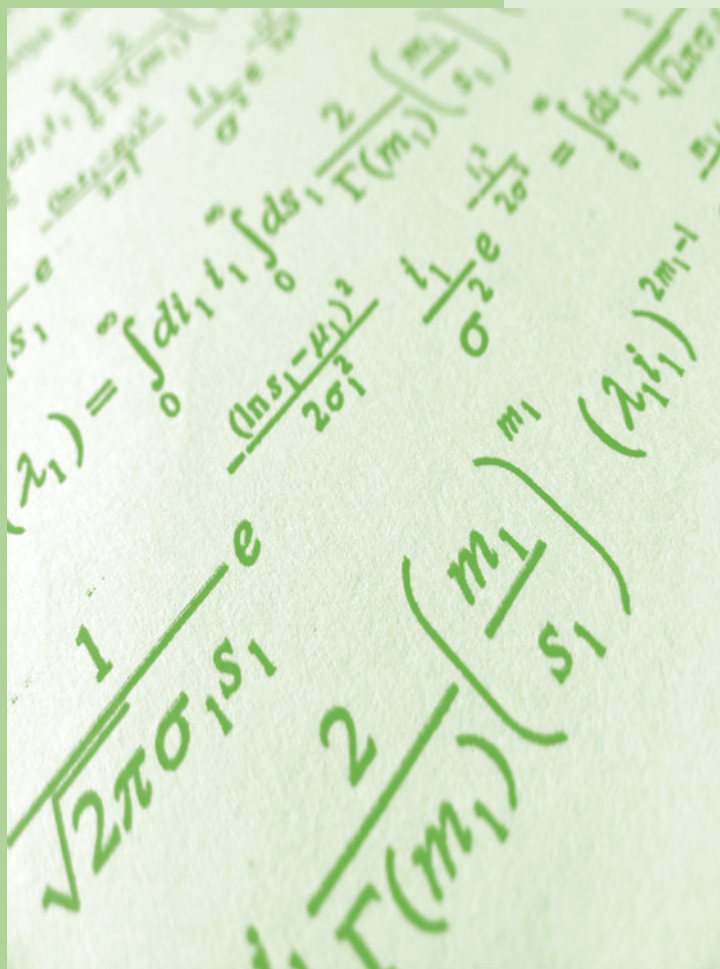


Chapter 22

Banking



REMEMBER

Before beginning this chapter, you should be able to:

- Learn about remittance of funds, safe deposit lockers, public utility services.

KEY IDEAS

After completing this chapter, you would be able to:

- Understand deposit accounts—savings bank accounts, current accounts and term deposit accounts and processes related.
- Study about types of cheques and parties dealing with cheques.
- Do calculation of interest on loans.
- Calculate interests on savings accounts in banks
- Study hire purchase and find the rate of interest on buying in instalment scheme.

INTRODUCTION

Before people began using money, purchase and sale of goods used to be performed through exchange of goods. This system is called, 'Barter system'. As there was no uniformity in the valuation of various goods under this system, the values of all goods were converted in terms of money, thus ensuring that a proper value is paid for the goods purchased.

Once the monetary system became a standard method of value exchange, the necessity to ensure the safety of money came into existence. With an intention to safeguard money, and also to facilitate availability of money to everyone in the society, gradually the banking system developed.

Among the various services offered by the banks, taking deposits and providing loans are the basic ones. Apart from these, banks render the following ancillary services.

1. **Remittance of funds:** Banks help in transferring money from one place to another in a safe manner, through the issue of demand drafts, money transfer orders, and telegraphic transfers. Banks also issue travellers cheques to travellers in home currency as well as in foreign currency, by which travellers can minimize the risk of theft or loss of money while travelling to a different place. These travellers' cheques can be easily converted into money. With the advent of technology, nowadays, money transfer has become simple through Internet and phone banking.
2. **Safe deposit lockers:** Banks provide safety lockers to customers to keep safely preserve their valuables. A customer can store their valuables, like gold ornaments, important documents in bank lockers by paying a small amount of rent charged by the bank.
3. **Public utility services:** Through bank accounts, the customers can pay their telephone bills, electricity bills, insurance premium, and other services.

DEPOSIT ACCOUNTS

Deposit accounts offered by the banks are designed in such a way that they cater to various needs of the customers. These come according to their financial capabilities of the customers. At present, the following types of deposit accounts are offered by the banks:

Savings Bank Account

An Indian individual, either resident or non-resident, can open a savings bank account with a minimum balance of ₹500. The minimum balance may vary from bank to bank. A passbook is issued to the customer. It contains all the particulars of the transactions and the balance. Such an account can be opened in joint names also. It is known as a 'joint account'. If one of the joint account holders is a minor, the following guidelines are applicable: A minor who is at least ten-year old can open an account in a bank or a post office. However, the minimum age to open an account and to operate an account differs from bank to bank and post office. In a post office, the minimum age to open and operate a savings account is 10 years. If the minor's minimum age to operate an account is less than his/her minimum age to open an savings account, a guardian can operate the minor's account. A savings bank accounts carry a certain amount of interest compounded half-yearly. The rate of interest varies from bank to bank. It may also vary from time to time. Cheque books are issued to an account-holder against a requisition slip duly filled up and signed by the person. If a customer operates his/her account through cheques, then it is known as '**cheque-operated account**'.

Depositing Money in the Bank Accounts

Money can be deposited in a bank either by cash or through a duly filled pay-in-slip or challan. Pay-in-slips can be used for payment through cash or cheque.

Demand Draft

Money can be deposited through demand drafts (i.e., bank drafts). A person who wants to send money to another person can purchase a bank draft.

A bank draft is an order issued by a bank to its specified branch or to another bank (if there is a tie-up) to make payment of the amount to the party, in whose name the draft is issued.

The purchaser of the draft specifies the name and address of the person to whom the money is being sent, which is written on the bank draft. The payee can encash the drafts by presenting it at the specified branch or bank.

Withdrawing Money From Saving Bank Account

Money deposited in these accounts can be withdrawn by using withdrawal slips or cheques. A specimen of a cheque is given below.

Pay to self _____		Date: _____
_____ or/bearer		
Rupees (in words) _____		

A/c No. _____	_____	Rs. _____
The Corporation Bank No : 2, M.G. Road Chennai		
(Br.code: 0745)		
11 320016 11 110041680		

Figure 22.1

Cheque books are issued only to those account-holders who fulfill certain special requirements, such as maintenance of minimum balance, updated information related to the account.

Types of Cheques

A cheque can be classified into two types. These are as follows:

Bearer Cheque

A bearer cheque can be encashed by anyone who possesses the cheque, though the person's name is not written on the cheque. There is a risk of wrong a person getting the payments.

If the word '**bearer**' is crossed-out in the cheque, then the person whose name appears on the cheque can alone encash the cheque. This type of cheque is known as an '**order cheque**'.

Crossed Cheque

If two parallel lines are drawn at the left-hand top corner of a cheque, it is called a '**crossed cheque**'. The words '**A/C payee**' may or may not be written between the two parallel lines. The payee has to deposit the crossed cheque in his/her account. The collecting bank collects the money from the drawer's bank, and it is credited to the payee's account.

Bouncing of Cheques

If an account-holder issues a cheque for an amount exceeding the balance in his account, the bank refuses to make payment. In such an instance, the cheque is said to be **dishonoured** one. This is known as **bouncing of cheque**. If a cheque bounces, the issuer of the cheque is liable for prosecution under the **Negotiable Instruments Act, 1887**.

Safeguards to be taken while Maintaining 'Cheque-Operated Accounts'

1. Immediately after receiving a cheque book, a customer verifies if all the leaves are serially arranged and printed with correct numbers.
2. Blank cheques should not be issued to anybody except the account holder.
3. Any changes, alterations, corrections made while filling a cheque, should be authenticated with full signature.
4. The amount on a cheque has to be written in words and figures legibly.
5. The amount of the cheque should be written immediately after the printed words '**Rupees**' or '₹'. Also, the word '**only**' should be mentioned after the amount in words.
6. A cheque becomes outdated or stale after six months from the date of issue. Hence, it should be presented within six months from the date of issue.

Parties dealing with a cheque

Drawer

The account-holder who writes the cheques and signs on it in order to withdraw money is called 'drawer' of the cheque.

Drawee

The Bank on whom the cheque is drawn is called the 'drawee bank' as they pay the money.

Payee

The party to whom the amount of cheque is payable is called the 'payee'. The payee has to affix his/her signature on the back of the cheque.

Any savings bank account-holder can withdraw money from his/her account using a withdrawal form, a specimen of which is given below.

State Bank of India		----- Branch	Date:
Name of the account holder: _____			
Account No.			
Note: This form is not a cheque.			
Payment will be rejected if this form is not submitted along with the pass book.			

Please pay self/ourselves only.			
Rupees _____		only.	
and debit the amount from my/our above savings bank account.		Rs. _____	
Token No.	PAY CASH	Signature of the customer	
Scroll No.	passing officer		

Figure 22.2

Banks impose restrictions on the number of times of withdrawal of money from savings bank accounts. A violation of such restriction attracts a nominal charge. The interest on savings bank accounts are paid half-yearly by taking the minimum balance for each month as the balance for that entire month. **‘Minimum balance’** is the least of all the balances left in the account from the 10th to the last day of that month.

Example: The following table shows the particular of the closing balances of a savings account during the month of March, 2006.

Date	Closing Balance
5.3.2006	₹1,800.00
10.3.2006	₹2,400.00
18.3.2006	₹3,500.00
25.3.2006	₹1,700.00
31.3.2006	₹2,500.00

From the given table, it can be observe that the closing balance on 25th March, i.e., ₹1700, is the minimum closing balance between 10th of March and the last day of March. This is the minimum balance for the month of March.

The monthly minimum balances for every six months are calculated, and on this the interest for six months is calculated. Most of the banks add the interest to the existing balance once in every half year. That is, on June 30th and December 31st.

However, the periodicity of interest calculation differs between banks to post offices.

Calculation of Interest on Savings Accounts in Banks

The monthly minimum balances from January to the end of June are added. This total amount is called the **‘product’** in banks. Interest is calculated on this product and added to the opening

balance on July 1st. In the same manner, the interest for the next half year is calculated and added to the opening balance on January 1st.

In savings account, interest is calculated by maintaining the following steps:

1. The least of the balances from the 10th day of a month to the last day of the month is considered as the balance for the month.
2. The sum of all these monthly balances is considered as the product for calculating interest.
3. $\text{Interest} = \frac{\text{Product} \times \text{Rate of interest}}{12 \times 100}$

EXAMPLE 22.1

The following is an extract of the savings bank pass book of Mrinalini who has an account with Corporation Bank.

Calculate the interest accrued on the account at the end of June, 2005 at 5% pa.

Date	Particulars	Amount Withdrawn		Amount Deposited		Balances	
		₹	P	₹	P	₹	P
7.1.2005	Balance B/F					8,400	00
10.1.2005	By cash			12,500	00	20,900	00
31.1.2005	To cheque No. 3541	6,500	00			14,400	00
15.2.2005	By cash			3,500	00	17,900	00
13.3.2005	To cheque No. 3543	2,800	00			15,100	00
25.3.2005	By cheque			2,000	00	17,100	00
3.4.2005	To cheque No. 3544	1,400	00			15,700	00
18.4.2005	To cheque No. 3545	3,500	00			12,200	00
21.5.2005	By cash			5,400	00	17,600	00
15.6.2005	To cheque No. 3546	6,000	00			11,600	00
21.6.2005	To cheque No. 3547	2,000	00			9,600	00
15.7.2005	By cash			3,500	00	13,100	00

SOLUTION

The minimum balance in rupees

for January	= 14,400
February	= 14,400
March	= 15,100
April	= 12,200
May	= 12,200
June	= 9,600

	77,900

The product is ₹77,900.

$$\text{Interest} = \frac{\text{Product} \times \text{Rate}}{100 \times 12} = \frac{77900 \times 5}{100 \times 12} = ₹324.58$$

Current Account

This account is very convenient for business people, companies, government offices, and various other institutes which need to make frequent and large amounts of monetary transactions. Banks do not give any interest on these accounts, but the operation of these accounts is flexible. There is no restriction on amounts deposited or withdrawn (i.e., on the number of transactions) as the savings bank accounts.

Term Deposit Accounts

These accounts are of two types:

1. Fixed deposit accounts
2. Recurring deposit accounts

Fixed Deposit Accounts

Customers can avail the facility of depositing a fixed amount for a definite period of time. As the time period is fixed, banks give a higher rate of interest on these accounts. If money is withdrawn from these accounts before the fixed time period, banks pay lesser interest than what was agreed upon. As this discourages premature withdrawal, banks rely more on these funds. The rate of interest payable varies with the period for which the money is deposited in these accounts, and it varies from bank to bank. The rates of interest offered by a bank on fixed deposits are as follows:

Time period	Rate of Interest (%) pa
15 days and upto 45 days	5.25
46 days and upto 179 days	6.50
180 days to, less than 1 year	6.75
1 year to less than 2 years	8.00
2 years to less than 3 years	8.25
3 years and above	8.50

Recurring Deposit Accounts

These accounts help customers to build up large amounts through small deposits. These accounts facilitate depositing a fixed amount per month for a time span of 6 months to 3 years, and above. This time period is called the **maturity period**.

The following table gives an idea about how the principal amounts are taken to calculate the interest in recurring deposit accounts.

Date	Deposit	Principal on which interest is to be paid
1.4.2006	₹3,000	₹3,000
1.5.2006	₹3,000	₹6,000
1.6.2006	₹3,000	₹9,000

Recurring deposit accounts are helpful to those who have low earnings. They can save large amounts through regular and fixed savings. A person who opens this account deposits an initially agreed amount each month. At the end of the maturity period, the cumulative amount with interest, which is called the ‘maturity amount’, is paid to the account-holder. The rates of interest payable on these accounts are same as those payable on fixed deposit accounts.

The recurring deposit interest is calculated by applying the following formula.

$$\text{We know that, } 1 + 2 + 3 + \cdots + n = \frac{n(n+1)}{2}$$

If a man deposits ₹ k per month, for n months at $r\%$ pa, then simple interest

$$= ₹ \left[k \times \frac{n(n+1)}{2} \times \frac{1}{12} \times \frac{R}{100} \right].$$

EXAMPLE 22.2

Govind opened a bank account on 1.4.2006 by depositing ₹3,000. He deposited ₹1,000 on 11.4.06 and withdrew ₹500 on 15.4.2006. Compute the interest paid by the bank for the month of April, if the rate of interest is 4% pa.

SOLUTION

Balance as on 1.4.2006 = ₹3,000

as on 11.4.2006 = ₹4,000

as on 15.4.2006 = ₹3,500

The minimum balance for the month of April = ₹3,000

$$\text{The interest paid by the bank for the month of April} = \frac{3000 \times 1 \times 4}{1200} = ₹10.$$

EXAMPLE 22.3

Rajan makes fixed deposit of ₹8,000 in a bank for a period of 2 years. If the rate of interest is 10% pa compounded annually, find the amount payable to him by the bank after two years.

SOLUTION

The amount of fixed deposit = ₹8,000.

$R = 10\%$ pa and $n = 2$.

$$\begin{aligned} \text{The amount returned by the bank} &= P \left[1 + \frac{r}{100} \right]^n \\ &= 8000 \left[1 + \frac{10}{100} \right]^2 \\ &= 8000 [1 + 0.1]^2 = 8000 \times 1.21 = ₹9,680. \end{aligned}$$

EXAMPLE 22.4

Maresh deposits ₹600 per month in a recurring deposit account for 2 years at 5% pa. Find the amount he receives at the time of maturity.

SOLUTION

Here, $P = ₹600$,

$N = 2 \times 12$ months and $R = 5\%$ pa

$$SI = P \times \frac{n(n+1)}{2} \times \frac{1}{12} \times \frac{R}{100} = 600 \times \frac{24(25)}{2} \times \frac{1}{12} \times \frac{5}{100} = 750$$

The total amount = $(24 \times 600) + 750 = 14400 + 750 = ₹15,150$.

Loans

The loans given by the banks can be classified into the following three types:

1. Demand loans
2. Term loans
3. Overdrafts (ODs)

Demand Loans

The borrower has to repay the loans on demand. The repayment of the loan has to be done within 36 months from the date of disbursement of the loan. The borrower has to execute a demand promissory note in favour of the bank, promising that he would repay the loan unconditionally as per the stipulations of the bank.

Term Loans

The borrower enters into an agreement with the bank regarding the period of loan and mode of repayment, number of instalments, etc. The repayment period is, generally, more than 36 months. These loans are availed by those who purchase machinery, build houses, etc.

Overdrafts (ODs)

A current account holder enters into an agreement with the bank which permits him to draw more than the amount available in his account, but upto a maximum limit fixed by the bank. These loans are availed by traders.

Calculation of Interest on Loans

Interest on loans is calculated on daily product basis. Once in every quarter the loan amount is increased by that amount.

Daily product = Balance $\times$ Number of days it has remained as balance.

$$\text{Interest} = \frac{\text{Sum of daily products} \times \text{Rate}}{100 \times 365}$$

Note If the loan is repaid totally, the date on which it is repaid is not counted for calculation of interest. If the loan is repaid in part, the day of repayment of loan is also counted for calculating the interest.

EXAMPLE 22.5

Ganesh takes a loan of ₹20,000 on 1.4.2005. He repays ₹2,000 on the 10th of every month, starting from May, 2005. If the rate of interest is 15% pa, calculate the interest upto 30.6.2005.

SOLUTION

Loan Amount (in ₹)	Loan Period	No. of Days	Daily Product
20,000	1.4.2005 to 10.5.2005	40	40×20000 $= ₹8,00,000$
Repays 2,000 on 11.5.2005 Balance 18,000	11.5.2005 to 10.6.2005	31	31×18000 $= ₹5,58,000$
Repay 2,000 on 11.6.2005 Balance 16000	11.6.2005 to 30.6.2005	20	20×16000 $= ₹3,20,000$

Total daily product (DP) = ₹16,78,000

$$\begin{aligned}\text{Interest} &= \frac{\text{DP} \times \text{Rate}}{100 \times 365} \\ &= \frac{1678000 \times 15}{100 \times 365} = ₹689.60.\end{aligned}$$

Compound Interest

When interest is calculated on principal as well as on interest, it is known as compound interest. The interest is added to the principal at regular intervals, quarterly or half yearly or yearly, and further interest is calculated on the increased principal thus obtained.

The formula to find out the amount payable, when the interest is compounded annually is as follows:

$$A = P \left(1 + \frac{r}{100} \right)^n$$

where, p = principal
 r = rate of interest, and
 n = number of years.

When interest is compounded k times a year, then $A = P \left(1 + \frac{r}{k \times 100} \right)^{n \times k}$

When interest is compounded quarterly $k = \frac{12}{3} = 4$.

When interest is compounded half-yearly $k = \frac{12}{6} = 2$, and so on.

HIRE PURCHASE AND INSTALMENT SCHEME

When a buyer does not have purchasing capacity, the seller allows the buyer to make part payments in monthly, quarterly, half-yearly or yearly instalments. This scheme is of two types:

1. Hire purchase scheme
2. Instalment scheme

Hire Purchase Scheme

In this scheme, the buyer is called the 'hirer' and the seller is called the 'vendor' enters into an agreement which is known as '**hire purchase agreement**'.

Important Features of Hire Purchase Scheme

1. The hirer pays an initial payment known as 'down payment'.
2. The vendor allows the hirer to take possession of the goods on the date of signing the agreement, but he does not transfer the ownership of the goods.
3. The hirer promises to pay the balances amount in instalments.
4. If the hirer fails to pay the instalments the vendor can repossess the goods.
5. Once goods are repossessed, the hirer cannot ask for repayment of the instalments of money already paid. This money paid will be treated as rent for the period.

Instalment Scheme

Under instalment scheme, the seller transfers the possession as well as the ownership of the goods to the buyer. The buyer has the right to resell, or pledge the goods, but he has to repay the instalments due.

Finding the Rate of Interest on Buying in Instalment Scheme

The formula that is used to calculate the rate of interest on instalment purchase is:

$$R = \frac{2400E}{n[(n+1)I - 2E]}$$

where, R = Rate of Interest

E = Excess amount paid

n = number of instalments

I = amount of each instalment

E = Down payment + Sum of instalment amounts – Cash price

EXAMPLE 22.6

A television set is sold for ₹9,000 cash on ₹1,000 cash down followed by six equal instalments of ₹1,500 each. What is the rate of interest?

SOLUTION

$$n = 6$$

$$I = ₹1500$$

$$E = [1000 + 6 \times 1500 - 9000] = ₹1000$$

$$R = \frac{2400E}{n[(n+1)I - 2E]} = \frac{2400 \times 1000}{6[(6+1)1500 - 2000]} = 47.1\%.$$

TEST YOUR CONCEPTS

Very Short Answer Type Questions

- Fixed deposit is also known as _____ deposit.
- Farhan opens a savings bank account on 5.5.2007 in UTI Bank by depositing ₹1,000. The interest paid by the bank, if she closed her account on 1.4.2008, is _____. (Rate of interest is 6% pa)
- Bhavya opened a savings bank account in a bank on 7.7.2007 with a deposit of ₹500. Since then she neither deposited nor withdrew any amount. The amount, on which she receives interest, if she closed her account on 1.1.2007, is _____.
- Charan opens a savings bank account on 6.3.2007 depositing ₹750 in Union Bank of India. He deposits ₹1,000 on 15.3.2007 and withdraws ₹500 on 23rd March. The sum on which he will earn interest for the month of March is _____.
- Anil opened a savings bank account with a bank on 12.3.2006 with an initial deposit of ₹1,000.

He withdrew ₹300 on 18.3.2006. The amount, on which he would receive interest for the month of March, 2006 is _____.

- Banks offer higher rate of interest on savings accounts than fixed deposit accounts. (True/false)
- Which of the following is a utility service provided by the Banks? (Issuing traveller cheques/Receiving payment for telephone bills)
- Under a recurring deposit, a depositor is paid a lump sum payment after the period for which the deposit is made. This lump sum payment is called _____ value.
- In the banks, safe deposit lockers are provided to the customers at free of cost. (True/False)
- The rate of interest on current account is _____ % pa

Short Answer Type Questions

- Himesh opened a savings bank account with a bank on 3.6.2007 with ₹500. His transactions during June and July were as follows:

Deposited ₹500 on 8.6.2007.

Withdrew ₹300 on 11.6.2007.

Deposited ₹500 on 13.6.2007.

Withdrew ₹350 on 29.6.2007.

Deposited ₹500 on 3.7.2007.

Deposited ₹500 on 12.7.2007.

Find the amounts qualifying for interest during June, July and August.

Directions for questions 12 to 15: Hansika opened savings bank account with a bank on 1.2.2007. A page from her pass book is given below. She closed her account on 30.6.2007.

Date	Particulars	Amount Withdrawn (₹)	Amount Deposited (₹)	Balance (₹)
4.1.2007	B/F	—	1,500.00	1,500.00
23.1.2007	To self	500.00		1,000.00
6.2.2007	By cash	—	3,500.00	4,500.00
15.2.2007	To self	1,000.00		3,500.00
26.2.2007	By cash	—	6,500.00	10,000.00
15.3.2007	By cash	—	2,000.00	12,000.00
8.4.2007	To self	3,000.00		9,000.00
15.4.2007	By cash	—	7,000.00	16,000.00

- Find the amount for which Hansika receives interest.
- If the bank pays interest at 6% pa, find the interest she receives while closing her account.
- If the bank pays interest 8% pa, then find out total amount Hansika will receive on closing her account.



15. Calculate the total interest earned by Hansika till 3.6.2007, if the bank pays

- (i) 4.8% pa till 31.3.2007.
(ii) 7.2% pa from 1.4.2007 to 30.6.2007

Essay Type Questions

16. Javed makes a fixed deposit of ₹100,000 in a bank for one year. If the rate of interest is 6% pa, compounded half-yearly, then find the maturity value.
17. Srija makes a fixed deposit of ₹125,000 with a bank. The bank pays interest at 8% pa compounded annually, and she received ₹157,464 at the time maturity. Find the time period for which she held account.
18. Tilak opened a recurring deposit account with a bank and deposited ₹600 per month for one year. Find the interest that Tilak will receive, if the bank pays 6% pa.
19. David makes a fixed deposit of ₹50,000 in a bank for $1\frac{1}{2}$ years. If the interest is compounded half-yearly and the maturity value is ₹66,550, then find the rate of interest pa.
20. Tushar opens a recurring deposit account with a bank and deposits ₹500 per month for $1\frac{1}{2}$ years. If he receives ₹570 as interest, then find the rate of interest offered by the bank.

CONCEPT APPLICATION

Level 1

1. Ramesh opens a savings bank account in a bank on 16.6.2007 with a deposit of ₹700. He deposited ₹1,500 on 7.7.2007. Find the amount on which he would receive the interest at the end of July 2007.
- (a) ₹700 (b) ₹1,500
(c) ₹2,200 (d) ₹800
2. Akshit opened a savings bank account in a bank on 13.2.2007 with a deposit of ₹1,000. He again deposited ₹1,000 on 9.3.2007. Find the amount on which he receives interest, if he closes his account on 31.3.2007.
- (a) ₹1,000 (b) ₹2,000
(c) ₹3,000 (d) None of these
3. Madhu makes a fixed deposit of ₹15,000 in a bank, for two years. If the rate of interest is 10% pa, compounded annually, then find the maturity value.
- (a) ₹3150 (b) ₹17,500
(c) ₹16,750 (d) ₹18,150
4. Dinesh makes a fixed deposit of ₹50,000 in a bank, for one year. If the rate of interest is 12% pa, compounded half-yearly, then find the maturity value.
- (a) ₹66,125 (b) ₹56,180
(c) ₹57,500 (d) ₹63,250
5. Karthik makes a fixed deposit of ₹15,000 in a bank, for 219 days. If the rate of interest is 9% pa, then what amount will he receive on the maturity of the fixed deposit?
- (a) ₹15,810 (b) ₹16,320
(c) ₹15,430 (d) ₹16,610
6. Prabhu deposits ₹600 per month in a recurring deposit account for 1 year at 8% pa. Find the interest received by Prabhu.
- (a) ₹424 (b) ₹312
(c) ₹360 (d) ₹450
7. Kamal deposits ₹550 per month in a recurring deposit account for $1\frac{1}{2}$ year at 8% pa. Find the interest that Kamal will receive at the time of maturity.



- (a) ₹550 (b) ₹627
(c) ₹230 (d) ₹346

8. Sneha opened a cumulative time deposit account with a bank. She deposits ₹500 per month for $1\frac{1}{4}$ years. If she receives ₹300 as interest, find the rate of interest pa.

- (a) 6% (b) 8%
(c) 7.5% (d) 10%

9. Vijay makes a fixed deposit of ₹10,000 in a bank for 2 years under compound interest. If the

maturity value is ₹11,664, find the rate of interest pa compounded annually.

- (a) 4% (b) 5%
(c) 8% (d) 10%

10. Subhash makes a fixed deposit of ₹25,000 in a bank for 146 days. If the rate of interest is 7.5% annum, then what amount would he receive on the maturity of the fixed deposit?

- (a) ₹27,500 (b) ₹25,750
(c) ₹26,500 (d) ₹28,450

Level 2

11. Find the amount received by Prakash on closing of his account, if the bank pays interest at 6% pa.

- (a) ₹65,010 (b) ₹11,810
(c) ₹62,310 (d) ₹12,100

12. Varsha opened a recurring deposit account with Oriental Bank of Commerce and deposited ₹800 per month at an interest rate of 4% pa. If she receives ₹800 as interest, then find out the total time for which the account was held (in years).

- (a) $1\frac{1}{2}$ (b) 2
(c) $1\frac{3}{4}$ (d) $2\frac{1}{4}$

13. Susheel has a cumulative time deposit account of ₹800 per month at 6% pa. If he receives ₹1,300 as interest, then find out the total time for which the account was held (in months).

- (a) 26 (b) 25
(c) 24 (d) 28

14. Vishal has a recurring deposit account in a finance company for 1 year at an interest rate of 8% pa. If he receives ₹9,390 at the time of maturity, then what amount, per month, was invested by Vishal?

- (a) ₹650 (b) ₹700
(c) ₹750 (d) ₹800

Directions for questions 15 to 17: A page from the pass book of Noel is given below. He closes his account on 3.12.2006.

Date	Particulars	Withdrawn (₹)	Deposited (₹)	Balance (₹)
3.7.2006	B/F	-	-	5,000.00
12.7.2006	By cash	-	3,000.00	8,000.00
15.8.2006	To self	2,500.00	-	5,500.00
6.10.2006	By cash	-	5,000.00	10,500.00
8.11.2006	To self	1,500.00	-	9,000.00
15.11.2006	By cash	-	6,000.00	15,000.00

15. Find the amount on which he receives interest on closing his account.

- (a) ₹41,500 (b) ₹35,500
(c) ₹44,500 (d) ₹33,500

16. The interest received by Noel on closing his account, if the bank pays interest at 6% pa, is _____.

- (a) ₹177.50 (b) ₹207.50
(c) ₹222.50 (d) ₹167.50

17. If the bank pays 6% pa, find the amount received by Noel on closing his account.

- (a) ₹41,722.50 (b) ₹35,677.50
(c) ₹15,177.50 (d) ₹9,177.50

Directions for questions 18 to 20: Answer these questions based on the information provided.

A page from Giri's pass book is given below. He closed his account on 2.7.2007. Assume that there

were no transactions involving his account after 18.5.2007.

Date	Particular	Withdrawn	Deposited	Balance
2.1.2007	B/F	—	—	4,000
14.1.2007	By cash	—	5,000	9,000
14.2.2007	To self	3,000	—	6,000
7.4.2007	By cash	—	2,000	8,000
8.5.2007	To self	5,500	—	2,500
18.5.2007	By cash	—	6,500	9,000

18. If the bank paid interest to Giri at 8% pa, then find the interest received by him on closing his account (in ₹).
- (a) 226 (b) 280
(c) 237 (d) 240
19. Find the sum on which Giri received interest on closing his account (in ₹) from January 2007–June 2007 (in ₹).
- (a) 32,500 (b) 33,500
(c) 34,500 (d) 35,500
20. Using the information as provided in the previous question, find out the amount received by Giri on closing his account (in ₹) from January 2007–June 2007?
- (a) 9,237 (b) 2,737
(c) 35,847 (d) 35,737

Directions for question 21 to 25: Select the correct alternative from the given choices.

21. Anil opened a savings account in a bank on 12.11.2008. His first deposit to his account was ₹800 on that day. His second deposit to his account was ₹1,200 on 9.12.2008. Find the sum on which he would receive interest at the end of December 2008 (in ₹).
- (a) 800 (b) 1,200
(c) 400 (d) 2,000
22. Chetan deposited ₹1,200 per month in a recurring deposit account for one year at 6% pa Find the interest received by him (in ₹).
- (a) 384 (b) 426
(c) 468 (d) 492
23. Bala made a fixed deposit of ₹30,000 in a bank for two years at $R\%$ pa under compound interest. The maturity value is ₹35,643. Find R
- (a) 7 (b) 9 (c) 11 (d) 13
24. Bhuvan made a fixed deposit of ₹15,000 in a bank on 1.1.2007 for 219 days under 12% pa simple interest. Find out the maturity value (in ₹).
- (a) 15,840 (b) 15,960
(c) 16,080 (d) 16,140
25. Amar made a fixed deposit of ₹20,000 in a bank, for two, years at 8% pa under compound interest. Find out the maturity value (in ₹).
- (a) 22,896 (b) 23,328
(c) 24,124 (d) 24,312

Level 3

Directions for questions 26 to 28: A page from Richa's pass book is given below. Answer the following questions by finding the missing entries. She closes her account on 30.6.2007.

Date	Particulars	Amount With drawn (₹)	Amount deposited (₹)	Balance (₹)
5.1.2007	By Cash		500.00	500.00
23.1.2007	By Cash		6,000.00	6,500.00
8.2.2007	By Cash		(missing entry)	8,000.00
13.2.2007	To self	(missing entry)		5,000.00

18.2.2007	By Cash	2,000.00	(missing entry)
9.3.2007	By Cash	5,000.00	12,000.00
15.3.2007	To self	Missing entry	9,000.00
11.4.2007	To self	Missing entry	5,000.00
5.5.2007	By Cash	Missing entry	10,050.00

26. If the bank pays 4% pa, then find the interest received by Richa on closing her account.
- (a) ₹98.5 (b) ₹115
(c) ₹132 (d) ₹133



27. Find the amount on which she will receive interest on closing her account.

- (a) ₹29,550 (b) ₹34,500
(c) ₹39,600 (d) ₹36,900

28. If the bank pays interest 8% pa from 1.1.2007 to 30.4.2007 and 6% pa from 1.5.2007 to 30.6.2007, then find the total interest received by Richa.

- (a) ₹230.50 (b) ₹247
(c) ₹196.50 (d) ₹188

Directions for questions 29 to 35: Select the correct alternative from the given choices.

29. Arun made a fixed deposit in bank A at $R\%$ pa, for T days. Bala made a fixed deposit in bank B at $R/2\%$ pa for $2T$ days. Charan made a fixed deposit in bank C at $2R\%$ pa for $T/2$ days. All of them deposited equal sums of money at simple interest on 1.1.2005. Name the person whose deposit earned the highest maturity value?

- (a) Arun
(b) Bala
(c) Charan
(d) All deposits had equal maturity values

30. Charan opened a cumulative time deposit account with a bank. For $1\frac{1}{2}$ years, he deposited ₹800 per month. He received an interest of ₹1,140. Find the rate of interest (in % pa).

- (a) 10 (b) 9
(c) 8 (d) 12

31. In the above problem, if the bank paid Charan interest at 9% pa, then find the interest he would have received on closing his account (in ₹).

- (a) 202.5 (b) 216
(c) 229.5 (d) 243

32. Ashwin opened a savings account in a bank on 4.1.2006 with a deposit of ₹2,000. On the 9th of every odd month of that year, he deposited ₹500

to his account. On the 9th of every even month of that year, he withdrew ₹500 from his account. He closed his account on 1.2.2007. Find the sum on which he would have received interest on closing the account (in ₹).

- (a) 22,500 (b) 24,000
(c) 25,500 (d) 27,000

33. Dinesh opened a recurring deposit account with State Bank of India. He deposited ₹900 per month at 7.5% pa. He received ₹1,687.5 as interest. Find the time period of his deposit (in years).

- (a) 3 (b) 3.5
(c) 2.5 (d) 2

34. Ganesh makes a fixed deposit of ₹40,000 in a bank for a year at 20% pa simple interest. Harish makes a fixed deposit of an equal sum for the same period and at the same rate of interest, interest being compounded half-yearly. Find the difference between maturity values of investment of Harish and Ganesh. (in ₹).

- (a) 400 (b) 360
(c) 440 (d) 300

35. Ramu deposited ₹400 per month in a recurring deposit account for 2 years at 9% pa. Somu deposited ₹400 per month in a recurring deposit account for $2\frac{1}{2}$ years at 12% pa. Which of the following can be concluded about the interests to be paid to them on maturities of their deposits?

- (a) Ramu must be paid an interest of ₹860 less than that of Somu.
(b) Ramu must be paid an interest of ₹960 less than that of Somu.
(c) Ramu must be paid an interest of ₹916 less than that of Somu.
(d) Ramu must be paid an interest of ₹816 less than that of Somu.



TEST YOUR CONCEPTS

Very Short Answer Type Questions

- | | |
|-----------------|---|
| 1. term deposit | 6. False |
| 2. ₹40. | 7. Receiving payment for telephone bills. |
| 3. ₹1500 | 8. Maturity |
| 4. ₹750 | 9. False |
| 5. ₹0 | 10. 0 |

Short Answer Type Questions

- | | |
|---------------------------|-------------|
| 11. ₹700, ₹1350 and ₹1850 | 14. ₹16,370 |
| 12. ₹55,500 | 15. ₹304 |
| 13. ₹277.50 | |

Essay Type Questions

- | | |
|--------------|-------------------|
| 16. ₹10,6090 | 19. $r = 20\%$ pa |
| 17. 3 years | 20. 8% pa |
| 18. ₹234 | |

CONCEPT APPLICATION

Level 1

1. (c) 2. (b) 3. (d) 4. (b) 5. (a) 6. (b) 7. (b) 8. (a) 9. (c) 10. (b)

Level 2

11. (a) 12. (b) 13. (b) 14. (c) 15. (b) 16. (a) 17. (c) 18. (c) 19. (d) 20. (a)
21. (d) 22. (c) 23. (b) 24. (c) 25. (b)

Level 3

26. (c) 27. (c) 28. (a) 29. (d) 30. (a) 31. (a) 32. (d) 33. (d) 34. (a) 35. (b)



CONCEPT APPLICATION

Level 1

- Find the minimum balance from 10th of month to end of the month.
- Calculate the minimum balances from the 10th to end of the each month and the total minimum balance.
- Use, $A = P \left(1 + \frac{r}{100} \right)^n$
- $A = P \left(1 + \frac{r}{100} \right)^n$
 - Given, $P = ₹50,000$,
 $n = 2$ half-years,
 $R = 6\%$ per half-year.
 - Use, $A = \left(1 + \frac{R}{100} \right)^n$ to find the maturity value (A).
- Use, $SI = \frac{P \times d \times R}{36500}$, where
 $d =$ number of days.
 - $P = ₹1500$,
 $T = \frac{219}{365} = \frac{3}{5}$ years and $R = 9\%$ pa
 - Use, $A = P + \frac{PRT}{100}$ to find the maturity value (A).
- Use, $SI = \frac{P \times n(n+1)}{2} \times \frac{R}{1200}$
- Use, $SI = \frac{P \times n(n+1)}{2} \times \frac{R}{1200}$
 - Given $P = ₹550$, $n = 18$ months, $R = 8\%$
 - Use, $I = \frac{p \times n(n+1)}{2} \times \frac{R}{1200}$ to find interest revised.
- Use, $SI = \frac{P \times n(n+1)}{2} \times \frac{R}{1200}$.
- Use, $A = P \left(1 + \frac{r}{100} \right)^n$.
- $SI = \frac{P \times d \times R}{100 \times 365}$, where

$d =$ Number of days.

(ii) Total = $P + SI$.

$$12. \text{ Use, } SI = \frac{P \times n(n+1)}{2} \times \frac{R}{1200}$$

$$13. \text{ (i) Use, } SI = \frac{P \times n(n+1)}{2} \times \frac{R}{1200}$$

(ii) Given $P = ₹800$, $I = 1300$, $R = 6\%$

$$\text{(iii) Use, } I = \frac{p \times n(n+1)}{2} \times \frac{R}{1200} \text{ to find } n.$$

$$14. \text{ (i) Use, } SI = \frac{P \times n(n+1)}{2} \times \frac{R}{1200}.$$

(ii) Let the amount deposited per month be ₹ P .

Amount $A = ₹9390$, $SI = 9390 - P$.

$$\text{(iii) Use, } 9390 = P + \frac{p \times n(n+1)}{2} \times \frac{R}{1200} \text{ to find } P.$$

- Calculate the minimum balance available from the 10th to the end of each month and the total minimum balances.

- Interest is calculated on the minimum balance for the entire period.

$$17. \text{ Use, } SI = \frac{P \times T \times R}{100}.$$

- Interest received by Giri (in ₹)

$$= (35500) \left(\frac{1}{12} \right) \left(\frac{8}{100} \right) = \frac{710}{3}$$

= ₹237 (approximately).

- Minimum value from the 10th January to the end of January = ₹4,000

Minimum balance from the 10th February to the end of February = ₹6,000

Minimum balance from the 10th March to the end of March = ₹6,000

Minimum balance from the 10th April to the end of April = ₹8,000

Minimum balance from 10th May to the end of May = ₹2,500

Minimum balance from the 10th June to the end of June = ₹9,000

The sum of minimum balances = ₹35,500

∴ Giri, on closing his account, will receive interest on ₹35,500.

20. Amount received by Giri (in ₹) = 9000 + 237 = ₹9,237.

21. Minimum balance from the 10th November to the end of November = ₹0

Balance in December = ₹(800 + 1200) = ₹2,000

∴ Minimum balance from the 10th December to the end of December ₹2,000. Anil will receive interest on the sum of minimum balance, i.e., ₹2,000 at the end of December 2008.

22. Time period = 1 year = 12 months

Interest received by him (in ₹)

$$= 1200 \frac{(12)(13)}{2} \left(\frac{1}{12} \right) \left(\frac{6}{100} \right)$$

$$= (12) \left(\frac{13}{2} \times 6 \right) = 156 \times 3 = 468.$$

23. $30000 \left(1 + \frac{R}{100} \right)^2 = 35,643$

$$\left(1 + \frac{R}{100} \right)^2 = \frac{35643}{30000} = \frac{11881}{10000}$$

$$\left(1 + \frac{R}{100} \right)^2 = \left(\frac{109}{100} \right)^2 \Rightarrow R = 9.$$

24. Time period = 219 days = $\frac{219}{365}$ years

$$= \frac{3}{5} \text{ years}$$

Maturity value (in ₹)

$$= 15000 \left(1 + \frac{\left(\frac{3}{5} \right) \cdot 12}{100} \right)$$

$$= 15000 + (150) \left(\frac{3}{5} \right) (12)$$

$$= 15000 + 1080 = 16,080.$$

25. Maturity value (in ₹) = $20000 \left(1 + \frac{8}{100} \right)^2$

$$= 20,000(1.08)^2 = 23,328.$$

26. (i) Interest is calculated on minimum balance for the entire period.

(ii) Use, $SI = \frac{P \times R \times T}{100}$, where P = sum of all

minimum balances, $r = 4\%$ and $T = \frac{1}{12}$ year.

27. (i) Calculate the minimum balances from the 10th of the month to the end of each month.

(ii) Find the sum of the minimum balances of all the months.

28. (i) Calculate the total minimum balance from 1.1.2007 to 30.4.2007, and also the rate of interest given.

(ii) Calculate the total minimum balance from 1.5.2007 to 30.6.2007 and the SI with the rate of interest given.

(iii) Apply the new rates of interest and the corresponding interest received by Richa.

29. In this problem too, all deposits are placed under SI.

∴ Time periods of Arun, Bala and Charan where

$$\frac{T}{365} \text{ years, } \frac{2T}{365} \text{ years and } \frac{T}{365} \text{ years, respectively.}$$

Maturity value of Arun's investment (in ₹)

$$= P \left(1 + \frac{\frac{T}{365}(R)}{100} \right)$$

Maturity value of Bala's investment (in ₹)

$$= P \left(1 + \frac{\frac{2T}{365} \cdot \left(\frac{R}{2} \right)}{100} \right) = P \left(1 + \frac{\frac{T}{365}(R)}{100} \right)$$

Maturity value of Charan's investment (in ₹)

$$= P \left(1 + \frac{\frac{T}{365}(2R)}{100} \right) = P \left(1 + \frac{\frac{T}{365}R}{100} \right)$$

All deposits had equal maturity value.

30. Let the rate of interest be $R\%$ pa time period = $1\frac{1}{2}$ years = 18 months.



Interest received by him (in ₹) = 800

$$\frac{(18)(19)}{2} \left(\frac{1}{12} \right) \left(\frac{R}{100} \right) = R \left[(8) \left(\frac{9 \times 19}{12} \right) \right]$$

$$= R \left(\frac{72 \times 19}{12} \right) = 114R \Rightarrow 114R = 1140$$

(given) $R = 10$.

31. Interest received by him (in ₹) = $\frac{9}{100}$

$$(27000) \left(\frac{1}{12} \right)$$

$$= \frac{2430}{12} = 202.50.$$

32. His minimum balances in the year 2006 (in ₹) are 2500, 2000, 2500, 2000, 2500, 2000, 2500 and 2000.

The sum on which Ashwin would have received interest (in ₹)

$$= 6(2500 + 2000) = 27,000.$$

33. Let the time period be T years.

T years = $12 T$ months.

Interest received by him

$$= (900) \frac{(12T)(12T + 1)}{2} \left(\frac{1}{12} \right) \left(\frac{7.5}{100} \right)$$

$$= 1687.5$$

$$\frac{9(T)(12T + 1)(7.5)}{2} = 1,687.5$$

$$T(12T + 1) = \frac{(1687.5)(2)}{(9)(7.5)} = 50 \quad (1)$$

$$12T^2 + T - 50 = 0$$

$$12T^2 - 24T + 25T - 50 = 0$$

$$12T(T - 2) + 25(T - 2) = 0$$

$$(12T + 25)(T - 2) = 0$$

$$T = \frac{-25}{12} \text{ or } 2$$

But $T > 0$

$$\therefore T = 2.$$

34. Maturity value of Ganesh's investment (in ₹)

$$= 40000 \left(1 + \frac{20}{100} \right) = 40000(1.2) = 48,000$$

Maturity value of Harish's investment (in ₹)

$$= 40000 \left(1 + \frac{20}{2(100)} \right)^2$$

$$= 40,000(1.1)^2$$

$$= 40,000(1.21)$$

$$= 48,400$$

The required excess amount (in ₹)

$$= 48,400 - 48,000 = 400.$$

35. Time periods of Ramu's account and Somu's account are 2 years, i.e., 24 months and $2\frac{1}{2}$ years, i.e., 30 months, and respectively.

Interest to be paid to Ramu (in ₹)

$$= \frac{400(24)(25)}{2} \left(\frac{1}{12} \right) \left(\frac{9}{100} \right)$$

$$= 4(300) \left(\frac{3}{4} \right) = 900$$

Interest to be paid to Somu (in ₹)

$$= \frac{400(30)(31)}{2} \left(\frac{1}{12} \right) \left(\frac{12}{100} \right) = 1,860$$

Interest to be paid to Ramu is less than that to be paid to Somu by ₹960.

