Dr.Babasaheb Ambedkar Open University

DACA
DIPLOMA IN ADVANCE COST ACCOUNTING

Block

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Managerial Cost Accounting

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Unit : 6 : Uniform Costing And Inter Firm Comparison

Introduction:

Cost statements are mainly prepared in a business mainly for managerial decision making. But to make decisions, it used to become necessary to compare the figures of current years operation with previous years or with the other firms. But such comparison is possible only if costing methods are same for both the years or with both the firms. During this chapter, we will understand the need and essentials of uniform costing and its effects on inter firm comparison.

Structure of the chapter:

6.1 Objectives:

By the end of this chapter, the student will learn about

- Meaning and scope of uniform costing
- Scope of standardization in uniform costing
- Advantages and limitations of uniform costing
- Meaning and need of inter firm comparison
- Purpose of inter firm comparison
- Advantages and limitation of inter firm comparison

6.2 Meaning And Scope

Several undertakings use the same costing principles and practices. Where uniform costing is introduced there must be some uniformity in the treatment of expenses and general accounting procedure. The important matters which require uniformity of treatment may be summarised as under:

General cost accounting policies and principles: the method of costing together with the techniques of costing such as standard costing, marginal costing to be employed should be determined in advance.

Classification of accounts: There must be uniformity in the classification and codification of accounts.

The definitions must be clear so as to distinguish between direct and indirect materials, wages and expenses. There must be a general agreement as to the methods and techniques of recording accounting data as well as submission of reports and statements for planning and control.

6.3 Causes/Reasons For Differences

The causes for such differences may be: (a) Size and organisational set up, (b) Methods of production, and (c) Methods/principles of cost accounting applied.

Size and Organisational Set-Up

In a small firm, several function are combined and performed by a single individual, whereas, in a big concern, the work may be broken down into a number of elements/ components each of which being performed by a number of individuals. So, size of the unit is a major factor using difference in costing techniques and methods.

Methods of Production

The use of different types of machines/plant/equipment, degree of mechanisation, differences in material mix, and sequence/nature of operations/processes are mainly responsible for the differences in costs.

Methods; and Principles of Cost Accounting Applied

The largest degree of differences pertain to the methods and principles of cost accounting applied in terms of: (i) Different methods of treatment of expenditure of buying, storage and issue of materials, (ii) Pricing of issues of stores/materials, (iii) Payment to workers (iv) Basis of classification/absorption of overheads, (v) Calculation of depreciation, and so on.

6.4 Scope for Standardisation

There is no system of uniform costing that may fit in all circumstances. The system should be tailored to the needs of each individual case. The essential points on which uniformity is normally required include, *inter alia,* the following:

- Methods of cost accounting, for example, job costing, process costing or a variable of one/both of these
- Methods of defining costs:

Direct materials,

— Direct labour,

— Direct expenses,

— Overhead costs
    1. Factory
    2. Selling
    3. Distribution
    4. Administration
    5. Research and development

- Methods of recovering depreciation
- Methods of allocating/apportioning overhead costs to cost centres and jobs/products

6.5 Uniform Cost Manual

A uniform cost manual is prepared mainly for the purpose of the guidance of the firms intending to use uniform costing techniques. Where a uniform costing is introduced, there must be a uniform cost manual, containing instructions to be followed in connection with cost ascertainment and cost control.

6.6 Advantages and Disadvantages

The participating firms derive some advantages and limitations from the use of uniform cost accounting.

Advantages

The benefits accruing to the participating concerns from the use of uniform costing are as listed below:

1. Greater operating efficiency.
2. Facilitates the establishment of realistic pricing policies.
3. Establishment of the best methods and principles/techniques of costing.
4. Through the central/trade organisation the provision of information which assists in formulating policy, carrying out plans, controlling internally, and facilitating the making of plans to meet competition.

Thus, the advantages of this method include that it permits the calculated costs to be verified against the annual accounts, and that it follows other recommendations for pricing in public enterprises.

Disadvantages/Limitations

The limitations of uniform costing in terms of problems/difficulties in establishment and operation of such a system are summarised below:

1. Standardisation of definitions and methods is difficult to achieve/accomplish.
2. Even when (1) is achieved, there is bound to be great difficulty in fitting the methods advocated by the system into the framework for each individual business unit.
3. Many differences exist between firms such as age of plant, geographical location, availability of labour, cash and other vital ingredients of successful production, and the degree of mechanisation.
4. Many companies may not disclose the figures as they fear that the confidential

information will be disclosed to the competitors.

Thus, disadvantages of this method are that it does not prevent the allocation of overheads and other common costs from being arbitrary,

Inter-Firm Comparisons

6.7 Meaning And Need

Inter-firm comparison is used mainly for the comparison of operating and financial results of two firms to know ultimately to know whether the results of the firm is good enough in compartion of other firms or not? For the purpose of inter firm comparison it is necessary to have uniform costing techniques. Inter-firm comparison is the technique by which the performances, deficiencies, costs, and profits of various concerns in an industry are analysed on a voluntary basis by exchange of information, and a relative comparison is made. It is a tool for control by comparing own performance with those of competitors to increase efficiency and maximise profits. The inter-firm comparison technique *enables* performance appraisal in relation to competitors in the industry.

6.8 Purpose/Scope

The main purpose of inter-firm comparison is the improvement of efficiency by showing the management the present achievements and possible weaknesses. Many problems may be overcome through the assistance of inter-firm comparisons. More usually, attention is focussed on weaknesses. Various factors that can be compared in inter firm comparision are profits, expenses, sales etc. For the purpose of comparison, ratio analysis is used as a tool.

6.9 Advantages

Advantages

The advantages of inter-firm comparison based on ratios are briefly outlined below.

Weaknesses Revealed

Sometimes it may happen that the management is believeing that the performance of te firm is very good but whether it is good or not in the given circumstances can be measured by firm comparison only. And if it is not good then proper emphisis should be levied on the weaker areas. One of the most important benefits is the fact that weaknesses, if any, are revealed.

Voluntary Basis

Here, the datas are supplied by the firm not for the purpose of publications but for the purpose of comparing this data with the other data and so the data will be supplied willingly and voluntary basis which will produce better results for inter firm comparison.

6.10 Exercise

1. Explain what is uniform costing and what is the need for uniform costing?
2. What is the scope of standardization of uniform costing?
3. What are the advantages and disadvantages of uniform costing?
4. What is the meaning and need for inter firm comparison?
5. What are the purposes of inter firm comparison?
6. Explain the advantages of inter firm comparison?

Unit :7 : Integrated Accounts

Introduction:

Two types of accounts can be maintained. One is financial set of accounts and the other is cost sets of accounts both of them have their own benefits and limitations. To over come the limitations of both the sets of accounts and to gain the benefits of both the sets under one set of account, integrated accounts was established. During this chapter we will understand different aspects of integrated accounts. Thus, An accounting system in which the same data used OT provide the information required for both financial accounting and cost accounting.

Structure of the chapter:

7.1 Objectives:

By the end of this chapter, the student will learn about

- Meaning of integrated accounts
- Need for integrated accounts
- Accounting procedure in integrated accounts

7.2 Basic Understanding of Integrated Accounts

Financial records are prepared for the purpose of knowing the results of the business of particular period where as costing records are prepared mainly for the purpose of knowing the cost of any product. If for the both the purposes different sets of books of accounts are prepared then there may be need for a reconciliation statement between them are made. The need for such a statement can be dispensed with if only *one* set of books is maintained to serve both financial and costing purposes. Such a system of accounts in which only one set of books is maintained to record both cost and financial transactions is referred to as integrated integral accounts.

Since under the integrated system of accounts only one set of books is maintained, there is considerable economy both in costs and clerical work in terms of time and effort. Moreover, the accounting function is considerably simplified, paving the way for a more efficient control system of accounting. Such a system enhances the speed of accounting work and, hence, also facilitates the reporting function of accounting.

7.3 Installation of Integrated Accounts System

For the purpose of installing integrated accounts system, it is necessary to have necessary control accounts:

Number of Control Accounts Theoretically speaking, a single control account covering all items relating to the costing department can serve the purpose. However, it would be operationally better and more convenient from the point of view of control, if separate control accounts are opened for each o: the elements of cost, namely:

(a) Stores control account (for materials).
(b) Wages control account.
(c) Factory overhead control account.
(d) Administrative overhead control account.
(e) Selling and distribution overhead control account.
(f) Work-in-process control account (to take care of incomplete manufactured units),
(g) Finished stock control account (to record the finished goods).
(h) Sales ledger control account/sundry debtors control account
(i) Bought ledger control account/sundry creditors control account
(j) *Assets account:* A separate individual account should be created for each asset, namely, plant and equipment furniture, building, cash and bank balances, and so on. All these accounts are prepared on the basis of the financial accounting principles.
(k) *Cost of sales account:* This account would represent the cost of goods sold during the period. The accounting procedure of dealing with this is explained later.
(l) Share capital account:
(m) Debentures account.
(n) Other long-term loans account.
(o) Reserves and surplus account.
(p) Any other liability account.

Transaction Relating to Financial Expenses and Appropriations

Financial expense items -such as interest on capital, writing off deferred revenue expenditure and appropriations items such as transfer to general or specific reserves, dividends paid, are dealt with as per the conventional principles of financial accounting.

Following is the list of different situations and appropriate entries in the situation under interegrated system:

1. When materials are purchased:

   Stores ledger control A/c Dr.
   To Creditors A/c.

2. When materials are purchased directly:

Work in progress A/c Dr.
To creditiors A/c

3. When materials are issued to production

Work in progress A/c Dr.
To stores ledger control A/c

4. When indirect material are issued to production

Factory overhead A/c Dr.
To stores ledger control A/c

5. When total wages are paid

Wages A/c Dr.
To cash A/c

6. When direct wages are charged to production

Work in progress A/c Dr.
To wage control A/c

7. When indirect wages are charged to production

Factory overhead A/c Dr.
To wages control A/c

8. Cost of normal idle time

Factory overheads A/c Dr.
To wages control A/c

9. Cost of abnormal idle time

P & L A/c Dr.
To wages control A/c

10. When factory overheads are paid

Factory overhead A/c Dr.
To cash A/c

11. When factory overheads are charged to production

Work in progess A/c Dr.
To factory overheads A/c

12. When selling and distribution overheads are allocated to cost of sales

Cost of sales A/c Dr.
To selling & distribution overhead A/c.

13. When finished goods are transferred to godown:

Finished stock ledger control A/c Dr.
To work in progress A/c

14. Cost of goods sold

Cost of sales A/c Dr.
To Finished stock ledger control A/c

15. When sales are made

Debtors A/c Dr.
To cost of sales A/c

16. Profits transferred to P & L A/c.

Cost of sales A/c Dr.
To P & L A/c

Closure of Nominal Accounts

At periodical intervals, say, a month or quarter, all nominal accounts would be closed by transferring to profit and loss account. The following points deserve special attention in this context:

(a) Cost of sales account would be prepared separately. This account would represent profit earned equivalent to the difference of sales revenue and cost of sales. The amount of profit so arrived at would be transferred to profit and loss account by passing the following journal entry

Cost of sales A/c ...Dr
To profit and loss A/c

In the case of loss, the entry would be reversed. Exhibit shows the procedure of determining cost of sales.

Cost of Sales A/c

To finished stock ledger control A/c (Cost of goods sold)	By sales ledger control A/c (Sales made)
To selling and distribution overheads control A/c	By profit and loss A/c (loss)
To profit and loss A/c (profit)	

(b) Items relating to financial expenses, over- and under-absorption of any type of overheads, abnormal losses and gains will be recorded in the profit and loss account. The format of profit and loss account is given in below:

Profit and Loss Account

To cost of sales (losses transferred from)	By cost of sales (profits transferred from)
For absorption or under-absorption of overheads:	For ever – absorption of overheads:
	By factory overheads control A/c
To factory overheads control A/c	
To administrative overheads control A/c	To administrative overheads control A/c
To selling overheads control A/c	By selling overheads control A/c
To abnormal losses (specify)	By abnormal gains (specify)
To financial expenses (specify)	By non-operating gains (specify)
To appropriations (specify)	By losses (current year)
To profit (current period)	

7.4 Practical:

1. Journalize the following transactions assuming Cost and Financial Accounts are integrated in case of Srijee Ltd:

Wages paid (30% indirect)	Rs. 12,000
Raw material purchases	20,000
Direct materials issued to production	15,000
Wages charged to production	9,500

Solution : Journal Entries

Wages central a/c	Dr.	Rs. 8,400	
Overhead control a/c	Dr.	3,600	
To Bank			Rs. 12,000
(Being wages paid)			
Stores ledger control a/c	Dr.	20,000	
To Bank			20,000
(Being raw materials purchased)			
Work-in-progress, ledger control a/c	Dr.	15,000	
To Stores ledger control a/c			15,000
(Being direct materials issued to production)			
Work-in-progress ledger control a/c		9,500	
To Wages control a/c			8,400
To Overhead control a/c			1,100
(Being wages and overheads charged to production)			

2. Journalise the following transactions assuming that cost and financial accounts are integrated in case of Sharp Ltd.:

Raw materials purchased	Rs. 40,000
Direct materials issued to production	30,000
Wages paid (30% indirect)	24,000
Wages charged to production	16,800
Manufacturing expenses incurred	Rs. 19,000
Manufacturing overhead charged to production	18,400
Selling and distribution cost	4,000
Finished products (at cost)	40,000
Sales	58,000
Closing stock	Nil
Receipts from debtors	13,800
Payment to creditors	22,000

Solution : Journal Entries

Stores ledger control a/c	Dr.	Rs. 40,000	
To Sunry creditors a/c			Rs. 40,000
Or Brought ledger control a/c			
(Being the raw materials purchased)			
W.I, P. ledger control a/c	Dr.	30,000	
To Stores ledger control a/c			30,000
(Being direct materials issued to jobs)			
Wages control a/c	Dr.	24,000	
To Bank			24,000
(Being wages paid)			
W.I. P. ledger control a/c	Dr.	16,800	
Factory overhead control a/c	Dr.	7,200	
To Wages control a/c			24,000
(Being wages allocated)			
Factory overhead control a/c	Dr.	19,000	
To Bank			19,000
(Factory overheads incurred)			
W.I P. ledger control a/c	Dr.	18,400	
To Factory overheads control a/c			18,400
(Factory overheads charged from production)			
Selling and distribution overhead a/c	Dr.	4,000	
To Bank			4,000
(Selling and distribution overheads incurred)			
Finished stock ledger control a/c	Dr.	40,000	

To W I.P. ledger control a/c			40,000
(Being finished stock at cost)			
Cost of sales a/c	Dr.	40,000	
To Finished stock ledger control a/c			40,000
(Being cost of finished goods sold)			
Cost of sales a/c	Dr.	Rs. 4,000	
To Selling and distribution overhead control a/c			Rs. 4,000
(Selling and distribution overhead charged to cost of sales)			
Sundry debtors (or sales ledger control a/c) a/c	Dr.	58,000	
To Cost of sales a/c			58.000
(Being sales made)			
Bank a/c	Dr.	13,800	
To Sundry debtors a/c			13,800
(Being receipts from debtors)			
Sundry creditors (or Bought ledger control) a/c	Dr.	22,000	
To Bank			22,000
(Being payment made to sundry creditors)			

3. Pass Journal entries relating to the following transactions presuming that the concern is following integral system of accounting for Prima Ltd.

(i) Sales for the period were Rs. 10,20,000 as compared to the budgeted sales of Rs. 10,00,000.

(ii) Goods of Rs. 6,10,000 purchased as compared to standard cost of Rs. 6,00,000.

(iii) Production wages paid Rs. 1,12,000 as compared to standard _cost of Rs. 1,10,000.

(iv) Production overheads amounted to Rs. 1,52,000 as compared to standard cost of Rs. 1,50,000.

Solution : Journal Entries

(i) For Sales :

(a) Non-integral System :

Financial Books		Rs. .	Rs.
Sundry debtors a/c		Dr. 10,20,000	
To Sales			10,20,000
Costing Books			
General ledger adjustment a/c		Dr. 10,20,000	
To Budgeted sales a/c			10,00,000
To Sales value variance a/c			20,000

(b) Integral System :

		Rs.	Rs.
Sundry debtors	Dr.	10,20,000	
To Budgeted sales a/c			10,00,000
To Sales value variance a/c			20,000

(ii) For Purchase of Goods :

(a) Non-integral System :

Financial Books :			
Purchases a/c	Dr.	6,10,000	
To Sundry creditors			6,10,000
Cost Books :			
Stores ledger control a/c	Dr.	6,00,000	
Materials cost variance a/c	Dr.	10,000	
To General ledger adjustment a/c			6,10,000

(b) Integral System :

Stores ledger control a/c	Dr.	6,00,000	
Materials cost variance a/c	Dr.	10,000	
To Sundry creditors			6,10,000

(iii) For Wages Paid :

(a) Non-integral system :

Financial Books :			
Wages a/c	Dr.	1,12,000	
To Bank			1,12,000
Cost Books :			

Wages control a/c	Dr.	1,10,000	
Labour cost variance a/c	Dr.	2,000	
To General ledger adjustment a /c			1,12,000
(b) Integral System :			
Wages control a/c	Dr.	1,10,000	
Labour cost variance a/c	Dr.	2,000	
To Bank			1,12,000
(iv) For Production Overheads :			
(a) Non-integral System :			
Financial Books :			
Production expenses a/c	Dr.	1,52,000	
To Bank			1,52,000
Cost Books :			
Production overhead a/c	Dr.	1,50,000	
Overhead cost variance a/c	Dr.	2,000	
To General ledger adjustment a/c			1,52,000
(b) Non- integral System :			
Production overhead a/c	Dr	1,50,000	
Overhead cost variance a/c	Dr.	2,000	
To Bank			1,52,000

4- Record the following transactions in the ledger under Integral System and prepare the Trial Balance for Nilisha Ltd.

Trial Balance at the Beginning of the Period

	Dr.	*Cr.*
Bank balance	Rs. 3,000	
Stock :		
Finished goods	4,000	
Work-in progress	6,500	
Raw materials	6,000	
Creditors,		2,000
Debtors	1,000	
Fixed assets	1,02,000	
Depreciation provision		2,500
Capital account		1,10,000
Profit and loss account		8,000
	1,22,500	1,22,500

Transactions during the year were :

Materials purchased on credit		Rs. 10,000
Materials issued to production :	Rs.	
Direct	7,000	
Indirect	1,000	8,000
Payment to creditors		6,000
Wages paid :		
Direct	10,000	
Indirect	2,000	12,000
Finished goods produced		30,000
Cost of finished goods sold		32,000
Sales value		40,000
Receipts from debtors		35,000
Overhead incurred :		
Factory	6,000	
Office	1,000	
Selling and distribution	1,000	8.000
Depreciation (in addition to overheads)		500

Solution : Bank Account

To Balance b/d	Rs. 3,000	By Purchases ledger control a/c	Rs. 6,000
To Sales ledger control a/c	35,000	By Wages control a/c	12,000
		By Factory overheads	6,000
		By Office overheads	1,000
		By Selling and distribution overheads	1,000
		By Balance c/d.	12,000
	38,000		38,000

Finished Goods Ledger Control Account

To Balance b/d	Rs. 4,000	By Cost of sales a/c	Rs. 32,000
To Work-in-progress a/c	30,000	By Balance	3,000
To Office overheads a/c	1,000		
	35,000		35,000

Work-in-progress Ledger Control Account

To Balance b/d Rs	6,500	By Finished goods ledger	
To Stores ledger control a/c	7,000	control a/c	Rs 30,000
To Wages control a/c	10.000	By Balanced c/d	3,000
To Factory overheads a/d	9,500		
	33,000		33,000

Stores Ledger Control Account

To Balance b/d	Rs. 6,000	By W.I.P. ledger control	Rs. 7,000
To Purchases ledger control a/c	10,000	By Factory overheads a/c	1,000
		By Balance c/d	8,000
	16,000		16,000

Purchases Ledger Control Account

(Creditors a/c)

To Bank	Rs. 6,000	By Balance b/d	Rs. 2,000
To Balance c/d	6,000	By Stores ledger control a,/c	10,000
	12,000		12,000

Sales Ledger Control Account

(Debtors ale)

To Balance b/d	Rs. 1,000	By Bank	Rs 35,000
To Cost of sales a/c	40,000	By Balance c/d	6,000
	41,000		41,000

Factory Overheads Account

		Rs. By W.I.P. ledger Control a/c	
To Stores ledger control a/c .	1,000		Rs. 9,500

To Wages control a/c	2,000		
To Bank	6,000		
To Depreciation provision	500		
	9,500		9,500

Wages Control Account

To Bank	Rs. 12,000	By WI;f\ Led. control a/c	Rs. 10,000
		By Factory overheads	2,000
	12,000		12,000

Cost of Sales Account

To Finished goods ledger control a/c	Rs. 32,000	By Sales ledger control a/c	Rs 40,000
To Profit and Loss a/c	8,000		
	40,000		40,000

Office Overheads Account

To Bank	Rs. 1,000	By Finished goods ledger - control a/c	Rs. 1,000

Selling and Distribution Overheads Account

To Bank	Rs, 1,000	By Profit and Loss a/c	Rs. 1,000

Provision for Depreciation Account

To Balance c/d	Rs. 3,000	By Balance b/d	Rs. 2,500
	?	By Factory overhead	500
	3,000		3,000

Profit and Loss Account :..

To Selling and distribution Overhead a/c	Rs. 1,000	By Cost of sales a/c	Rs, 8,000
To Net Profit	7,000		
	8,000		8,000

Profit and Loss Appropriation Account

To Balance c/d	Rs. 15,000	By Balance b/d	Rs, 8,000
		By Profit and Loss a/c (Profit for the year)	7,000
	15,000		15,000

Share Capital Account

To Balance c/d	Rs. 1,10,000	By Balance b/d	Rs. 1,10,000

Fixed Assets Account

To Balance b/d	Rs. 1,02,000	By Balance c/d	Rs. 1,02,000

Trial Balance

	Dr.	*Cr.*
Purchases ledger control a/c		Rs. 6,000
Sales ledger control a/c	Rs. 6,000	
Provision for depreciation		3,000
Bank	12,000	
Finished goods ledger control a/c	3,000	
Work-in-progress ledger control a/c	3,000	
Stores ledger control a/c	8,000	
Profit and Loss a/c		15,000
Share capital a/c		1,10,000
Fixed assets a/c	1,02,000	
	1,34,000	1,34,000

5. From the following particulars pass the journal entries in an integral? accounting system for unix ltd. ;

(a) Issued materials Rs. 3,00,000 of which Rs. 2,80,000 (standards Rs. 2,40,000) is direct materials ;

(b) Net wages paid Rs. 70,000 deductions being Rs. 12,000 (stanndard Rs. 75,000) ;

(c) Gross salaries payable for the period is Rs. 26.000 (standard Rs, 25,000). Deductions Rs. 2,000.

(d) Sales (credit) Rs. 8,00,000

(e) Discount allowed Rs. 5,000.

(f) Salaries and Wages allocation s Rs. 60,000 direct (standard Rs. 62,000) and out of the balance 50% production, 30% Administration and 20% Selling and Distribution Overheads.

Solution

(a)	Work-in-progress Led. Control A/c	Dr.	2,40,000	
	Production Overheads Control A/c	Dr.	20,000	
	Material Usage Variance A/c	Dr.	40,000	
	To Stores Ledger Control A/c			3.00,000
	(Being the issue of materials)			
(b)	Wages Control A/c	Dr.	75,000	
	Labour Rate Variance A/c	Dr.	7,000	
	To Cash A/c			70,000
	To Expense Creditors A/c			12,000
(c)	Salaries Control A/c	Dr.	25,000	
	Salaries Rate Variance A/c	Dr.	1,000	
	To Salaries Payable A/c			24,000
	To Expense Creditors A/c			2,000
	(Being the provision for salaries payable)			
(d)	Debtors Ledger Control A/c	Dr.	8,00,000	
	To' Sales A/c (Being the credit sales for the period)			8,00,000
(e)	Discount A/c	Dr.	5,000	
	To Debtors Ledger Control A/c (Being the discount allowed to debtors)			5,000
(f)	Work-in- progress Ltd. Control A/c	Dr.	62,000	
	Production Overhead A/c	Dr.	20,000	
	Administration Overhead Control A/c	Dr.	12,000	
	Selling and Distribution Overhaeds Control A/c	Dr.	8,000	
	To Wages Control A/c			75,000
	To Salaries Control A/c			25,000
	To Labour Efficiency Variance A/c			2,000
	(Being the allocation of wages and salaries			

6. Nikita Enterprises operates an integral system of accounting. You are required to pass the Journal Entries for the following transactions that took place for the year ended 30-6-2004 :

(Narrations are no trequired)

	Rs.
Raw materials purchased (50% on Credit)	6,00,000
Materials issued to production	4,00.000
Wages paid (50% direct)	2.00.000
Wages charged to Production	1,00,000
Factory Overheads incurred	80,000
Factory Overheads charged to Production	1,00,000
Selling and Distribution overheads incurred	40,000
Finished Goods at cost	5,00,000
Sales (50% Credit)	7,50,000
Closing Stock	NIL
Receipts from Debtors	2,00,000
Payments to Creditors	2,00,000

Solution :

Journal Entries under Integral System of Accounting

		Dr. Rs.	*Cr.* Rs.
Stores Ledger Control Account	Dr.	6,00,000	
To Sundry Creditors Account			3,00,000
To Cash/Bank Account			3,00,000
Work-in-Progress Control Account	Dr	4,00,000	
To Stores Ledger Control Account			4,00,000
Wages Control Account	Dr.	2,00,000	
To Cash/Bank Account			2,00,000
Work-in-Progress Control Account	Dr.	1,00,000	
To Wages Control Account			1,00,000
Factory Overheads Control Account	Dr.	1,00,000	
To Wages Control Account			1,00,000
Factory Overheads Control Account	Dr.	80,000	
To Cash/Bank Account			80,000
Work-in-Progress Control Account	Dr.	1,00,000	
To Factory Overheads Control Account			1,00,000
Selling & Distribution Overheads Control A/c	Dr.	40,000	
To Cash/Bank Account			40,000
Finished Goods Stock Ledger Control Account	Dr.	5,00,000	
To Work-in-Progress Control Account			5,00,000
Cost of Sales Account	Dr.	5,40,000	
To Finished Goods Stock Ledger Control A/c To Selling & Distribution Overheads Control			5,00,000
Contract Account			40,000
Sundry Debtors Account	Dr.	3.75,000	
Cash/Bank Account	Dr.	3,75,000	
To Sales Account			7,50,000
Sales Account	Dr.	7,50,000	
To Cost of Sales Account Cash/Bank Account	Dr.	2,00,000	7,50,000
To Sundry Debtors Accounts			2,00,000
Sundry Creditors Account	Dr.	2,00,000	
To Cash/Bank Account			2,00,000

7. A company operates Integrated Accounting System. Journalise the following transactions of March 2000.

	Rs.
(1) Materials purchased (on credit)	60,000
(2) Materials issued to production	44,000
(3) Indirect materials issued	6,000
(4) Materials returned to suppliers	10,000
(5) Purchases for special job	10,000
(6)'Normal wastage of materials	1,000
(7) Abnormal wastage of materials	

Journal Entries (Integrated Accounts Method)

Date	Particulars		L F	Debit Rs.	Credit Rs.
(1)	Stores Ledger Control A/c	Dr.		60,000	
	To Creditors A/c				60,000
	(Being materials purchased on credit)				
(2)	Work-in Progress Ledger Control A/c	Dr.		44,000	
	To Stores Ledger Control A/c				44,000
	(Materials issued to production)				
(3)	Factory Overheads A/c	Dr.		6,000	
	To Stores Ledger Control A/c				6,000
	(Indirect materials issued to production)				
(4)	Creditors A/c	Dr.		5,000	
	To Stores Ledger Control A/c				5,000
	(Materials returned to suppliers)				
(5)	Work-in-Progress Ledger Control A/c	Dr.		20,000	
	To Creditors A/c				20,000
	(Materials purchased for special job)				
(6)	Factory Overheads A/c	Dr.		1,000	
	To Stores Ledger Control A/c				1,000
	(Being transfer of normal wastage of materials to Factory Overheads A/c)				
(7)	Costing Profit and Loss A/c	Dr.		1,600	
	To Stores Ledger Control A/c				1,600
	(Being transfer of abnormal wastage of materials to Costing P & L A/c.)				

8. A company adopts Integrated Accounting System. Journalize the following transactions of March 2001.

Rs.

(1) Direct wages paid 60,000

(2) Indirect 'wages paid 15,000

(3) Indirect wages control 10,000

(4) Factory overhead 2,000

(5) Wages charged to production 1,14,000

SOLUTION

Journal Entries . (Integrated Accounts Method)

			Rs.	Rs.
(1)	Wages Control A/c To Cash A/c (Being- total wages paid)	Dr	25,000	25,000
(2)	Work-in-Progress Ledger Control A/c 'To Wages Control A/c (Being direct wages charged to production)	Dr.	19,000	19,000
(3)	Factory Overheads A/c To Wages Control A/c (Being the amount of factory indirect wages transferred to factory overheads a/c)	Dr.	5,000	5,000
(4)	Factory Overheads A/c To Wages Control A/c (Being wages of normal idle time transferred to factory overheads a/c)	Dr.	1,000	1,000

Wages Control Account

	Rs.		Rs.
To Cash A/c-total wages	25,000	By Work-in-Progress A/c	19,000
		" Factory Overheads A/c - Indirect Wages	5,000
		" Factory Overheads A/c - Normal Idle time	1,000
	25,000		25,000

9. A company keeps its accounts as per Integrated Accounting System. Journalise the following transactions for March 2001 and also prepare Factory Overheads Account:

	Rs.
1. Factory expenses paid	12,000
2. Depreciation of factory	2,400
3. Materials issued for repairs	1,500
4. Indirect wages allocated	4,000
5. Recovery of factory overheads	19,000

SOLUTION:

Factory Overhead Account

	Rs.		Rs.
To Bank A/c Expenses paid	12,000	By Work-in-Progress A/c - Recovery	19,000
" Depreciation Provision A/c.	2,400	" Costing P & L A/c - under recovery	900
" Stores Ledger Control A/c — Repairs	1,500		
" Wages Control A/c - Indirect	4,000		
	19,900		19,900

Journal Entries

			Rs. 12,000	Rs.
(1)	Factory Overheads A/c To Bank A/c (Being factory overheads paid)	Dr.		12,000
(2)	Factory Overheads A/c To Depreciation Provision A/c (Being depreciation transferred to depreciation provision A/c)	Dr.	2,400	2,400
(3)	Factory Overheads A/c To Stores Ledger Control A/c (Being indirect materials transferred to factory overheads account)	Dr.	1,500	1,500
(4)	Factory Overheads A/c To Wages Control A/c (Being indirect wages transferred to factory overheads account)	Dr.	4,000	4,000
(5)	Work-in Progress A/c To Factory Overheads A/c (Being factory overheads charged to production)	Dr.	19,000	19,000
(6)	Costing P & L A/c To Factory Overheads A/c (Being under-recovery of factory overheads transferred to costing P & L A/c)	Dr.	900	900

10. Journalise the following transactions in the books of Integrated Chirag Ltd. which has adopted an integrated system of cost and financial accounts;

	Rs.
Raw materials purchased	20,000
Direct materials issued to production	15,000
Wages paid (30% indirect)	12,000
Wages charged' to production	9,500
Manufacturing expenses incurred	8,400
Manufacturing overheads charged to production	9,200
Selling and distribution cost	2,000
Finished products at cost	20,000
Closing stock	Nil
Sales	29,000
Receipts from debtors	6,900
Payment to creditors	11,000
Plant and Machinery bought	37,500

SOLUTION:

Journal Entries

				Rs.	Rs.
(1)	Stores Ledger Control A/c To Creditors A/c (Being raw materials purchased)	Dr		20,000	20,000
(2)	Work-in-Progress A/c To Stores Ledger Control A/c (Being raw materials issued to production	Dr		15,000	15,000
(3)	Wages A/c Factory Overheads A/c To Bank A/c (Being direct wages Rs. 8,400 and indirect wages Rs. 3,600 paid)	Dr Dr		8,400 3,600	12,000
(4)	Work-iii-Progress A/c To Wages A/c (Being wages charged to production)	Dr.		9,500	9,500
(5)	Factory Overheads A/c To Bank A/c (Being factory overheads paid)	Dr.		8,400	8,400
(6)	Work-in-Progress A/c To Factory Overheads A/c (Being factory overhead, charged to production)	Dr.		9,200	9,200
(7)	Selling and Distribution Overheads A/c To Bank A/c (Being selling and distribution overheads paid)	Dr.		2,000	2,000
(8)	Cost of Sales A/c To 'Selling and Dist. Overheads A/c (Being Selling and distribution overheads allocated)	Dr.		2,000	2,000
(9)	Finished Stock Ledger Control A/c	Dr		20,000	

	To Work-in-Progress A/c (Being finished goods in the factory transferred to finished stock godown)				20,000
(10)	Cost of Sales A/c To Finished Stock Ledger Control (Being the cost of sales of finished stock transferred to cost of sales A/c)	Dr. A/c		20,000	20,000
(11)	Debtors A/c To Cost of Sales A/c (Being sales made)	Dr.		29,000	29,000
(12)	Bank A/c To Debtors A/c (Being the amount received from debtors)	Dr.		6,900	6,900
(13)	Creditors A/c To Bank A/c (Being payment made to creditors)	Dr.		11,000	11,000
(14)	Plant and Machinery A/c To Bank A/c (Being plant and machinery purchased)	Dr.		37,500	37,500

11. Jay Ltd. uses Integrated Accounting System. Journalise the following transactions for the year ending 31st March, 2001 and prepare necessary accounts :

	Rs.
Materials purchased on credit	30,000
Wages paid	35,000
Productive wages	30,000
Unproductive wages	5,000
Materials issued to production	27,000
Factory overheads paid	14,000
Factory overheads charged to production	17,200
Administration overheads paid	9,200
Closing balance of work-in-progress	7,200
Selling expenses paid	10,000
Administration overheads charged to Finished Stock A/c	9,000
Selling expenses charged to Sales A/c	10,000
Sales	80,000
Closing stock of finished goods	7,000
Receipts from debtors	70,000

Journal Entries

				Rs.	Rs.
(1)	Stores Ledger Control A/c To Creditors A/c (Being materials purchased)	Dr		30,000	30,000
(2)	Wages Control A/c To Cash A/c (Being wages paid)	Dr		35,000	35,000

(3)	Work-in-progress Control A/c To Wages Control A/c (Wages charged to production)	Dr	30,000	30,000
(4)	Factory. Overheads A/c To Wages Control A/c (Indirect wages transferred to fa'ctory overheads)	Dr	5,000	5,000
(5)	Work-in-Progress Ledger Control A/c To Stores Ledger Control A/c (Being materials issued to production)	Dr	27,000	27,000
(6)	Factory Overheads A/c To Cash A/c (Being "factory expenses paid)	Dr	14,000	14,000
(7)	Work-in-Progress Ledger Control A/c To Factory Overheads A/c (Being factory overheads charged to production)	Dr	17,200	17,200
(8)	Administration Overheads A/c To Cash A/c (Being administration overheads paid)	Dr.	9,200	9,200
(9)	Finished £tock Ledger Control A/c To Administration Overheads A/c (Being administration overheads charged to finished stock ledger control A/	Dr.	9,000	9,000
(10)	Finished Stock Ledger Control A/c To –Work-in-Progress Ledger Control A/c (Being goods finished in the factory transferred to finished stock godown)	Dr.	67,000	67,000
(11)	Selling Overheads A/c To Cash A/c (Being selling overheads paid)	Dr	10,000	10,000
(12)	Cost of Sales a/c To Selling Overheads A/c (Being Selling Overheads transferred to cost of sales A/c)	Dr.	10,000	10,000
(13)	Debtors A/c To Cost of Sales A/c (Being credit sales made)	Dr.	80,000	80,000
(14)	Cost of Sales A/c To Finished Stock Ledger Control A/c (The cost of sales of finished stock transferred to cost of sales A/c)	Dr.	69,000	69,000
(15)	'Cost of Sales A/c To Costing Profit and Loss A/c (Profit shown by cost of sales A/c transferred to costing P & L A/c)	Dr.	1,000	1,000
(16)	Costing Profit and Loss A/c ;To Factory Overheads A/c ' To Administration Overheads A/c	Dr.	2,000	1,800 200

	(Under recovery transferred to costing P & L A/c)				
(17)	Profit & Loss A/c To Costing Profit & Loss A/c (Net loss transferred to P & L A/c)	Dr.		1,000	1,000
(18)	Cash A/c To Debtors A/c (Cash received from debtors)	Dr.		70,000	70,000

Stores Ledger Control Account

	Rs.		Rs.
To Creditors A/c	30,000	By Work-in Progress A/c	27,000
		" Balance c/d	3,000
	30,000		30,000

Wage Control Account

	Rs.		Rs.
To Cash A/c	35,000	By W.-in-P. A/c	30,000
		" Factory Overhead A/c	5,000
	35,000		35,000

Factory Overheads Account

			Rs.
To Cash A/c-	14,000	By W.-in-P. A/c	17,200
" Wages Control A/c	5,000	" Costing P & L A/c - under recovery	1,800
	19,000		19,000

Administration Overheads Account

	Rs.		Rs.
To Cash A/c	9,200	By Finished Stock Ledgei Control A/c	9,000
		" Costing P & L A/c - under recovery	200
	9,200		9,200

Selling Overheads Account

	Rs.		Rs.
To Cash A/c	10,000	By Cost of Sales A/c	10,000
	10,000		10,000

Work-in-progress Control Account

	Rs.		Rs.
To Stores Ledger Control A/c	27,000	By Finished Stock	
" Wages Control -A/c	30,000	Ledger Control A/c	
" Factory Overheads A/c	17,200	-transfer (?)	67,000
		" Balance c/d	7,200
	74,200		74,200

Finished Stock Ledger Control Account

	Rs.		Rs.
To Administration		By Cost of Sales	
Overheads A'/c	9,000	A/c (?)	69,000
Work-in-Progress A/c	67,000	" Balance c/d	7,000
	76,000		76,000

Cost of Sales Account

	Rs.		Rs.
To Finished Stock Ledger		By Debtors A/c - Sales	80,000
Control A/c .	69,000		
" Selling Overheads A/c	10,000.		
" Costing P & L A/c - Profit	1,000		
	80,000		80,000

Costing Profit and Loss Account

	Rs.		Rs.
To Factory Overheads A/c	1,800	By Cost of Sales A/c	
" Administration		- Profit	1,000
Overheads A/c	200	" P & L A/c - Loss	1,000
	2,000		2,000

Cash Account

To Debtors A/c	70,000	By Wages Control A/c	35,000
		" Factory Overheads A/c	14,000
		" Administration Overheads A/c	9,200
		" Selling Overheads A/c	10,000
		" Balance c/d	1,800
	70,000		70,000

Debtor Account

	Rs,		Rs.
To Cost of Sales A/c	80,000	By Cash A/c	70,000
		" Balance c/d	10,000
	80,000		80,000

Creditors Account

	Rs.		Rs.
To Balance c/d	30,000	By Stores Ledger	
		Control A/c	30,000
	30,000		30,000

12. Yash Ltd. keeps accounts under Integrated Accounting System. The following are the balances on 31st March, 2000.

	Debit	Credit
	Rs.	Rs.
Stores Control A/c	9,000	
Finished Goods A/c	6,500	
Work-in-Progress A/c	8,500	
Creditors		4,000
Bank Balance	5,000	
Debtors A/c	6,000	
Fixed Assets A/c	27,500	
Profit and Loss A/c		16,000
Depreciation Provision A/c		2,500
Share Capital A/c		40,000
	62,500	62,500

Transactions during the year ending 31st March, 2001, were as under

	Rs.
Wages - Indirect	2,500
Wages - Direct	43,500
Materials Purchased - Credit	50,000
Materials issued to production	55,000
Materials issued for repairs	1,000
Goods finished during the year (cost)	1,07,500
Sales - Credit	1,50,000
Cost of Sales	1,10,000
Factory overheads absorbed	24,000
Factory overhead paid by cheque	20,000
Administration overheads paid by cheque	6,000
Selling-distribution overheads paid by cheque	7,000
Depreciation (Factory)	650
Payment to creditors	50,500
Received from debtors	1,45,000
Taxes prepaid (included in factory overheads incurred)	150
Purchase of fixed assets by cheque	1,000
Donations	500
Penalty paid	250
Income-tax	10,000
Interest on Bank Loan	50

Prepare." necessary accounts in the Integrated Ledger and Prepare a Trial Balance. Administration overheads are charged to Profit and Loss Account. –

Stores Ledger Control Account

		Rs.			Rs.
2000 Apr.-1	To Balance b/d	9.000	2001 March 31	By W.-in-P. A/c	55.000
2001 Mar 31	" Creditors A/c	50,000		" Factory Overheads A/c - Repairs	1,000
				" Balance c/d	3,000
		59,000			59,000

Wages Control Account

		Rs.			Rs.
2001 March 31	To Bank A/c	46,000	2001 March 31	By W.-in-P. A/c - Direct Wages	43, 500
				" Factory Overheads A/c - Indirect wages	2,500
		46,000			46,000

Factory Overheads Account

		Rs.			Rs.
2001 Mar. 31	To Wages Control A/c	2,500	2001 Mar. 31	By Prepaid Taxes	150
	" Stores Ledger Control A/c	1,000		" W.-in-P. A/c	24,000
	" Bank A/c	20,000			
	" Depreciation Provision A/c	650			
		24,150			24,150

Administration Overheads Account

		Rs.			Rs.
2001 Mar. 31	To Bank A/c	6,000	2001 Mar. 31	By Costing P & L A	6,000
		6,000			6,000

Selling Distribution Overheads Account

		Rs.			Rs.
2001 Mar. 31	To Bank A/c	7,000	2001 Mar. 31	By Cost of Sales A/c	7,000
		7,000			7,000

Work in Progress Account

		Rs.			Rs.
2000 Apr. 1	To Balance b/d	8,500	2001 Mar. 31	By Finished Stock A/c	1,07,500
2001 Mar.31	" Stores Ledger Control A/c	55,000		" Balance c/d	23,500
	" Wages Control A/c	43,500			
	" Factory Overheads A/c	24,000			
		1,31,000			1,31,000

Finished Stock Account

		Rs.			Rs.
2000 Apr. 1	To Balance b/d	6,500	2001 Mar. 31	By Cost of Sales A/c	1,10,000
2001 Mar. 31	" W.-in-P. A/c x(	1,07,500		" Balance c/d	4,000
		1,14,000			1,14,000

Cost of Sales Account

		Rs.			Rs.
2001 Mar. 31	To Finished Stock A/c	1,10,000	2001 Mar. 31	By Debtors A/c - Sales	1,50,000
"	." Selling-distribution Overheads A/c	7,000			
"	" Costing P & L A/c - profit	33,000			
		1,50,000			1,50,000

Cost Profit & Loss Account

		Rs.			Rs.
2001 Mar. 31	To Administration Overheads A/c	6,000	2001 Mar. 31	By Cost of Sales A/c - Profit	33,000
	" P & L A/c - Net Profit	27,000			
		33,000			33,000

Profit and Loss Account for the year ending 31st March,1999

		Rs.			Rs.
2001 Mar. 31	To Donations A/c	500	2000 Apr. 1	By Balance B/d	16,000
	" Int. on Bank Loan	50	2001 Mar.- 31	" Costina P & L A/c	27,000
	" Penalty	250			
	" Income-tax	10,000			
	" Balance c/d	32,200			
		43,000			43,000

Bank Account

		Rs.			Rs.
2000 " Apr. 1	To Balance b/d	5,000	2001 Mar. 31	By Wages Con. A	46,000
2001 Mar 31	" Debtors A/c - collection	1,45,000		" Fixed Assets A	1,000
			"	" Factory Overheads A/c	20,000
			"	" Administration Overheads A/	6,000
			"	" Selline Overheads A/c	7,000
				" Creditors A/c	50,500
				" Donations	500
				" Penalty	250
				" Int. on bank loa	50
			"	" Income tax	10,000
			"	" Balance c/d	8,700
		1,50,000			1,50,000

Debtors Account

2000		Rs.	2001		Rs.
Apr. 1	To Balance b/d	6,000	Mar, 31	By Bank A/c	1,45,000
2001			"	" Balance c/d	11,000
Mar.	" Cost of Sales A/c	1,50,000			
31		1,56,000			1,56,000

Creditors Account

2001		Rs-	2000		Rs.
Mar.	To Bank A/c	50,500	Apr. 1	By Balance b/d	4,000
31	" Balance c/d	3,500	2001		
			Mar. 31	" Stores Ledger Control A/c	50,000
		54,000			54,000

Fixed Assets Account

2000		Rs.	2001		Rs.
Apr. 1	To Balance b/d	27,500	Mar. 31	By Balance c/d	28,500
2001					
Mar.	" Bank A/c	1,000			
31		28,500			28,500

Depreciation Provision Account

2001		Rs.	, 2000		Xis.
Mar.	To Balance c/d	3,150	Apr. 1	By Balance b/d	2,500
31			2001		
			Mar. 31	" Factory Overheads A/c	650
		3,150			3,150

Prepaid Taxes Account

2001		Rs.	2001		Rs.
Mar.-3 1	To Factory Overheads A/c	150	Mar.-31	By Balance c/d	150
		150			150

Share Capital Account

2001		Rs.	2000		Rs.
Mar.31	To Balance c/d	40,000	Apr. 1	By Balance b/d	40,000
		40,000			40,000

Trial Balance as on 31st March, 2001

Particular	Debit Rs.	Credit Rs.
Stores Control A/c	3,000	
Work-in Progress A/c	23,500	
Finished Goods A/c	4,000	
Debtors A/c .	11,000	
Creditors A/c		3,500
Bank Balance	8,700	
Prepaid Expenses A/c Share Capital A/c	150	
Profit and Loss A/c		40,000
Depreciation- Provision A/c		32,200
Fixed Assets A/c	28,500	3,150
	78,850	78,850

7.5 PRACTICAL EXERCISE:

1. Vidula Ltd. operates Integrated Accounting System. Journalise the following transactions and prepare Stores Ledger Control Account:

	Rs.
1. Materials purchased on credit	26,800
2. Materials purchased for cash	5,200
3. Materials, issued to production	20,500
4. Materials issued for repairs	2,400
5. Materials returned to suppliers	1,840
6. Materials purchased for special job	7,560
7. Material distroyed by fire	1,200
8. Normal wastage of materials	850

2. Swaroopchand Ltd. has adopted Integrated Accounting System. Journalise -the following transactions for August 2001 and prepare Wages Control Account:

	Rs.
Direct wages paid	53,400
Direct wages charged to production	51,600
Indirect wages paid	11,500
Indirect wages allocated	11,500
Wages for repairs	800

3.Journalise the following transactions of Dhirajlal Ltd. and prepare Factory Overheads Account under a system of integrated accounts:

	Rs.
Factory expenses, paid	17,500
Materials issued for repairs	2,500
Indirect materials issued	1,200
Indirect wages allocated	3,000
Depreciation of factory	3,200
Recovery of factory overheads	24,800
Expenses allocated to w.-in-p.	1,500

4.From the following information, you are required to pass journal entries and prepare necessary accounts for Suresh Ltd. under the-system of integrated accounts:

	Rs.
1. Materials purchased on credit	80,000
2. Materials purchased for cash	40,000
3. Wages paid (20% Indirect)	60,000
4. Materials issued to production	70,000
5. Materials returned to suppliers	10,000
6. Factory overheads paid	12,000
7. Factory overheads charged to production	25,000
8: Administration overheads paid	10,000
9. Administration overheads charged to production	11,000
10.Finished goods from factory	1,40,000
11.Closing stock of finished goods	Nil
12. Sales (60% Credit)	2,00,000

5. The following are the extracts of balance of Daxa Ltd. In its integrated ledger on 31-3-2001. Pass journal entries; prepare necessary accounts and a Trial Balance:

Balances on l-4-2000	Rs.
Plant and machinery	1,40,000
Debtors	24,000
00Bank overdraft	48,000
Share capital	1,20,000
Reserves	28,000
Raw materials	64,000
Creditors	32,000
Transactions during the year:	
Raw materials purchased	90,000
Raw materials issued to production	1,20,000
Closing stock of raw materials	30,000
Direct wages paid	1,00,000
Direct wages charged to production	94,000
Factory overheads paid	1,80,000
Factory overheads charged to production	99.000
Selling-distribution expenses	13,000

Finished goods (at cost price)	2,16,000
Sales	3,44,000
Closing stock of finished goods	10,000
Payment to creditors	93.000
Receipts from debtors	3,60,000

6. The following were the balances of Raj Ltd. in it integrated ledger on 1-4-2000:

	Debit Rs.	**Credit Rs**
Share Capital	-	70,000
Creditors	-	7,000
Fixed Assets A/c	52,000	-
Bank balance	9,000	-
Debtors A/c	10,000	-
Stores Ledger Control A/c	16,000	-
Finished Goods A/c	11,000	-
W.-in-P. A/c	15,000	-
Depreciation Provision A/c	-	4,000
Profit and Loss A/c	-	32,000
	1,13,000	1,13,000

Following were the transactions during the year 2000-2001:

	Rs.
Materials purchased	90,000
Materials issued to production	1,02,000
Materials issued for repairs	1,800
Indirect wages	4,500
Direct wages	80,600
Finished goods produced (cost)	1,92,000
Cost of sales	1,96,500
Sales -credit	2,80,000
Recovery Of factory overheads	44,650
Factory overheads paid by cheque	37,500.
Administration overheads paid by cheque	10,800
Selling and distribution expenses paid by cheque	12,300
Depreciation on factory	1,100
Receipts from customers	2,52,500
Interest on bank loan	150
Prepaid rent (included in works overhead)	250
Donations	800
Income-tax	18,000
Penalty paid	400
Fixed assets purchased by cheque	1,600
Payment to creditors	90,000

From the above, information prepare Integrated Accounts and Trial balance.
Administration overheads are charged directly to Profit and Loss Account

7. Navin Ltd. maintain Integrated Accounts of Cost and Financial Accounts. From the following details write up control accounts in the general ledger of the factory and prepare a trial balance :

Share Capital	Rs. 3,00,000
Reserve	2,00,000
Sundry Creditors	5,00,000
Plant and Machinery	5,75,000
Sundry Debtors	2,00,000
Closing Stock	1,50,000
Bank & Cash balance	75,000
Transactions during the year were as follows	
Stores purchased	10,00,000
Stores issued to Production	10,50,000
Stores in hand	95,000
Direct wages incurred	6,50,000
Direct wages charged to production	6,00,000
Manufacturing expenses incurred	3,00,000
Manufacturing expenses charged to production	2,75,000
Selling and distribution expenses	1,00,000
Finished Stock production (at cost)	18,00,000
Sales at selling price	22,00,000
Closing Stock	96,000
Payment to Creditors	11,00,000
Receipt from Debtors	21,00,000

8. Power Ltd. operates an integrated accounting system and the following details are given for the year ended 31st March, 1986

Trial Balance as on 31st March, 1986

	Debit	Credit
Share Capital		Rs. 20,00,000
Reserves		2,00,000
Creditors for purchases		1,50,000
Expense Creditors		22,000
Freehold buildings, at cost	Rs. 5,00,000	
Plant and Machinery, at cost	13,00,000	
Provision for depreciation on plant	and	

machinery		
Stock of :		
Raw Material	2,20,000	
Work-in-Progress	40,000	
Finished goods	60,000	
Debtors	2,00,000	
Bank	1,50,000	
	24,70,000	24,70,000

The following data for the month of April 1986 are given

Raw material purchased on credit	Rs. 9,90,000
Raw material returned to suppliers	40,000
Material issued to production	*8,50,000*
Material returned from shop floor	20,000
Factory .wages paid :	
Productive	2,50,000
Non-productive	50,000
Salaries paid :	
Administration	1,00,000
Selling and Distribution	75,0000
Overhead expenses incurred but not paid	
Production	3,00,000
Administration	55,000

9. Following transactions took place in Yadav Ltd. during the month of March, 1993:

1. Raw material purchased on credit	Rs. 40,000
2. Direct material issued to production	30,000
3. Wage paid (30% indirect)	24,000
4. Manufacturing expenses incurred (cash)	16,800
5. Manufacturing overhead charged to production	18,000
6. Selling and distribution cost (cash)	4,000
7. Finished goods at cost	40,000
8. Sales	58,000
9. Receipts from debtors	13,800
10 Payments to creditors	21,000

You are required to journalise the above transactions presuming that integrated

system of accounting is followed by Willu & Co.

10..*Poonam Ltd.* has the following balances in its integrated ledger as off 1st January, 199i

	Rs
Share Capital	2,00,000
Reserves	50,000
Sundry debtors	40,000
Plant and machinery	2,50,000
Sundry creditors	65,000
Bank overdraft ,	80,000
Raw materials	1,00,000

Transactions during the year ended 31st December, 1993 were as follows:

Raw material purchased on credit	1,60,000
Raw material issued to production	2,00,000
Raw materials on hand on 31.12.93	52,000
Direct wages — incurred	1,90,000
— charged production	1,86,000
Manufacturing expenses — incurred	1,78,000
— charged to production	1,86,000
Selling and distribution expenses	20,000
Finished Stock — Production (at cost)	3,82,000
' — Sales (at selling price)	5,72,000
Payment to creditors	1,70,000
Receipts from debtors	6,00,000

You are required to -

(a) Write up and close off the ledger accounts.

(b) Prepare a trial balance of the closing balances, and

(c) Prepare profit and Joss account and a balance sheet.

11. Kalrav Ltd. operates an integral system of accounting. You are required to pass the Journal Entries for the following transactions that took place for the year ended 30-6-1990. *(Narrations are not reauired)*

Raw Materials Purchased (50% on Credit)	Rs. 6,00,000
Materials Issued to production	4,00,000
Wages Paid (50% Direct)	2,00,000
Wages Charged to production	1,10,000
Factory Overheads Incurred	80,000
Factory Overheads Charged to production	1,00,000
Selling and Distribution Overheads incurred	40,000
Finished Goods at Cost	5,20,000
Sales (50% credit)	7,50,000
Closing Stock	nil
Receipts from debtors	2,00,000
Payments to creditors	2,10,000

12. Kapoor Ltd. Maintain Integrated Account of Cost and Financial Accounts. From the following details write control accounts in the general ledger of the factory and prepare a trial balance:

Share capital	Rs. 3,00,000
Reserve	2,20,000
Sundry Creditors	5,00,000
Plant and Machinery	5,75,000
Sundry Debtors	2,50,000
Closing Stock	1,50,000
Bank and Cash balance	75.000
Transactions during the year were as follows:	
Stores purchased	10,00,000
Stores issued to production	10,50,000
Stores in hand	95.000
Direct wages incurred	6,80,000
Direct wages charged to production	6,00,000
Manufacturing expenses incurred	3,00,000
Manufacturing expenses charged to production	2,75,000

Selling and distribution expenses	1,00,000
Finished Stock production (at cost)	18,00,000
Sales at selling price	22,00,000
Closing Stock	, 95,000
Payment to Creditors	11,00,000
Receipt from Debtors	21,00,000

UNIT : 8 : CVP ANALYSIS

Introduction:

Managerial cost accounting is the process of accumulating, measuring, analyzing, interpreting, and reporting cost information useful to both internal and external groups concerned with the way in which the organization uses, accounts for, safeguards, and controls its resources to meet its objectives.

Cost information is used for many different purposes that can be generally classified into five types: 1) performance measurement; 2) cost reduction and control; 3) determination of reimbursement and fee or price setting; 4) program authorization, modification, and discontinuation decisions; and 5) decisions to contract out work or make other changes in the methods of production or delivery of services.

The main objective of financial accounting is to know the results of operation of certain periods where as the main objective of cost accounting is to help in managerial decision making. There are various costing methods which help the management to take the proper decisions related to business, CVP is one of them which help the management to take the decisions. During this chapter, we will discuss about the CVP analysis.

Structure of the chapter:

8.1 Objectives:

By the end of this chapter, the student will learn about

- Meaning and need of CVP analysis
- Break even analysis
- Algebraic method of break even analysis
- Graphical method of break even analysis

8.2 Basic Understanding of Cvp Analysis

Cost volume profit (CVP) analysis can be used to determine the effects of changes in an organisation's sales volume on its costs, revenue and profit. As Profit planning is a function of the selling price of a unit of product, the variable cost of making and selling the product, the volume of product units sold, and, in the case of multi-product companies, sales-mix and, finally, the total fixed costs. The cost-volume-profit (CVP) analysis is a management accounting tool to show the relationship between these ingredients of profit planning.

Break even analysis is one of the widely used techniques in CVP studies. The break-even point (BEP) may be defined as a point at which the firm's total revenues are exactly equal to total costs, yielding zero income. The "no-profit, no-loss" point is a break-even point or a point at which losses cease and profits begin. Thus, the break-even point means the volume of sales where the total revenues and expenses are equal, and the operation breaks even

8.3 Break-Even Analysis

Once you know what your variable costs are, as well as your overall fixed costs for the business, you can determine your breakeven point: the volume of sales needed to at least cover all your costs. You can also compute the new breakeven point that you'd need to meet if you decided to increase your fixed costs

The BEP can be determined by two methods:

1 Algebraic methods: (a) Contribution margin approach and
2 Graphic presentation: (a) Break-even chart

8.4 Algebraic Methods

8.4.1 Contribution Margin Approach

Here, the break even point is achieved by using formula. The whole rocedure for achieveing break even can be identified with the help of following illustration. E.g. How many ice-creams, having a unit cost of Rs 2 and a selling price of Rs 3, must a vendor sell in a fair to recover the Rs 800 fees paid by him for getting a selling stall and additional cost of Rs 400 to install the stall?" The answer can be determined by dividing the fixed cost by the difference between the selling price (Rs 3) and cost price (Rs 2). Thus,

$$\text{BEP (units)} = \frac{\text{Fixed cost (Entry fees + Stall expenses)}}{\text{(Sales price - Unit variable cost)}}$$

(Rs 800 + Rs 400)/(Rs 3 - Rs 2) = 1,200 units

Or,

$$\text{BEP (units)} = \frac{\text{Fixed costs}}{\text{(Contribution margin (CM) per unit}}$$

Or,

BEP (amount)/BEP (Sales revenue)/BESR = BEP (units) X Selling price (SP) per unit
= 1,200 X Rs 3= Rs 3,600

Or,

$$\text{BEP (amount)} = \frac{\text{Fixed costs}}{\text{(Profit volume ratio (P/V ratio)}}$$

$$\text{P/V ratio} = \frac{\text{Contribution margin per unit}}{\text{Selling price per unit}}$$

Re 1 / Rs 3 = .3333

or

BEP (amount) = Rs 1,200 -=- 0.3333 = Rs 3,600

From the P/V ratio, the variable cost to volume ratio (V/V ratio) can be easily derived:

P/V ratio = 1 - P/V ratio

In the vendor's case, it is = 1-1/3 = 2/3 = 66.67 per cent

The P/V ratio, as the name suggests, establishes the relationship between variable costs (VC) and sales volume in amount. The direct method of its computation is:

$$\frac{\text{Variable cost}}{\text{Sales revenue}} = \text{Rs } 2 \div \text{Rs } 3 - 66.67 \text{ per cent}$$

Thus, P/.V ratio + V/V ratio = 1 or 100 per cent

(1/3 + 2/3)= 1 (33.33 per cent+ 66.67 per cent) = 100 per cent

Margin of Safety

- Difference between the budgeted sales revenue and the break-even sales revenue
- Gives a feel for how close projected operations are to the break-even point

The excess of the actual sales revenue (ASR) over the break-even sales revenue (BESR) is known as the margin of safety. Symbolically, margin of safety = (ASR - BESR)

When the margin of safety (amount) is divided by the actual sales (amount), the margin of safety ratio (M/S ratio) is obtained. Symbolically,

$$\text{M/S ratio} = \frac{\text{(ASR-BESR)}}{\text{ASR}}$$

Assume in the vendor's case that sales is 2,000 units (Rs 6,000); margin of safety (Rs 6,000 - Rs 3,600) = Rs 2,400; and the M/S ratio is Rs 2,400 ÷Rs 6,000 = 40 per cent.

The amount of profit can be directly determined with reference to the margin of safety and P/V ratio. Symbolically,

Profit = [Margin of safety (amount)] X P/V ratio

Or Profit = [Margin of safety (units) x CM per unit]

In the vendor's case, profit = Rs 2,400 X 0.3333 (33.33 per cent) = Rs 800 or 800 X Re 1 = Rs 800.

The reason is that once the total amount of, fixed costs has been recovered, profits will increase by the difference of sales revenue and variable costs.

Break-liven Analysis Applications

Sales Volume Required One application of a BE analysis is to determine the required sales volume to generate a budgeted amount of profit. The required sales are given by following Eq.

(Fixed expenses + Desired operating profit) ÷ P/V ratio

In Example , if the desired operating profit of SV Ltd, is Rs 14,000, required sales volume = (Rs 26,000 + Rs 14,000)70.40 = Rs 1,00,000

A variant of the above approach is that the management may be interested in knowing the required sales volume to produce the desired profit after taxes. In this case, the analysis must be expanded slightly. Assume that SV Ltd wants a net income after taxes of Rs 13,500 and that its current tax rate is 35 per cent, the net income after taxes is 65 per cent of the net income before taxes.

$$\text{Required sales volume} = \frac{Fixed\ costs + \left[\dfrac{Desireedincomeaftertaxes}{1-taxrate}\right]}{P/Vratio}$$

$$= \frac{Rs.26,000 + \left[\dfrac{Rs.13,500}{1-0.35}\right]}{0.40} = Rs.1,16,923$$

Verification

Sales volume	Rs 1,16,923
Less variable costs	70,154
Contribution	46,769
Less fixed costs	26,000
Profits before taxes	20,769
Less taxes (0.35)	7,269
Profit after taxes	13,500

Operating Profit at a Given Level of Sales Volume [Actual sales (ASR) - Break-even sales (BESR)] X P/V ratio

Effect on Operating Profit of a Given Increase in Sales Volume

[Budgeted sales (BSR) - BESR] x P/V ratio

Suppose that SV Ltd forecasts 10 per cent increase in sales next year, the projected profit will be:

(Rs 1,04,500 - Rs 65,000) X 0.40 = Rs 15,800

Additional Sales Volume Required The sales manager on the basis of a market research/survey may report to the management that due to increased competition in the market and the liberal import policy of the government, the present price is relatively higher. He may advise reduction in prices to stay in competition

Suppose that SV Ltd reduces its selling price from Rs 10 a unit to Rs 9. The sales volume needed to offset reduced selling price/maintain a present operating profit of Rs 12,000 would be:

$$= \frac{\text{Desired profit (P) + Fixed expenses (FC)}}{\text{Revised P/V ratio (Rs 3/Rs 9)}}$$

= Rs (12,000 + Rs 26,000) - 0.3333
= Rs 1,14,000

The required sales volume of Rs 1,14,000 represents an increase of about 20 per cent over the present level. The management should explore new avenues of sales potential to maintain the existing amount of profit.

On the other hand, if the firm has the opportunity to increase the unit-selling price of the product, the impact of increased sales price would be that the BEP will be reached sooner because an increase in the selling, price will raise the contribution margin, assuming no change in the variable costs. An increased contribution margin will decrease the sales volume necessary to reach a desired goal.

Assume that the management of SV Ltd increases the selling price of its product from Rs 10 to Rs 12, the

$$\text{desired sales volume would be:} \frac{FC + P}{\text{Revised P/V ratio}}$$

= Rs 38,000 ÷ 0.50 (Rs 6 - Rs 12) = Rs 76,000

Effect of Changes in Fixed Costs

A firm may be confronted with the situation of increasing fixed costs. An increase in the total budgeted fixed costs of a firm may be necessitated either by external factors, such as, an increase in property taxes, insurance rates, factory rent, and so on, or by a managerial decision 'of an increase in salaries of executives. More important than this in the latter categories are expansion of the present plant capacity so as to cope with additional demand. The increase in the requirements of fixed costs would imply the computation of the following:

(a) Relative break-even points
(b) Required sales volume to earn the present profits
(c) Required sales volume to earn the same rate of profit on the proposed expansion programme as on the existing ones.

Effect of Changes in fixed expenses

- When estimates of fixed costs are revised, the break-even point will change
- percentage change in fixed expenses will lead to similar increase in the break-even point (in units or dollars)

If there are different fixed costs apply to different levels of sales volume

- more than one break-even point

Assume the management of SV Ltd decides a major expansion programme of its existing production capacity. It is estimated that it will result in extra fixed costs of Rs 8,000 on advertisement to boost sales volume and another Rs 16,000 on account of new plant facility.

(a) *The relative BEPs will be:*

Present facilities	= Fixed costs ÷ P/V ratio
	= Rs 26,000/0.40
	= Rs 65,000
Proposed facilities	= (Present PCs + Additional PCs)
	=P/V ratio
	= (Rs 26,000 + Rs 24,000)/0.40
	= Rs 125,000

It may be noted that increase in PCs (from Rs 26,000 to Rs 50,000) has caused disproportionate increase in the BEP (from Rs 65,000 to Rs 1,25,000).

(b) *The required sales volume to earn the present profit:*

Present PCs + Additional PCs + Present profit (NI)] ÷ P/V ratio
= [Rs 26,000 + Rs 24,000 + Rs 12,000] ÷ 0.40
= Rs 1,55,000

(c) *The required sales volume to earn the present rate of profit on investment:*

(Present PCs + Additional FCs + Present return on investment + Return on new investment)/P/V ratio

Let us assume that the present investment is Rs 1,00,000 and the new investment will involve an additional financial outlay of Rs 60,000. The required sales volume will be (Rs 26,000 + Rs 24,000 + Rs 12,000+ Rs 7,200 (0.12 X Rs 60,000)70.40 = Rs 1,73,000

These computations may be reported in a summary form to the management as follows.

Effect of Changes in Fixed Costs

	Present facilities	*Prospective facilities*	*Increase*
Fixed costs	Rs 26,000	Rs 50,000	Rs 24,000
BEP sales volume	65,000	1 ,25,000	60,000
BEP sales volume (units)	6,500	12,500	6,000
Sales volume to earn existing profit	95,000	1 ,55,000	60,000
Sales volume in units to earn existing profit	9,500	15,500	6,000
Sales volume to earn existing ROI	95,000	1 ,73,000	78,000
Sales volume. to earn existing ROI (in units)	9,500	17,300	7,800

Effect of Changes in Variable Costs

- changes the unit contribution margin
- a new break-even point
- an increase in unit variable expenses will increase the break-even point

Assuming an increase of VC by Re 1 a unit for SV Ltd, the new contribution margin will be: Rs 3*(Rs* 10 - Rs 7) and the revised P/V ratio 0.30 that is,

(Rs 3 ÷ Rs 10).
Revised BEP = (Rs 26,000)/0.30 = Rs 86,667

Desired sales volume to earn existing profit = Rs 38,000/0.30 = Rs 1,26,667

Assuming that variable costs of SV Ltd decline by Re 1 per unit, revised BEP = Rs 26,000/0.50 = Rs 52,000.

Desired sales volume to maintain existing profit = Rs 38,000/0.50 = Rs 76,000.

Effects of Multiple Changes So far we have assumed that a change takes place in one of the three variable affecting profits—cost, price and sales volume. In cases where more than one factor is affected, the BEP analysis can be applied as shown below:

$$\frac{FC + FC(NEW) + \left[\frac{DesiredNI}{1 - taxrate}\right]}{\text{[Contribution margin per unit (New SP - New VC)} \div \text{New selling price } (newSP)]}$$

Assuming the following set of new Figures for SV Ltd:

	Existing data	*New data*
Selling price per unit	Rs 10	Rs 11
Fixed costs	26,000	40,000
Variable cost per unit	6	5.50
Contribution margin per unit	4	5.50
Desired net income after taxes (to maintain the existing ROI)	12,000	25,000
Tax rate	35 per cent	

SOLUTION

Desired sales volume (on the basis of new data) [Rs 26,000 + Rs 14,000 + (Rs 25,000 ÷ 0.65)] ÷ 0.50, that is (Rs 5.5 + Rs 11) = (Rs 78,461.5) ÷ 0.50 = Rs 1,56,923

Desired sales volume on the basis of existing data = [Rs 26,000 + (Rs 12,000 ÷ 0.65)] ÷ 0.40 (Rs 4 ÷ Rs 10) = Rs 44,462 ÷ 0.40 = Rs 1,11,154.

8.5 GRAPHIC PRESENTATION

Under the algebraic technique of break-even analysis, separate computations were needed to arrive at the above set of figures. The utility of the graphical technique is that such a set of figures can be determined without involving any separate calculations. Graphical techniques can be used forthe break-even chart; .

Break-Even Chart The break even chart is a graphic relationship between costs, volume and profits. It shows not only the BEP but also the effects of costs and revenue at varying levels of sales. The break- even chart can, therefore, be more appropriately called the cost- volume- profit graph (CVP graph).

Assumptions regarding the CVP Graph are

1. Costs can be segregated into fixed and variable costs;
2. The behaviour of total revenues and total costs is linear in relation to output in the relevant range;
3. There is no uncertainty as to the cost, revenue and output quantity used;
4. The analysis either covers a single product, or if there are multiple products, the sales mix of products remains constant as the level of total units sold changes;
5. All revenues and costs can be added and compared without taking into account the time value of money;
6. There are no changes in management policy, production methods and efficiency;

7. Inventory levels remain relatively stable within the relevant period.

The CVP graph may be prepared in a simple manner. Sales are shown on the horizontal axis; the vertical axis measures costs and revenues corresponding to varying volume of sales. Sales are expressed in terms of units, rupees and percentage level of activity. The CVP relationships portrayed in such a graph are valid only within the relevant range that underlies the construction of the graph.

The BEP lies at the point of intersection of the sales line and the total cost line.. The fixed cost line is parallel to the horizontal axis. The variable cost line is superimposed on the fixed cost line and moves upward uniformly with sales volume at the variable cost to volume ratio. This is the total cost line. The sales revenue line starts from the point of origin and moves upward uniformly with volume. The meeting point of the total cost line and sales line is the BEP. Following is the graphical presentation of Break even chart.

8.6 Pratical:

1. From the following particulars calculate the breakeven point for Amit Ltd.:

Variable cost per unit	Rs. 12
Fixed expenses	60,000
Selling price per unit	18

Solution :

B.E.P. (in Units) = Fixed costs / Contribution per unit

=60,000 / 6 = 10,000

2. From the following particulars of Gaurav Ltd., find out the selling price per unit if B.E.P. is to be brought down to 9,000 units :

Variable cost per unit	=Rs. 75
Fixed expenses	=Rs. 2,70,000
Selling price per unit	=Rs. 100

Solution : Let the contribution per unit be *X* for Breakeven Sales of 9,000 units.

B.E.P. = Fixed costs / contribution per unit

9,000 unit = 2,70,000/*X*

X =30

Contribution should be Rs. 30 per unit in place of Rs. 25 being at present. It means selling price should be increate by Rs. 5. The selling price should , therefore be, Rs. 105

3. The following data are obtained from the records of Kartik Ltd. :

	First year	*Second year*
Sales	Rs. 80,000	90,000
Profit	10,000	14,000

Calculate the break-even point. *(B.Com., Calicut, 1980)*

Solution :

B.E.P (OF SALES) = Fixed costs / P. V. ratio

P. V. ratio = Change in profit / Change In sales

Fixed cost = Contribution - Profit

Fixed cost =Rs. 80,000 × (40/100) - Rs. 10,000

=Rs. 32,000—Rs. 10,000=Rs. 22,000

BE P. (Sales) =Rs. 22,000/40%

= Rs. 22,000 × 100 / 40

= Rs. 55,000

4. From the following date, calculate Break-even Point expressed in terms of units and also the new B.E.P. if selling price is reduced by 10% for Ketan Ltd.:

Fixed expenses:	
Depreciation	Rs. 1,00,000
Salaries	Rs. 1,00,000
Variable expenses:	
Materials	Rs. 3 per unit
Labour	Rs. 2 per unit
Selling price	Rs. 10 per unit

Solution :

(i) Break-even Point = Fixed expenses / Contribution per unit

= 2,00,000/5

=40,000 units

5. The following information relating to Bhavik Ltd. is given to you.

Sales	Rs. 4,00,000
Fixed cost	1,80,000

Variable cost 2,50,000

Ascertain how much the value of sales must be increased for the company to break-even. **Solution :**

Break-even Sales = Fixed costs / Contribution × Sales

= 1,80,000/1,50,000 × 4,00,000

= Rs. 4,80,000

Actual sales are only Rs. 4,00,000. Sales will have to be increased by Rs 80,000 to make break-even.

6. From the following figures find the break-even volume for Rushabh Ltd.:

Selling price per tonne — R_s. 69.50

Variable cost per tonne — Rs. 35.50

Fixed Expenses — Rs. 18.02 lakhs

If this volume represents 40% capacity, what is the additional profit for an added production of 40% capacity, the selling price of which is 10% lower for 20% capacity production and 15% lower, than the existing price, for the other 20% capacity.

Solution.

Break-even Volume = Fixed Cost / Contribution per tonne

= 18.02 lakhs / 34

=53,000 tonnes

Profit for additional 40% Capacity

Present Break-even level of 53,000 tonnes represent 40% capacity. Additional profit for another 40% Capacity, *i.e.,* 53,000 tonnes. Selling Price per tonne for 1st 20% of capacity, *(i.e.,* 26,500 tonnes)

Less : 10%	69.5
	62.55
less : Variable Cost	35.50
Profit per tonne	27.05
Total profit : 26,500 ×27. 05=	Rs,7,1 6,825 (i)
Selling Price per tonne for 2nd 20% Capacity	69,500
Less : 15%	10,425
	59,075
Less: Variable Cost	35,500
Profit per tonne	23.575

Total Profit :

23575 × 26,500= Rs. 6,27,737 *(ii)*

Hence, Additional Profit over extra 40% capacity production is :

Rs- 13,41,562 *(i.e.* 7,16,825+6,27,737)

7. Given fixed cost—Rs. 8,000 ; profit earned—Rs. 2,000 ; and break-even sales—Rs. 40,000, find the actual sales.

Solution : Let the actual sales be *X*

Break-even sales =(Fixed cists /Contribution) × SAles

or Rs. 40,000 =(80000/(8,000 + 2000)) × X

or Rs. 40,000 = 8000/10000 × X

=8 X

=(40,000 × 10)/8

=Rs. 50,000

8. Form the following particulars, calculate the sales required to earn a profit of Rs. 1,29,660.

Sales.	Rs. 6,00,000
Variable costs	3_f75,000
Fixed costs	1,80,000

Solution :

Sales for a desired profit = (Fixed cost + Desired profit) /P.V, ratio

P/V ratio = Contribution / Sales

= 2,25,000 / 6,00,000

= 375 or 37·5%

Sales for a profit of Rs. 1,20,000=(1,80,000 + 1,20,000) / 37.5%

= 3,00,000 ×l00 / 37.5%

=Rs. 8,00,000.

9. Sale of a product amounts to 200 units per month at Rs. 10 per unit. Fixed overhead is Rs. 400 per month and variable cost Rs. 6 per unit. There is a proposal to redude prices by 10%. Calculate the present and future P/V ratio and find, by applying P/V ratio, how many units must be sold to maintain total profit.

Solution :

Pxesent P/V ratio = Selling price-Variable cost / sales × 100

= Rs. 10 – Rs. 6 / Rs. 10 × 100, i. E. 40%

Future P/V ratio = Rs. 9 – Rs. 6 / Rs. 9 × 100

= Rs. 3 / 9 or 33.1/3

Present profit =Contribution—Fixed cost

= 40% of Rs. 2,000—Rs. 400

=Rs. 800—Rs. 400

=Rs. 400

Unit to be sold = (Fixed cost + Desired profit) / Contribution per unit

= Rs. 400+Rs. 400/ Rs. 3

=Rs. 800/5

=267 unit (approx)

10. From the following data calculate :

(i) P/V ratio

(ii) Profit when bales are Rs. 20,000

(iii) New break-even point if selling price is reduced by 20%

Fixed expenses Rs. 4,000

Break-even point 10,000

Solution :

(i) Break-even sales = Fixed expenses / P/V ratio

or P/V ratio = Fixed expenses /Break-even sales

- 4,000/10,000 =40%

(ii) Profit when sales are Rs. 20,000

Profit = Sales × P/V ratio—Fixed expenses

=Rs. 20,000×40%—Rs. 4,000 ==Rs. 8,000—Rs. 4,000=Rs. 4,000

(III) New break-even point if felling price is reduced by 20% :

If the selling price Rs. 100, now it will be Rs. 80. Variable cost per unit Rs. 60 *(i.e.,* 100—40% old P/V ratio)

∴ New P/V ratio = (80-60) /80=25%

Break-even point = 4000/25%=Rs. 16,000

11. Shanti Ltd. has fixed expenses of Rs. 90,000 with sales at Rs 1.00.000 and a profit of Rs. 60,000. Calculate the profit/ volume ratio. If in the next period, the company suffered a loss of Rs. 30,000 calculate the sales volume.

(b) What is the margin of safely for a profit of Rs. 60,000 in *(a) above*

Solution :

(a) Profit/Volume ratio = Contribution /sales× 100

Conribution = Fixed cost+Profit

=90,000+60,000=Rs. 1,50,000

P/V ratio = 1,50,000/ 3,00,000 = 50%

In the next period, contribution=90,000—30,000 = Rs. 60,000

Let sales be *x* :

P/V ratio = Contribution/Sales

Or 50/100= 60,000/x

Or 50x = 60,00,000

or x =60,00,000/50

=Rs. 1,20,000

Thus, at sales of Rs. 1,20,000 there will be a loss of Rs. 30,000.

(b) Margin of safety = profit / p/V ratio

=60,000/50%

=rs. 1,20,000

Also margin of safety = Actual Sales—Break-even sales

= Rs. 3,00,000-1,80,000=Rs. 1,20,000

BEP = Fixed cost/ P/V ratio 50% = 90,000/50% =Rs. 1,80,000

12. Suraj Ltd. have an installed capacity of 5,000 tractors per annum. They are presently operating at about 35 per cent of installed capacity. For the coming year, they have budgeted as follows:

Production/Sales	4,000 units
Costs:	Rs. (crores)
Direct materials	8.00
Direct wages	0.60
Factory expenses	0.80
Administrative expenses	0.20
Selling expenses	0.20
Profit .	1.00

Factory expenses as well as selling expenses are, variable to the extent of 20 per cent.

Calculate the break-even capacity utilisation percentage.

Solution : Statement of Cost of Sales of 4,000 Tractors

	Cost (per unit Rs.)	Total (Rs. in crores)
Variable costs:		
Direct materials	8.00	20,000
Direct wages	0.60	1,500
Factory expenses (20%)	0.16	400
Variable cost of production.	8.76	21,900
Selling expenses (20%)	0.04	100
Total variable cost	8.80	22,000
Fixed Cost:		
Factory expenses 80%	0.64	
Selling expenses 80%	0.16	
Administrative expenses	0.20	
Total	1.0	
Total costs (both variable & fixed)	9.80	

Contribution per unit:

Selling price per unit	27,000
Variable cost per unit	22,000
	5,000

Break-even point (units) = Fixed costs/Contribution per unit

i.e. = 1,00,00,000/5,000 or 2,000 units

The installed capacity is 5,000 tractors, therefore, the break-even point as a percentage of installed capacity will be at 40%.

13. There are two similar plants under the same management for Yashraj Ltd. The management desires to merge these two plants. The following particulars are available :

	Factory I	Factory II
Capacity operation	100%	60%
Sales	Rs. 300 lacs	Rs. 120 lacs
Variable costs	220 lacs	90 lacs
Fixed costs	40 lacs	20 lacs

You are required to calculate: *(a)* what would be the capacity of the marged plant to be operated for the purposes of break-even, and *(b)* what would be the profitability on, working at 75% of the merged capacity.

Solution : Sales for factory II at 100% capacity

$= (120/60) \times 100$ =Rs. 200 lacs 60

Variable costs for factory II at 100% capacity

$= (90/60) \times 100$ =Rs. 150 lacs

Total sales =Rs. 300 lacs + Rs. 200 lacs

=Rs. 500 lacs

Total variable costs =Rs. 220+Rs. 150 lacs

=Rs. 370 lacs

Total fixed costs =Rs, 40 lacs + Rs. 20 lacs

=Rs. 60 lacs

Combined P/V ratio $= ((S-V)/s) \times 100$

$= ((\text{Rs. } 500-\text{Rs. } 370)/500) \times 100$

$= 26\%$

(a) Break-even point for marged plant = (Fixed cost/ (P/V) ratio)

=230.77 lacs

At Rs. 500 lacs sales capacity level is 100%

at Rs. 230.77 lacs of sales capacity level shall be

$= (10/500) \times 230.77$ or 46.15%

(b) At 75% of merged capacity, sales would be Rs. 375 lacs Profit at Rs. 375 lacs

= Sales × P/V ratio—Fixed cost

= 375 lacs × 26% - Rs. 60 lacs

= Rs. 37.5 lacs

Profitability is $= (37.5/375) \times 100$ or 10%

14. From the following data, which product would you recommend to be manufactured in a factory, time being the key factor?

	Per unit of product 'A'	*Per unit of product 'B'*
Direct material	Rs. 24	Rs. 14
Direct labour at Re. 1 per hour	2	3
Variable overhead at Rs. 2 per hour	4	6
Selling price	100	110
Standard time to produce	2 hours	3 hours

Solution:

Variable cost per unit:

For product *A* Rs. 30

For product *B* Rs. 23

Contribution per unit:

For product *A* Rs. 100 - 30=Rs. 70

For product *B* Rs. 110 - 23=Rs. 87

Contribution per hour:

For product *A* Rs. 70/ 2 hours = Rs. 35

For product *B* Rs 87/ 3 hours =Rs. 29

Since time is the key factor, contribution per hour should be compared to decide which product should be recommended for manufacturing. The contribution per hour for product *A* is higher in comparison to that for product *B*. Therefore, manufacture of product *A* is recommended.

15. From the following data, recommend the most profitable product mix, presuming that direct labour hours available are only 700.

	Products	
	A	*B*
Contribution per unit	Rs. 30	Rs. 20
Direct labour per unit	10	5 hrs.

The maximum production possible for each of the products *A* and *B* is 100 units.

The fixed overheads are Rs. 1,000.

Solution:

Contribution per labour hour Contribution per unit/Labour hours per unit

Product *A*. *30/10* = Rs. 3 per labour hour

Product *B*. *20/5* = *Rs*. 4 per labour hour

In case there is no limiting factor product *A is* more profitable than product *B* since the former has a higher contribution per unit than the latter. Since in the present case, the labour is the key factor, product *B* is more profitable as compared to product *A*. The following product mix may therefore be recommended.

	Units	*Labour hrs.*	*Contribution*
Product *A*	20	200	Rs. 600
Product *B*	100	500	2,000
Total	120	700	2,600
Less : Fixed overheads			1,000
Net profit			1,600

In case any other product mix is done, it will result in profit lower than Rs. 1,600.

16. A company budgets for a production of 1,50,000 units.- The variable cost per unit is Rs. 14 and fixed cost is Rs. 2 per unit. The company fixes its selling price to fetch a profit of 15% on cost.

(a) What is the break-even point ?

(b) What is the profit-volume ratio ?

(c) If it reduces its selling price by 5%, how the revised selling price affect the break-even point and the profit-volume ratio ?

(d) If a profit increase of 10% is desired more than the budget, what should be the sales at the reduced prices ?

Solution.

(a) Computation of Break-even Point

Variable Cost per unit Rs.	14
Fixed Cost per unit	2
	16
Profit (15% on cost)	2.40
Selling price per unit ,	18.40

Contribution per unit=Selling price — Variable cost

= 18.40- 14=Rs, 4.40

Break-even Point (in Unit) = Fixed Costs/ Contribution per unit

= 3,00,000/4.40

=68,181.8 or 68,182 units

Breakeven Point (in Rs.) =68,182 × 15

=Rs. 12,54,549

(b) Computation of Profit Volome (P/V) Ratio

P/V Ratio Contribution per unit / selling per unit × 100

(c) *Break-even Point and PIV after reduction of Selling Price*

Present Selling Price Rs.	18.40
Less : Reduction in Selling Price (5%)	.92
New Selling Price	17.48
Less Variable Cost	14.00
Contribution per unit	3.48

New Break-even Point (in units) =Fixed Cost /Contribution per unit

=3,00,000/3.48

=86,207 units

New P/V Ratio = Contribution per unit / Selling price per unit

= 3.48/17.48 × 100 = 19.90%

(d) *Sales for the desired profit*

Budgeted Profit = 1,50,000 ×2.40=Rs. 3,60,000

Add 10% Increase 36,000

Desired Profit 3,96,000

Sales in units for desired profit at reduce = Fixed Cost+Desired Profit / Contribution per unit

=(3,00,000 + 3,96,000)/3.48 = 2,00,000 units

Sales in Rupees for =2,00,000 × 17.48

desired profit ==Rs. 34,96,000

8.7 Pratical Exercise:

1. A person wants to hire a stall in Nay a Gujarat Fair, for which he will be required to pay a fixed rent of Rs. 1,000. The products that he wants to sell can be sold at Rs. 6 per unit and can be bought at Rs. 2 from the market. If he-wants to reach a sales level of no profit-no loss, how many units should he sell?

2. The budget officer of Sardar Ltd. has prepared budget for the incoming year and the following information is available from it.

	Rs.
Sales (1,00,000 units)	1,00,000
Variable Costs	40,000
Fixed Costs	50,000

From the above mentioned information find out (i) Profit Volume Ratio

(ii) Break-even point and (iii) Margin of safety and how these three will be Effected in the following circumstances:

(A) Increase of 20% in number of Units sold

(B) Increase of 5% in Variable cost

(C) Increase of 10% in fixed cost

(D) Increase of 10% in Selling Price and Decrease in units of sale by *20%*

3. A company sells 200 units of product A per month at Rs. 10 per unit. The monthly fixed expenses are Rs. 400 and its variable cost per unit is Rs. 6.

(a) From the above information, find out P.V. Ratio.

(b) There is a proposal to reduce selling price by 10%. In that case, what would be the new P.V. ratio? On the basis of this ratio, find out how many units must be sold to maintain the current profit.

4. The following are the particulars of a business unit of Srimati Ltd.:

Sales	Profit
Rs.	Rs.
1,00,000	10,000
1,20,000	14,000

Work out the following answers from the above details.

(1) Profit-Volume Ratio.

(2) Figures of profit when sales are of Rs. 90,000 and Rs. 40,000.

(3) Figure of sales to earn profit of Rs. 20,000.

(4) Fixed costs.

(5) Break-even points

5. Vinash Ltd. manufacture of small capacity motors. The cost structure of a motor is as under:

Material	Rs. 50
Labour	Rs. 80
Variable Overheads	75% of labour cost

Fixed overheads of the Company amount to Rs. 240 lakhs per annum. The sale price of the motor is Rs. 230 each.

(a) Determine the number of motors that have to be manufactured and Sold in a year in order to break-even.

(b) How many motors have to be made and sold to make a profit of Rs. one lakh per year ?

(c) If the sale price is reduced by Rs. 15 each, how many motors have to be sold to break-even ?

6. *Sandip* Ltd. furnishes you the following information Delating to the half year ending 30th June, 1986.

Fixed expenses	Rs. 50.000
Sales value	2,00.000
Profit	50,000

During the second half of the same year the company has projected a loss of Rs. 10,000. Calculate :

(i) The P/V ratio, break-even point and margin of safely for six months ending 30th June 1986.

(ii) Expected sales volume for second half of the year assuming that Selling price and fixed expenses remain unchanged in the second half year also.

(iii) The break-even point and margin of safety for the whole year 1986.

7. Suryakant Ltd. has given the following data;

Selling price per unit	Rs.20
Direct material cost per unit	Rs.8
Direct labour cost per unit	Rs. 2
Variable overhead per unit	Rs.2
Fixed overhead (Total)	Rs. 20,000

Find out:

(a) *P/V* ratio, *(b)* Break-even sales, (c) Margin of safety at a sale level of Rs. 1,00.000. (d) Profit, if sales are 20% above the break-even sales, *(e)* Sales to make a profit of Rs. 5,000 *(f) P/V* ratio if the selling price is increased by 10%. *(g)* Break-even sales, if the selling price is increased by 10%. (h) Break-even sales, if the fixed overhead is increased by 20%.

8. The following data are obtained form the records of Indravijay Ltd.:

	First year	*Second year*
Sales	80,000	90,000
Profit	10,000	14,000

Calculate:

(a) *PIV* ratio, *(b)* Break-even point, (c) Profit or loss at sales of Rs. 50,000. (d) Sales required to earn a profit of Rs. 19,000. *(e)* Margin of safety, if sale is Rs. 60,000.

10. From the following particulars, calculate break-. even point:

Sales	Rs. 2.00.000
Variable cost	Rs. 1.20.000
Fixed overhead	Rs. 30.000

Also calculate:

(a) New B.E.P. if selling price is reduced by 10%.

(b) New B.E.P. if variable cost increases by 10%.

(c) NewB.E.P. if fixed cost increases by 10%.

11. Holand Ltd., an appliance manufacturer, has always sold its products through wholesalers. Last year, its sales were Rs. 20,00,000 and its net profit was 10% of sales.

As a result of the increase in appliance sales through departmental stores and mail order business establishments, the company is considering elimination of whole salers and selling directly to retailers. It is estimated that this would result in a 40% drop in sales but net profit would be Rs. 1,80,000 due to the elimination of middlemen. Fixed expenses would increase from Rs. 2,00,000 to Rs. 3,00,000 owing to additional warehouses and distribution facilities.

You are required to find out: *(i)* Whether the proposed change would raise or lower the break-even point in rupees ? By how much ? Give reasons.

(ii) What would be the sale volume in rupees which would enable Westinghouse to obtain as much profit as it made last year ?

12. Suryaputra Ltd. manufactures the 'Rain-pour' garden spray. The accounts of the company for the year 1987 are expected to reveal a profit of Rs. 14,00,000 from the manufacture of 'Rain-pour' after charging fixed costs of Rs. 10,00,000. The Rain-pour is sold for Rs. 50 per unit and has a variable unit cost of Rs. 20.

Market sensitivity tests suggest the following responses to price changes :

Alternatives	*Selling price reduced by*	*Quantity sold increased by*
A	*5%*	10%
B	7%	20%
C	10%	25%

Evaluate these alternatives and state which, on profitability consideration, should be adopted for the forthcoming year, assuming cost structure unchanged from 1987.

13. Jagmohan Ltd. make plastic buckets. An analysis of their accounting reveals:

Variable cost per bucket	Rs. 20
Fixed cost	Rs. 50,000 for the year
Capacity	2,000 buckets per year
Selling price per bucket	Rs. 70

Required : *(i)* Find the break-even point.

(ii)-Find the number of buckets to be sold to get a profit of Rs. 30,000. *(iii)* If the company can manufacture 600 buckets more per year with an additional fixed cost of Rs. 2,000, what should be the selling price to maintain the profit per bucket as at (ii) above ?

14. The profit/volume ratio of P Ltd. is 50% and the margin of safety is 40%.-You are required to calculate the net profit if sale volume is Rs. 1,00,000.

15. Shakti Ltd., a multi-product company, finished the following-data relating to the year 1992:

	1st half of the year	*2nd half of the year*
Sales	Rs. 45,000	Rs. 50,000
Total cost	40,000	43,000

Assuming that there is no change in prices and variable costs and that the fixed expenses are incurred equally in the two half year periods, calculate for the year 1992: *(i)* the profit volume ratio, *(ii)* the fixed expenses, *(iii)* the break even sales, and *(iv)* the percentage of margin of safety to total sales.

16. The following figures are available from the records of Sanjay Ltd. as at 31st March:

	1988	*1989*
	Rs. lakhs	*Rs. lakhs*
Sales	150	200
Profit	30	50

Calculate : *(a)* the P/V ratio and total fixed expenses; *(b)* the break even level of sales; *(c)* sales required to earn a profit of Rs. 90 lakhs; *(d)* Profit or loss that would arise if the sales were Rs. 280 lakhs.

18. The trading results of Aditya Ltd. for two periods are as under:

Period	*Sales*	*Profit*
1	Rs. 1,30,000	Rs.6,000
2	1,50,000	10,000

Calculate *(a)* P/V Ratio, *(b)* Sales required to earn a profit of Rs. 15,000, *(c)* Profit when sales are Rs. 1,10,000, and *(d)* Break-even sales.

19. The following figures relate to Sunit Ltd. manufacturing a varied range of products:

	Total sales	*Total cost*
Year ended 31st Dec.1990	Rs. 22,23,000	Rs. 19,83,600
Year ended 31st Dec. 1991	24,51,000	21,43,200

Assuming stability in prices, with variable costs carefully controlled to reflect predetermined relationship, and an unvarying figure for fixed costs, **calculate :**

(i) the profit/volume ratio, to reflect the rate of growth for profit and sales; and *(ii)* any other cost figures to be deduced from the data.

20. Suchita Ltd. make plastic buckets. An analysis of their accounting reveals:

Variable cost per bucket	Rs. 20
Fixed cost	Rs. 50,000 for the year
Capacity	2,000 buckets per year
Selling price per bucket	Rs. 70

Required:

(I) Find the break-even point.

(II) Find the number of buckets to be sold to get a profit of Rs. 30,000.

(III) If the Company can manufacture 600 buckets more per year with an additional fixed cost of Rs. 2,000, what should be the selling price to maintain the profit per bucket as at (II) above?

21. Two businesses P Ltd. and Q Ltd. sell the same type of product in the same type of market. Their budget profit and loss accounts for the coming year are as follows:

	PLtd,		*Q Ltd.*	
Sales		1,50,000		1,50,000
Less : Variable cost	1,20,000		1,00,000	
Fixed costs	15,000		35,000	
Budgeted Net Profit		15,000		15,000

You are required to:

(a) Calculate the break-even point of each business.

(b) Calculate the sales volume at which each business will earn Rs. 5,000 profit.

*(c)*State which business is likely to earn greater profit in conditions of:

(I)heavy demand for the product.

(II) low demand for the product and briefly give your reasons.

22. Sanjog Ltd. has prepared the following budget estimates for the year 1992-93:

Sales (units)	15,000
Fixed expenses	Rs.34,000
Sales value	1,50,000
Variable costs	6 per unit

You are required to: *(a)* Find the *P/V* ratio, break-even point and margin of safety

23. The following figures are available from the records of Raju Ltd. as at 31st March:-

	1988	*1989*
	(Rs. lakhs)	*(Rs. lakhs)*
Sales	150	200
Profit	30	50

Calculate :- *(a)* the P/V ratio and total fixed expenses; *(b)* the break-even level of sales; *(c)* sales required to earn a profit of Rs; 90 lakhs; *(d)* Profit or loss that would arise if the sales were Rs. 280 lakhs.

8.8 Exercise

1. Describe CVP analysis and how it helps in managerial decision making?
2. What is break even analysis?
3. Explain algebraic method of break even analysis?
4. Explain graphic method of break even analysis?

Unit : 9 : Decision Making

Introduction:

The main purpose of cost accounting is to help the managers in taking decisions. Managers need to take decisions in various situations and for the purpose the cost accounting provides necessary information. Through this chapter we will understand about the usefulness and need of cost accounts in managerial decision making.

Structure of the Chapter:

9.1 Objectives:

By the end of this chapter the student will learn about

- Different costs to be considered in decision making
- Different types of situations under which decision making can be made

9.2 Meaning and Understanding of Decision Making

Decision Making as a process is an amalgam of both rational and psychological factors. Decision theory analysis studies the rational factor in order to clarify the way in which decisions should be made. However, the analysis does not make the decision makers role superfluous. The decision-maker having analysed the decision problem normatively via decision theory analysis must introspectively apply the blend of rational and psychological factors in order to come to a decision about the problem under consideration

Managers of the business needs to take various decisions regarding business activities. For the purpose of making such decisions necessary informations are also required. Decision-making involves the act of selecting one course of action from among various feasible alternatives available. Short-term decisions are of a special nature. The type of information required for decision-making depends on the decision situation under consideration. The information required for such decisions is called *'relevant data.'* The relevant data refers to decision-making elements required to meet the needs of specific situations. The conventional accounting data would not serve the purpose. They have to be altered/ modified in terms of addition/deletion to tailor the historical costs to the requirements of decision-making.

The first element of the relevant data is that it is future-oriented. that is, it relates to a future period. The underlying consideration is that these decisions imply some future activity. Moreover, such data may be quantifiable or not, means qualitative data are also considered for the purpose of decision making.

Thus, short-term decision-making is based on quantifiable, future accounting information. This is derived from the alteration of the historical cost data. The modification is based on the following cost concepts.

9.2.1 Relevant Costs

A relevant cost or benefit is one that will be affected by the decision. This means that the following can be disregarded as they are irrelevant in the decision-making process:

- Fixed overheads. These will be incurred regardless of the decision.
- Notional costs. For example, notional rent - these costs are only a book exercise and do not represent a real cash flow.
- Past or sunk costs. These have already happened, so they cannot be affected by a future decision. It is vital to note that relevant costs are always future costs.
- Book values. Similar to sunk costs. For example, the price paid for stock in the past is not a relevant cost to the decision.

9.2.2 Opportunity Costs

Opportunity cost is the cost of the opportunity lost. When a decision to follow one course of action is made, the opportunity to pursue some other course is foregone. The monetary benefits that would accrue from taking the alternative course are sacrificed and these benefits, if measurable, should be added to the costs of the decision.

A company often has a choice of options. For example, does it choose to use a scarce resource for Contract A instead of Contract B? If it does choose Contract A then Contract B will be deprived of the resource that could have generated a contribution for the company. This is an example of an opportunity cost, a relevant cost for decision-making.

By definition, an opportunity cost is *one which measures the cost of sacrificing one course of action in favour of another.*

9.2.3 Sunk Costs

Sunk costs means the cost which is already incurred and it cannot be changed by any future course of action. Such costs are historical costs that are irrevocable in a given situation. They are the costs that have been incurred by a decision that was made in the past and cannot be changed by any decision that would be made in the future. They are, therefore, irrelevant in decision-making and have to be deleted from the historical costs.

In short Sunk Cost means *A past cost not directly relevant in decision making*

9.2.4 Discretionary Costs

When, Whether to incur such cost or not is at the discreation of the head of the department is known as discreationary costs. These costs can be avoided in the future as a result of managerial choices because management can choose not to incur them. Avoidable costs are relevant costs when particulars decision-alternatives are compared.

9.2.5 Differential Costs

These are the difference in costs between two alternative course of actions. These costs are also useful in planning and decision-making. They provide a device for testing the profitability of increased output, and give a better measure than the average cost. Defined in this sense, incremental costs differ from variable costs. The former is a comprehensive term, which includes, besides variable costs, additional fixed costs resulting from a particulars decision, whereas, the latter is comprised of variable costs only. The difference between incremental/differential costs and revenues is the incremental/ differential contribution.

In short, **differential cost** means the increase or decrease in costs as a result of one more or one less unit of output

9.3 Decision-Situations

Here, we shall describe the various major situations in which the various tools of decision making can be used. This section demonstrates the application of incremental/differential costs and revenue data for decision-making in the following situations:

1. Sales volume related
2. Sell or further process
3. Make or buy
4. Product lines/divisions/departments
5. Short-term use of scarce resources
6. Joint outputs of common processing operations
7. Operate or shut-down

EQUIPMENT REPLACEMENT:

The timing of replacement of equipment is dependent on factors like replacement costs, discount factors and differences in productivity, reliability and safety of existing and new equipment. Predictions related to these factors are, however, normally subject to uncertainties, and in this paper we discuss how two subjective approaches to representing uncertainties related to future events—the classical Bayesian approach and the fully subjective approach—can be used as a basis for decision-making about replacement. Some key features of the approaches are discussed, including integration of engineering judgements, uncertainty treatment and type of performance measures to be used.

DETERMINING SUITABLE PRODUCT-MIX:

When a company is producing a number of products, the question of ideal product-mix arises. The optimum product-mix would be that which maximises the profit. That product-mix that gives maximum contribution would the ideal product-mix. Hence, in order to determine the best product-mix, the contribution of each product must be calculated and the production must be in order in which they give the contribution per unit. if necessary, the product that gives low contribution may be eliminated. The optimum product-mix can be determined with the help of P.V. Ratio and break-even point also. The best product-mix would be that which increases P.V. ratio or which reduces break-even point.

LEASE OR BUY:

Sometime a question arises whether it is better to buy an asset or to take it on lease. Three points must be considered in this regard:

(1) Comparing costs of both alternatives
(2) Liquidity of business
(3) The risk of obsolescence arising on buying an asset.

9.3.1 Sales Volume Related Decisions

Such decision cover mainly, acceptance of special/extra sales orders.

Special Orders

Sometimes it may happen that some special orders may generate, which requires modifications in the normal terms. These special orders may demand some special prices. Such orders can be accepted if the capacity exists and acceptance of such

order do not affect the normal existing sale. One decision-situation relates 'to increase in sales volume outside the normal marketing pattern. Typical examples of such types of sales are acceptance of special orders, one-time quantity sale, and sales to foreign customers. If such special sales do not affect the normal sales, the accept-reject decision would be based on the incremental contribution. In case, the special sale would affect the future sales volume and/or selling price, the opportunity cost in terms of lost revenue will also be relevant to the decision-making.

9.3.2 Sell Now or Process Further Decisions

Certain articles are of such nature which requires further processing. Such further processing should be carried on or the articles be sold right now, is decided under this decision. When an item of production passes through various processes, it is saleable at different stages/points, that is, at various physical stages of production. In deciding at what stage to sell the product, the two critical variables are: (i) Identification of sunk costs and (ii) Calculation of incremental returns at various sales alternatives. All costs, whether fixed or variable, incurred before the sell or process further point, should be treated as sunk, and therefore, irrelevant costs. The incremental return relevant to the decision is the difference between the costs that are incurred beyond the decision point and the revenues. If, however, the fixed resources would remain idle as a result of not processing the product further, and if they could be diverted to some other use, *opportunity cost* would also become relevant to the decision analysis.

9.3.3 Make or Buy Decisions

Sometimes it may happen that the product or the part of the product, which is manufactured by the manufacturer can be bought from the outside market. Such decision of manufactureing or buying the product will involve many qualitative and quantitative considerations. Many firms have to choose between manufacturing certain components themselves or acquiring them from outside suppliers. Incremental analysis provides solution to this kind of decision-problems too. The relevant input' information is the committed/avoidable costs if the firm has adequate idle capacity to make the components because the firm would not be required to incur fixed costs to produce the components. If, however, there is need to enlarge the capacity of existing plant, or the existing capacity of the plant is diverted for the production of the components, opportunity cost in terms of lost contribution will be relevant to the decision analysis.

The following points have to be considered while making this decision:

(1) It has to be seen whether the firm has spare capacity to make the part of raw materials required. It has also to be considered whether the spare capacity can be put to any other more profitable use.

When the firm decides to make its component parts, it does not remain dependent on its supplies or distributors e.g. when there is a strike in supplier's factory, it does not affect the production programme of the firm. Secondly, when it makes its own parts, it not only gets profit form its main activities, but it also gets the profit form manufacturing the parts.

(2) Before the firm decides to make the part in its own factory, it must consider the element of risk involved. It must be satisfied that there would be a saving in cost and at the same time the quality of the ultimate product must be maintained. It must also be sore that it will be able to produce the part in sufficient quantity, as it has to complete with its own suppliers and they would not supply the parts in case of need.

(3) The cost to manufacturing the part is an important consideration. Generally, the purchase price of outside supplier must be compared with the marginal cost of manufacturing the part. So far as the variable cost is less than the purchase price, it would be profitable to make in the factory.

(4) It must also be considered whether the idle capacity can be put to any other profitable use. It may be found that a new market can be developed and the current product can be sold there, for which the unused capacity can be utilised.

(5) The additional fixed costs which would be incurred when the part is to be manufactured must also be considered. For example, the number of supervisor may have to be increased or selling and administrative overheads may increase; more person may have to be appointed in the accounts department. This suggests that all additional costs that will have to be incurred for manufacturing the part must be considered.

(6) Another factor that has a bearing on this decision is the additional capital investment that must be made. It may be that additional production facilities may have to be installed the factory has to be extended, the new machines or equipments have to be purchased. This would lead to consideration of additional capital investment. The return on additional investment must be taken into account while comparing the cost with purchase price. If the return is found to be satisfactory, then a decision to manufacture it should be take.

(7) Sometimes, some non-cost factors have also to be considered besides marginal cost. In order to maintain business secret, a part though cheaply available may be make in the factory.

When to make the parts, though available cheaper outside: In the following circumstances, the component part should be made in the factory, even though it is cheaply available from outside suppliers.

(1) When the quality of the ultimate product may depend upon the quality of the parts, it would be better to make it, so that the firm has not to depend on the mercy of the supplier for maintaining the quality of its product.

(2) When the supply of part is not dependable and the production may be interrupted due to short supply of parts e.g. there may be transport difficulties. In such a case, the part has to be made in the factory to ensure continuous flow of production.

(3) When the management wants to keep its design or process as a trade

secret and does not want to pass that secret to the supplier.

When the part must be purchased though price is high:

In certain circumstances, the part can be manufactured cheaply in the factory, yet the management decides to buy it form outside:

(1) When the quantity of parts required is small.

(2) When the supply from outside sources is regularly available.

(3) When special technique may be required to manufacture the part. Skilled workers are not easily available.

(4) When a more profitable alternative is available to use the spare capacity.

(5) When the capital required for manufacturing part is not available in sufficient quantum.

(6) When the management feels that during busy season or during crisis, the regular supply is available. This would happen when good relation are maintained with the suppliers.

9.3.4 Addition/Elimination of Product Lines /Divisions /Shifts /Departments

Sometimes circumstances may demand the decision regarding whether a particular product or devision or even a department be eliminated or continued. When, a firm is divided into multiple sales outlets, product lines, divisions, departments (segments), it may have to evaluate their individual performances to decide whether or not to continue operations of each of these segments or add a new segment. The decision criterion would be the *segment margin.* The segment margin equals segment's contribution margin less fixed costs that are directly traceable to that segment.

DROPPING A PRODUCT-LINE:

When a company is manufacturing two or more products and one of them may appear to be unprofitable, the management may take the decision to discontinue the production of that item. In that case, the accountant should prepare a statement showing effects of the decision on the future profits of various products. If the overall profit increase due to dropping of a product, the decision should be taken to drop that produt.

9.3.5 Short-Term Use of Scarce Resources

Sometimes it may be possible that various uses may be available for scarce resources. The decision in such situation demands the use of scarce resources in best possible manner. Incremental analysis can also be used to allocate resources that are limited in quantity (key factory). This requires that alternative courses of action be compared in a way that takes resource availability into account. The decision criterion in such a situation is the contribution margin per unit of the key factor. This will maximise the total contribution of the firm.

9.3.6 Joint Outputs of Common Processing Operations

A decision-situation faced by the management is whether to sell joint outputs at the split-off point or process them further. The decision-criterion should be to choose the alternative, which will maximise the total contribution 'of the various joint products to the common processing costs. As the common processing costs before the split-off point are sunk costs, that have already been incurred to create the joint products, they are irrelevant and will not be considered in decision-making. The only relevant costs will be the additional common processing costs. A related short-term decision involves selecting an alternative processing plan for joint products when the proportions of the outputs (sales-mix) from the common processing costs can be varied.

9.3.7 Operate or Shut Down

Sometimes due to continious loss or any other reason the situation may demand the complete shut down of the operation. In this situation by considering various cost and non cost factor the decision is required to be taken whether the operation is required to be closed down or continued.

Shut-Down Decisions:

Besides the costs, other factors have also to be considered:

(1) To maintain the skilled worker, it would be better to continue the business, even though enough contribution is not available. This would be the case where skilled worker are essential for carrying on business operations. If the worker are relieved it would be difficult to get skilled worker when business restarts.

(2) Desire of management to keep the product before the public. If the production is suspended, the product would be lost form public memory and when the business restarts, it would take heavy expenditure on advertisement. This would the case when the product is sold under trade mark or brand name. In such a case, the operations are to be continued even though contribution is very insufficient and loss may be treated as advertisement cost.

(3) The possibility of machine and equipments becoming obsolete has also to be considered. Where fast technological change are taking place, the machine will become obsolete within a short time. This cost has also to be considered as shut down cost.

(4) Certain specific costs of certain industries are also relevant in taking this decision. For example, in iron and steel industry, it takes days to close down the furnace and also to restart it.

(5) Reputation of the firm may be adversely affected in the eyes or the public. They would think that the firm is not dependable and would turn to competitors products.

(6) It may adversely affect the relationship with the suppliers. On the basis of the demand of the firm, the suppliers would have extended the facilities, which may remain idle, involving the supplier into a great loss.

(7) When business is suspended it may be that the customers may not pay their dues. It will take a great deal of efforts to collect dues form them.

9.4 Practical:

1. Manish Ltd. decides to effect a 10% reduction in the price of its product because it is felt that such a step may lead to a greater volume of sales.

It is anticipated that there are no prospects of a change in total fixed costs and variable costs per unit. The directors wish to maintain net profits at the present level.

The following information has been obtained from its books :

Sales: 10,000 units Rs. 2,00,000

Variable costs : Rs. 15 per unit

Fixed costs 40,000

How would management proceed to implement this decision ?

Solution:

Present Profit:

Sales	Rs, 2,00,000
Less : Variable costs	1,50,00
Contribution	50,000
Less : Fixed costs	40,000
Profit	10,000

Future contribution per unit :

Selling price	Rs. 18
Less : Variable cost	15
Contribution per unit	3

Volume of sales for desired profit = $\frac{\text{Fixed costs 4-Desired profit}}{\text{Contribution per unit}} \times$ S.P. per unit

= (40,000+10,000)/3 = × 18

=Rs. 3,00,000

Units to be sold =16,667

The management should reduce the selling price only when it is sure of increasing sales by 6,667 units.

2. With a view to increase the volume of sales, marketing manager has in mind a proposal to reduce tb.2 price of its product by 20%. No change in total fixed costs or variable costs per unit is estimated. The directors, however, desire the present level of profit to be maintained.

The following information has been provided :

Sales 50,000 units Rs. 5,00,000

Variable costs Rs. 5 per unit

Fixed costs 50,000

Advise management on the basis of the various calculations made from the data given

Solution: **Marginal Cost Statement**

1.	Sales	Rs. 5,00,000
2.	Variable costs	2,50,000
3.	Contribution (1 - 2)	2,50,000
4.	Fixed costs	50,000
5	Profit (3-4)	2,00,000

Present profit/volume ratio:

= (Contribution/ sales) × 100

= (2,50,000/50,00,000) × 100 = 50%

Future profit/volume ratio :

= (Contribution per unit/Selling price per unit) × 100

= (3/8) × 100 = 37.50%

3. The budgeted results for Amitabh Ltd. include the following:

			Rs. in lakhs	*Variable cost as % of sales value*
Sales:	Product	*A*	60	50%
	"	*B*	50	60%
	"	*C*	80	65%
	"	*D*	40	80%
	"	*E*	30	70%
			260	

Fixed overheads for the period Rs. 100.00 lakhs.

You are required to *(a)* prepare a statement showing the amount of loss expected, (b) assuming that the sale of only one product can be increased at a time, you are asked to recommend a change in the sales volume of each product which will eliminate the expected loss.

Solution: Statement showing the amount of contribution and expected loss

Product	*Sales Rs.*	*Ratio of variable cost to sales*	*Variable cost Rs.*	*Contribution as % of sales*	*Contribution in Rs.*
A	60,00,000	50%	30,00,000	50%	30,00,000
B	50,00,000	60%	30,00,000	40%	20,00,000
C	80,00,000	65%	52,00,000	35%	28,00,000
D	40,00,000	80%	32,00,000	20%	8,00,000
E	30,00,000	70%	21,00,000	30%	9,00,000
Total	2,60,00,000		1,65,00,000		95,00,000
	Contribution at present level of activity				95,00,000
	Total fixed expenses				1,00,00,000
	Loss				5,00,000

Additional sales required to break-even, assuming sales of only one product is increased at a time, to give the additional contribution of Rs. 5,00,000, is calculated as follows:

Sales required = Under-recovery of fixed overheads/(P/V Ratio of the product)

Product A	5,00,000	Rs. 10,00,000
	50%	
B	5,00,000	12,51,000
	40%	
C	5,00,000	14,28,571
	35%	
D	5,00,000	25,00,000
	20%	
E	5,00,000	16,66,667
	30%	

The company should utilize the spare capacity available for Product *'A'* to achieve maximum profitability as its P/V Ratio is highest. Fixed costs remaining the same at every level of production, this combination will lead to maximum profitability.

5. The following details have been furnished to you regarding two proposals which are for consideration before a firm.

(a) Improvement in the quality of the product, which will result in an additional sales of 5,000 units at the existing price. However, this improvement in quality will result in increase in the variable cost by 10 paise per unit.

(b) Reduction in the selling price of the product by 12 paise per unit. This will push up sales by 5,000 units.

In both cases the fixed expenses will increase by 1,000.

The present sales of the firm is 10,000 units at the rate of Rs. 2 10 per unit. The variable cost is Rs. 1.60 per unit and the total fixed costs are Rs. 3,000.

You are required to state whether it will be appropriate for the firm to select any of the new proposals or should it continue with the existing scheme.

Solution:

	Present case	*Proposed case*	
		(a)	(b)
Expected sales units	10,000	15,000	15,000
Selling price (Rs.)	2.10	2.10	1.98
Variable cost (Rs.)	1.60	1.70	1.60
Contribution (Rs.)	0.50	0.40	0.38
Total contribution (Rs.)	5,000	6,000	5,700
Fixed expenses (Rs.)	3,000	4,000	4,fOO
Profit (Rs.)	2,000	2,000	1,700

The above analysis shows that it will be appropriate to continue with the status quo. However, if there is a possibility of increasing the selling price in future, proposal (a) may be considered.

6. At present the operations of Marks Ltd. are mainly manual. Under the present method of production, the business shows a let income of Rs. 1,000 per month at maximum production capacity as thus:

Sales Revenue	Rs. 10,000
Variable costs to make and sell	Rs. 8,000
Contribution	Rs. 2,000
Fixed costs to make and sell	Rs. 1,000
	Rs. 1,000

Sale volume can be increased by at least 50 per cent if production capacity permitted.

Under consideration is a plan to double the production capacity by substituting machinery for manual labour. In case the plan is adopted, fixed costs would be increased by Rs. 6.000 per month and variables costs would be reduced by 75 per cent.

You are required to give—

(i) calculations of all costs involved in and the profitability of the proposed change in manufacturing operations; and

(ii) arguments for and against the proposed change based on the calculations made.

Solution

(i) Computation of Cost and Profit under the proposed change..

		Rs.
Sales (i)		20,000
Variables costs to make and sell (8,000 × 2 × 1/4)		4,000
Fixed costs to make and sell (1,000 + 6.000)		7.000
	(ii)	11,000
Profit *(i)* - (it)		9,000

(ii) The profit will increase nine times as compared to the present profit in case the capacity is doubled presuming that selling price per unit will remains unchanged. Hence it is advisible to go for the proposed change provided the benefit is to continue for a sufficiently long period to cover subsequent annual depreciatior and interest costs.

7. Jay Bharat Ltd produces high quality balls. It has received an offer from a sports store to buy 10,000 balls at R.10 per ball. The store would sell the ball for Rs.13 each which is Rs.5 less than is normally charged by dealers selling the company's product. It is promised by the owner of the store that he would not disclose the maker's name.

The company can produce 1,00,000 balls per year. Planned results for the coming years without considering the order from the store are as follows :

Sales (80,000 balls @ 12 per ball)	Rs.9,60,000
Cost of goods sold (80,000) balls @ 7 per ball)	Rs.5,60,000
Gross profit	4,00,000
Selling and administrative expenses (all fixed)	2,50,000
Income	1,50,000

Cost of goods sold contains variable cost of Rs.5 per ball. It is estimated that variable cost of printing the name on the ball is Rs.0.25 per ball.

You are required to advise whether the company should accept the offer or not. will your answer change if the seller's name is to appear on the ball to be sold by the store ?

Solution

Increment Analysis (accept special offer or not)

Particulars	Amount
Increase in sales revenue (10,000 X Rs.10)	Rs.1,00,000
Less variable costs (Rs.4.75 X 10,000)	47,500
Incremental profit	52,500

The offer should be accepted. the firm has enough capacity to make the balls and the incremental revenues exceed the incremental cost.

The answer may or may not change, but the factors that must be considered is whether regular sales would be affected if customers come to know that they could buy the balls at Rs.13 instead of Rs.18 per ball. It may be contended that the maximum loss might be 10,000 balls, the number that the store would sell, as a result of which planned sales would decrease by 10,000 balls to 70,000. In that case, the firm would suffer a loss of Rs.20,000 by accepting the offer. Sales revenue of 10,000 balls @ 12 per ball was 1,20,000 Instead of selling to the store. the company would get Rs.1,00,000 (10,000 X Rs.10). Moreover, there could be some ill will among customers affecting thus. future sales.

8. Sunrise Ltd makes ready made shirts (of one male size). Revenue and cost date relating to the coming years are given below :

Sales (9,000 shirts @ Rs 100 per shirt)	Rs.9,00,000
Cost of sales	6,40,000
Gross profit	2,60,000
Selling and administrative expenses	1,50,000
Income	1,10,000

The firm has a capacity to make 10,000 shirts per year. The fixed costs included in the cost of goods sold are Rs.1,00,000. The only variable selling, general and administrative expenses are : 4 per cent sales commission. and Rs. 2 per shirt paid to the designer.

A chain store manager has approached the sales manager of Nonwhite Ltd offering to by 1,000 shirts at Rs.70 per shirt. The sales manager believes that accepting this offer would result in a loss because the average cost of a shirt is higher than Rs. 70. He feels that a loss would still result. even if sales commission would not be paid on the sales order. The designer has agreed to waive 50 per cent of his fee on any number of shirts sold to such a store.

(i) Tender you advice to the sales manager of Nonwhite Ltd.

(ii) Suppose that the order was for 2,500 instead of 1,000 shirts, what would by your advice ?

(iii) assuming the same facts as in part (ii), what is the lowest price that the firm would accept and still earn Rs.1,10,000?

Solution

(I) incremental analysis Approach (accept special offer or not : 1,000 shirts)

Particulars		**Amount**
Increase in sales revenue (1,000 X Rs. 70)		Rs. 70,000
Less incremental costs :		
Variable cost (1,000 x Rs. 60)*	Rs. 60,000	
Designer's fees (1,000 X Rs. 1)	1,000	61,000
Incremental profit		**9,000**

*(Rs 6,40,000 - Rs. 1,00,000) - 9,000

The sales manager is advised to accept the offer as it yields additional income of 9,000

(ii) Special offer : 2,500 shirts

Additional contribution (2,500 X Rs. 9)		Rs. 22,500
Less lost profit contribution (1,500 x Rs.34) on regular sales of 1,500 Units (regular sales would be 9,000 - 1,500 = 7,500 shirts)@ 34 per unit arrived as follows :		51,000
Selling price	Rs. 100	
Less : variable making cost	60	
Sales commission	4	
Designer's fees	2	
	34	
Decrease in contribution		Rs. 28,500

The firm's income would be less by Rs.28,500. The sales manager should not accept this offer.

(iii) Computation of the lowest price

Sales price (offered)	Rs. 70.00

Add additional contribution required to be earned so that profit level is maintained : Rs.28,500 from 2,500 units to be sold: increase in sales price per shirrs is (Rs. 28,500 - 2,500) 11.40
The lowest price for accepting the offer of 2,500 shirts 81.40

9.5 PRACTICAL EXERCISE:

1. The following cost and other date apply to two component parts used by Yak Ltd

Particulars	Part X	Part Y
Direct material	Rs.0.80	Rs. 16.00
Direct labour	2.00	9.40
Overheads	8.00	4.00
Unit cost	10.80	29.40
Unit needed per year	6,000	8,000
Machine-hours per unit	2	1
Unit cost, if purchased	10	30

The company hitherto has been manufacturing all its required components. However, in the current years, only 14,000 hours of otherwise idle maching time can be devoted to the production of components. accordingly. some of the parts must be purchased from outside suppliers. In producing parts, overhead is applied at Rs. 4 per machine-hour. fixed capacity costs, which will not be affected by any make or buy decision, represent 70 per cent of the applied overhead.

1. Assuming that the 14,000 hours of available machine time are to be schedule so that the company realizes maximum potential cost savings, determine the relevant production cost that should be considered in the decision to schedule machine time.
2. Compute the number of units that Yak Ltd should produce if it allocates the machine time on the basis of the potential cost savings per machine-hour.

2. Scope Ltd is engaged in producing a variety of precision instruments and other specialized electric components. The company is presently following a policy of pricing all of its products at 150 per cent of the total variable costs to produce and sell them. Because of the specialized nature of these products, this has proved to be a useful pricing policy.

Recently, the government invited tender for 1,000 electric components to be used at the TV station. The company's management is exploring the possibility of the firm entering into a Government contract. The management accountant has prepared the following cost estimates for the purpose:

Direct material	Rs. 8,00,000
Direct labour	5,50,000
Variable overheads	2,25,000

Fixed manufacturing overheads	3,00,000
Production set-up costs	1,25,000
Special tools and dyes	3,00,000
Total costs	23,00,000
Unit cost (Rs.23,00,000 - 1,000 Units) :	2,300

The Government requires delivery of all 1,000 units within one year. In order to meet that schedule, the company would have to forego a regular sales order of value of Rs.22,50,000.

You are required to state the lowest price the company could bid on the contract for the components without sacrificing short-run profit. State your assumptions, if any.

3. Saurin Ltd produces a single product. Its maximum annual production capacity is 4,80,000 labour-hours. Currently. it is producing at an annual rate of 3,75,000 labour-hours. Normal volume (the basis of absorption of fixed overhead) is 4,50,000 hours.

The company has received an offer of 70,000 such units at a special price of Rs 12 unit. The regular selling price is Rs.15 per unit. the standard cost sheet for one unit of the product is as follows:

Direct materials (10 kgs @ Rs. 0.50)	Rs. 5.00
Direct labour (1.5 hours @ Rs 2)	3.00
Variable overheads (1.5 hours @ Rs. 2)	3.00
Fixed overheads (1.5 hours @ Rs 1)	1.50
	12.50

In the short run. would it be profitable to accept the offer?

4.Prakash Ltd. having an installed capacity of 1,00,000 units of a product, is currently operating at 70 per cent utilization. At current levels of input prices, the FOB unit cost (after taking credit for applicable export incentives) works out as follows:

Capacity utillsation (per cent)	FOB unit costs
70	Rs.97
80	92
90	87
100	82

The company has received 3 foreign offers from different sources: A. 5,000 units at Rs.55 per unit FOB; B, 10,000 units at Rs 52 per unit FOB; and C, 10,000 units at Rs 51 per unit FOB. advise the company as to whether any. or all, export orders should be accepted or not.

5. Ketul Ltd manufactures a single product which sells at Rs 5 per unit. The variable cost of this product is Rs. 3.5 per unit. and at present the fixed expenses of the organization are Rs.1,00,000 per year, with a maximum capacity of 2,00,000 units per annum.

Capacity can be increased in stages by making changes which will increase the annual fixed costs of the business as follows:

(i) At 2,00,000 units per annum, the addition of Rs.20,000 per annum fixed charges will increase capacity to 3,00,000 units per annum.

(ii) At 3,00,000 units per annum, the addition of a further Rs 40,000 per annum fixed charges will increase capacity to 4,00,000 units per annum.

(iii) At 4,00,000 units per annum. the addition of a still further Rs. 60,000 per annum fixed charges will increase capacity to 5,00,000 units per annum.

Sales beyond 4,00,000 units per annum can be achieved only if the selling price of the product is reduced to Rs 4.8 per unit. It is estimated that maximum demand is 5,00,000 units per annum.

You are required to make recommendations to management in respect of each addition to capacity.

6. Paulomi Ltd. is considering a contract, which will require among other inputs, 150 kg. of material M. 160 kg. of material M are in stock which were purchased for Rs. 1.60 per kg. The replacement price of M is Rs. 1.75 per kg. The material is in stock as a result of a buying error and the company has no other use for it. If not used on this contract, it would be sold for Rs. 1.20 per kg.

What is the *relevant cost* of the material to be used in this contract?

7. A machine which originally cost Rs. 12,000 has an estimated life of 10 years and is depreciated at the rate of Rs. 1,200 per year. It has been unused for sometime, however, as expected production orders did not materialise.

A special order has now been received which would require the use of the machine for two months.

The current net realisable value of the machine is Rs. 8,000. If it is used for the job, its value is expected to fall to Rs. 7,500. The net book value of the machine is Rs. 8,400. Routine maintenance of the machine currently costs Rs. 40 per month. With use, the cost of maintenance and repairs would increase to Rs. 60 per month.

What would be the *relevant cost and irrelavant cost* of using the machine for the order, so that it can be charged at the minimum price for the order ?

8. A company bought a machine for Rs. *5* lacs on which it pays interest at 12% p.a. to the bank and charges depreciation of Rs. 50,000 p.a. on it. The company produces two products A and B, the variable costs of which are Rs. 20 and Rs. 10 respectively and their selling prices are Rs. 40 and Rs. 14 respy. The output and sales of both are 10,000 and 20,000 units respy. Other fixed charges are Rs. 40,000 p.a. The management is considering closing down the production of B, because it is making loss.

Advise the management.

9 A company manufactures two products A and B for which certain material used is in short supply, (i.e. material is a key factor). According to production capacity of the factory 4,000 units of A and 2,000 units of B can be manufactured. For manufacture of 1 unit of A, 10 kgs. of raw material is used and for 1 unit of B, 8 kgs of raw-material is used. Total raw material available is 44,000 kgs. Selling price per unit of A is Rs. 80 and per unit of B is Rs. 60. Variable expenses per unit in respect of both products are Rs. 55 and Rs. 30 respectively.

How many units of both the products should be manufactured to get maximum profit?

10 A company manufactures two products 'O' and 'P'. The following details relate to two products:

	'O'	'P'
Sale Price	Rs. 145	Rs. 98
Direct Material	Rs. 50	Rs. 40
Direct Labour Hours (Wage rate Re. 1 per hour)	25 hours	10 hours
Variable Overhead	80% of Direct-wages	80% of Direct-wages

Total Fixed Overhead Rs. 5,000.

If the labour is in short supply, then production of which product is profitable? If the production capacity of factory is 1,000 units of 'O' and 2,000 units of 'P' and the 40,000 labour hours are available, then how much of each product should be manufactured to get the maximum profit?

11 The cost of manufacturing a part is given below (on the basis of production of 1,00,000 units).

	Cost Per Unit Rs.
Direct Material Cost	
Part purchased from outside	20.00
Other Materials	4.00
Direct Wages	6.00
Variable Overheads	4.00
Fixed Overheads (Total Rs. 40 lakhs)	40.00
Total Cost	Rs. 74.00

The company is operating at 80 per cent capacity and it will not be making any other use of balance of 20 per cent capacity in future. Hence, it contemplates to manufacture a part of the above product, which it purchases from outside. The estimated cost of the part is as under:

Direct Materials	Rs. 4
Direct Wages	Rs. 7
Variable Overheads	Rs. 3
Fixed Costs (20% of Rs. 40 lakhs)	Rs. 8
	Rs. 22

Should the company make the part or buy it from outside?

12 The directors of Asish Ltd. .are considering the sales budget for the next budget period. You are required to present to the board a statement showing the marginal cost of each product and to recommend which of the following sales mixes should be adopted :

(1) 1,350 units of A and 900 units of B

(2) 2,700 units of A only

(3) 1,800 units of B only

(1) 1,800 units of A and 600 units of B

(2) You ascertain the following information:

	Product A	Product B
Fixed Overheads: Rs. 10,000 per year;		
Direct Labour at 50 paise per hour	20 hours	30 hours
Variable Costs: 100% of wages		
Direct Material	Rs. 20	Rs. 25
Selling Price	Rs. 60	Rs. 100

13 Anjali Ltd. had purchased a machine two years ago at a cost of, Rs. 70,000. The equipment has no salvage value at the end of its useful life estimated at 7 years and the company charges depreciation according to straight-line method. If the machine is disposed of today, it will not realise anything.

The management learns that a new machine can be purchased at a cost of Rs. 1,00,000 to do the same job and having an expected economic life of 5 years without any salvage value. The advantage of the new machine lies in its greater operating efficiency, which will reduce the variable operating expenses from the present level of Rs. 2,40,000 to Rs. 1,80,000 per annum. The sales volume is expected to continue at Rs. 3 lakhs per annum for the next 5 years.

You are required to state on the basis of above information whether the old machine should be continued or the new machine should be purchase.

14. (a) What are the specific cost and non-cost factors to be considered in the make of buy decisions ?

(b) Alkesh Ltd. manufacturers automobile accessories and parts. The following are the total costs of processing 1,00,000 units :

Direct material cost	Rs. 5 lakhs
Direct labour cost	Rs. 8 lakhs
Variable factory overhead	Rs.-6 lakhs
Fixed factory overhead	Rs.- 5 lakhs.

The purchase price of the component is Rs. 22. The fixed overhead would continue to be incurred even when the component is bought from outside, although there would have been reduction to the extent of Rs. 2,00,000.

Required—*(a)* Should the part be made or bought considering that the present facility when released following a buying decision would remain idle ?

(b) In case the released capacity can be rented out to another manufacturer for Rs. 1,50,000 having good demand, what should be the decision ?

15. Kartavya Ltd. uses three different components (materials) in manufacturing its primary product. Stoner manufactures two of the components and purchases one (designated as Component 1) from outside suppliers. The Company is currently developing the annual profit plan. Sales are highly seasonal, Component 2 cannot be acquired from outsiders; however Component 3 can be purchased. The three Components have critical specifications. The annual profit plan provided data for the following computations :

	Component 3 unit cost (at 12,000 units)
Material (direct)	Rs. 1.40
Labour (direct)	2.20
Fixed overhead (apportioned)	0.40
Annual machine rental	
(special machine used only far Component 3)	0.50
Variable factory overhead	1.00
Average storage cost per year (fixed)	0.40
Total	5.90

Average inventory level 500 units.

The purchase manager investigated outside suppliers and found one that would sign a one year contract to deliver "12,000 top quality units as needed during the year at Rs. 5.20 per unit". Serious consideration is being given to this alternative. Should Stoner make or buy Component 3 ? Explain the relevant factors influencing your decision.

16. Hitesh Ltd., has an annual production of 90,000 units for a motor component. The component cost structure is as below :

Materials	Rs. 270 per unit
Labour-25% fixed	180 per unit
Expenses :	
Variable	90 per unit
Fixed	135 per unit
	Total 675 per unit

(a) The purchase manager has an offer from a supplier who is willing to supply the component at Rs. 540. Should the component be purchased and production stopped ?

(b) Assume the resources now used for this component's manufacture are to be used to produce another new product for which the selling price is Rs. 485.

In the latter case the material price will be Rs. 200 per unit. 90,000 units of this product can be produced at the same cost basis as above for labour and expenses. Discuss whether it would be advisable to divert the resources to manufacture that new product, on the footing that the component presently being produced would, instead of being produced, be purchased from the market.

17. Bholu Ltd. manufactures lighters. He sells his product at Rs. 20 each, and makes profit of Rs. *5 on* each lighter.

He worked 50 per cent of his machinery capacity at 50,000 lighters. The cost of each lighter is as under :

Direct material	**Rs. 6**
Wages	2
Works overhead	5 (50 per cent fixed)
Sales expenses	2 (25 per cent variable)

His anticipation for the next year is that the cost will go up as under :

Fixed charges	10%
Direct labour	20%
Material	5%

There will not be any change in selling price.

There is an additional order for 20,000 lighters in the next year.

What is the lowest rate he can quote so that he can earn the same profit as the current year ?

18. Ramrajya Ltd. has undertaken to hire certain plant and machinery at a cost of Rs. 50,000 for the quarter ending 31st March 1993 and the rent has already been paid in advance. The company produces large scale equipment on order. A customer has offered to pay Rs. 80,000 for a special job which will incur a material cost of Rs. 10,000 and a labour cost of Rs. 40,000. Labour can be hired casually as required. The market for large scale equipment is badly depressed and it is most unlikely that any other order will be forthcoming. There are no alternative uses for plant and machinery. It is to be assumed that no other cost exists, (a) Should the company accept the order? *(b)* In the next quarter company does not hire the plant and machinery and the customer repeats the order. How should the company negotiate with the customer now?

19. Sumitra Ltd. has decided to open a branch sales office. Clerical work connected with filing orders and billing customers will be done in this office and the company is studying various possible methods for accomplishing this work in order to find the

most economical one. The following two methods are for consideration:

	MethodA	*Method B*
Cost of Equipment (*A* — Manual; *B* — Automatic)	Rs. 2,000	Rs. 15,000
Life (years)	10	10
Repairs and maintenance per annum	50	100
No. of clerks required	3	2
Annual salaries of each clerk/ machines operator	3,000	3,500

In case of Method *A*, any increase over present volume of work will require an additional clerk. The cost of .supplies is Rs. 100 p.a. In case of Method *B* two clerks can handle double the present volume of work and the only added expenses will be for additional paper, forms and similar supplies. Rate of interest is 8% on the average amount invested in the equipment during its expected life.

20. You are \he Management Auditor of Navin Ltd. The Managing Director of the company seeks your advice on the following problem: ,

The *XYZ* Ltd. produces a variety of products each having a number of component parts. Product *B* takes 5 hours to produce on a machine No. 99 working at full capacity. *B* has a selling price of Rs. 50 and a marginal cost of Rs. 30 per unit. *A-10* a component part could be made on the same machine in 2 hours for a marginal cost of Rs. 5 per unit. The supplier's price is Rs. 12.50 per unit. Should the company make or-buy *A-10* ? Assume that machine hour is the limiting factor.

21. Rustam Ltd., manufactures automobile accessories and parts. The following are the total costs as also the unit costs of processing a component: SSB 1,000:

	Cost element	*Total cost for 1,00,000 units*	*Unit cost*
1.	Direct material	Rs. 5,00,000	5
2.	Direct labour	Rs. 8,00,000	8
3.	Variable factory overhead	6,00,000	6
4.	Fixed factory overhead	5.00.000	5
		24.00.000	24

Another manufacturer has offered to sell the part to Rustam Ltd. for Rs. 22 each.

The fixed overhead would continue to be incurred even when the component is bought out although there would be a reduction to the extent of Rs. 1,50,000 following the savings in salaries of supervisory personnel that could be avoided if the company opts to 'Buy' rather than 'Make'.

9.6 Exercise

1.Explain relevant cost, differential cost, sunk cost, opportunity cost in decision making?

2.Explain make or buy decision in decision making?

3.Explain Sell or further process decision in decision making?

Unit : 10 : Responsibility Accounting

Introduction:

With the increase in the business and increase in the organizational structure, it has become necessary to decentralize the activities by allocating responsibilities to various people. With the increase volume of the business, it has become difficult for the owner of the business to make decision making in the business in centralized manner rather they are looking for decentralizing the activities. For the purposes, in an organization, various responsibility centers have arised. The head of the center is responsible only for the activities of his own center only. Through this chapter, we will study about the various responsibility centers and their workings.

Structure of the chapter:

10.1 Objectives:

By the end of this chapter, the student will learn about

- Meaning and objectives of responsibility centers
- Expense as a center under responsibility accounting
- Profit as a center under responsibility accounting
- Investment as a center under responsibility accounting

10.2 Meaning

"Responsibility accounting collects and reports planned and actual accounting information about the inputs and outputs of responsibility centres."

Responsibility Centres

'Responsibility centres' provide the basis for one such approach. A responsibility centre has been defined by the Chartered Institute of Management Accountants as 'a segment of the organisation where an individual manager is held responsible for the segment's performance'. There are three types of 'responsibility centre' – expense centres, profit centres, and investment centres:

- An expense centre is 'a location, function or items or equipment in respect of which controls may be ascertained and related to cost units for control purposes'
- A profit centre is 'a segment of the business entity by which both revenues are received and expenditures are caused or controlled. Such revenues and expenditure being used to evaluate segmental performance'.
- An investment centre is 'a profit centre in which inputs are measured in terms of expenses and outputs are measured in terms of revenues, and in which assets employed are also measured, the excess of revenues over expenditure then being employed'.

10.3 Objectives

There are three basic objectives for the purpose of responsibility accounting: (i) To determine the contribution of a division to the total organisation, (ii) To provide basis for evaluation of quality of performance, and (iii) To motivate, consistent with the basic goals of the organisation.

Determination of Contribution of a Division

Here, we shall check the effectiveness of the unit. Effectiveness is related to the goals of the organisation. Applied to responsibility accounting, it implies how well a responsibility centre contributes to the goals of the organisation. If a centre is not able to contribute what is expected of it, it is not effective. In determining the contribution of each responsibility centre to the organisation as a whole, both efficiency and effectiveness are relevant, that is, a responsibility centre should be both efficient and effective.

Evaluation of Quality of Performance

Responsibility accounting is used to measure the performance of managers and it, therefore, influences the way the managers behave. In discussing responsibility accounting, we must take behavioural considerations into account.

Could a valid distinction be made between the performance of a division as an entity and the personal performance of a divisional manager? The two may not be distinguishable in the long run. In the short term, however, a very useful and necessary distinction may be made. It is conceivable that a division may not have made a satisfactory contribution to the goals of the organisation. Yet the manager may be judged to have discharged his responsibility very well.

Motivation Consistent with Organisational Goals

Divisional performance measurement (responsibility accounting) should be designed in such a way that, in seeking to achieve their own goals, divisional managers will simultaneously work to achieve the goals of the firm. This can be ensured through a system of incentives, for example, bonus for good performance, and so on.

10.4 Types of Responsibility Centres

There are mainly three types of responsibility centers mainly: Expense/cost centre, Profit centre, and Investment centre.

10.4.1 Expense/Cost Centres

In an expense centre of responsibility, the accounting system records only the cost incurred in/by the centre/division/unit but the revenues earned (output) are excluded. Staled differently, an expense centre is a segment whose financial performance is measured in terms of cost. The incremental cost would include both variable and fixed costs but would exclude costs common to several divisions and allocated among them on some arbitrary basis.

Here, the performance will be measured by compring actual data with the budgeted data and the variance between the actual and the budget/standard/plan would be indicative of the efficiency of the division/divisional manager.

Suitability

The expense centre can be employed in some of the situations.

In several cases, the output (revenue) of a responsibility centre cannot be reliably measured in financial terms. Included in this category are centres such as legal departments, accounting departments. Each of these centres/divisions has a conceptually identifiable output—legal advice (legal department), reliable accounting reports (accounting department), Their outputs cannot obviously be expressed in monetary terms. The only measurable performance measure is their efficiency in the use of inputs. Thus, such divisions can be evaluated only as expense centres. In brief, *cost is a suitable measure of performance in staff units/divisions.*

Limitations

However, in general, an expense centre is not a useful basis of measuring performance of responsibility centres. This is mainly because it ignores output (revenues) measured in financial terms.

10.4.2 Profit Centres

"A profit centre is a responsibility centre in which inputs are measured in terms of expenses and outputs are measured in terms of revenues. Both the elements of accounting information—cost (input) and revenues (output) are considered. In other words, in a profit centre, the measure of performance is broader than in an expense centre because, in an expense centre the accounting system measures only one element (cost), whereas in a profit centre both the elements (cost as well as revenue) are measured in monetary terms. The difference between revenues and costs is profit.

Since in a profit centre there are financial measures of the output as well as of the input, it is possible to measure the effectiveness and efficiency of performance in financial terms. Profit analysis can be used as a basis for evaluating the performance of a division as an entity and/or for evaluating the performance of a divisional manager. A profit centre requires all of the data needed in an expense centre as well as additional data regarding revenues. Therefore, management can determine whether the division was efficient in the utilisation of resources and, whether the division was effective in attaining its objectives. This objective is presumably to earn a *satisfactory* "profit". The

criterion for a satisfactory profit may be budgeted profit/past profit in the division/profits of other similar divisions/some combination of two or more of these

Advantages

A profit centre, as a responsibility centre, is of considerable significance in measuring the performance of divisions/divisional managers.

Profit, defined as the differences between revenues and costs/expenses, is a combined measure of both effectiveness and efficiency.

Moreover, in profit centers managers can be expected to behave as if they were running their own business. For this reason, the profit centre is a good training ground for general management responsibility. If managers are responsible for both revenue and expense aspects of performance (profit centre), the contribution of each manager to the goal of the entire organisation is easier to measure than when no single manager is responsible for both revenues and expenses (expense centres).

Limitations

The profit centre approach also encounters certain problems mainly related with the transfer prices.

When internal exchange of goods and services take place between the different divisions of a firm, they have to be expressed in monetary terms. The monetary amount for these inter-divisional exchanges/ transfers is called the transfer price. The determination of an appropriate transfer price is one of the major problems of profit centres. The implication of the transfer price is that for the selling division (the division whose goods/services are being transferred) it is a source of revenue, whereas, for the buying division (the division which is receiving/acquiring the goods/services) it is an element of cost. It will, therefore, have a significant bearing on the revenues, costs, and profits of responsibility centres. Hence, the need for correct determination of transfer prices. The determination is, however, complicated because a wide variety of alternative methods are available. So, determination of transfer price may be considered as one of the biggest problem in profit center.

10.4.3 Investment Centres

The third type of responsibility centre is an investment centre. It is defined as a responsibility centre in which inputs are-measured in terms of cost/expenses and outputs are measured in terms of revenues and in which assets employed are also measured. The essence of investment centre analysis is the relationship between the profits and the assets that are used to generate those profits. Therefore, sometimes investment center is treated as an extension of profit center.

The investment centre analysis can be used as a basis for evaluating the contribution of a division as an entity as also the performance of a divisional manager. The measure of performance in an investment centre is based on the relationship between the profits/income, and the amount of assets employed in generating the profits. There are two ways to relate income to assets: Return on investment.

Return on Investment (ROI) Analysis

With reference to responsibility accounting, the ROI will be the return on investment. Symbolically,

ROI = profit contribution ÷ Segment resources/assets

The ROI is useful in evaluating the total earning power of all assets directly employed by a segment regardless of how they are financed. The net ROI is a better indicator of a division's ability to generate profit contributions in excess of the direct cost of financing its operations.

Advantages

There are several advantages in using ROI to measure divisional performance. In the first place, ROI is the generally accepted measure of overall performance. As a measure of divisional performance, it is consistent with a firm-wise rate of return analysis. It is also compatible with the common sense view that investments are made to achieve the goal of a desired rate of return.

10.5 Exercise

1. Describe the meaning of responsibility and objectives for creating responsibility centers?
2. Write a short note on expense or cost center of responsibility?
3. What are the advantages and limitation of cost center of responsibility?
4. Write a short note on profit center of responsibility?
5. What are the advantages and limitation of profit center of responsibility?
6. Write a short note of investment as a center of responsibility?
7. What are the advantages and limitation of investment center of responsibility?

Unit :11 : Budgets and Budgetary Controls

Introduction:

It is true that the future is uncertain and no one can predict the future. But, it is also true that the business should be run in such unpredictable situations. So, not a certain but reasonable estimates of the future course of actions can be made. Budgeting is an activity related with the predictions about the future activities. Different types of budgets are prepared in the business keeping in mind the actual situations of the business. These budgets will guide the owner in which direction he should run his business. During this chapter, the we will discuss about the preparation of various types of budgets and its usefulness in the business.

Structure of the chapter:

11.1 Objectives:

By the end of this chapter, the student will learn about

- Meaning of planning
- Meaning and essentials of budgeting
- Purposes for preparing budgets
- Various types of operating budgets
- Various types of financial budgets

11.2 Planning

Budgeting, as a tool of planning, is closely related to the broader system of planning in an organistion. Planning involves the specification of the basic objectives that the organisation will pursue and the fundamental policies that will guide it. In simple terms, planning means decideing something for the purpose of achievement.

11.3 Budget—Definition and Essential Elements

A budget is a plan expressed in quantitative, usually monetary term, covering a specific period of time, usually one year. In other words a budget is a systematic plan for the utilization of manpower and material resources.

In a business organization, a budget represents an estimate of future costs and revenues. Budgets may be divided into two basic classes: Capital Budgets and Operating Budgets.

Capital budgets are directed towards proposed expenditures for new projects and often require special financing. The operating budgets are directed towards achieving short-term operational goals of the organization, for instance, production or profit goals in a business firm. Operating budgets may be sub-divided into various departmental of functional budgets.

The main characteristics of a budget are:

1. It is prepared in advance and is derived from the long-term strategy of the organization.

2. It relates to future period for which objectives or goals have already been laid down.

It is expressed in quantitative form, physical or monetary units, or both.

Different types of budgets are prepared for different purposed e.g. Sales Budget, Production Budget, Administrative Expense Budget, Raw-material Budget etc. All these sectional budgets are afterwards integrated into a master budget, which represents an overall plan of the organization.

BUDGETARY CONTROL

No system of planning can be successful without having an effective and efficient system of control. Budgeting is closely connected with control. The exercise of control in the organization with the help of budgets is known as budgetary control. The process of budgetary control includes:

1. Preparation of various budgets.
2. Continuous comparison of actual performance with budgetary performance.
3. Revision of budgets in the light of changed circumstances.

A system of budgetary control should not become rigid. There should be enough scope of flexibility to provide for individual initiative and drive. Budgetary control is an important device for making the organization. More efficient on all fronts. It is an important tool for controlling costs and achieving the overall objectives.

11.4 Budgets—Purpose

The main objectives of budgeting are: (i) statement of expectations, (ii) Communication, (iii) Coordination, and (iv) framework for judging performance.

Statement of Expectations

A budget may also be treated as statement of expectations. A statement showing what is expected course of actions in future. It highlights firms long term ans short terms goals. A firm has the basic objective of optimising long-run profit. Its long-range goals also include survival, consumer satisfaction, employee welfare, personal power and prestige, and so on. These long-range objectives can be achieved in successive phases over a period of time. In other words, long-range objectives have to be split into short-term operational plans. Thus, a budget can be said to be a device to express goals which are sought to be achieved in a short period of time. In other words, it is a means to establish congruence between short-term goals and the long-term objectives of the firm. Therefore, budgets formulate targets of expected performance. The advantage is that by laying down targets, budgets contain an explicit statement of expectations. These targets help direct their operations, identify problems, help motivate lower-level employees and clarify the relationship between current activities and future policies. Another implication is that budgets explicitly state the underlying assumptions and goal and/or the means of attaining it. To illustrate, if the sales target (projected sales) for any given period is Rs 5,00,000, the budget will not only indicate this figure but will also give details about the assumed prices, quantity, sales efforts, and so on.

Communication

For the successful achievement of budgets it is necessary to be communicated to the down level employees. Unless the budgeted information is communicated to the down level employees, it will be difficult for the employees to known what is expected from them by the top management. Another purpose of budgeting is to communicate or inform others of the goals and methods selected by top management. Since budgeting deals with fundamental policies and objectives, it is prepared by top management. A formal budget by itself will not ensure that a firm's operations will be automatically geared to the achievement of the goals set in the budget. For this to happen, the managers and lower-level employees have to understand the goals and support them and coordinate their efforts to attain them. In other words, the employees should be aware well in advance of the level of performance expected of them. It is for this reason that a budget is viewed as a means of communicating to the employees the level of performance expected of them so that the goals set out in the budget can be accomplished.

Coordination

If a budget is not prepared or future course of actions are not determined for the departments then it may become difficult to coordinate the activities of different departments. If the activities are not coordinated then it may be possible that individually the results of each department may be proper but due to lack of coordination, the overall goals may not be achieved. The term "coordination" refers to the operation of all departments of an organisation in such a way that there is no

bottleneck or imbalance. In other words, coordination implies a harmonious relationship between various departments to ensure smooth and uninterrupted operation of each of them. If an organisation is to achieve its long-run goals, coordination in the activities of all its departments is necessary. If there is no coordination, imbalances will be created which will hinder smooth operation and stand in the way of the accomplishment of the goals of the budgets.

In view of the above, coordination is a major function of budgeting. Budgets should be drafted in such a way that the operations of the various departments are related to each other for the achievement of the overall goal.

Framework for Judging Performance

Budgets are prepared for the purpose of judging the performance of various employees and various departments. Actual performances are compared with the budgets to know the variations in the results. Finally, a budget establishes expectations as a framework for judging employees performances. A budget, as observed earlier, defines the goals, the means of implementing them and the level of performance by the employees. The extent to which employees have succeeded in the task assigned to them, can be judged on the basis of a comparison of the actual performance/achievement with the budget. If the actual performance equals or exceeds the budgeted level, it may be termed satisfactory, otherwise not. Thus, a budget can serve as a yardstick to judge employee performance or as a control device.

Budgeting, as a tool of planning and control, serves as a guide to conduct operations and a basis for evaluating actual results. Actual results can be judged satisfactory or unsatisfactory in the light of the relevant budgeted data and also in the light of changes in conditions. However, a budget should not be regarded as a rigid requirement of performance. Many of the factors upon which a budget is based are beyond the control of management and all of them are uncertain.

11.5 Preparation/Types of Budgets

Budgets may be mainly classified in the following categories: (i) Operating budgets, (ii) Financial budgets. Another classification of *budgets are*: (i) Fixed budget and (ii) Flexible budget.

11.5.1 Operating Budgets

Operating budgets relate to the physical activities/operations of a firm such as sales, production, purchasing, debtors collection and creditors payment schedules. In specific terms, an operating budget has the following components:

1. Sales budget,
2. Production budget,
3. Purchase budget,
4. Direct labour budget,
5. Manufacturing expenses budget, and
6. Administrative and selling expenses budget, and so on.

11.5.2 Financial Budgets

Financial budgets are concerned with expected cash receipts/disbursements,

financial position and results of operations. In other words, a financial budget has the following components:

1. Budgeted income statement,
2. Cash budget, and
3. Budgeted balance sheet.

Cash Budget: Liquidity is essential for running a business. The principal aim of the cash budget, as a tool of planning, is to ascertain whether, at any time, there is likely to be an excess or shortage of cash. The preparation of a cash budget involves various steps.

The first element of a cash budget is the selection of the period of time to be covered by the budget. The period coverage of a cash budget will differ from firm to firm depending upon its nature and the degree of accuracy with which the estimates can be made. As a general rule, the period selected should be neither too long nor too short. If it is too long, it is likely that the estimates will be upset as we cannot visualise them at the time of the preparation of the budget. If on the other hand, the time span is too small, the disadvantage are: (i) Failure to take into account important events which lie just beyond the period covered by the budget; (ii) Heavy workload in preparation; and (iii) Abnormal factors that may be operative.

The planning horizon of a cash budget should be determined in the light of the circumstances and requirements of a particular case. For instance, if the flows are expected to be stable and dependable, such a firm may prepare a cash budget covering a long period, say, a year and divide it into quarterly intervals. In the case of a firm whose flows are uncertain, a quarterly budget divided into monthly intervals may be appropriate.

The *second* element of the cash budget is the factors that have a bearing on cash flows. The items included in the cash budget are the cash items only, non-cash items such as *depreciation* are excluded. The factors that generate cash flow are generally divided, for purposes of constructing a cash budget, into two broad categories: (a) Operating and (b) Financial. While the former category includes cash flows generated by the operations of the firms and are known as the "operating cash flows," the latter consist of the "financial cash flows." The major components of the two types of cash flows are outlined below.

Operating Cash Flows

The main operating factors/items which generate cash outlfows and inflows over the time span of a cash budget are tabulated below.

Operating Cash Flow Items

Cash *inflows/Receipt*		*Cash outflows/Disbursements* j
1. Cash sales	1.	Accounts payable/Payable payments
2. Collection of accounts receivable	2.	Purchase of raw materials
3. Disposal of fixed assets	3.	Wages and salary (pay roll)
	4.	Factory expenses
	5.	Administrative and selling expenses
	6.	Maintenance expenses
	7.	Purchase of fixed assets

Financial Cash Flows The major financial factors/items affecting generation of cash flows are depicted below.

Financial Cash Flow Items

Cash Inflows/Receipts	*Cash outflows/Payments*
1. Loans/borrowings	1. Income tax/tax payments
2. Sale of securities	2. Redemption of loan
3. Interest received	3. Re-purchase of shares
4.. Dividend received	4. Interest paid
5. Rent received	5. Dividends paid
6. Refund of tax	
7. Issues of new shares and securities	

Flexible Budgets

The discussion of the *budgets* and its components in the preceding section was based on the assumption of fixed-level of activity. In other words, the budgets were related to a specific level of operation implying thereby that a firm can accurately and precisely forecast the level of its behaviour/operations in a given period of time. If the business environment is capable of accurate prediction, this approach to budgeting is likely to yield dependable results. If, however, changes take place during the budget period, the budget will serve no useful purpose. Such a budget is technically referred to as a fixed/static budget. In other words, budgets prepared at a single level of activity, with no prospect of modification in the light of the changed circumstances, are fixed or static budgets. The alternative to fixed budgets are flexible/variable/ sliding, budgets.

A flexible budget estimates costs at several levels of activity. The merit of a flexible budget is that instead of one estimate it contains several estimates/plans in different assumed circumstances. Since business activities cannot be accurately predicted as the business conditions/ environment are uncertain, it is useful tool in real business situations, that is, an unpredictable environment.

It may at the outset be noted that the construction of a flexible budget is similar to that of a fixed budget except in one respect. While the fixed budget is based on costs and other business operations/activities at *one* level, the flexible budget considers several alternatives/levels/volumes of activity. The term "volume/ level" of activity refers to the usage of capacity. In other words, volume/level of activity signifies the percentage use of capacity. Thus, the essence of a flexible budget is the presentation of estimated cost data in a manner that permits their determination at various levels of volume. This means that all costs must be identified as to how they behave with a change in volume—whether they vary or remain fixed. The conceptual framework of flexible budgeting, therefore, relates to: (i) Measure of volume and (ii) Cost behaviour identified with change in volume.

Measure of Volume The determination of volume may be one of the important activity for preparing flexible budget. Different departments may use different measures of volume. In the first place, the measure of volume may be expressed in terms of the activity or factor that causes costs to vary, for example, labour costs vary on the basis of number of hours worked, material costs vary due to quantity of materials consumed. Secondly, the volume measure should be related to factors controllable by management, that is, number of hours worked, the quantity of materials consumed and

number of machine-hours operated. In brief, volume should be expressed in terms of some unit of input, such as direct labour-hours, direct labour cost or machine-hours. The measure applied in any particular case will depend on the peculiarities.

Cost Behaviour with Change in Volume Three different types of cost behaviour can be visualised with changes in volume/level of activity: (i) Fixed costs, (ii) Variable costs, and (iii) Mixed costs.

Fixed Costs The fixed cost means the cost which remains fixed irrespective of number of units produced. The fixed costs are associated with inputs that do not fluctuate in response to changes in the total activity or output of the firm, within relevant range. They may also be called non-variable costs. They are normally fixed for a relevant range of volume but fluctuate beyond that range. Moreover, fixed costs are to be analysed in relation to a given period of time.

Fixed cost may be: (i) Committed and (ii) Discretionary. Fixed costs that are associated with the acquisition of capacity-producing assets are known as the committed fixed costs. The identifying characteristic of a committed cost is that its occurrence as well as amount are predetermined and can be altered only by another major decision to reverse or amend the earlier commitment. Also known as *managed costs*, discretionary costs result from management decisions. They are incurred as well as reduced at the discretion of the management.

Variable Costs Variable costs means the cost which varies with the changes in the level of output. The variable costs are costs that are assumed to fluctuate in direct proportion to production activity/sales activity/some other measure of volume. The level of variable costs at any volume can be estimated easily if the relationship between costs and volume is shown.

Mixed Costs It is also known as semi variable or semi fixed cost. It contains the charactaristcs of both the variable cost as well as fixed cost. Such cost remains fixed up to some level of activity and then after it varies with the level of output. The mixed costs are composed of both fixed and variable elements. The fixed part of mixed costs often represents a cost of capacity, while the variable element is influenced by changed in activity. For budgeting purposes, mixed costs must be broken down into their fixed and variable components/segments. Once this is done, the amount of fixed costs and the rate at which total variable costs change in proportion to total changes in output/volume can be worked out. That is, the fixed costs remain constant regardless of activity, but the variable portion is assumed to change in direct proportion to change in labour-hours, labour costs, machine-hours, material costs/material quantity, and so on.

Students should note that practical questions will be asked only for cash budgets and for other budgets only theoretical questions will be asked.

A Proforma of Various Budgets

Sales Budget for First Six Months of 1998

Product		January Rs.	February Rs.	March Rs.	April Rs.	May Rs.	June Rs.	Total Rs.
X_1	Units							
	Value							

	Wholesale
	Retail
	Area 1
	Area 1
	Area 3
X_2	Same as above
X_3	Same as above

Information needed to prepare a Sales Budget:

(1) price/demand relationships

(2) past seasonal trends

(3) current sales level

(4) sales representatives' reports

(5) market research, economic trends

Production Budget

Production Budget for First Six months of 1998 (units)

	January	February	March	April	May	Total
Closing stock						
Sales during month						
Less: Opening stock						
Completed prodn-reqd						

Materials Purchase Budget

Material Purchase Budget for the First Six Month of 1998

	A		B	
	kg	Rs.	kg	Rs.
January				
February				
March				
April				
May				
June				

Manpower Budget

Machining Department

Component	Quantity units	Hours per unit	Total hours
X1			
X_2			

X_3

X4

Manpower required = Total hours / Effective working hours per person

Similar proforma can be made, for 'Assembly Department'.

Machinery Utilisation Budget The procedure for calculating machine time requirements follows an identical pattern to that of the above manpower budget. The resultant information is used to determine if any new asset purchases are required after allowance has been made for downtime due to routine maintenance and breakdowns. This mirrors the allowances built into the manpower budget for sickness and holidays.

Production Cost Budget

Departmental Production Cost Budget for First Six Months 1998

Product	January Rs.	February Rs.	March Rs.	April Rs.	May Rs.	June Rs.	Total Rs.
Direct costs:							
Labour							
Materials							
Expenses							
Total direct costs							
Indirect costs:							
Labour							
Salaries							
Materials							
Expenses							
Depreciation							
Total indirect costs							
Total departmental costs							

Administration,

Selling and Distribution Cost Budgets

Administration, Selling and Distribution Cost Budget

	January	February	March	April	May
Sales quantity, '000 units					
Variable costs:	Amount (Rs.)				
Sales commission at 10%					
Vehicle fuel and servicing					

Fixed costs:	
Administration cost	
Basic salesman's salaries	
Advertising	
Office salaries	
Drivers' wages	
Vehicle standing charges	
Total budget	

Research and Development Budget Considering research and development as just another department and to budget for it in the same way as administrative, selling and distribution expenses

Master Budgets

Budgeted Profit and Loss Account for the First Six Months 1998

	January Rs.	Februar y Rs.	March Rs.	April Rs.	May Rs.	June Rs.	Total Rs.
Sales, (Rs.)							
Less:							
Direct labour							
Direct materials							
Direct expenses							
Production overheads							
Administration costs							
Selling costs							
Distribution costs							
Total costs							
Profit/(Loss)							

Budgeted Balance Sheet

Fixed assets	Rs.	Rs.
Current assets:		
Stocks and work-in-progress		
Debtors		
Bank balance and cash		
Less: Creditors due within one year		
Net current assets (working capital)		

Total net assets (capital employed)

Less: Creditors due after one year

Share capital and reserves

Statement of Sources and Application of Funds

Sources of funds:

Profit before tax

Add back: Depreciation Total cash generated from trading operations

Other sources:

Issue of new shares

New loan Total sources of funds

Less: Applications of funds: Payment of tax Payment of dividend Purchase of fixed assets

Increase in working capital:

Increase in stocks

Increase in debtors

Increase in creditors Movement in net liquid funds

Special Financial Budgets

Forecast Trading and Profit and Loss Account

	January Rs.	February Rs.	March Rs.	April Rs.	May Rs.	June Rs.	Total Rs.
Sales *Less:* Purchases Gross profit Wages Expenses Depreciation Net profit or (loss)							

Cash Budget

	January Rs.	February Rs.	March Rs.	April Rs.	May Rs.	June Rs.
Cash Receipts:						
Cash sales						
Credit sales						
net of discount						
Asset sales						
Total (A)						

Cash Payments:						
Purchases (net)						
Wages						
Expenses						
Rent						
Machinery						
Total (B)						
Monthly +/(-)						
Cumulative balance						

Capital Expenditure Budget

Category of Investment	Amount requested Rs.	Amount allocated
		Rs. %
Plant & Mach.		
Furniture etc.		
Vehicles		
Land & Building		
Total		

Capital Budget Report

	Actual/projected costs				
Project Title	Last	This	Total	Projected	Authorised
number	year	year	to date	to complete	amount
	Rs.	Rs.	Rs.	Rs.	Rs.

Flexible Budgeting This is defined by the Chartered Institute of Management Accountants as a 'budget which is designed to change in accordance with the level of activity attained'. Essentially, the flexible budget consists of not one budget but a series of budgets, each being based on a different level of activity within the expected range.

Flexible Budget at	
Activity level	
Direct labour	70% Rs.
Direct materials	80% Rs.
Variable overheads	90% Rs.
Fixed overheads	100% Rs.
Total	

Comprehensive Example on Preparation of 'Budgets'

Y Co. Ltd. Balance Sheet at 31st December 1997

			Rs.
Issued share capital (Re. 1 Ordinary shares)			3,50,000
Reserves			1,29,600
Capital employed			Rs. 4,79,600
Represented by: Fixed assets:	Cost	Depreciation	Rs.
	Rs.	Rs.	
Machinery	2,20,000	1,04,000	1,16,000
Vehicles	35,000	18,000	17,000
	2,55,000	1,22,000	1,33,000
Current assets: Stock of raw materials		36,000	
Finished goods (2,400 units)		21,600	
		57,600	
Debtors			
(Oct. Rs. 1,17,000, Nov. Rs. 1,30,000 and Dec. Rs. 1,28,000)		3,75,000	
Cash at bank		18,000	
		4,50,600	
Less: Current liabilities:			
Creditors for materials	59,000		
Creditors for variable overheads	9,000		
Creditors for fixed overheads	36,000		
		1,04,000	
			3,46,600
			Rs. 4,79,600

The following information has been collected for the budget period:

(1) Sales at Rs. 20 per unit:

	January	February	March	April	May	June
Units	4,300	6,200	8,100	4,200	7,100	8,100

(2) Production is to be as stable as possible throughout the period, with a closing stock in June of 3,400 units.

(3) Unit production costs are expected to be:

	Rs.
Raw materials	5
Direct labour	3
Variable overheads	2
	10

(4) Monthly purchases of raw materials should be:

January	February	March	April	May	June
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
34,000	30,000	29,000	37,000	34,000	32,000

(5) Customers pay their accounts during the third month after the month of sale.

(6) Creditors for materials are paid during the second month after purchase.

(7) Variable overheads are paid on the basis of 25% in the month of production, and 75% in the month following.

(8) Fixed overheads of Rs. 40,000 per month are paid during the following month.

(9) Three automatic lathes are purchased for Rs. 75,000, and paid for in April.

(10) Depreciation on machinery will be Rs. 3,000 per month until March, increasing to Rs. 4,000 per month for the rest of the period.

Depreciation on vehicles will be Rs. 500 per month.

(11) Wages are paid during the month of production.

(1) Sales Budget

January Rs.	February Rs.	March Rs.	April Rs.	May Rs.	June Rs.	Total Rs.
86,000	1,24,000	1,62,000	84,000	1,42,000	1,62,000	7,60,000

(2) Production Budget (in units)

The opening stock on 1st January is known to be 2,400 units, and the closing stock on 30th June is required to be 3,400 units. The production required will be:

Monthly sales for the six months	38,000
Add: Stock increase over the period	1,000
Required production	39,000
	39,000

Each month's production = 39,000/6 = 6,500 units.

The production budget in units will be:

	January	February	March	April	May	June
Opening stock	2,400	4,600	4,900	3,300	5,600	5,000
Add: Production	6,500	6,500	6,500	6,500	6,500	6,500
	8,900	11,100	11,400	9,800	12,100	11,500
Less: Sales ,	4,300	6,200	8,100	4,200	7,100	8,100
Closing stock	4,600	4,900	3,300	5,600	5,500	3,400

(3) Raw Materials Budget

The opening balance sheet records the stock of raw materials at Rs. 36 000. Monthly purchases are known, and the material content of each unit of production is Rs. 5. The materials budget can now be prepared.

	January Rs.	February Rs.	March Rs.	April Rs.	May Rs.	June Rs.
Opening stock	36,000	37,500	35,000	31,500	36,000	37,500
Add: Purchases	34,000	30,000	29,000	37,000	34,000	32,000
	70,000	67,500	64,000	68,500	70,000	69,500
Less: Usage	32,500	32,500	32,500	32,500	32,500	32,500
Closing stock	37,500	35,000	31,500	36,000	37,500	37,000

(4) Production Budget (in value)

Calculation for Cost of Production

	Rs./unit
Direct materials	5
Direct labour	3
Variable overheads	2
	10

	January Rs.	February Rs.	March Rs.	April Rs.	May Rs.	June Rs.	Total Rs.
Direct materials	32,500	32,500	32,500	32,500	32,500	32,500	1,95,000
Direct labour	19,500	19,500	19,500	19,500	19,500	19,500	1,17,000
Variable overheads	13,000	13,000	13,000	13,000	13,000	13,000	78,000
	Rs. 65,000	Rs. 65,000	Rs. 65,000	Rs. 65,000	Rs. 65,000	Rs. 5,000	Rs. 3,90,000

(5) Fixed Overheads Budget

Fixed overheads will not vary with production, but will remain as a static charge. If during the budget period there is an increase in an element of cost. There will be a corresponding increase in budgeted fixed overheads. It will be normal to have fixed overheads spread equally throughout the period. The monthly charge in the example is estimated at Rs. 40,000.

(6) Debtors Budget

Sales are made at Rs. 20 per unit, and customers pay during the third month after the month of sale. The first three months of the budget period will expect to receive payment for the sales of October, November, December of the previous year. These were respectively Rs. 117,000, Rs. 130,000 and Rs. 128,000.

	January Rs.	February Rs.	March Rs.	April Rs.	May -Rs.	June Rs.
Opening balances	3,75,000	3,44,000	3,38,000	3,72,000	3,70,000	3,88,00
Add: Sales	86,000	1,24,000	1,62,000	84,000	1,42,000	1 ,62,00
	4,61,000	4,68,000	5,00,000	4,56,000	5,12,000	5,50,00
Less: Cash received	1,17,000	1,30,000	1,28,000	86,000	1,24,000	1 ,62,00
Closing balances Rs.	3,44,000	Rs. 3,38,000	Rs. 3,72,000	Rs. 3,70,000	Rs. 3,88,000	Rs. 3,88,00

(7) Creditors for Materials Budget

Suppliers are paid during the second month after purchase. November's purchases of Rs. 26,000 will be paid for during January, and December's purchases of Rs. 33,000 during February.

	January Rs.	February Rs.	March Rs.	April Rs.	May Rs.	June . Rs.
Opening balances	59,000	67,000	64,000	59,000	66,000	71000
Add: Purchases	34,000	30,000	39,000	37,000	34,000	32000
	93,000	97,000	93,000	96,000	1,00,000	103000
Less: Payments	26,000	33,000	34,000	30,000	29,000	37000
Closing balances	Rs. 67,000	Rs. 64,000	Rs. 59,000	Rs. 66,000	Rs. 71,000	Rs. 66000

(8) Capital Budget

	January Rs.	February Rs.	March Rs.	April Rs.	May Rs.	June Rs.	Total Rs.
Machinery	3,000	3,000	3,000	4,000	4,000	4,000	21,000
Vehicles	500	500	500	500	500	500	3,000
	Rs. 3,500	Rs. 3,500	Rs. 3,500	Rs. 4,500	Rs. 4,500	Rs. 4,500	Rs. 24,000

(9) Cash budget

	January Rs.	February Rs.	March Rs.	April Rs.	May Rs.	June Rs.
Receipts: Sales	Rs1,17,000	Rs. 1,30,000	Rs. 1,28,000	Rs. 86,000	Rs. 1,24,000	Rs 1,62,000
Payments: Materials	26,000	33,000	34,000	30,000	29,000	37,000
Labour variable	19,500	19,500	19,500	19,500	19,500	19,500
overheads 25%	3,250	3,250	3,250	3,250	3,250	3,250
75%	9,750	9,750	9,750	9,750	9,750	9,750
Fixed overheads	36,000	40,000	40,000	40,000	40,000	40,000
Machinery	—	—	—	75,000	—	—
	Rs. 93,750	Rs. 1,05,500	Rs. 1,06,500	Rs. 1,77,500	Rs. 1,01,500	Rs. 1,09,500

Cash Budget

Opening balance	18,000	41,250	65,750	87,250	(4,250)	18,250
Add: Receipts	1,17,000	1,30,000	1,28,000	86,000	1,24,000	1,62,000
	1,35,000	1,71,250	1,93,750	1,73,250	1,19,750	1,80,250

Less: Payments	93,750	1,05,500	1,06,500	1,77,500	1,01,500	1,09,500
	Rs. 41,250	Rs. 65,750	Rs. 87,250	Rs. (4,250)	Rs. 18,250	Rs. 70,750

(10) Master Budget

Operating Statement for the Period 1st January to 30th June 1998

	Rs.	Rs.
Sales		7,60,000
Less: Cost of sales:		
Opening stock	21,600	
Add: Production	3,90,000	
	4,11,600	
Less: Closing stock (3400 x Rs. 10)	34,000	
		3,77,600
Gross profit		3,82,400
Less: Fixed overheads (6 x Rs. 40000)	2,40,000	
Depreciation	24,000	
		2,64,000
Net profit		Rs. 1,18,400

Estimated Balance Sheet at 30th June 1998

	Rs.	Rs.	Rs.
Issued share capital			
(Re. 1 ordinary shares)			3,50,000
Reserves			
(Re. 1 29600 + Rs. 118400)			2,48,000
Capital employed			Rs. 5,98,000
	Rs.	Rs.	Rs.
Represented by:			
Fixed assets:			
	Cost	Depreciation	
Machinery	2,95,000	1,25,000	1,70,000
Vehicles	35,000	21,000	14,000
	3,30,000	1,46,000	1,84,000
Current assets:			

Stock			
(Raw materials Rs. 37,000;			
Finished goods Rs. 34,000)		71,000	
Debtors		3,88,000	
Cash at bank		70,750	
		5,29,750	
Less: Current liabilities:			
Creditors for materials	66,000		
Creditors for variable overheads	9,750		
Creditors for fixed overheads	40,000		
		1,15,750	
			4,14,000
			Rs. 5,98,000

Illustration:

In Kanti Ltd., Factory Overhead is applied on the basis of Rs. 2.00 per standard labour hour. Selling and administrative expenses including interest expenses are not considered to be part of the product cost. Each unit of the finished product requires:

		Product A	Product B
Material	01	12 units	12 units
Material	02	6 units	8 units
Direct labour		14 hours	20 hours

Additional information regarding the year 1997-98

	Finished Product	
	A	B
Expected sales in units	5,000	1,000
Selling price per unit	Rs. 105.40	Rs. 164. 00
Desired ending inventory in units	1,100	50
Beginning inventory in units	100	50
Beginning inventory in rupees	Rs. 8,670	Rs. 5,810
	Direct Materials	
	01	02
Beginning inventory in units	5,000	5,000
Beginning inventory in rupees	Rs. 6,000	Rs. 13,000
Desired ending inventory in units	6,000	1,000

Work-in-process is negligible and may be ignored.

At anticipated volume levels the following costs will be incurred:

Factory Overhead

	Rs.
Supplies	30,000
Indirect labour	70,000
Payroll fringe costs	25,000
Power — variable portion	8,000
Maintenance — variable portion	20,000
Depreciation	25,000
Property taxes	4,000
Property insurance	500
Supervision	20,000
Power — Fixed portion	1,000
Maintenance — Fixed portion	4,500
	Rs. 2,08,000

Selling and administrative expenses

	Rs.	
Sales commission	20,000	
Advertising	3,000	
Sales salaries	10,000	
Travel	5,000	
Clerical wages	10,000	
Supplies	1,000	
Executive salaries	21,000	
Interest expenses	1,300	
Miscellaneous	5,000	
		Rs. 76,300

Prepare a budget for the year 1997-98 with the following detailed:

(1) Sales Budget

(2) Production Budget

(3) Direct Material Purchases Budget

(4) Direct Labour Budget

(5) Factory Overhead Budget

(6) Ending Inventory Budget

(7) Cost of Goods Sold Budget

(8) Selling and Administrators Expenses Budget

(9) Budgeted Income Statement.

Assume income tax for 1997-98 to be Rs. 20,000.

Solution Kanti Ltd

Sales Budget For the Year Ending 31st March 1998

	Units	Selling price	Total sales
		Rs.	Rs.
Product A	5,000	105.40	5,27,000
Product B	1,000	164.00	1,64,000
			6,91,000

Production Budget For the Year Ending 31st March 1998

	Products	
	A	B
Planned sales	5,000	1,000
Desired ending finished goods inventory	1,100	50
	6,100	1,050
Less: Beginning finished goods inventory	100	50
	6,000	1,000

Direct Material Purchase Budget For the Year Ending 31st March 1998

	Material 01	Material 02	Total
Desired ending direct material inventory in units	6,000	1,000	
Units needed for production (as per W.N.)	84,000	44,000	
Total needs	90,000	45,000	
Less: beginning direct material inventory in units	5,000	5,000	
Units to be purchased	85,000	40,000	
Unit price	Rs. 1.20	2.60	
Purchase cost	Rs. 1,02,000	Rs. 1,04,000	Rs. 2,06,000

W.N.: Usage of direct materials in units and Rupees

Direct Material	Production Product-A (6,000 units)	Product-B (1,000 units)	D irect materia usage	Total 1 Material unit cost	Cost of material used
01 (12 units per finished product)	72,000	12,000	84,000	Rs. 1.20	Rs. 1,00,800
02 (6 units per product A) units per product B)	36,000	8,000	44,000	2.60	1,14,400
					Rs. 2,15,200

Direct Labour Budget For the Year Ending 31st March 1998

	Unit produced	Standard direct per unit labour hours per unit	Total hours	Total budget @ Rs. 2.05 per hour
Product A	6,000	14	84,000	Rs. 1,72,200
Product B	1,000	20	20,000	41,000

Factory O/H Budget For the Year Ending 31st March 1998

An anticipated activity of 1,04,000 standard direct labour hours

Supplies	Rs. 30,000	
Indirect labour	70,000	
Payroll fringe costs	25,000	
Power- — variable portion	8,000	
Maintenance — Variable portion	20,000	
Total variable overhead		Rs. 1,53,000
Depreciation	25,000	
Property taxes	4,000	
Supervision	20,000	
Property insurance	500	
Power — fixed portion	1,000	
Maintenance — fixed portion	4,500	
Total fixed overhead:		55,000
Total factory overhead		Rs. 2,08,000

(Rs. 2,08,000 / 1,04,000) is Rs. 2.00 per Standard direct labour hour.

Ending Inventory Budget For the Year Ending 31st March 1998

Direct materials:	Units	Unit cost	Total amount
01	6,000	Rs. 1.20	Rs. 7,200

02		1,000	2.60	2,600
				9,800
Finished goods:				
A	1,100	Rs. 86.70*	95,370	
B	50	116.20*	5,810	
				1,01,180
				Rs. 1,10,980

*W.N.: Computation of unit costs

		Product A		Product B	
	Unit cost	Units	Amount	Units	Amount
	Rs.		Rs.		Rs.
Material 01	1.20	12	14.40	12	14.40
Material 02	2.60	6	15.60	8	20.80
Direct labour	2.05	14	28.70	20	41.00
Factory overhead	2.00	14	28.00	20	40.00
			86.70		116.20

Cost of Goods Sold Budget For the Year Ending 31st March 1998

	Rs.	Rs.
Direct materials used		2,15,200
Direct labour		2,13,200
Factory overhead		2,08,000
Total manufacturing costs		6,36,400
Add: finished goods, April 30,1997	14,480	
Less: finished goods, March 31,1998	1,01,180	
		(86,700)
Inventory increase for year		5,49,700

Selling and Administrative Expenses Budget For the Year Ending 31st March 1998

	Rs.	Rs.
Sales commissions	20,000	
Advertising	3,000	
Sales salaries	10,000	
Travel	5,000	

Total selling expenses		38,000
Clerical wages	10,000	
Supplies	1,000	
Executive salaries	21,000	
Miscellaneous	5,000	
Total administrative expenses		37,000
Total selling and administrative expenses		75,000

Budgeted Income Statement For the Year Ending 31st March 1998

	Rs.	Rs.
Sale		6,91,000
Cost of goods sold		5,49,700
Gross margin		1,41,300
Selling and administrative expenses	75,000	
Interest expenses	1,300	
		76,300
Net income before income tax		65,000
Income tax (assumed)		20,000
Net income after income tax		Rs. 45,000

Out of all budgets only cash budget will be asked as a practical aspect in the examinations.

Practicals:

1: From the following information, prepare a monthly cash budget for Ratnajog Ltd. For 3 months ending 31st March :

(i) Revenue is expected to be Rs. 90,000, Rs. 92,000 and Rs. 90,000 in the three months,

(ii) Purchase for December, January, February and March are likely to be

Rs. 80,000, Rs. 60,000, Rs. 65,000 and Rs. 70,000 respectively, 40 percent is paid in next month.

(iii) Rent per month is Rs. 4,000 and personal withdrawal Rs. 6,000.

(iv) Rs. 35,000 is expected to be outflows towards purchase of a vehicle in the month of March.

(v) Cash expenses are Rs. 14,000 for each month, (vi) Present cash balance is Rs. 15,000.

Solution :

CASH BUDGET for Quarter ending 31st March

	JAN	FEB	MARCH
Receipts :			
Opening Balance	15,000	13,000	18,000
Receipts : Sales	90,000	92,000	90,000
Total Receipts (a)	1,05,000	1,05,000	1,08,000
Payments :			
Cash Purchase	36,000	39,000	42,000
(60 % of current month)			
Payment to creditors	32,000	24,000	26,000
(40 % of last month)			
Rent	4,000	4,000	4,000
Withdrawal	6,000	6,000	6,000
Cash expenses	14,000	14,000	14,000
Purchase of vehicle	-	-	35,000
Total Payments (b)	92,000	87.000	1,27,000
Closing Balance (a) - (b)	13,000	18,000	-31,000

2. From the following data prepare Cash Budget for Manu Ltd. from the period from 1st July to 31st December, 2002 when the opening cash balance is expected to be Rs. 50,000 :

Month	Sales	Purchase	Wages	Factory expenses	Admini-stration expenses	Selling expenses
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
May	2,00,000	90,000	18,000	12,000	7,000	8,000
June	1,80,000	95,000	20,000	14,000	8,000	9,000
July	2,10,000	94,000	19,000	10,000	7,000	8,000
Aug.	1,70,000	94,000	15,000	13,000	5,000	8,500
Sept.	1,75,000	85,000	22,000	14,500	6,500	8,600
Oct.	2,20,000	72,000	18,000	11,000	7,200	9,300
Nov.	2,12,000	75,000	21,000	9,500	7,500	7,800
Dec.	2,50,000	65,000	20,000	10,000	7,400	6,500

Additional Information:

(1) Machinery to be purchased for Rs. 60,000 in July will be payable on delivery.

(2) Period of credit allowed by suppliers is 1 month and the same credit period is allowed to customers.

(3) Wages are paid after one week, while factory administrative expenses and selling expenses are paid one month after the month in which they are incurred.

(4) A sales commission of 2 1/2 % on sales is paid two months after sales.

(5) Machinery to be purchased in August for Rs. 1,80,000 is payable in equal instilments in September and October.

Solution :

Notes: (1) As the credit period for sales is one month, the collection for credit sales during each month will be for the sale of the previous month, e.g. in July, the collection will be made for sales of June, i.e. Rs. 1,80,000. Similar calculations will be made for all the 6 months.

(2) Credit purchases will be similarly paid after one month, e.g. in July, payment will be made for the purchases of June, i.e. Rs. 95.000.

(3) Sales commission at 2 1/2% on sales of May will be paid in July. This will be 2 1/2 % of 2.00,000 = Rs. 5.000.

Thus the total selling expenses will be

Selling expenses of July Rs. 9,000

+ Sales Commission on sales of May Rs. 5,000

Rs. 14,000

Selling expenses of all the months will be calculated in the same manner.

(4) Wages are paid after one week. This means that 1/4 wages of June will be paid in July. Similarly 1/4 wages of July will be paid in August, i.e. 3/4 of wages of July only will be paid in July. Thus wages paid in July will be as follows :

1/4 wages of June Rs. 20,000 Rs. 5,000

3/4 wages of July Rs. 19,000 Rs. 14,250

Rs. 19,250 Wages for remaining 5 months will be similarly calculated.

(5) Other expenses of previous month will be paid during the current month, e.g. factory expenses of Rs. 14,000 of June will be paid in July.

(6) As there is a deficit of cash balance of Rs. 28,600 in October, an arrangement will have to be made with the bank for overdraft.

CASH BUDGET

For the period of 6 months from 1-7-2002 to 31-12-2002

Particulars	July Rs.	Aug. Rs.	Sept. Rs.	Oct. Rs.	Nov. Rs.	Dec. Rs.
Opening balance	50,000	19,750	90,250	24,250	28,600	67,275
Receipts :						
Sales collection	1,80,000	2,10,000	1,70,000	1,75,000	2,20,000	2,12,000

Total Receipts	2,30,000	2,29,750	2,60,250	1,99,250	1,91,400	2.79.275
Payments :						
Purchases	95,000	94,000	94,000	85,000	72,000	75,000
Wages	19,250	16,000	20,250	19,000	20,250	20,250
Factory Exp.	14,000	10,000	13,000	14,500	11,000	9,500
Adm. Exp.	8,000	7,000	5,000	6,500	7,200	7,500
Selling Exp.	14,000	12,500	13,750	12,850	13,675	13,300
Cap. Exp. (Machinery)	60,000	-	90,000	90,000	-	-
Total Payments	2,10,250	1,39,500	2,36,000	2,27,850	1,24,125	1,25,550
Closing Cash Balance	19.750	90,250	24.250	-28.600	67.275	1,53.725

3 : Manish Ltd. wishes to arrange overdraft facilities with its bankers during the period April to June, 2002 when it will be manufacturing mostly for stock. Prepare a cash budget for the above period from the following data indicating the extent of bank facilities the company will be require at the end of each month.

(A) Months	Sales Rs.	Purchases Rs.	Wages Rs.	Mfg. Exp. Rs.	Office Exp. Rs.	Selling Exp. Rs.
Feb.	1,80,000	1,24,800	12,000	3,000	2,000	2,000
March	1,92,000	1,44,000	14,000	4,000	1,000	4,000
April	1,08,000	2,43,000	11,000	3,000	1,500	2,000
May	1,74,000	2,46,000	12,000	4,500	2,000	5,000
June	1,26,000	2,68,000	15,000	5,000	2,500	4,000
July	1,40,000	2,80,000	17,000	5,500	3,000	4,500
August	1,60,000	3,00,000	18,000	6,000	3,000	5,000

(b) Cash on hand 1-4-2002 (estimated) Rs. 25,000.

(c) 50 % of credit sales are realised in the month following the sale and the remaining 50 % in the second month following. Creditors are paid in the month following the month of purchase :

(d) Lag in payment of manufacturing expenses 1/2 month.

(e) Lag in payment of other expenses 1 month. Solution]

Cash Budget

For 3 months April to June - 2002

	April Rs.	May Rs.	June Rs.
Receipts :			
Opening balance	25,000	44,500	- 66,750
Sales	1,86,000	1,50,000	1,41,000
	2,11,000	1,94,500	74,250
Payments :			
Purchases	1,44,000	2,43,000	2,46,000
Wages	14,000	11,000	12,000
Mfg. Exp.	3,500	3,750	4,750
Office Exp.	1,000	1,500	2,000
Selling Exp.	4,000	2,000	5,000
	1,66,500	2,61,250	2,69,750
Closing balance	44,500	- 66,750	- 1,95,000

Notes:

(1) Collection from credit sales in April will be as follows :

50 % of the credit sales of March	Rs. 96,000
50 % of the credit sales of February	Rs. 90,000
	Rs. 1,86,000

Collections from the credit sale will be calculated similarly for May and June.

(2) As the time lag of purchases is one month, the payment for March purchases will be made in April, April purchases will be paid in May and May purchases will be paid in June.

(3) Similarly, as the time lag for payment of wages, office expenses and selling expenses is one month, the payment will be made for the expenses of previous month i.e. March wages will be paid in April and so on.

(4) The time lag for manufacturing expenses is 1/2 month, which suggests that 1/2 month's expenses are paid in the next month. Thus in April, 1/2 mfg. expenses of March will be paid and 1/2 expenses of April will also be paid.

(5) The above budget shows that there will be a deficit of Rs. 66,750 in May, for which arrangement of bank overdraft will have to be made. Similarly, in June, an overdraft will have to be arranged for Rs. 1,95,500.

4 : Make out cash budget for October to December from the following information for Suryakant Ltd.:

(1) Cash and Bank Balance on 1-10-2002 Rs. 10,000.

(2) Sales Actual and Budgeted :

June Rs. 30,000 (Actual) October Rs. 40,000 (Estimated)

July Rs. 32,500 (,,) November Rs. 41,000 (,,)

August Rs. 35,000 (,,) December Rs. 44,500 (,,) September, Rs. 37,500(Estimated)

(3) Purchases-Actual and Budgeted figures are :

June Rs. 18,000 (Actual) October Rs. 24,000 (Estimated)

July Rs. 20,000 (,,) November Rs. 20,000 (,,)

August Rs. 24,000 (,,) December Rs. 25,500 (,,) September Rs. 22,500 (Estimated)

(4) Wages and other expenses - Actual and budgeted :

	Wages	Expenses
	Rs.	Rs.
August (Actual)	7,500	2,500
September (Actual)	7,500	3, (XX)
October (Estimated)	9.000	3.(XX)
November (Estimated)	9,000	4.(XX)
December (Estimated)	H).(XX)	4.(XX)

(5) Special:

Advance payment of Income tax Rs. 2,500 in November. Purchase of Plant of Rs. 5,000 in October.

(6) Rent payable in advance Rs. 150.

(7) 10 % of purchases and sales are on cash terms.

(8) Time lag: Credit Sales 2 months

Credit Purchases 1 month

Wages 1/2 month

Expenses 1/4 month

Solution

Cash Budget

For October to December, 2002

	October	November	December
	Rs.	Rs.	Rs.
Receipts :			
Opening Balance	10,000	6,450	5,300
Cash Sales	4,000	4,100	4,450
Collection from Debtors	31,500	33,750	36,000
Total Receipts	45,500	44,300	45,750
Payments :			
Cash Purchases	2,400	2,000	2,500
Credit Purchases	20,250	21,600	18,000
Wages	8,250	9,000	9,500
Expenses	3,000	3,750	4,000
Rent	150	150	150
Plant	5,000	—	—
Income-tax	—	2,500	—
Total Payments...	39,050	39,000	34,150
Closing Cash Balance	6,450	5,300	11,600

Notes:

(1) Every month 10% of sales is cash sales, so in October 10% of Rs. 40,000 = Rs. 4,000 will be received in cash. Similarly, during November 10 % of 41,000 = Rs. 4,100 will be received for cash sales and in December, 10 % of Rs. 44,500 = Rs. 4,450 will be received for cash sales.

(2) As the credit period for sales is 2 months, the customers will pay for credit sales, two months after the sale is made. Thus in October, collection will be made for credit sale made in August. Remember that credit sale is 90 % of the Total sales. In August the sale is Rs. 35,000 and 90 % of this will be Rs. 31,500, which will be collected in October. In November, collection from debtors will be 90 % of Rs. 37,500 which is sale of September. This will be Rs. 33,750. In December 90 % of October sale of Rs. 40,000 = Rs. 36,000 will be collected.

(3) Payment on account of cash purchases will be 10 % of the total purchases of each month, e.g. in October 10 % of 24,000 = Rs. 2,400 will be paid.

(4) Credit purchases will be 90 % of total purchases and payment will be made one month after. Thus in October, payment will be made for 90 % of purchases of September, i.e. 90 % × Rs. 22,500 = Rs. 20,250.

(5) As the time lag for wage is 1/2 month, 1/2 of the wages of September will be paid in October and 1/2 of October wages will be paid in October.

(6) As time lag for expenses is 1/4 month, in October 1/4 of September

expenses will be paid and 3/4 of October expenses will be paid in October.

Practical Exercise:

1. From the following information of Manjari Ltd. prepare cash budget for the three months from April to June 2001 :

(i) On 1-4-2001, Bank Balance Rs. 1,00,000

Month	Total Sale (Rs.)	Stock (Rs.)	Total Overhead expenses (Rs.)
March	1,20,000	30,000	36,000
April	1,50,000	33,000	48,000
May	1,80,000	36,000	42,000
June	1,50,000	33,000	48,000
July	1 ,80,000	30,000	36,000

(ii) Goods are sold by adding profit of 33 1/3 % on sale price.

(iii) All sales are made for cash.

(iv) Purchases are made for cash.

(v) Total overhead expenses include monthly expenses of Rs. 20,000 which is paid in the same month. Variable overhead expenses are paid in subsequent month.

(vi) An old machine is to be sold for Rs. 50,000 in April 2001. (vii) A new machine is to K: brought for Rs. 50,000 in June 2001. the payment of which is made 50 *f'/r* against delivery and the remaining amount in the subsequent month.

(viii) Dividend of Rs. 30,000 for the year 2000-2001 is to be paid in June 2001.

2. From the following, prepare Cash Budget for Saroj Ltd. the period from 1st March to 31st August 2002 when the opening Cash Balance would be Rs.20,000

Month	Sales	Selling Expenses	Purchases	Wages	Factory Expenses	Administrative and Selling Expenses
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
January	1,70,000	7,000	80,000	15,000	10,000	5,000
February	1,60,000	7,500	84,000	16,000	11,000	5,500
March	1,82,000	6,500	83,000	16,800	8,000	4,500
April	1,55,000	6,800	83,000	12,000	10,500	4,700
May	1,65,000	7,400	76,000	18,000	12,000	5,400
June	2,00,000	7,000	68,000	16,000	9,600	5,700
July	1,80,000	6,000	70,000	17,000	8,000	5,000
August	2,20,000	5,500	58,000	16,500	9,600	5,500

(1) Period of credit allowed by suppliers and to customers : 1 month.

(2) Lag in payment of:
(a) Wages l/8th month.
(b) Other expenses 1 month.

(3) Machinery purchased for Rs. 50,000 in March payable on delivery.

(4) Building purchased in April for Rs. 1,50,000 payable in two equal instalments in May and July.

(5) Commission at 3 % on sales payable two months after sales.

3. Prakash Ltd. closes its books on 31st March each year. On 1st January 2002 it wants to prepare a cash forecast for the first quarter of the ensuing year. The following information is available : Sales (as per budget):

March, 2002 Rs. 50,00,000 May, 2002 Rs. 55,00,000

April. 2002 Rs. 60.00,000 June. 2002 Rs. 70,00,000

The details of cost of sales for month of March :

Materials Rs. 22.50,000 Variable Overheads Rs. 5,00,000

Wages Rs. 7.50.000 Fixed Overheads Rs. 7.50,000

Fixed overheads include an amount of Rs. 2,00,000 for depreciation on plant and machinery.

1/5 of the sales are for cash and rest on credit. Customers are allowed a credit period of one month, which happens to be the credit period allowed by the suppliers also.

Wages and variable overheads are paid in the month which follows that in which they are incurred. Material and labour costs are strictly variable. Fixed overheads to be paid in the same month.

During June, 2002 Income-tax of Rs. 6,00,000 is to be paid. The staff are to be paid a bonus of Rs. 3,00,000 in May. A uniform gross profit on variable cost is maintained by the company.

The cash balance in hand on 1 st April is expected to be Rs. 2,00,000.

Prepare cash forecast for the 3 months and also suggest how the shortfall or excess can be filled up or utilised as the case may be. Assume that each month's production is sold out in full.

4. Draw out Cash Budget of Ashok Trading Co. Ltd. for April to June, 2002 from the following information :

(1) Cash and Bank balances on 1-4-2002 Rs. 40,000.

(2) Sales : Actual and budgeted :

	Actual		Budgeted
	Rs.		Rs.
January, 2002	1,40,000	April, 2002	1,40,000
February, 2002	1,50,000	May, 2002	1,60,000
March, 2002	1,30,000	June, 2002	1,30,000

(3) Purchase - Actual and budgeted

	Actual		Budgeted
	Rs.		Rs.
January, 2002	70.000	April. 2002	70,000
February. 2002	80,000	May. 2002	90,000
March, 2002	70,000	June. 2002	70,000

(4) Wages and expenses - Actual and budgeted :

Feb. 2002 22,000 10,000 April, 2002 20,000 12,000

March, 2002 16,000 12,000 May, 2002 25,000 14,000

June, 2002 16,000 14,000

(5) Machinery to be purchased for Rs. 50,000 in April, 2002.

(6) Income-tax to be paid for Rs. 40,000 in May, 2002.

(7) Rent Rs. 700 payable each month, not included in expenses.

(8) 80 % of purchases and sales are on credit terms.

(9) Time lag: Credit sales 2 months

Credit purchases 1 month

Wages 1 1/2 month

Expenses 1/4 month

5. Prepare a Cash Budget for 3 months ending 31 st December, 2001 from the following information of Prerna Limited :

Cash Balance as on 1st October, 2001 Rs. 50,000.

Months	Total Sales	Total Purchases	Wages	Overheads
	Rs.	Rs.	Rs.	Rs.
August	2,00,000	1,00,000	30,000	50,000
September	2,50,000	1,40,000	24,000	60,000
October	3,00,000	2,00,000	32,000	45,000
November	4,00,000	1,50,000	26,000	55,000
December	4,50,000	2,50,000	40,000	70,000

(1) Assume 20 % of total sales to be cash sales.

(2) 5 % of credit sales are returned by the customers in every month of sales.

(3) Commission on sales at 2 % on total net sales, is to be paid within a month, following actual sales.

(4) 50 % of credit sales are realised in the month, following the sales and the remaining 50 % in (he second month following sales :

(5) Assume 10 % of total purchase to be cash purchases. The period of credit allowed by suppliers is one month.

(6) The time lag in the payment of wages is 1/4 month and the time lag in the payment of overheads is 1/2 month.

(7) Equity dividend at 10 % on the capital of Rs. 5,00,000 is payable in December, 2001.

(8) Plant costing Rs. 1,00,000 is due for delivery in September, payable 15 % on delivery and the balance in December,. 2001.

6. Prepare a Cash Budget for three months ending 30th June, 2002 from the following information of Namrata Limited : Cash Balance as on 1st April, 2002 Rs. 45,000 :

Months	Total Sales	Credit Sales Return	Total Purchases	Wages	Over-heads
	Rs.	Rs.	Rs.	Rs.	Rs.
February	2,80,000	4,000	2,65,000	26,000	46,000
March	3,20,000	6,000	2,40,000	28,000	30,000
April	4,00,000	10,000	2,80,000	24,000	44,000
May	3,60,000	8,000	3,00,000	32,000	50,000
June	3,40,000	12,000	3,20,000	36,000	60,000

(1) Assume the proportion for cash sales and credit sales as 1 : 4.

(2) Assume 20 % of total purchases to be cash purchases.

(3) 50 % of net credit sales are realised in the month following the sales and remaining 50 % in the second month, following the sales.

(4) The period of credit allowed by suppliers is one month.

(5) The time lag in the payment of wages is 1/4 month and time lag in the payment of overheads is 1/2 month.

7. Maya Ltd. has seasonal sale. The cost of the goods in terms of % of the selling price is as follows :

Materials	20%
Wages	10%
Factory Expenses	20%
Depreciation	10%
	60%

Sales proceeds forecasts are as follows :

Month (1999)	Sales (Rs.)
January	3,00,000
February	5,00,000
March	6,00,000
April	8,00,000
May	8,00,000
June	10,00,000
July	10,00,000

Additional information is as Follows :

(1) Credit sales are 75 % and cash sales 25 % of the total sales.

(2) The company purchases materials a month before its requirement. Purchases of materials are on credit.

(3) Time Tag :

Credit Sales 2 months

Credit purchases 1 month

Wages $^1/_2$ month
Factory Expenses $^1/_2$ month.

(4) A sum of Rs. 2,00,000 is to be paid every month in respect of fixed administration expenses.

(5) Income-tax Rs. 50,000 is payable in May, 1999.

(6) Cash and bank balances on 1-4-99 (estimated) Rs. 20,000. Prepare Cash Budget for three months ending June 1999.

8. Prepare a Cash Budget for three months ending 31 st December, 2001 from the following information of Daipan Limited. Cash Balance on 1st October 2001, Rs. 1,20,000.

Year and Month	Total Sales	Total Purchases	Wages	Overheads
2001	Rs.	Rs.	Rs.	Rs.
August	3,00,000	1,40,000	40,000	80,000
September	4,00,000	2,00,000	50,000	1,10,000
October	4,50,000	1,60,000	60,000	1,20,000
November	5,00,000	2,40,000	70,000	1,30,000
December	6,00,000	3,00,000	80,000	1,50,000

Additional Information:

(1) Assume the proportion of cash sales and credit sales as 1 : 4.

(2) Assume 20 % of total purchases to be cash purchases.

(3) Assume 2 % of credit sales to be sales return every month.

(4) 50 % of net credit sales are realised in the month following the sales and remaining 50 % in the second month following the sales.

(5) Plant costing Rs. 1,00,000 is due for delivery in October, 2001 payable 10 % on delivery and the balance after three months.

(6) Sales Commission 5 % on total Net Sales, is to be paid in the next month after actual sales.

(7) The period of credit allowed by suppliers is one month.

(8) Overheads include Rs. 5,000 depreciation per month on fixed assets.

(9) The time lag in the payment of wages and overheads is one month.

9. Prepare a Cash Budget for three months ending on 30th June, 1996 from the following information of Shree Trivankal Ltd. Cash and Bank balance as on 1st April, 1996 Rs. 15,000. Cost of goods in terms of percentage of the selling price is as follows

Material 30 %

Wages 20 %

Factory overhead 25 %

The production and stock of finished goods in units for various months are as follows :

Month	Production (Units)	Stock of Finished Goods (Units)
February '96	3,000	500
March '96	4,000	1,500
April '96	3,500	1,000
May '96	4,500	500
June '96	6,250	1,250
July '96	4,750	1,000

Additional Information:

(1) Cost Price is Rs. 100 per unit.

(2) Selling price per unit is fixed at profit of 50 % on sales price.

(3) Assume 60 per cent of total sales as credit sales and remaining cash sales.

(4) 50 per cent of credit sales is collected in the month after sales and remaining 50 per cent in the second month after sales.

(5) Anticipating sales of each month necessary purchases are made in the preceding month. 25 % is paid immediately and remaining amount is paid in the month after purchases.

(6) The time lag in the payment of wages and factory overheads is one month.

(7) Income tax paid for Rs. 15.000 in March while dividend is received for Rs. 10,000 in June.

(8) Company's fixed assets are Rs. 1.00.000.Provide 10%depreciation on straight line method.

(9) In April company is to purchase a machine of Rs. 3,00,000. The amount is paid after one month.

10. The projected sales of P.D.V. Ltd. for the months of July to November, 1995 are:

Year 1995	Rs.	Year 1995	Rs.
July	6,20,000	August	6,40,000
September	5,80,000	October	5,60,000
November	6,00,000		

The anticipated purchases are :

Year 1995 Rs.		Year 1995	Rs.
July	3,80,000	August	3,33,000
September	3,50,000	October	3,90,000
November	3,40,000		

The wages are expected to be Rs. 1,00,000 per month. The management is

expected to pay two months' wages as bonus during October, 1995. The Company is expected to pay an advance-tax for income-tax Rs. 90,000 before 15th September, 1995. The Company has ordered in June 1995 for a machine costing Rs. 16,00,000. IDBI has agreed to finance the purchase of Machine which is expected to be delivered in January 1996. The Company has advanced 5 % in June, 1995 with order, and they have agreed to pay another 10 % advance after 3 months. The Company extends 2 months' credit to its customers and the company enjoys one month credit from the suppliers.

The general expenses for the company are Rs. 60,000 per month payable at the end of each month. The company anticipates to receive interim dividend of 10 % for the investment of 90,000 equity shares of Rs. 10 each during October 1995. The Company anticipates to have an overdraft of Rs. 40,000 on 1st September, 1995 (Limit sanctioned is Rs. 55,000).

Draw a Cash Budget for September-November 1995 for approaching your bankers for a short-term further credit.

11. On the basis of following information, prepare a Cash Budget of Best Luck Ltd. for January to March 1997.

(1) Cash Balance on 1-1-97 Rs. 20,000.

(2) Sales : Actual and budgeted figures are :

Actual Rs.	Estimated Rs.	
Nov. 96	90,000	Jan. 97 1,25,000
Dec. 96	1,00,000	Feb. 97 1,40,000
		March 97 1,50,000

(3) Purchases (Actual and budgeted figures are) :

Actual Rs.	Estimated Rs.	
Nov. 96	56,000	Jan. 97 60,000
Dec. 96	58,000	Feb. 97 70,000
		March 97 75,000

(4) Direct wages and Manufacturing overheads budgeted :

	Wages	Mfg. OH.
	Rs.	Rs.
January '97	26,000	17,200
February '97	30,000	18,200
March, '97	32,000	19,200

(5) All Sales are on credit. 40 % of these are collected in the month of sales, on which a cash discount of 10 % is allowed and the remaining 60 % of these are collected in the next month.

(6) Generally, all purchases are made for cash and cash discount of 10 % is allowed by the suppliers. But in the month of March 1997 the company buys on credit,

payment can be deferred by one month by foregoing cash discount.

(7) The Budgeted manufacturing overheads include three months provision for depreciation amounting to Rs. 3,600.

(8) General overheads budgeted for (January to March '97) the quarter was Rs. 15,000 out of which Rs. 3,000 was for bad-debts reserve.

(9) Special: (a) Last Instalment of Advance Payment of Income-tax Rs. 16,000 is due in March.

(b) Purchase of plant of Rs. 54,000 in February.

12. From the following information of the Bhagvat Gita Co. Ltd. prepare Cash Budget for the three months from October-98 to December-98.

Month	Sales Rs.	Closing Stock Rs.	Total Overhead expenses Rs.
August	1,60,000	20,000	24,000
September	2,00,000	30,000	30,000
October	2,40,000	50,000	40,000
November	3,20,000	60,000	36,000
December	2,80.000	55,000	40,000
January	3,00,000	50,000	30,000

Additional Information :

(1) On 1-10-98 Bank Balance was Rs. 1,00,000.

(2) Goods are sold at a profit of 33.1/3 % on cost price.

(3) Purchases are made for cash.

(4) Cash sales are 40 % of the total sales. 50 % of credit sales are collected in the month after sales and remaining sales are collected in the second month after sales.

(5) Total overhead expenses include monthly fixed overhead expenses of Rs, 10,000, which is paid in the same month. Variable overhead expenses are paid in the subsequent month.

(6) An old machine is to be sold for Rs. 60,000 in November '98.

(7) A new machine is to be purchased for Rs. 1,00,000 in November '98, the payment of which is to be made 80 % against delivery and the remaining amount in the subsequent month.

(8) Income-tax is to be paid for Rs. 20,000 in November '98.

13. From the following data, prepare Cash Budget for the period from 1st July to 31st December, 1998 when the opening cash balance is expected to be Rs. 50,000.

Month	Sales Rs.	Purchases Rs.	Wages Rs.	Other Expenses Rs.
May-	2,00,000	90,000	18,000	12,000
June	1,80,000	95,000	20,000	14,000
July	2,10,000	94,000	19,000	10,000
August	1,70,000	94,000	15,000	13,000
September	1,75,000	85,000	22,000	14,500
October	2,20,000	72,000	18,000	11,000
November	2,12,000	75,000	21,000	9,500
December	2,50,000	65,000	20,000	10,000

Additional Information:

(1) A machinery of Rs. 60,000 purchased in July will be payable on delivery.

(2) Period of credit allowed by the suppliers is one month and the same credit period is allowed to customers.

(3) Wages are paid after two weeks and other expenses are paid after two months.

14. The following in formation is available relating to Vikalp Electricals Ltd :

Month	Sales forecasts (Rs.)	Purchase of Raw Materials (Rs.)
May	75,000	37,500
June	75,000	37,500
July	1,50,000	52,500
August	2,25,000	3.67,500
September	3.00,000	1,27,500
October	1,50,000	97,500
November	1,50,000	67,500
December	1,37,500	37,500
January	75,000	

Other Information :

(1) All sales are on credit as under :

Within the month of sale 5 %.

Within the month following the sale 80 %.

During the second month following the sale 15 %.

(2) Payment of raw materials is made in the month following the month of purchase.

(3) Miscellaneous :

(a) Administrative salaries Rs. 11,250 per month.

(b) Monthly lease rental Rs. 3,750.

(c) Monthly depreciation Rs. 15,000.

(d) Monthly sundry expenses Rs. 1,150.

(e) Income tax paid : September Rs. 26,250 December Rs. 26,250

(f) Payment for Research in October Rs. 75,000.

(g) Opening balance of cash on July 1st Rs. 55,000.

(h) Minimum cash balance of Rs. 37,500 should be maintained. Prepare a statement showing Cash Budget for six months – July to December and estimate excess or deficit cash for each month.

11.6 Exercise

1. What is planning explain in the context of budgeting?
2. Define the meaning of budgeting and its essential elements?
3. Describe purposes for which budgeting be done?
4. Write a short note on operating budgets?
5. Write a short note on financial budgets?
6. Write a short note on flexible budgets?