		
July 18	By cash		1,600.00	
Sept 15	To Cheque	3,200.00		
Sept 26	By Cheque		2,350.00	

If the interest is calculated at 6% P.a. and is compounded at the end of march and September at every year, find the interest earned up to 31st march and then after completing all the entries, find the amount that the account holder would have received had he closed the account on 20th October the same year.

Solution 10:

(i)

Balance on 3rd Jan. = Rs. 5,000

Balance on 13th Feb. = Rs. 5,000 – Rs. 500 = Rs. 4,500

Balance on 24th Mar. = Rs. 4,500 + Rs. 2,000 = Rs. 6,500

Minimum balance for January = Rs. 5,000

Minimum balance for February = Rs. 4,500

Minimum balance for March = Rs. 4,500

Total principal = Rs. 14,000

Rate of interest = 6% p.a. and Time = $\frac{1}{12}\ Year$

∴ Interest = $\frac{P \times R \times T}{100} = \frac{14,000 \times 6 \times 1}{100 \times 12} = Rs.\ 70$ Ans

(ii)

Balance on 31st March = Rs. 6,500 + Rs. 70 = Rs. 6,570

Balance on 20th May = Rs. 6,570 + Rs. 800 = Rs. 7,370

Balance on 7th July = Rs. 7,370 – Rs. 1,400 = Rs. 5,970

Balance on 18th July = Rs. 5,970 + Rs. 1,600 = Rs. 7,570

Balance on 15th September = Rs. 7,065 – Rs. 3,200 = Rs. 4,370

Balance on 26th September = Rs. 4370 + Rs. 2,350 = Rs. 6,720

Minimum balance for April = Rs. 6,570

Minimum balance for May = Rs. 6,570

Minimum balance for June = Rs. 7,370

Minimum balance for July = Rs. 5,970

Minimum balance for August = Rs. 7,570

Minimum balance for September = Rs. 4,370

Total principal = Rs. 38,420

Rate = 6% and Time = $\frac{1}{12}\ Year$

∴ Interest = $\frac{P \times R \times T}{100} = \frac{38,420 \times 6 \times 1}{100 \times 12} = Rs.\ 192.10$ Ans

Balance on 1st October = Rs. 6,720 + Rs. 192.1 = Rs. 6,912.10

Since he closes his account on 20th October, then he will not receive any interest in this month.

So he will get Rs. 6,912.10

Question 11:

A page from the savings bank account of Mr. Prateek if given below.

Date	Particulars	Withdrawals (In Rs)	Deposits (In Rs)	Balance (In Rs)
January 1st 2006	B/F	-	-	1,270
January 7th 2006	By Cheque	-	2,310	3,580
March 9th 2006	To self	2,000	-	1,580
March 26th 2006	By cash	-	6,200	7,780
June 10th 2006	To Cheque	4,500	-	3,280
July 15th 2006	By clearing	-	2,630	5,910
October 18th 2006	To Cheque	530	-	5,380
October 27th 2006	To self	2,690	-	2,690
November 3rd 2006	By cash	-	1,500	4,190
December 6th 2006	To cheque	950	-	3,240
December 23rd 2006	By Transfer	-	2,920	6,160

If h receives Rs. 198 as interest on 1st January, 2007, Find the rate of interest paid by the bank.

Solution 11:

Principle for the month of Jan = Rs. 3,580

Principle for the month of Feb = Rs. 3,580

Principle for the month of march = Rs. 1,580

Principle for the month of April = Rs. 7,780

Principle for the month of May = Rs. 7,780

Principle for the month of June = Rs. 3,280

Principle for the month of July = Rs. 3,280

Principle for the month of Aug = Rs. 5,910

Principle for the month of Sept = Rs. 5,910

Principle for the month of Oct = Rs. 2,690

Principle for the month of Nov = Rs. 4,190

Principle for the month of Dec = Rs. 3,240

Total Equivalent principle for 1 month = Rs. 52,800

$$\therefore \text{Rate}\% = \frac{I \times 100}{P \times T}\% = \frac{198 \times 100 \times 12}{52,800 \times 1}\% = 4.5\%$$

Question 12:

A man holds a savings bank account in the union bank of India. A page of his passbook shows the following entries:

Date	Particulars	Withdrawals (Rs)	Deposits (Rs)	Balance (Rs)
May 1	B/F			3,200.00
May 6	By Cheque		500.00	3,700.00
May 17	By Cheque		800.00	4,500.00
June 4	By Cash		1,300.00	5,800.00
June 9	To Cheque	1,650.00		4,150.00

Calculate the rate of interest per annum if the total interest earned for the months of May and June is Rs. 39.25

Solution 12:

Minimum balance for May = Rs. 3,700

Minimum balance for June = Rs. 4,150

Total principal= Rs7,850

Interest = Rs. 39.25 and time = $\frac{1}{12}$ year.

∴ Rate = $\frac{I \times 100}{P \times T}$ % = $\frac{39,25 \times 100}{7,850 \times \frac{1}{12}}$ = 6% Ans.

Question 13:

A page from the passbook of Mr. Rohit is given below. The interest accrued for the period January to December 2006 at a certain rate of interest per annum is Rs. 377.40. without taking the principal as the nearest multiple of Rs. 10, calculate the rate:

Date	Particulars	Debit (Rs)	Credit (Rs)	Balance (Rs)
2006				
Jan 1	Balance B/F			7,500.00
March 7	By Cheque		1,875.00	
March 10	By Cash		625.00	
July 17	To self	3,250.00		
Oct 5	By Cheque		2,160.00	
Dec 19	To Cheque	1,340.00		

Solution 13:

Balance on 1st January = Rs. 7,500

Balance on 7th March = Rs. 7,500 + Rs. 1,875 = Rs. 9,375

Balance on 10th March = Rs. 9,375 + Rs. 625 = Rs. 10,000

Balance on 17th July = Rs. 10,000 – Rs. 3,250 = Rs. 6,750

Balance on 5th October = Rs. 6,750 + Rs. 2,160 = Rs. 8,910

Balance on 19th December = Rs. 8,910 – Rs. 1,340 = Rs. 7,570

Minimum balance for January = Rs. 7,500

Minimum balance for February = Rs. 7,500

Minimum balance for March = Rs. 10,000

Minimum balance for April = Rs. 10,000

Minimum balance for May = Rs. 10,000

Minimum balance for June = Rs. 10,000

Minimum balance for July = Rs. 6,750

Minimum balance for August = Rs. 6,750

Minimum balance for September = Rs. 6,750

Minimum balance for October = Rs. 8,910

Minimum balance for November = Rs. 8,910

Minimum balance for December = Rs. 7,570

Total principal = Rs. 1,00,640

Interest = Rs. 377.40 and Time = $\frac{1}{12}\ year$

∴ Rate = $\frac{I\ \times 100}{P \times T}$ % = $\frac{377.40\ \times 100}{1,00,640\ \times \frac{1}{12}}$ = 4.5% Ans

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Question 14:

Mr. Verma opened a savings bank account with the state bank of India on 5th April 2007 with Rs. 8,500. For the financial year 2007-2008, the other transactions with the bank are given below:

(i) 15-05.2007; deposited Rs. 3,700

(ii) 27-07-2007; withdrew Rs. 2,400

(iii) 06-09-2007; withdrew Rs. 1,600

(iv) 18-12-2007; deposited Rs. 4,500

(v) 29-01-2008; Deposited Rs. 1,900

(vi) 23-03-2008; account closed.

Taking the rate of interest as 6% per annum, find the amount that Mr. Verma gets on closing the account.

Solution 14:

Balance on 5-4-2007 = Rs. 8,500

Balance on 15-5-2007 = Rs. 8,500 + Rs. 3,700 = Rs. 12,200

Balance on 27-7-2007 = Rs. 12,200 – Rs. 2,400 = Rs. 9,800

Balance on 6-9-2007 = Rs. 9,800 – Rs. 1,600 = Rs. 8,200

Balance on 18-12-2007 = Rs. 8,200 + Rs. 4,500 = Rs. 12,700

Balance on 29-1-2008 = Rs. 12,700 + Rs. 1,900 = Rs. 14,600

Balance on 23-3-2008 = Rs. 14,600

Minimum balance for April = Rs. 8,500

Minimum balance for May = Rs. 8,500

Minimum balance for June = Rs. 12,200

Minimum balance for July = Rs. 9,800

Minimum balance for August = Rs. 9,800

Minimum balance for September = Rs. 8,200

Minimum balance for October = Rs. 8,200

Minimum balance for November = Rs. 8,200

Minimum balance for December = Rs. 8,200

Minimum balance for January = Rs. 12,700

Minimum balance for February = Rs. 14,600

Minimum balance for March = Rs. 0

Total principal = Rs. 1,08,900

Rate= 6%p.a. and Time = $\frac{1}{12}\ year$

$\therefore$ Interest $= \frac{P \times R \times T}{100} = \frac{1,08,900 \times 6 \times 1}{100 \times 12} = Rs.\,544.50$

The amount that he gets on closing the account

=Rs. 14,600 + Rs. 544.50

= Rs. 15,144.50 Ans.

Question 15:

Mrs. N. Batra has a savings bank account with the Punjab National bank. She had the following transactions (from 1st January, 2007 to 31st December, 2007) with the bank:

(i) 01-01-2007; B/F Rs. 8,764/-

(ii) 13-03-2007; deposited Rs. 6,482

(iii) 22-06-2007; withdrew Rs. 4,369

(iv) 09-08-2007; withdrew Rs. 1,333

(v) 24-11-2007; Deposited Rs. 2,158

Calculate the interest the accrued upto 31st December, 2007: if the rate of interest is 5% compounded yearly and the principle for every month is taken as the nearest multiple of Rs.10. Taking the rate of interest as 6% per annum, find the amount that Mr. verma gets on closing the account.

Solution 15:

Balance on 01-01-2007 = Rs. 8,764

Balance on13-03-2007 = Rs. 8,764 + Rs. 6,482 = Rs. 15,246

Balance on 22-06-2007 = Rs. 15,246 – Rs. 4,369 = Rs. 10,877

Balance on 09-08-2007 = Rs. 10,877 – Rs. 1,333 = Rs. 9,544

Balance on 24-11-2007 = Rs. 9,544 + Rs. 2,158 = Rs. 11,702
Minimum balance for January = Rs. 8,760
Minimum balance for February = Rs. 8,760
Minimum balance for March = Rs. 8,760
Minimum balance for April = Rs. 15,250
Minimum balance for May = Rs. 15,250
Minimum balance for June = Rs. 10,880
Minimum balance for July = Rs. 10,880
Minimum balance for August = Rs. 9,540
Minimum balance for September = Rs. 9,540
Minimum balance for October = Rs. 9,540
Minimum balance for November = Rs. 9,540
Minimum balance for December = Rs. 11,700
Total principal = Rs. 1,28,400
Rate = 5% p.a. and Time = $\frac{1}{12}$ Year
∴ Interest = $\frac{P \times R \times T}{100}$ = $\frac{1,28,400 \times 5 \times 1}{100 \times 12}$ = $Rs. 535$ Ans

Question 16:

Mrs. Kapoor opened a savings bank account in state bank of India on 9th January 2008. Her passbook entries for the year 2008 are given below:

Date	Particulars	Withdrawals (In Rs)	Deposits (In Rs)	Balance (In Rs)
Jan 9, 2008	By cash	-	10,000	10,000
Feb 12, 2008	By cash	-	15,500	25,500
April 6, 2008	To Cheque	3,500	-	22,000
April 30, 2008	To self	2,000	-	20,000
July 16, 2008	By cheque	-	6,500	26,500
Aug 4, 2008	To self	5,500	-	21,000
Aug 20, 2008	To Cheque	1,200	-	19,800
Dec 12, 2008	By cash	-	1,700	21,500

Mrs. Kapoor closed the account on 31st December, 2008. If the bank pays interest at 4% per annum, find the interest Mrs. Kapoor received on closing the account. Give your answer correct to the nearest rupee.

Solution 16:

Minimum balance for January = Rs. 10,000
Minimum balance for February = Rs. 10,000
Minimum balance for March = Rs. 25,500

Minimum balance for April = Rs. 20,000
Minimum balance for May = Rs. 20,000
Minimum balance for June = Rs. 20,000
Minimum balance for July = Rs. 20,000
Minimum balance for August = Rs. 19,800
Minimum balance for September = Rs. 19,800
Minimum balance for October = Rs. 19,800
Minimum balance for November = Rs. 19,800
Minimum balance for December = Rs. 0
Total principal = Rs. 2,04,700
Rate = 4% p.a. and Time = $\frac{1}{12}$ Year
$\therefore$ Interest = $\frac{P \times R \times T}{100} = \frac{2,04,700 \times 4 \times 1}{100 \times 12} = Rs. 682$ Ans

EXERCISE 2(B)

Question 1:
Manish opens a Recurring deposits account with the Bank of Rajasthan and Deposits Rs. 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 1:
Instalment per month (P) = Rs. 600
Number of months (n) = 20
Rate of interest (r) = 10% p.a.
$\therefore$ S.I. = $P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$
$= 600 \times \frac{20\,(20+1)}{2 \times 12} \times \frac{10}{100}$
$= 600 \times \frac{420}{24} \times \frac{10}{100} = Rs. 1,050$
The amount that Manish will get at the time of maturity
= Rs. (600 × 20) + Rs. 1,050
= Rs. 12,000 + Rs. 1,050
= Rs. 13,050 Ans

Question 2:

Mrs. Mathew opened a recurring Deposit account in a certain bank and deposited Rs. 640 per month for $4^1/_2$ years. Find the maturity value of this account, if the bank pays interest at the rate of 12% per year.

Solution 2:

Instalment per month (P) = Rs. 640

Number of months (n) = 54

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

$\therefore$ S.I. $= P \times \dfrac{n(n+1)}{2 \times 12} \times \dfrac{r}{100}$

$= 640 \times \dfrac{54\,(54+1)}{2 \times 12} \times \dfrac{12}{100}$

$= 640 \times \dfrac{2970}{24} \times \dfrac{12}{100} = Rs.\,9{,}504$

The amount that Manish will get at the time of maturity

= Rs. (640 × 54) + Rs. 9,504

= Rs. 34,560 + Rs. 9,504

= Rs. 44,064 Ans.

Question 3:

A and B both opened recurring deposit accounts in a bank. If A deposited Rs. 1,200 per month for 3 years and B deposited Rs. 1500 per months for $2\frac{1}{2}$ 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 3:

<u>For A</u>

Instalment per month (P) = Rs. 1,200

Number of months (n) = 36

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

$\therefore$ S.I. $= P \times \dfrac{n(n+1)}{2 \times 12} \times \dfrac{r}{100}$

$= 1{,}200 \times \dfrac{36\,(36+1)}{2 \times 12} \times \dfrac{10}{100}$

$= 1{,}200 \times \dfrac{1332}{24} \times \dfrac{10}{100} = Rs.\,6{,}660$

The amount that A will get at the time of maturity

= Rs. (1,200 × 36) + Rs. 6,660

= Rs. 43,200 + Rs. 6,660

= Rs. 49,860

<u>For B</u>

Instalment per month (P) = Rs. 1,500

Number of months (n) = 30

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

$\therefore$ S.I. $= P \times \dfrac{n(n+1)}{2 \times 12} \times \dfrac{r}{100}$

$= 1{,}500 \times \dfrac{30\,(30+1)}{2 \times 12} \times \dfrac{10}{100}$

$= 1{,}500 \times \dfrac{930}{24} \times \dfrac{10}{100} = Rs.\,5{,}812.50$

The amount that B will get at the time of maturity

$= $ Rs. $(1{,}500 \times 30) + $ Rs. $5{,}812.50$

$= $ Rs. $45{,}000 + $ Rs. $5{,}812.50$

$= $ Rs. $50{,}812.50$

Difference between both amounts $= $ Rs. $50{,}812.50 - $ Rs. $49{,}860$

$= $ Rs. 952.50

Then B will get more money than A by Rs. 952.50 Ans

Question 4:

Ashish deposits a certain a certain sum of money every month in a Recurring Deposits Account for a period of 12 months. If the bank pays interest at the rate of 11% p.a. and Ashish gets Rs. 12,175 as the maturity value of this account, did what sum of money did he pay every month?

Solution 4:

Let Instalment per month (P) = Rs. y

Number of months (n) = 12

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

$\therefore$ S.I. $= P \times \dfrac{n(n+1)}{2 \times 12} \times \dfrac{r}{100}$

$= y \times \dfrac{12\,(12+1)}{2 \times 12} \times \dfrac{11}{100}$

$= y \times \dfrac{156}{24} \times \dfrac{11}{100} = Rs.\,0.715\,y$

Maturity value $= $ Rs. $(y \times 12) + $ Rs. $0.715y = $ Rs. $12.715y$

Given maturity value $= $ Rs. $12{,}715$

Then Rs. $12.715y = $ Rs. $12{,}715$

$\Rightarrow y = \dfrac{12{,}715}{12.715} = Rs.\,1{,}000$ Ans

Question 5:

A man has a Recurring Deposit account in a bank for $3^{1}/_{2}$ years. If the rate of interest is 12% per annum and the man gets Rs. 10,206 on maturity, find the value of monthly instalments.

Solution 5:

Maturity value $= $ Rs $(y \times 12) + $ Rs. $0.715\,y = $ Rs. $12.715y$

Given maturity value = Rs. 12,715

Then Rs. 12.715 y = Rs. 12,715

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

$\quad$ = y × $\frac{42\ (42+1)}{2 \times 12}$ × $\frac{12}{100}$

$\quad$ = y × $\frac{1806}{24}$ × $\frac{12}{100}$ = $Rs.\ 9.03\ y$

Maturity value = Rs (y × 42) + Rs. 9.03y = Rs. 51.03 y

Given maturity value = Rs. 10,206

Then Rs. 51.03y = Rs. 10206

⟹ y = $\frac{10206}{51.03}$ = $Rs.\ 200$ Ans.

Question 6:

(i) Punnet has a recurring Deposits Account in the bank of Baroda and deposits Rs. 140 per month for 4 years. If the rate of interest given by the bank.

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

Solution 6:

(a) Instalment per month (P) = Rs. 140

Number of months (n) = 48

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

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

$\quad$ = 140 × $\frac{48\ (48+1)}{2 \times 12}$ × $\frac{r}{100}$

$\quad$ = 140 × $\frac{2352}{24}$ × $\frac{r}{100}$ = $Rs.\ (137.20)r$

Maturity value = Rs (140 × 48) + Rs. (137.20) r

Given maturity value = Rs8,092

Then Rs (140 × 48) + Rs. (137.20) r = Rs. 8,092

137.20 r = Rs. 8,092 – Rs. 6,720

⟹ r = $\frac{1,372}{137.20}$ = 10% Ans.

(b) Instalment per month (P) = Rs. 300

Number of months (n) = 24

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

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

$\quad$ = 300 × $\frac{24\ (24+1)}{2 \times 12}$ × $\frac{r}{100}$

$\quad$ = 300 × $\frac{600}{24}$ × $\frac{r}{100}$ = $Rs.\ (75)r$

Maturity value = Rs. (300 × 24) + Rs. (75) r

Given maturity value = Rs. 7,725

Then Rs. (300 × 24) + Rs. (75) r = Rs. 7,725

$\Rightarrow$ 75 r = Rs. 7,725 − Rs. 7,200

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

Question 7:

Amit deposited Rs. 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 7:

Instalment per month (P) = Rs. 150

Number of months (n) = 8

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

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

$= 150 \times \frac{8\,(8+1)}{2 \times 12} \times \frac{8}{100}$

$= 150 \times \frac{72}{24} \times \frac{8}{100} = Rs.\,36$

The amount that Manish will get at the time of maturity

= Rs (150 × 8) + Rs. 36

= Rs. 1,200 + Rs. 36

= Rs. 1,236 Ans

Question 8:

Mrs. Geeta deposited Rs. 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 Rs. 5,565; find the rate of interest per annum.

Solution 8:

Instalment per month (P) = Rs. 350

Number of months (n) = 15

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

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

$= 350 \times \frac{15\,(15 + 1)}{2 \times 12} \times \frac{r}{100}$

$= 350 \times \frac{240}{24} \times \frac{r}{100} = Rs.\,(35)r$

Maturity value = Rs. (350 × 15) + Rs. (35) r

Given maturity value = Rs. 5,565

Then Rs (350×15) + Rs. (35) r = Rs. 5,565

$\Rightarrow$ 35 r = Rs. 5,565 – Rs. 5,250

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

Question 9:

A recurring deposit account of Rs. 1,200 per month has a maturity value of Rs. 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 9:

Instalment per month (P) = Rs. 1,200

Number of months (n) = n

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

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

$= 1,200 \times \frac{n\ (n+1)}{2 \times 12} \times \frac{8}{100}$

$= 1,200 \times \frac{n(n+1)}{24} \times \frac{8}{100} = Rs.\ 4n\ (n+1)$

Maturity value = Rs $(1,200 \times n)$ + Rs. 4n (n + 1) = Rs $(1200n + 4n^2 + 4n)$

Given maturity value = Rs. 12,440

Then $1200n + 4n^2 + 4n$ = 12,440

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

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

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

$\Rightarrow$ n = $-$ 311 Or n =10 months

Then number of months = 10 Ans

Question 10:

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

Solution 10:

Instalment per month (P) = Rs. 300

Number of months (n) = n

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

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

$= 300 \times \frac{n\ (n+1)}{2 \times 12} \times \frac{12}{100}$

$$= 300 \times \frac{n(n+1)}{24} \times \frac{12}{100} = Rs. \, 1.5n \, (n+1)$$

Maturity value = Rs $(300 \times n)$ + Rs. 1.5n (n + 1)

= Rs. $(300n + 1.5n^2 + 1.5n)$

Given maturity value = Rs. 8,100

Then $300n + 1.5n^2 + 1.5n = 8,100$

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

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

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

$\Rightarrow n = -225$ Or $n = 24$ months

Then time = 2 year

Question 11:

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

(i) the total interest earned by Mr. gupta

(ii) the rate of interest per annum.

Solution 11:

(i) Maturity value = Rs. 67,500

Money deposited = Rs. $2,500 \times 24$ = Rs. 60,000

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

(ii) Instalment per month (P) = Rs. 2,500

Number of months (n) = 24

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

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

$$= 2500 \times \frac{24 \, (24 + 1)}{2 \times 12} \times \frac{r}{100}$$

$$= 2500 \times \frac{600}{24} \times \frac{r}{100} = Rs. \, (625)r$$

Then 625r = 7500

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

EXERCISE 2(C)

Question 1:
Given below are the entries in a saving Bank A/C pass book:

Date	Particulars	Withdrawals	Deposits	Balance
Feb 8	B/F	-	-	Rs. 8,500
Feb 18	To self	Rs. 4,000	-	4500
April 12	By Cash	-	Rs. 2,230	6730
June 15	To Self	Rs. 5,000	-	1730
July 8	By Cash	-	Rs. 6,000	7730

Calculate the interest for 6 months from February to July at 6% per annum.

Solution 1:
Principal for the month February = 4500
Principal for the month March   = 4500
Principal for the month April   = 4500
Principal for the month May   = 6730
Principal for the month June   = 1730
Principal for the month July   = 7730
Total principal for 1 month   = Rs. 29,690
$\therefore$ Interest $= = \frac{29690 \times 6}{100 \times 12} = Rs.\, 148.45$ Ans

Question 2:
A page from a passbook of savings bank account is given below:

Date	Particulars	Amount Withdrawn (In Rs)	Amount Deposits (In Rs)	Balance (In Rs)
09.08.1999	By Cash	-	10,000	10,000
11.08.1999	By Cheque	-	5,000	15,000
05.10.1999	To Cheque	12,000	-	3,000
10.10.1999	By Cash	-	17,000	20,000
27.11.1999	By Cheque	5,000	-	15,000
29.11.1999	By Cash	-	3,000	18,000

The account is closed on 2nd Jan, 2000. Find the amount received, if the rate of interest is 5%

Solution 2:

Minimum balance for August = Rs.10,000
Minimum balance for September = Rs. 15,000
Minimum balance for October = Rs. 20,000
Minimum balance for November = Rs. 15,000
Minimum balance for December = Rs. 18,000
Minimum balance for January = Rs. 0
Total principal = Rs. 78,000

Rate = 5% p.a. and time = $\dfrac{1}{12}$ Year

$\therefore$ S.I. $= \dfrac{P \times R \times T}{100} = Rs. \dfrac{78{,}000 \times 5 \times 1}{100 \times 12} = Rs.\,325$

Then Amount received = Rs. 18,000 + Rs. 325 = Rs. 18,325 Ans

Question 3:
John had a S.B. Account in Bank of Baroda. His passbook had the following entries:

Date	Particulars	Amount Withdrawn (In Rs)	Amount Deposits (In Rs)	Balance (In Rs)
Jan 1, 2000	By Balance	-	-	9,600
Jan, 8	By cash	-	6,000	15,600
Feb 18	To Cheque	10,500	-	5,100
May 19	By Cash	-	6,300	11,400
July 15	To self	2,400	-	9,000
Oct 7	By cash	-	3,600	12,600

On October 30, 2000 John received his transfer order and closed the account. If the amount of interest he received on closing the account on 30th, Oct 2000 is Rs. 310; calculate the rate of interest per annum.

Solution 3:
Minimum balance for January = Rs. 15,600
Minimum balance for February = Rs. 5,100
Minimum balance for March = Rs. 5,100
Minimum balance for April = Rs. 5,100
Minimum balance for May = Rs. 5,100
Minimum balance for June = Rs. 11,400
Minimum balance for July= Rs. 9,000
Minimum balance for August = Rs. 9,000
Minimum balance for September = Rs. 9,000
Minimum balance for October = Rs. 0

Total principal = Rs. 74,400

Received interest = Rs. 310 and time = $\frac{1}{12}$ Year

∴ Rate = $\frac{I \times 100}{P \times T}$ = $Rs. \frac{310 \times 100}{74,400 \times \frac{1}{12}}$ = 5% Ans.

Question 4:

Pramod deposits Rs. 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 4:

Instalment per month (P) = Rs. 600

Number of months (n) = 48

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

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

= 600 × $\frac{48\,(48 + 1)}{2 \times 12}$ × $\frac{8}{100}$

= 600 × $\frac{2352}{24}$ × $\frac{8}{100}$ = $Rs.\,4,704$

The amount that Manish will get at the time of maturity

= Rs. (600 × 48) + Rs. 4,704

= Rs. 28,800 + Rs. 4,704

= Rs. 33,504Ans

Question 5:

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

Solution 5:

Installment per month (P) = Rs. 80

Number of months (n) = 18

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

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

= 80 × $\frac{18\,(18 + 1)}{2 \times 12}$ × $\frac{r}{100}$

= 80 × $\frac{342}{24}$ × $\frac{r}{100}$ = $Rs.\,(11.4r)$

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

Given maturity value = Rs. 1,554

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

$\Rightarrow$ 11.4 r = Rs. 1,554 – Rs. 1,440

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

Question 6:

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

Solution 6:

Installment per month (P) = Rs. 400

Number of months (n) = n

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

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

$= 400 \times \frac{n(n+1)}{2 \times 12} \times \frac{8}{100}$

$= 400 \times \frac{n(n+1)}{24} \times \frac{8}{100} = Rs. \frac{4n(n+1)}{3}$

Given maturity value = Rs. 16,176

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

$\Rightarrow$ 1200n + 4n² + 4n = Rs. 48,528

$\Rightarrow$ 4n² + 1204n = Rs. 48,528

$\Rightarrow$ n² + 301n – 12132 = 0

$\Rightarrow$ (n+337) (n−36) = 0

$\Rightarrow$ n = − 337 or n = 36

Then number of months = 36 months = 3 years Ans

Question 7:

Mr. Bajaj needs Rs. 30,000 after 2 years. What least money (in multiple of Rs. 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 7:

Let installment per month = Rs. P

Number of months (n) = 24

Rate of interest Â® = 8% p.a.

$\therefore$ S.I. $= P \times \dfrac{n(n+1)}{2 \times 12} \times \dfrac{r}{100}$

$\qquad = P \times \dfrac{24\,(24 + 1)}{2 \times 12} \times \dfrac{8}{100}$

$\qquad = P \times \dfrac{600}{24} \times \dfrac{8}{100} = Rs.\,(2)P$

Maturity value = Rs. (P $\times$ 24) + Rs. 2P = Rs. 26P

Given maturity value = Rs. 30,000

Then 26P = Rs. 30,000

$\Rightarrow$ P = Rs. $\dfrac{30,000}{26} = Rs.\,1153.84 = Rs.\,1155$ (multiple of 5) Ans.

Question 8:

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

(i) the monthly instalment

(ii) the amount of maturity

Solution 8:

(i) Let Installment per month = Rs. P

Number of months (n) = 36

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

$\therefore$ S.I. $= P \times \dfrac{n(n+1)}{2 \times 12} \times \dfrac{r}{100}$

$\qquad = P \times \dfrac{36\,(36 + 1)}{2 \times 12} \times \dfrac{8}{100}$

$\qquad = P \times \dfrac{1332}{24} \times \dfrac{8}{100} = Rs.\,(4.44)P$

Given interest = Rs. 9,990

Then 4.44P = Rs. 9,990

$\Rightarrow$ P = Rs. $\dfrac{9,990}{4.44} = Rs.\,2,250$ Ans.

(ii) Maturity value = Rs (2,250 $\times$ 36) + Rs. 9,990 = Rs. 90,990 Ans

Question 9:

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

Solution 9:

Installment per month (P) = Rs. 900

Number of months (n) = 48

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

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

$= 900 \times \frac{48(48+1)}{2 \times 12} \times \frac{r}{100}$

$= 900 \times \frac{2352}{24} \times \frac{r}{100} = Rs.\,(882)r$

Maturity value = Rs (900 $\times$ 48) + Rs (882)r

Given maturity value = Rs. 52,020

Then Rs (900 $\times$ 48) + Rs (882) r = Rs. 52,020

$\implies$ 882 r = Rs. 52,020 – Rs. 43,200

$\implies r = \frac{8820}{882} = 10\%$ Ans

Question 10:

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

Solution 10:

Installment per month (P) = Rs. 1,800

Number of months (n) = 48

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

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

$= 1,800 \times \frac{48(48+1)}{2 \times 12} \times \frac{r}{100}$

$= 1,800 \times \frac{2352}{24} \times \frac{r}{100} = Rs.\,(1,764)r$

Maturity value = Rs (1,800 $\times$ 48) + Rs (1,764)r

Given maturity value = Rs. 1,08,450

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

1764 r = Rs. 1,08,450 – Rs. 86,400

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

Question 11:

Mr. Choudhury opened a saving's bank account at the state bank of india on 1st april 2007. The entries of one year as shown in his pass book are given below:

Date	Particulars	Withdrawn (In Rs)	Deposits (In Rs)	Balance (In Rs)
1st April 2007	By Cash	-	8,550.00	8,550.00
12th April 2007	To self	1,200.00	-	7,350.00

24th April 2007	By Cash	-	4,550.00	11,900.00
8th July 2007	By Cheque	-	1,500.00	13,400.00
10th Sept, 2007	By Cheque	-	3,500.00	16,900.00
17th Sep 2007	To Cheque	2,500.00	-	14,400.00
11th Oct 2007	By Cash	-	800.00	15,200.00
6th jan 2008	To Self	2,000.00	-	13,200.00
9th march 2008	By Cheque	-	950.00	14,150.00

If the bank pays interest at the rate of 5% per annum, find the interest paid on 1st April, 2008. Give your answer correct to the nearest rupee.

Solution 11:

Month	Balance (in Rs)
Apr 2007	7350
May	11900
Jun	11900
Jul	13400
Aug	13400
Sep	14400
Oct	14400
Nov	15200
Dec	15200
Jan 2008	13200
Feb	13200
Mar	14150
Total	**157800**

∴ Principal for 1 month is Rs. 157700, and Rate = 5% p.a.

∴ Interest $= \frac{PRT}{100} = \frac{157700 \times 5 \times 1}{100 \times 12} = \frac{263 \times 55}{2}$

$= \frac{1315}{2} = 657.08 = 657$ (in rupees)

The interest paid on 1st April, 2008 is Rs. 657.

Question 12:

Mr.Britto deposits a certain sum of money each month in a Recurring Deposit Account of a bank, if the rate of interest is 8% per annum and Mr. Britto gets Rs.8088 from the bank after 3 years, find the value of his monthly instalment.

Solution 12:

Here, n = the number of months for which the money is deposited

$= 3 \times 12 = 36$ and

r = interest rate percent per annum = 8

Let the monthly instalment be Rs.X then P = Rs. X

Using the formula:

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

$$I = Rs. \ x \times \frac{36 \times 37}{2 \times 12} \times \frac{8}{100} = Rs. \frac{111}{25} x$$

Total money deposited by Mr. Britto = $Rs.(x \times 36) = Rs.36x$

The amount of maturity = Total money deposited + interest

$$= Rs.36x + Rs. \frac{111}{25} x = Rs. \frac{1011}{25} x$$

But the amount of maturity = Rs.8088(given)

$$\Rightarrow Rs. \frac{1011}{25} x = 8088 \Rightarrow \frac{x}{25} = 8 \Rightarrow x = 200$$

Hence, the monthly instalment = Rs. 200