

As per New CBCS Syllabus for Fourth Semester BBA,
Bangalore University w.e.f. 2014-15

Cost Accounting

Theory, Problems and Solutions

M. N. Arora



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COST ACCOUNTING

THEORY, PROBLEMS AND SOLUTIONS

(As per New Syllabus (CBCS) for Fourth Semester BBA,
Bangalore University w.e.f. 2014-15)

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Preface

All business graduates must possess knowledge of cost accounting concepts and practices. It helps in planning and controlling of costs of products and services and also in making managerial decisions, which in turn assists in maximization of profit. This volume is an attempt to provide the students with thorough understanding of the cost accounting concepts, methods and techniques. I have presented the subject matter in a systematic and intelligible manner with liberal use of numerical illustrations and diagrams so as to make it interesting and sustain student interest.

The book has been divided into five chapters to fully cover the syllabus of BBM Bangalore. Based on the conviction that students can really learn cost accounting by solving problems, the theory and problems approach has been adopted to fully meet all the examination needs of the students in one book. Thus apart from well organised theory, the book has sufficient number of solved problems and illustrations and unsolved problems with answers and hints, apart from short answer questions and essay type questions. This will help students tackle examination questions with ease. The theory questions and practical problems have been mostly selected from examinations of BBM, BBA and B.Com. of various leading Indian universities.

I am sure this book will prove extremely useful to students and teachers alike.

I am grateful to Himalaya Publishing House who initiated the idea for this book and then produced it in this beautiful format.

I look forward to feedback, comments and suggestions from students and teachers.

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Bangalore University Syllabus

BBM

4.6 COST ACCOUNTING

OBJECTIVE

The objective of this subject is to familiarize students with the various concepts and element of cost.

Unit 1: INTRODUCTION TO COST ACCOUNTING

10 Hrs

Introduction – Meaning & Definition of Cost, Costing and Cost Accounting – Objectives of Costing - Comparison between Financial Accounting and Cost Accounting – Application of Cost Accounting – Designing and Installing a Cost Accounting System – Cost Concepts - Classification of Costs – Cost Unit – Cost Center – Elements of Cost – Preparation of Cost Sheet – Tenders and Quotations.

Unit 2: MATERIAL COST CONTROL

15 Hrs

Meaning – Types – Direct Material – Indirect Material - Material Control – Purchasing Procedure – Store Keeping – Techniques of Inventory Control – Setting of Stock Levels – EOQ – ABC Analysis – VED Analysis – Just In-Time – Perpetual Inventory System – Documents used in Material Accounting - Methods of Pricing Material Issues – FIFO – LIFO – Weighted Average Price Method and Simple Average Price Method.

Unit 3: LABOUR COST CONTROL

10 Hrs

Meaning – Types – Direct Labour – Indirect Labour – Timekeeping – Time booking – Idle Time – Overtime – Labour Turn Over. Methods of Labour Remuneration - Time Rate System – Piece Rate System – Incentive Systems – Halsey plan – Rowan Plan – Taylor's differential Piece Rate System and Merrick's Differential Piece Rate System – Problems

Unit 4: OVERHEAD COST CONTROL

15 Hrs

Meaning and Definition – Classification of Overheads – Procedure for Accounting and Control of Overheads – Allocation of Overheads – Apportionment of Overheads – Primary Overhead Distribution Summary – Secondary Overhead Distribution Summary – Repeated Distribution Method and Simultaneous Equations Method – Absorption of Factory Overheads – Methods of Absorption – Machine Hour Rate – Problems.

Unit 5: RECONCILIATION OF COST AND FINANCIAL ACCOUNTS

10 Hrs

Need for Reconciliation – Reasons for differences in Profit or Loss shown by Cost Accounts and Profit or Loss shown by Financial Accounts – Preparation of Reconciliation Statement and Memorandum Reconciliation Account.

SKILL DEVELOPMENT:

- Classification of costs incurred in the making of a product.
- Identification of elements of cost in services sector.
- Cost estimation for the making of a proposed product.
- Documentation relating to materials handling in a company.
- Collection and Classification of overheads in an organization.
- Discuss the reasons for LTO in organizations..



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Introduction

Chapter Outline

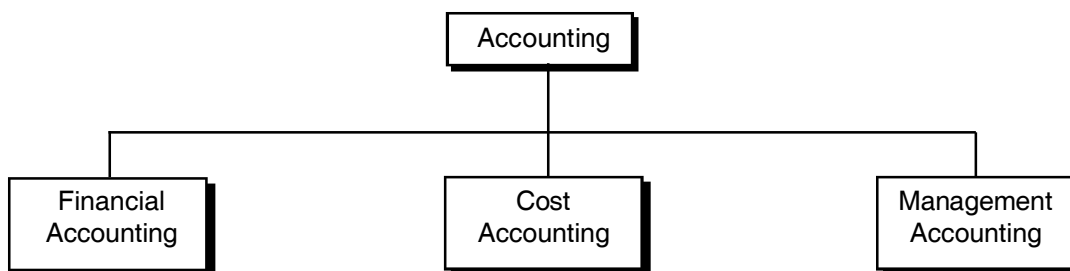
Type of Accounting, Cost Accounting — Meaning, Scope, Objectives, Cost Accounting and Financial Accounting — Comparison, Installation of Costing System; Advantages and Limitations of Cost Accounting, Application, Concept of Cost, Cost Centre, Cost Unit, Cost object, Methods and Techniques of Costing, Classification of costs, Elements of Cost, Cost Sheet, Examination Questions.

This introductory chapter provides a framework of cost accounting, explaining its basic concepts, cost classifications, elements of costs and preparation of cost sheet, etc.

Types of Accounting

Accounting serves the purpose of providing financial information relating to activities of a business. Such information is provided to shareholders, managers, creditors, debentureholders, bankers, tax authorities and others. Broadly speaking, on the basis of type of accounting information and the purpose for which such information is used, accounting may be divided into two categories:

1. Financial Accounting (or General Accounting),
2. Cost Accounting. and
3. Management Accounting



1.1 Types of accounting

Financial Accounting is mainly concerned with recording business transactions in the books of account and prepare:

- (a) **Profit and Loss Account** showing the net profit or loss during the year and
- (b) **Balance Sheet** showing the financial position of the company at a point of time.

Cost Accounting is a branch of accounting which specialises in the ascertainment of cost of products and services. It is for use by management. It has been explained in detail in this book.

Management Accounting is the modern concept of accounts as a tool of management. It is concerned with all such accounting information that is useful to management.

COST ACCOUNTING

Cost accounting has primarily developed to meet the needs of management. Profit and Loss Account and Balance Sheet are presented to management by the financial accountant. But modern management needs much more detailed information than supplied by these financial statements. Cost accounting provides detailed cost information to various levels of management for efficient performance of their functions. The information supplied by cost accounting acts as a tool of management for making optimum use of scarce resources and ultimately add to the profitability of business.

Meaning of Costing, Cost Accounting and Cost Accountancy

Costing. The terms '*costing*' and '*cost accounting*' are often used interchangeably. The Chartered Institute of Management Accountants (CIMA) of UK has defined costing as, "*the techniques and processes of ascertaining costs*". Wheldon* has defined costing as, "*the classifying, recording and appropriate allocation of expenditure for the determination of costs, the relation of these costs to sales value and the ascertainment of profitability.*" Thus, costing simply means cost finding by any process or technique. It consists of principles and rules which are used for determining:

- (a) the cost of manufacturing a product; e.g., motor car, furniture, chemical, steel, paper, etc. and
- (b) the cost of providing a service; e.g., electricity, transport, education, etc.

Cost Accounting. Cost accounting is a formal system of accounting for costs in the books of account by means of which costs of products and services are ascertained and controlled. An authoritative definition of cost accounting has been given by CIMA of UK as follows: "*Cost accounting is the process of accounting for costs from the point at which expenditure is incurred or committed to the establishment of its ultimate relationship with cost centres and cost units. In its widest usage, it embraces the preparation of statistical data, the application of cost control methods and ascertainment of profitability of activities carried out or planned.*"

Costing and Cost Accounting—Difference. Though the terms '*costing*' and '*cost accounting*' are interchangeably used, there is a difference between the two. Costing is simply determining costs by using any method like arithmetic process, memorandum statements, etc. Cost Accounting, on the other hand, denotes the formal accounting mechanism by means of which costs are ascertained by recording them in the books of account. In simple words, costing means finding out the cost of product or service by any technique or method, cost accounting means costing using double entry system.

Cost Accountancy. Cost accountancy is a very wide term. It means and includes the principles, conventions, techniques and systems which are employed in a business to plan and control the utilisation of its resources. It is defined by CIMA of UK, as "*the application of costing and cost accounting principles, methods and techniques to the science, art and practice of cost control and the ascertainment of profitability. It includes the presentation of information derived therefrom for the purposes of managerial decision-making.*" Cost accountancy is thus the *science, art and practice* of a cost accountant.

Scope. Cost accountancy is a wide term and includes costing, cost accounting, cost control and cost audit.

Cost control involves establishing pre-determined standards of cost for different elements *i.e.* material, labour and overhead. These standard costs are then compared with actual costs and differences between the two are analysed and the necessary corrective action is taken.

Cost audit is the application of auditing principles and procedures in the field of cost accounting. It is defined by CIMA, London as "verification of cost accounts and a check on the adherence to the cost accounting plan."

OBJECTIVES AND FUNCTIONS OF COST ACCOUNTING

The main objectives of cost accounting are as follows:

1. Ascertainment of cost. This is the primary objective of cost accounting. In other words, the basic objective of cost accounting is to ascertain the cost of products and services. For cost ascertainment different techniques and systems of costing are used in different industries.

2. Control and reduction of cost. Cost accounting aims at improving efficiency by controlling and reducing cost. This objective is becoming increasingly important because of growing competition.

3. Guide to business policy. Cost accounting aims at serving the needs of management in conducting the business with utmost efficiency. Cost data provide guidelines for various managerial decisions like make or buy, selling below cost, utilisation of idle plant capacity, introduction of a new product, etc.

4. Determination of selling price. Cost accounting provides cost information on the basis of which selling prices of products or services may be fixed. In periods of depression, cost accounting guides in deciding the extent to which the selling prices may be reduced to meet the situation.

5. Measuring and improving performance. Cost accounting measures efficiency by classifying and analysing cost data and then suggest various steps in improving performance so that profitability is increased.

In order to realise these objectives, the data provided by cost accounting may have to be re-classified, re-organised and supplemented by other relevant business data from outside the formal cost accounting system.

COST ACCOUNTING AND FINANCIAL ACCOUNTING — COMPARISON

Both cost accounting and financial accounting are concerned with systematic recording and presentation of financial data. The two systems rest on the same principles concerning debit and credit and have the same sources of recording the transactions. But cost accounting is much more detailed than financial accounting. This is because in financial accounting profit or loss is ascertained for the business as a whole whereas in cost accounting detailed cost and profit data for various parts of business like departments, products, etc., are shown. This is explained in the following example :

Suppose a company is manufacturing three products — A, B and C. Under financial accounting and cost accounting the following types of statements are prepared.

Under Financial Accounting. A Profit and Loss Account is prepared to compute profit as shown below (data is assumed):

*Cost Accounting and Costing Methods — Wheldon.

Profit and Loss Account for the year ending 31st March, 2013

To Materials	₹ 75,000	By Sales	₹ 1,50,000
To Wages	20,000		
To Other expenses	25,000		
To Profit (Balancing figure)	30,000		
	<u>1,50,000</u>		<u>1,50,000</u>

This statement shows that total profit is ₹ 30,000 but it does not disclose the details of profit/loss of each of products A, B and C in the total profit. This is revealed by cost accounting.

Under Cost Accounting. A detailed statement is prepared as follows : (Data of above Profit and Loss Account with further assumptions).

Statement of Cost and Profit for the year ending 31st March, 2013

	Total ₹	Product A ₹	Product B ₹	Product C ₹
Materials	75,000	40,000	12,000	23,000
Wages	20,000	10,000	5,000	5,000
Other expenses	25,000	20,000	3,000	2,000
Total cost	<u>1,20,000</u>	<u>70,000</u>	<u>20,000</u>	<u>30,000</u>
Sales	<u>1,50,000</u>	<u>96,000</u>	<u>28,000</u>	<u>26,000</u>
Profit/Loss (-)	<u>30,000</u>	<u>26,000</u>	<u>8,000</u>	<u>(-) 4,000</u>

In cost accounts, detailed costs are compiled for each product so that cost and profit on each product can be known. In the above Statement of Cost and Profit, it can be seen that total profit is ₹ 30,000 i.e. the same amount as in financial Profit and Loss Account. In addition, cost accounts show that in the total profit of ₹ 30,000, Product A is contributing ₹ 26,000 and Product B ₹ 8,000, whereas Product C is showing a loss of ₹ 4,000. When management gets this information, it should investigate to find out the reasons of loss in Product C. If Product C cannot be made profitable, its production should be stopped to improve the overall profit picture of the company. However, this types of information is not revealed by financial accounting.

The **main points of difference** between Cost Accounting and Financial Accounting are explained below:

Basis	Financial Accounting	Cost Accounting
1. Purpose	The main purpose of Financial accounting is to prepare Profit and Loss Account and Balance Sheet for reporting to owners or shareholders and other outside agencies, i.e., external users.	The main purpose of cost accounting is to provide detailed cost information to management, i.e., internal users.
2. Statutory requirements	These accounts are obligatory to be prepared according to the legal requirements of Companies Act and Income Tax Act.	Maintenance of these accounts is voluntary except in certain industries where it has been made obligatory to keep cost records under the Companies Act.

3. Analysis of cost and profit	Financial accounts reveal the profit or loss of the business as a whole for a particular period. It does not show the figures of cost and profit for individual products, departments and processes.	Cost accounts show the detailed cost and profit data for each product line, department, process, etc.
4. Periodicity of reporting	Financial reports (Profit and Loss Account and Balance Sheet) are prepared periodically, usually on an annual basis.	Cost reporting is a continuous process and may be on daily, weekly, monthly basis, etc.
5. Control aspect	It lays emphasis on the recording of financial transactions and does not attach importance to control aspect.	It provides for a detailed system of controls with the help of certain special techniques like standard costing and budgetary control.
6. Historical and pre-determined costs	It is concerned almost exclusively with historical records. The historical nature of financial accounting can be easily understood in the context of the purposes for which it was designed.	It is concerned not only with historical costs but also with pre-determined costs. This is because cost accounting does not end with what has happened in the past. It extends to plans and policies to improve performance in the future.
7. Format of presenting information	Financial accounting has a single uniform format of presenting information, i.e., Profit and Loss Account, Balance Sheet and Cash Flow Statement.	Cost accounting has varied forms of presenting cost information which are tailored to meet the needs of management and thus lacks a uniform format.
8. Types of transactions recorded	Financial accounting records only external transactions like sales, purchases, receipts, etc., with outside parties. It does not record internal transactions.	Cost accounting not only records external transactions but also internal or inter-departmental transactions like issue of materials by store-keeper to production departments.
9. Types of statements prepared	Financial accounting prepares general purpose statements like Profit and Loss Account and Balance Sheet. That is to say that financial accounting must produce information that is used by many classes of people, none of whom have explicitly defined informational needs.	Cost accounting generates special purpose statements and reports like Report on Loss of Materials, Idle Time Report, Variance Report, etc. Cost accounting identifies the user, discusses his problems and needs and provides tailored information.

APPLICATION OF COST ACCOUNTING

Cost accounting is generally considered as being applicable only to manufacturing concerns. This is not so. Its applications are in fact much wider. All types of activities, manufacturing and non-manufacturing, in which costs are incurred and monetary value is involved, should consider the use of cost accounting. Wholesale and retail business, banking and insurance companies, railways, airways,

shipping and road transport companies, hotels, hospitals, schools, colleges, universities, farming and cinema houses, all may employ cost accounting techniques to operate efficiently. It is only a matter of recognition by the management of the applicability of these costing concepts and techniques in their own fields of endeavour.

ADVANTAGES OF COST ACCOUNTING

Financial accounting has certain limitations which have given rise to cost accounting. In other words, the emergence of cost accounting is because of the limitations of financial accounting. Cost accounting has many advantages but the extent of the advantages obtained will depend upon the efficiency with which cost system is installed and also the extent to which the management is prepared to accept the system.

The principal advantages of cost accounting are as follows:

Advantages to Management

1. Reveals profitable and unprofitable activities. A system of cost accounting reveals profitable and unprofitable activities. On this information, management may take steps to reduce or eliminate wastages and inefficiencies occurring in any form such as idle time, under-utilisation of plant capacity, spoilage of materials, etc.

2. Helps in cost control. Cost accounting helps in controlling costs with special techniques like standard costing and budgetary control.

3. Helps in decision making. It supplies suitable cost data and other related information for managerial decision-making, such as introduction of a new product line, determining export price of products, make or buy a component, etc.

4. Guides in fixing selling prices. Cost is one of the most important factors to be considered while fixing prices. A system of cost accounting guides the management in the fixation of selling prices, particularly during depression period when prices may have to be fixed below cost.

5. Helps in inventory control. Perpetual inventory system, which is an integral part of cost accounting, helps in the preparation of interim profit and loss account. Other inventory control techniques like ABC analysis, level setting, etc., are also used in cost accounting.

6. Aids in formulating policies. Costing provides such information as enables the management to formulate production and pricing policies and preparing estimates of contracts and tenders.

7. Helps in cost reduction. It helps in the introduction of a cost reduction programme and finding out new and improved ways to reduce costs.

8. Reveals idle capacity. A concern may not be working to full capacity due to reasons such as shortage of demand, machine breakdown or other bottlenecks in production. A cost accounting system can easily work out the cost of idle capacity so that management may take immediate steps to improve the position.

9. Checks the accuracy of financial accounts. Cost accounting provides a reliable check on the accuracy of financial accounts with the help of reconciliation between the two at the end of the accounting period.

10. Prevents frauds and manipulation. Cost audit system, which is a part of cost accountancy, helps in preventing manipulation and frauds and thus reliable cost data can be furnished to management and others.

Advantages to Workers

Workers are benefited by introduction of incentive plans of wage payment which is an integral part of a cost system. This results not only in higher productivity but also higher earnings for workers.

Advantages to Society

An efficient cost system is bound to lower the cost of production. The benefits of cost reduction and cost control accrue to the public at large in the form of lower prices of products and services.

Advantages to Government Agencies and Others

A cost system produces ready figures for use by government, wage tribunals, trade unions, etc., for use in problems like price fixing, wage level fixation, settlement of industrial disputes, etc.

LIMITATIONS OR OBJECTIONS AGAINST COST ACCOUNTING

Despite the fact that the development of cost accounting is one of the most significant steps to improve performance, certain objections are raised against its introduction. These are as follows:

1. It is unnecessary. It is argued that maintenance of cost records is not necessary and involves duplication of work. It is based on the premise that a good number of concerns are functioning prosperously without any system of costing. This may be true, but in the present world of competition, to conduct a business with utmost efficiency, the management needs to know detailed cost information for its decision-making. Only a cost accounting system can serve this need of the management and thus help in the more efficient conduct of a business.

2. It is expensive. It is pointed out that installation of a costing system is quite expensive which only large concerns can afford. It is also argued that installation of the system will involve additional expenditure which will lead to a diminution of profits. In this respect, it may be said that a costing system should be treated as an investment and the benefits derived from the system must exceed the amount spent on it. It should not prove a burden on the finances of the company.

3. It is inapplicable. Another argument sometimes put forward is that modern methods of costing are not applicable to many types of industry. This plea is not very apt. The fault lies in an attempt to introduce a readymade costing system in a firm. A costing system must be specially designed to meet the needs of a business. Only then the system will work successfully and achieve the objectives for which it is introduced. In fact, applications of costing are very wide. All types of activities, manufacturing and non-manufacturing, should consider the use of cost accounting.

4. It is a failure. The failure of a costing system in some concerns is quoted as an argument against its introduction in other undertakings. This is a very fallacious argument. If a system does not produce the desired results, it is wrong to jump to the conclusion that the system is at fault. The reasons for its failure should be probed. In order to make the system a success, the utility of the system should be explained and the cooperation of the employees should be sought by convincing them that the system is for the betterment of all.

INSTALLATION OF A COSTING SYSTEM

There cannot be a readymade costing system for every undertaking. In order to meet the special needs of a business, a costing system has to be specially devised to give it a blend of efficiency and economy. The installation of a costing system requires a thorough study and understanding of all the

aspects involved as otherwise the system may be a misfit and enterprise will not be able to derive full advantage from it.

To start with, it is important to make cost benefit analysis, i.e., weigh the cost of the system against the likely benefits to be derived from it. The benefits from the system must exceed the amount spent on it. The management must feel the need for it and should be able to make full use of the information available from the system in the conduct of business. In other words, the system should be justified on the basis of its value to management.

Steps in Installation

The installation of a costing system requires the following steps to be taken:

1. Preliminary investigations should be made relating to the technical aspects of the business. For instance, the nature of the product and methods of production will determine the type of costing system to be applied.
2. The organisation structure of the business should be studied to ascertain the scope of authority of each executive. The existing organisation should be disturbed to the minimum as may be advisable after full consideration.
3. The methods of purchase, storage and issue of materials should be examined and modified as per the requirements.
4. The existing methods of remunerating labour should be examined for the purpose of introducing any incentive plans.
5. Forms and accounting records should be so designed so as to involve minimum clerical labour and expenditure.
6. The size and layout of the factory should be studied.
7. The costing system should be effective in cost control and cost reduction.
8. Costing system should be simple and easy to operate. Unnecessary details should be avoided.
9. The installation and operation of the system should be economical.
10. The system should be introduced gradually.

Practical Difficulties

Apart from technical costing problems, a cost accountant is confronted with certain practical difficulties in installing a costing system. These are:

1. Lack of support of top management. In order to make the costing system a success, it must have the whole-hearted support of every member of the management. Many a time, the costing system is introduced at the behest of the Managing Director or the Financial Director without the support of functional managers. They view the system as an interference in their work and do not make use of the system.

Before the system is installed, the cost accountant should ensure that the management is fully committed to the costing system. A sense of cost consciousness should be created in their minds by explaining them that the system is for their benefit.

2. Resistance from the accounting staff. The existing accounting staff may not welcome the new system. This may be because they look with suspicion at a system which is not known to them. The cooperation of the employees should be sought by convincing them that the system is needed to supplement the financial accounting system and that it is for the betterment of all.

3. Non-cooperation of working and supervisory staff. Correct activity data which is supplied by supervisory staff and workers is necessary for a successful costing system. They may not cooperate and resist the additional paper work arising as a result of the introduction of the system. Such resistance generally arises out of ignorance. Proper education should be given to the staff regarding benefits of the system and the important roles they have to play to make it successful.

4. Shortage of trained staff. In the initial stages, there may be shortage of trained costing staff. The staff should be properly trained so that costing department can run efficiently.

CONCEPT OF COST

The term 'cost' does not have a definite meaning and its scope is extremely broad and general. It is, therefore, not easy to define or explain this term without leaving any doubt concerning its meaning. Cost accountants, economists and others develop the concept of cost according to their needs because one complete description of 'cost' to suit all situations is not possible.

According to Oxford Dictionary, cost means "*the price paid for something*". However, some of the definitions of cost are given below:

1. Cost is "*the amount of expenditure (actual or notional) incurred or attributable to a given thing*". (CIMA, UK)
2. "*Cost is a measurement, in monetary terms, of the amount of resources used for the purpose of production of goods or rendering services*". (Cost Accounting Standards of ICWA of India)
3. "*A cost is the value of economic resources used as a result of producing or doing the things costed*". (W.M. Harper)
4. "*Cost means economic sacrifice, measured in terms of standard monetary unit, incurred or potentially to be incurred, as a consequence of a business decision to achieve a specific objective*". (Committee on Cost Concepts and Standards of **American Accounting Association**).

Cost Vs. Expense and Loss

Often the terms 'cost' and 'expense' are used interchangeably. But cost should be distinguished from expense and loss.

Expense is defined as "*an expired cost resulting from a productive usage of an asset*". It is that cost which has been applied against revenue of a particular accounting period in accordance with the principle of matching costs to revenue. In other words, an expense is that portion of the revenue earning potential of an asset which has been consumed in the generation of revenue. Unexpired or unconsumed part of the cost is recorded as an asset in the balance sheet. Such an unexpired cost is converted into an expense when it expires while helping to earn revenue. Depreciation of plant is an example of expired cost while prepaid insurance is an example of unexpired cost.

Loss is defined as "*reduction in firm's equity, other than from withdrawals of capital for which no compensating value has been received*". A loss is an expired cost resulting from the decline in the service potential of an asset that generated no benefit to the firm. Obsolescence or destruction of stock by fire are examples of loss.

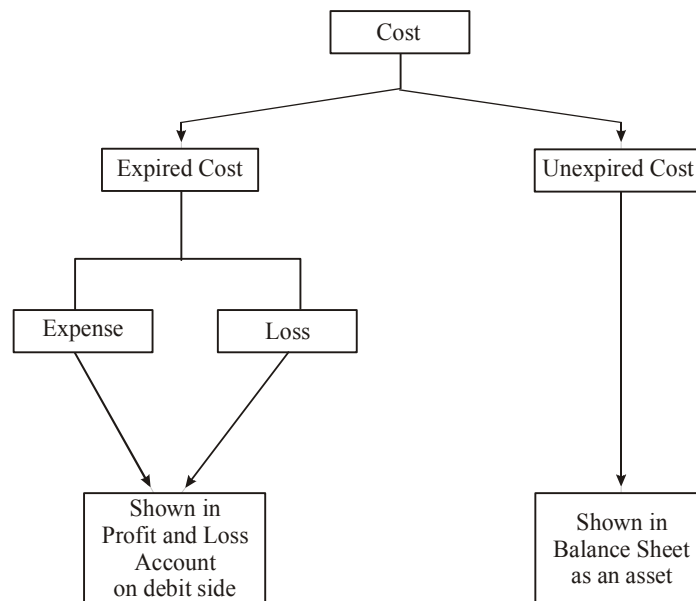


FIG. 1.2. Relation of Cost, Expense and Loss.

COST CENTRE

A cost centre is defined by CIMA of UK as “a location, person, or item of equipment (or group of these) for which costs may be ascertained and used for the purpose of control”. Thus, a cost centre refers to a section of the business to which costs can be charged. It may be a location (a department, a sales area), an item of equipment (a machine, a delivery van), a person (a salesman, a machine operator) or a group of these (two automatic machines operated by one workman). The main purpose of ascertaining the cost of a cost centre is control of cost.

Cost centres are primarily of two types:

- (a) **Personal cost centre**—which consists of a person or a group of persons,
- (b) **Impersonal cost centre**—which consists of a location or an item of equipment or group of these. From functional point of view, cost centres may be of following two types:
 - (a) **Production cost centre**—This is that cost centre where actual production work takes place. Examples are melting shop, machine department, welding department, finishing shop, etc.
 - (b) **Service cost centre**—This is that cost centre which are ancillary to and render services to production cost centres. Examples of service cost centres are power house, tool-room, stores department, repair shop, canteen, etc. Costs incurred in service cost centres are of indirect type.

A cost accountant sets up cost centres to enable him to ascertain the costs he needs to know. A cost centre is charged with all the costs that relate to it; e.g., if a cost centre is a machine, it will be charged with the costs of power, light, depreciation and its share of rent, etc. The purpose of ascertaining the cost of a cost centre is cost control. The person in charge of a cost centre is held responsible for the control of cost of that centre.

COST UNIT

It has been seen above that cost centres help in ascertaining the cost by location, equipment or person. Cost unit is a step further which breaks up the cost of a cost centre into smaller sub-divisions and helps in ascertaining the cost of saleable products or services.

A cost unit is defined by CIMA as a “unit of product, service or time in relation to which cost may be ascertained or expressed”. Cost units are the ‘things’, that the business is set up to provide of which cost is ascertained. For example, in a sugar mill, the cost per tonne of sugar may be ascertained, in a textile mill the cost per metre of cloth may be ascertained. Thus ‘a tonne’ of sugar and ‘a metre’ of cloth are cost units. In short, cost unit is unit of measurement of cost.

All sorts of cost units are adopted, the criterion for adoption being the applicability of a particular cost unit to the circumstances under consideration. Broadly, cost units may be :

- (i) **Units of production**, e.g., a kilogram of a chemical, a ream of paper, a tonne of steel, a metre of cable, etc. or
- (ii) **Units of service**, e.g., a km. or a tonne km., a cinema seat, a consulting hour, etc.

A few more examples of cost units in various industries are given below:

Industry	Normal Cost Unit
Cement	Tonne of cement
Chemicals	Tonne, kilogram, litre, gallon, etc.
Bricks	1,000 bricks or 500 bricks
Soft drink	Crate of 24 bottles or 12 bottles
Nursing home	Bed per day
Flour	Tonne of flour
Shoes	Pair or dozen pairs
Pencils	Dozen or gross
Electricity	Kilowatt hour (KWH)
Transport	Passenger kilometre/tonne kilometre
Automobile	Per Car/Scooter, Bus, etc.
Printing press	Thousand copies
Cotton or jute	Bale
Timber	Cubic foot
Mines	Tonne of mineral
Carpets	Square foot
Hotel	Room per day
Gas	Cubic foot/cubic metre
Ship-buding	Ship
Steel	Tonne of steel
Interior decoration	Job
Construction	Building, Flat etc.
Textile	Metre of cloth
Sugar	Tonne of sugar
Petroleum	Barrel/litre

The cost units and cost centres should be those which are natural to the business and which are readily understood and accepted by all concerned.

COST OBJECT

Cost object may be defined as “anything for which a separate measurement of cost may be desired”. A cost accountant may want to know the cost of a particular ‘thing’ and such a ‘thing’ is called a cost object. A cost object may be a product, service, activity, department or process etc. Examples of cost objects are given below:

Cost object	Examples
Product	Car, shaving razor, TV
Service	Telephone hotline, taxi service, electricity
Process	Melting process in a steel mill, weaving process in a textile mill.
Activity	Developing a website on the Internet, Purchasing raw material.
Department	Purchasing department, Personnel department, Production department

CLASSIFICATION OF COSTS

Classification is the process of grouping costs according to their common characteristics. It is a systematic placement of like items together according to their common features. There are various ways of classifying costs as given below. Each classification serves a different purpose.

1. Classification into Direct and Indirect Costs

Costs are classified into direct costs and indirect costs on the basis of their identifiability with cost units or jobs or processes or cost centres.

Direct costs. These are those costs which are incurred for and conveniently identified with a particular cost unit, process or department. Cost of raw materials used and wages of machine operator are common examples of direct costs. To be specific, cost of steel used in manufacturing a machine can be conveniently ascertained. It is, therefore, a direct cost. Similarly, wages paid to a tailor in a readymade garments company for stitching a piece of trouser is a direct cost because it can be easily identified in the cost of a trouser.

Indirect costs. These are general costs and are incurred for the benefit of a number of cost units, processes or departments. These costs cannot be conveniently identified with a particular cost unit or cost centre. Depreciation of machinery, insurance, lighting, power, rent, managerial salaries, materials used in repairs, etc., are common examples of indirect costs. For example, depreciation of machine for stitching a piece of trouser cannot be known and thus it is an indirect cost.

Costs are not traced or identified directly with a cost unit for one of the three reasons:

1. It is impossible to do so; *e.g.*, rent of building, etc.
2. It is not convenient or feasible to do so; *e.g.*, nails used in furniture, sewing thread, etc.
3. Management chooses not to do so; *i.e.*, many companies classify certain items of cost as indirect because it is customary in the industry to do so; *e.g.*, carriage inward may be treated as an indirect expense. (Alternatively, it is treated as a part of the cost of direct material purchased).

The terms direct and indirect should be used in relation to the object of costing. An item of cost may be direct in one case and the same may be indirect in another case. It is the nature of business and the cost unit chosen that will determine whether a particular cost is direct or indirect. For example, depreciation of plant used by a contractor at site is direct cost whereas depreciation of plant used in a factory is indirect cost. It is because in the factory, plant would probably benefit more than one cost unit and it may not be convenient to allocate depreciation to various cost units with any degree of accuracy.

This classification is important from the point of view of accurate ascertainment of cost. Direct costs of a product can be conveniently determined while the indirect costs have to be arbitrarily apportioned to various cost units. For example, in readymade garments, the cost of cloth and wages of tailor are accurately ascertained without any difficulty and are thus direct costs. But the rent of factory building, managerial salaries, etc., which are indirect costs, have to be distributed to various cost units on some arbitrary basis and cannot be accurately ascertained.

2. Classification into Fixed and Variable Costs

Costs behave differently when level of production rises or falls. Certain costs change in sympathy with production level while other costs remain unchanged. As such on the basis of behaviour or variability, costs are classified into fixed, variable and semi-variable.

(i) **Fixed costs.** These costs remain constant in 'total' amount over a wide range of activity for a specified period of time; *i.e.*, these do not increase or decrease when the volume of production changes. For example, building rent, managerial salaries remain constant and do not change with change in output level and thus are fixed costs.

But fixed cost 'per unit' decreases when volume of production increases and *vice versa*, fixed cost per unit increases when volume of production decreases. For example, if total fixed cost is ₹ 10,000 per month, per unit fixed cost will be as follows:

Fixed Costs	
•	Rent and lease
•	Managerial salaries
•	Building insurance
•	Salaries and wages of permanent staff
•	Municipal taxes

<i>Total fixed cost (a)</i>	<i>No. of units produced (b)</i>	<i>Fixed cost per unit (a ÷ b)</i>
₹ 10,000	1	₹ 10,000
₹ 10,000	2	₹ 5,000
₹ 10,000	10	₹ 1,000
₹ 10,000	100	₹ 100
₹ 10,000	1,000	₹ 10

The line representing fixed cost per unit will not touch X-axis because the fixed cost per unit cannot be zero.

The characteristics of fixed costs are :

- (a) Total fixed cost does not change within a relevant range of output.
- (b) Per unit fixed cost decreases when output increases and vice-versa, it increases when output decreases.

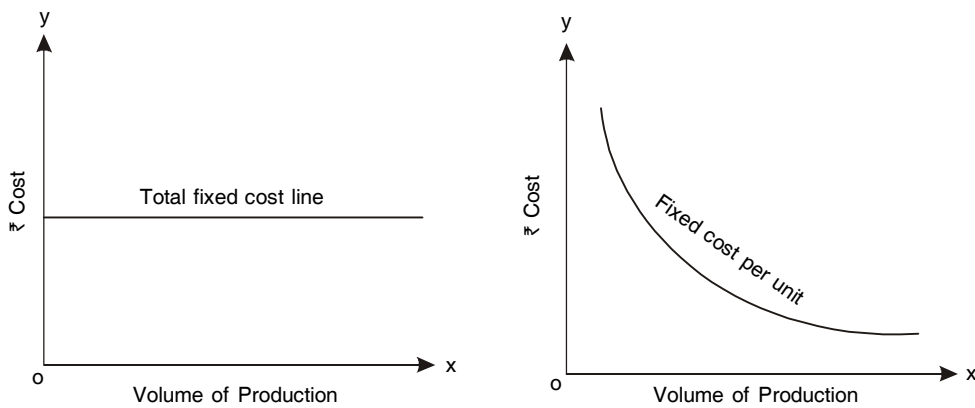


FIG. 1.3. Behaviour of Fixed Costs.

(ii) **Variable costs.** These costs tend to vary in direct proportion to the volume of output. In other words, when volume of output increases, total variable cost also increases, and *vice versa*, when volume of output decreases, total variable cost also decreases. But, the variable cost per unit remains fixed. It is shown in Fig. 1.4.

Thus, in general, variable costs show the following characteristics :

- (a) Total amount of variable cost increases or decreases in direct proportion to the volume of output.
- (b) Variable cost per unit does not change.

The following Table shows the per unit and total variable cost behaviour.

Variable cost per unit (a)	No. of units produced (b)	Total variable cost (a × b)
₹50	1	₹50
₹50	2	₹100
₹50	10	₹500
₹50	100	₹5000
₹50	500	₹25000

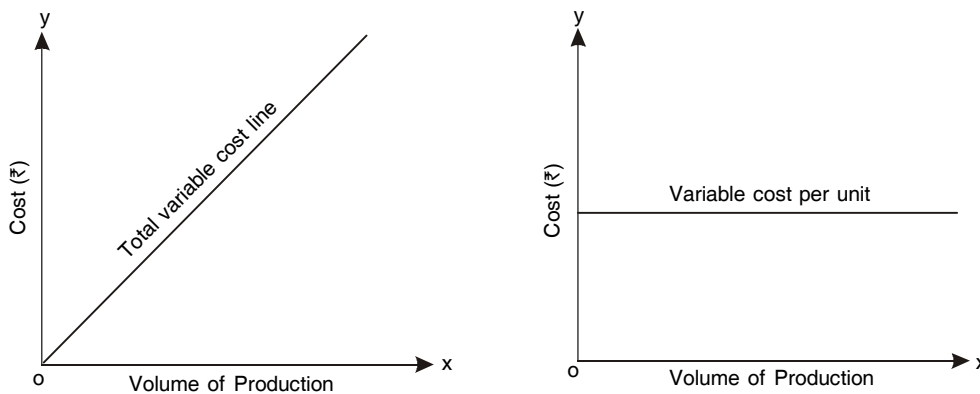


FIG. 1.4. Behaviour of Variable Costs.

(iii) **Semi-variable or semi-fixed costs (Mixed costs).** These costs include both a fixed and a variable component; *i.e.*, these are partly fixed and partly variable. A semi-variable cost has often a fixed element below which it will not fall at any level of output. The variable element in semi-variable costs changes either at a constant rate or in lumps. For example, introduction of an additional shift in the factory will require additional supervisors and certain costs will increase by jumps. In the case of telephone, there is a minimum rent and after a specified number of calls, the charges are according to the number of calls made. Thus, there is no fixed pattern behaviour of semi-variable costs. This is shown in the Fig. 1.5.

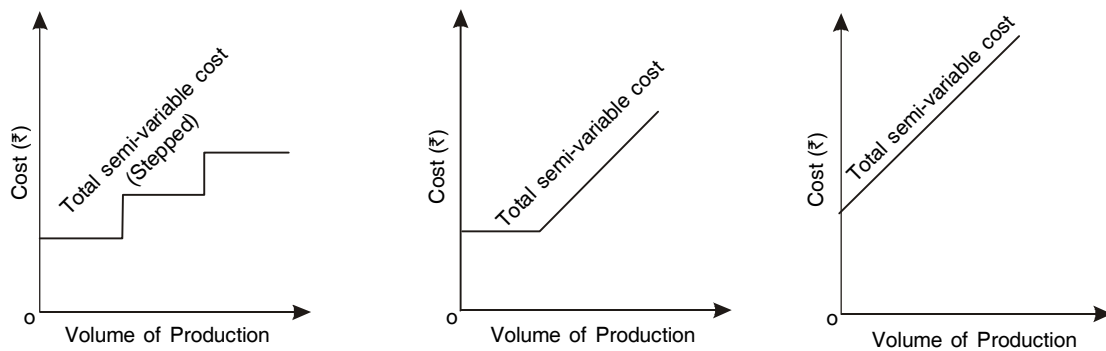


FIG. 1.5. Behaviour of Semi-variable Costs

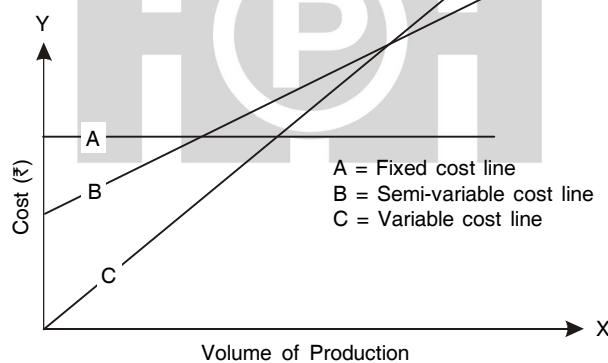


FIG. 1.6. Comparative Behaviour of Total Fixed, Variable and Semi-variable Costs

3. Classification into Controllable and Non-controllable Costs

From the point of view of controllability, costs are classified into controllable costs and non-controllable costs.

Controllable costs. These are the costs which may be directly regulated at a given level of management authority. Variable costs are generally controllable by department heads. For example, cost of raw material may be controlled by purchasing in larger quantities.

Non-controllable costs. These are those costs which cannot be influenced by the action of a specified member of an enterprise. For example, it is very difficult to control costs like factory rent, managerial salaries, etc.

Two important points should be noted regarding this classification. *First*, controllable costs cannot be distinguished from non-controllable costs without specifying the level and scope of management authority. In other words, a cost which is uncontrollable at one level of management may be controllable at another level of management. For example, a departmental manager may have no control over the number of supervisors employed in his department, but this decision may have to be taken by the production manager. Thus supervision cost will be non-controllable at the departmental manager's level, but it will be controllable at the level of production manager. *Second*, all costs are controllable in the long run and at some appropriate management level.

It is a misconception that variable costs are controllable and fixed costs are non-controllable. However, variable costs are more prone to control than fixed costs.

4. Classification into Historical Costs and Pre-determined Costs

On the basis of time of computation, costs are classified into historical costs and pre-determined costs.

Historical costs. These are past costs which are ascertained after these have been incurred. Historical costs are thus nothing but actual costs. These costs are not available until after the completion of the manufacturing operations.

Pre-determined costs. These are future costs which are ascertained in advance of production on the basis of a specification of all the factors affecting cost. These costs are extensively used for the purpose of planning and control.

5. Classification into Normal and Abnormal Costs

Normal cost may be defined as cost which is normally incurred on expected lines at a given level of output. This cost is a part of cost of production. Abnormal cost is that which is not normally incurred at a given level of output. Such cost is over and above the normal cost and is not treated as a part of the cost of production. It is charged to costing Profit and Loss Account.

CLASSIFICATION OF COSTS FOR DECISION MAKING

There are certain costs which are specially computed for use by the management for the purpose of decision-making. These costs may not be recorded in the books of account.

Sunk Costs

A sunk cost is a cost that has already been incurred and that cannot be changed by any decision made now or in the future. Such costs are not relevant for decision-making about the future. To illustrate the concept of such cost, assume that a firm has just paid ₹ 1,00,000 for a special purpose machine. Since the cost outlay has been made, ₹ 1,00,000 investment in the machine is a sunk cost. Even though afterwards the decision to buy the machine is found unwise, no amount of regret can relieve the company of its decision, nor any future decision can cause the costs to be avoided. Despite the fact that sunk costs, which are historical costs, are irrelevant for making decisions, they are frequently analysed in detail before decisions about future courses of action are made. For example, historical costs may affect future tax payments which will differ depending on the course of action selected by management. Moreover, an analysis of historical costs may provide information about how future costs will differ under alternative courses of action.

Sunk cost and irrelevant costs are not synonymous and one should understand the difference between these two. Not all irrelevant costs are sunk costs but all sunk costs are irrelevant. To take an

example, in choosing from the two alternative methods of production, if direct material cost is the same under the two alternatives, it is an irrelevant cost. But direct material cost is not a sunk cost because it will be incurred in future and is a future cost. In the opinion of *Horngren*, a well known authority on the subject, *sunk cost has the same meaning as the past cost and all past costs are irrelevant.*

Differential (or Incremental) Costs

This cost may be regarded as the difference in total cost resulting from a contemplated change. In other words, differential cost is the increase or decrease in total cost that results from an alternative course of action. It is ascertained by subtracting the cost of one alternative from the cost of another alternative. The alternative choice may arise because of change in method of production, in sales volume, change in product mix, make or buy decisions, take or refuse decision, etc.

For differential cost analysis, we need to know the incremental revenues (the change in revenue) and incremental cost (the change in cost) arising from the decision.

Marginal Cost

Marginal cost is the additional cost of producing one additional unit. Marginal cost is the same thing as variable cost. Marginal costing (or variable costing) is a technique of charging only variable costs to products. Inventory is also valued at variable cost only. Fixed cost is treated as period cost and written off in Profit and Loss Account of the period. Marginal costing is also a very important analytical and decision-making tool in the hands of management. It helps in decisions like make or buy, pricing of products, selection of sales mix, etc. (The technique of marginal costing is discussed in this book in a separate chapter).

Imputed Costs (Notional cost)

These are hypothetical costs which are specially computed outside the accounting system for the purpose of decision-making. Interest on capital invested is a common type of imputed cost. As interest on capital is usually not included in cost, it is considered necessary to take it into account when deciding about the alternative capital investment projects. The failure to consider imputed interest cost may result in an erroneous decisions. For example, project A requires a capital investment of ₹ 50,000 and project B ₹ 40, 000. Both the projects are expected to yield ₹ 10,000 as additional profit. Obviously, these two projects are not equally profitable since project B requires less investment and thus, it should be preferred. Similarly, rental value of building owned by a firm is also an imputed cost.

Opportunity Cost

An opportunity cost may be defined as the potential benefit that is lost or sacrificed when the selection of one course of action makes it necessary to give up competing course of action. In other words, an opportunity cost is the sacrifice involved in accepting an alternative under consideration. For example, a company has deposited ₹ 1 lakh in bank at 10% p. a. interest. Now, it is considering a proposal to invest this amount in debentures where the yield is 12% p. a. If the company decides to invest in debentures, it will have to forego bank interest of ₹ 10,000 p. a., which is the opportunity cost.

Opportunity cost is a pure decision-making cost. It is an imputed cost that does not require cash outlay and it is not entered in the accounting books.

Replacement Cost

This is the cost at which there could be purchased an asset identical to that which is being replaced. In simple words, replacement cost is the current market cost of replacing an asset. When the management considers the replacement of an asset, it has to keep in mind its replacement cost and not the cost at which it was purchased earlier. For example, a machinery purchased in 1995 at ₹ 10,000 is discarded in 2003 and a new machinery of the same type is purchased for ₹ 15,000. So the replacement cost of the machinery is ₹ 15,000.

Out-of-pocket Cost (Explicit Cost and Implicit Cost)

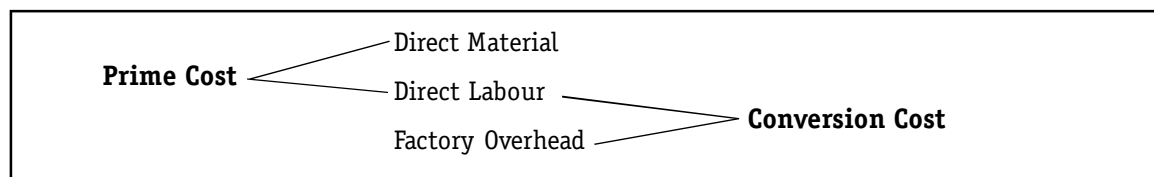
There are certain costs which require cash payment to be made (such as wages, rent) whereas many costs do not require cash outlay (such as depreciation). Out-of-pocket costs, also known as explicit costs, are those costs that involve cash outlays or require the utilisation of current resources. Examples of out-of-pocket costs are wages, material cost, insurance, power cost, etc. Out-of-pocket cost may be either fixed (manager's salary) or variable (raw materials and direct wages). Depreciation on plant and machinery does not involve any cash outlay and therefore is not an out-of-pocket cost. Such costs are also known as implicit costs. Out-of-pocket cost is frequently used as an aid in make or buy decision, price fixation during depression and many other decisions.

Future Cost

No decision can change what has already happened. The past is history and decisions made now can affect only what will happen in the future. Thus, the only relevant costs for decision-making are predetermined or future costs. But it is the historical costs which generally provide a basis for computing future costs. However, changing relationships in the future are also given due consideration while estimating future costs.

Conversion Cost

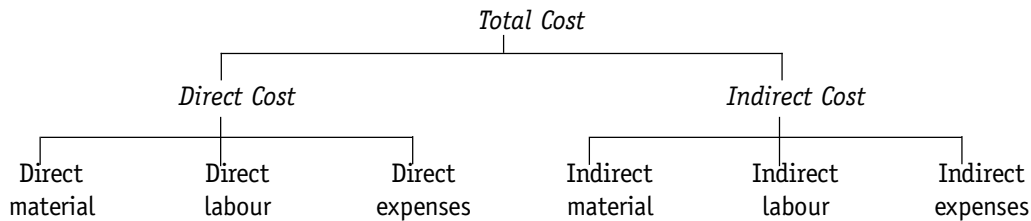
It is the total cost of converting a raw material into finished product. This term is used to denote the sum of direct labour and factory overhead costs in the production of a product. In other words, conversion cost is the factory cost minus direct material cost. Appropriate use of this cost can be made in certain managerial decisions.



It should be noted that labour cost is a part of prime cost as well as conversion cost.

ELEMENTS OF COST

A cost is composed of three elements, i.e., material, labour and expenses. Each of these elements may be direct or indirect. This is shown below :



Material Cost

According to CIMA, UK, material cost is “the cost of commodities supplied to an undertaking.” Materials may be direct or indirect.

Direct materials. Direct material cost is that which can be conveniently identified with and allocated to cost units. Direct materials generally become a part of the finished product. For example, cotton used in a textile mill is a direct material. However, in many cases, though a material forms a part of the finished product, yet, it is not treated as direct material; e.g., nails used in furniture, thread used in stitching garments, etc. This is because value of such materials is so small that it is quite difficult and futile to measure it. Such materials are treated as indirect materials.

Indirect materials. These are those materials which cannot be conveniently identified with individual cost units. These are minor in importance, such as (i) small and relatively inexpensive items which may become a part of the finished product; e.g., pins, screws, nuts and bolts, thread, etc., (ii) those items which do not physically become a part of the finished products; e.g., coal, lubricating oil and grease, sand paper used in polishing, soap, etc:

- | Direct Materials |
|---|
| <ul style="list-style-type: none"> • Clay in bricks • Leather in shoes • Steel in machines • Cloth in garments • Timber in furniture |

- | Indirect Materials |
|---|
| <ul style="list-style-type: none"> • Lubricating oil • Sand paper • Nuts and bolts • Coal • Small tools • Office stationery |

- | Direct Labour |
|---|
| <ul style="list-style-type: none"> • Machine operator • Shoe-maker • Carpenter • Weaver • Tailor |

- | Indirect Labour |
|---|
| <ul style="list-style-type: none"> • Supervisor • Inspector • Cleaner • Clerk • Peon • Watchman |

Labour Cost

This is “the cost of remuneration (wages, salaries, commissions, bonuses, etc.), of the employees of an undertaking”. CIMA

Direct labour. Direct labour cost consists of wages paid to workers directly engaged in converting raw materials into finished products. These wages can be conveniently identified with a particular product, job or process. Wages paid to a machine operator is a case of direct wages.

Indirect labour. It is of general character and cannot be conveniently identified with a particular cost unit. In other words, indirect labour is not directly engaged in the production operations but only to assist or help in production operations.

Expenses

All costs other than material and labour are termed as expenses. It is defined as “the cost of services provided to an undertaking and the notional cost of the use of owned assets.” (CIMA)

Direct expenses. According to CIMA, UK, "direct expenses are those expenses which can be identified with and allocated to cost centres or units." These are those expenses which are specifically incurred in connection with a particular job or cost unit. Direct expenses are also known as *chargeable expenses*.

Indirect expenses. All indirect costs, other than indirect materials and indirect labour costs, are termed as indirect expenses. These cannot be conveniently identified with a particular job, process or work order and are common to cost units or cost centres.

Prime Cost

This is the aggregate of direct material cost, direct labour cost and direct expenses. Thus,

$$\text{Prime Cost} = \text{Direct Materials} + \text{Direct Labour} + \text{Direct Expenses.}$$

Overhead

This is the aggregate of indirect material cost, indirect labour cost and indirect expenses. Overhead is also known as oncost. Thus,

$$\text{Overhead} = \text{Indirect Materials} + \text{Indirect Labour} + \text{Indirect Expenses.}$$

Overheads are divided into production overhead, office overhead and selling overhead as follows :

1. Production overhead. Also known as factory overhead, works overhead or manufacturing overhead, these are those overheads which are concerned with the production function. It includes indirect materials, indirect wages and indirect expenses in producing goods or services.

(a) *Indirect material* — Examples : Coal, oil, grease, etc., stationery in factory office, cotton waste, brush, sweeping broom etc.

(b) *Indirect labour* — Examples : Works manager's salary, salary of factory, office staff, salary of inspector and supervisor, wages of factory sweeper, wages of factory watchmen.

(c) *Indirect expenses* — Examples : Factory rent, depreciation of plant, repair and maintenance of plant, insurance of factory building, factory lighting and power, internal transport expenses.

2. Office and administration overhead. This is the indirect expenditure incurred in general administrative function, *i.e.*, in formulating policies, planning and controlling the functions, directing and motivating the personnel of an organisation in the attainment of its objectives.

These overheads are of general character and have no direct connection with production or sales activities. This category of overhead is also classified into indirect material, indirect labour and indirect expenses.

(a) *Indirect material* — Examples : Stationery used in general administrative office, postage, sweeping broom and brush, etc.

Direct or Chargeable Expenses

- Hire of special plant for a particular job
- Travelling expenses in securing a particular contract
- Cost of patent rights
- Experimental costs
- Cost of special drawings, designs and layouts
- Carriage paid for materials purchased for a specific job
- Royalty paid in mining
- Depreciation or hire of a plant used on a contract at site

Indirect Expenses

- Rent and rates
- Depreciation
- Lighting and power
- Advertising
- Insurance
- Repairs

(b) *Indirect labour* — Examples : Salary of office staff, salary of managing director, remuneration of directors of the company.

(c) *Indirect expenses* — Examples : Rent of office building, legal expenses, office lighting and power, telephone expenses, depreciation of office furniture and equipments, office air-conditioning, sundry office expenses.

3. Selling and distribution overhead. Selling overhead is the cost of promoting sales and retaining customers. It is defined as “the cost of seeking to create and stimulate demand and of securing orders.” Examples are advertisement, samples and free gifts, salaries of salesmen, etc.

Distribution cost includes all expenditure incurred from the time the product is completed until it reaches its destination. It is defined as “the cost of sequence of operations which begins with making the packed product available for despatch and ends with making the reconditioned returned empty packages, if any, available for re-use”. Examples are carriage outwards, insurance of goods in transit, upkeep of delivery vans, warehousing, etc.

Selling and distribution overheads are also grouped into indirect material, indirect labour and indirect expenses.

(a) *Indirect material* — Examples : Packing material, stationery used in sales office, cost of samples, price list, catalogues, oil, grease, etc., for delivery vans, etc.

(b) *Indirect labour* — Examples : Salary of sales manager, salary of sales office staff, salary of warehouse staff, salary of drivers of delivery vans, etc.

(c) *Indirect expenses* — Examples : Advertising, travelling expenses, showroom expenses, carriage outwards, rent of warehouse, bad debts, insurance of goods in transit, etc.

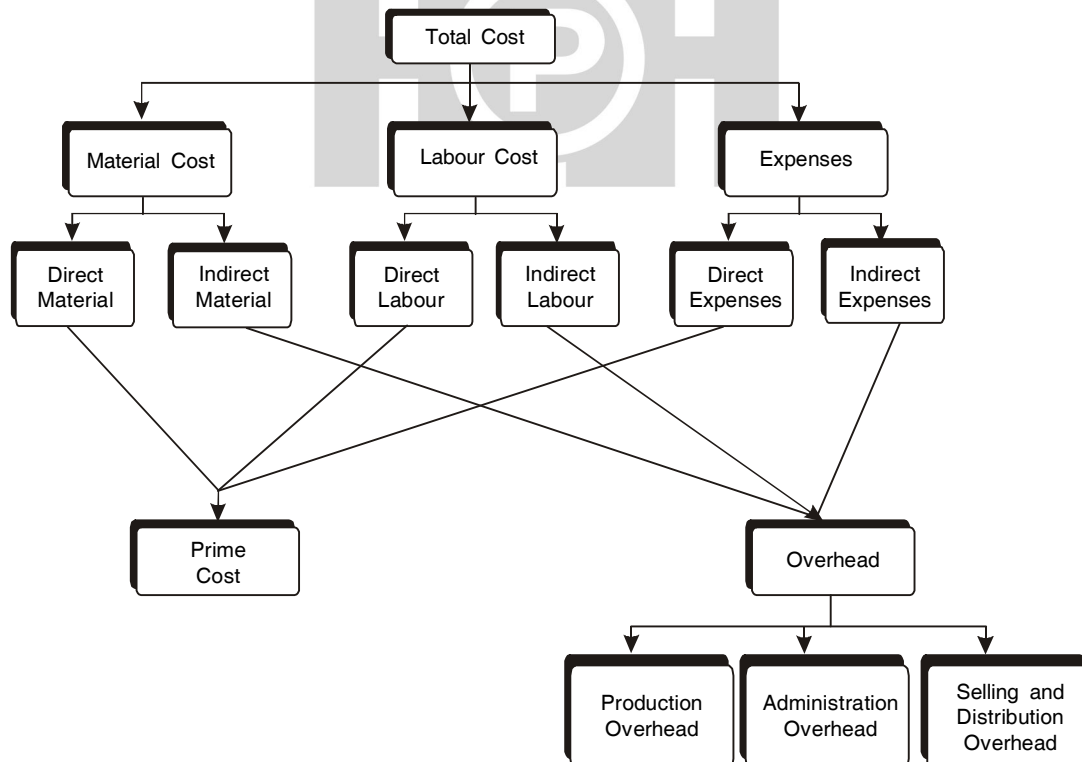


FIG. 1.7. Elements of Cost

Illustration 1.1

A manufacturer has shown an amount of ₹ 19,310 in his books as 'Establishment' which really include the following expenses:

Interest on debentures	1,200
Agents' commission	6,750
Warehouse wages	1,800
Warehouse repairs	1,500
Lighting of office	70
Office salaries	1,130
Director's remuneration	1,400
Travelling expenses of salesmen	1,760
Rent, rates and insurance of warehouse	310
Rent, rates and insurance of office	230
Lighting of warehouse	270
Printing and stationery	1,500
Trade magazines	70
Donations	150
Bank charges	100
Cash discount allowed	770
Bad debts	300

From the above information prepare a statement showing in separate total:

- (a) Selling expenses, (c) Administration expenses.
 (b) Distribution expenses, (d) Expenses which you would exclude from costs.

(B.Com., Kerala)

Solution

(a) Selling Expenses :	₹
Agents' commission	6,750
Travelling expenses of salesmen	1,760
Bad debts	300
Total	8,810
(b) Distribution Expenses :	₹
Warehousing wages	1,800
Warehouse repairs	1,500
Rent, rates and insurance of warehouse	310
Lighting of warehouse	270
Total	3,880
(c) Administration Expenses :	₹
Office salaries	1,130
Office lighting	70

Director's remuneration	1,400
Rent, rates and insurance of office	230
Printing and stationery	1,500
Trade magazines	70
Total	4,400
(d) Items not included in costs	₹
Donations	150
Cash discount allowed	770
Bank charges	100
Interest on debentures	1,200
Total	2,220

Note: List of items not included in cost is given on Page 5.4 Chapter 5.

Components of Total Cost—Elements of cost may be grouped as follows:

(i) Prime Cost = Direct material + Direct labour + Direct expenses.
(ii) Works Cost or Factory Cost = Prime cost + Factory overhead.
(iii) Cost of Production = Works cost + Administration overhead.
(iv) Total Cost or Cost of Sales = Cost of production + Selling and distribution overhead.

Direct Materials	Direct Labour	Direct Expenses		
Prime Cost			Factory overheads	= Prime Cost
Factory Cost			Adm. overhead	= Factory Cost
Cost of Production			Selling & Dist. ohd.	= Cost of Production
				= Total Cost or Cost of Sales

FIG. 1.9. Components of Total Cost

COST SHEET

Cost sheet is defined by CIMA, U.K. as "a document which provides for the assembly of the detailed cost of a cost centre or cost unit."

Thus cost sheet is a periodical statement of cost designed to show in detail the various elements of cost of goods produced like prime cost, factory cost of production and total cost. It is prepared at regular intervals, e.g., weekly, monthly, quarterly, yearly, etc. Comparative figures of the previous period may also be shown in the cost sheet so that assessment can be made about the progress of the business.

Production Statement

Though the term *Production Statement* is used interchangeably with cost sheet, the former is an expanded form of the latter. In addition to cost elements, a production statement includes items of sales, stocks and profits. When the details of cost sheet or production statement are shown in a T-shape

account, it is known as *Production Account*. Other names used are *Cost Statement* and *Statement of cost and Profit*.

Purposes. Cost sheet serves the following purposes:

1. It reveals the total cost and cost per unit of goods produced.
2. It discloses the break-up of total cost into different elements of cost.
3. It provides a comparative study of the cost of current period with that of the corresponding previous period.
4. It acts as a guide to management in fixation of selling prices and quotation of tenders.

Method of Preparing Cost Sheet

A cost sheet is prepared by clarifying costs according to elements — materials, labour and overhead.

1. *Materials* — Cost of materials includes cost of materials purchased plus all expenses relating to purchases, e.g., carriage inward, octroi, custom duty on imported materials, etc.

2. *Labour* — A distinction is to be made between direct labour and indirect labour. Direct labour cost which is also known as productive wages, is taken in the prime cost. Indirect labour cost or unproductive wages are added in the factory overhead.

3. *Overheads* — Overheads are classified into three broad categories :

- (i) Factory Overhead.
- (ii) Office Overhead.
- (iii) Selling and Distribution Overhead.

Specimen of a simple cost sheet is given below:

Cost Sheet (or Statement of Cost) for the period.....

<i>Particulars</i>	No. of units produced.....	
	<i>Total cost</i> ₹	<i>Cost per unit</i> ₹
Direct Materials		
Direct Labour		
Direct (or Chargeable) Expenses		
Prime Cost		
Works Overheads		
Works Cost		
Office and Administrative Overheads		
Cost of Production		
Selling and Distribution Overheads		
Total Cost or Cost of Sales		
Profit or Loss		
Sales		

Illustration 1.2

Prepare a cost sheet of the following data relating to the manufacture of Jeans:

Number of Jeans manufactured during the month	1,000
	₹
Direct materials consumed	20,000
Direct labour	8,000
Indirect labour (in factory)	2,500
Supervision costs (in factory)	1,000
Factory premises rent	1,600
Factory lighting	600
Oil for machines	100
Depreciation of machines	500
Office overheads	8,000
Office salaries	2,000
Misc. office expenses	1,000
Selling and distribution overheads	6,000

Note: A profit margin of 20% on the total cost of goods is expected on the sale of Jeans.

Solution**Cost Sheet (for the period....)**

<i>Particulars</i>		<i>Total for 1,000 units</i>	<i>Per unit</i>
		₹	₹ P.
Direct materials	20,000		
Direct labour	<u>8,000</u>		
	Prime Cost	28,000	28.00
<i>Works/Factory Overheads:</i>			
Indirect labour	2,500		
Supervision costs	1,000		
Factory rent	1,600		
Factory lighting	600		
Oil for machines	100		
Depreciation of machines	<u>500</u>	6,300	6.30
	Works Cost	34,300	34.30
<i>Office and Adm. Overheads:</i>			
Office overheads	8,000		
Office salaries	2,000		
Misc. expenses	<u>1,000</u>	11,000	11.00
	Cost of Production	45,300	45.30
<i>Selling and Distribution Overheads:</i>		6,000	6.00
	Total Cost	51,300	51.30
Profit 20% of Total Cost		10,260	10.26
	Sales	61,560	61.56

Illustration 1.3

From the following information for the month of January, prepare a Cost Sheet to show the following components : (a) Prime Cost, (b) Factory Cost, (c) Cost of Production, (d) Total Cost.

	₹
Direct material	57,000
Direct wages	28,500
Factory rent and rates	2,500
Office rent and rates	500
Plant repairs and maintenance	1,000
Plant depreciation	1,250
Factory heating and lighting	400
Factory manager's salary	2,000
Office salaries	1,600
Director's remuneration	1,500
Telephone and postage	200
Printing and stationery	100
Legal charges	150
Advertisement	1,500
Salesmen's salaries	2,500
Showroom rent	500
Sales	1,16,000

Solution**Cost Sheet for the month of Jan.**

		₹
Direct materials		57,000
Direct wages		28,500
	Prime Cost	85,500
<i>Factory Overhead :</i>		
Factory rent and rates	2,500	
Plant repair and maintenance	1,000	
Plant depreciation	1,250	
Factory heating and lighting	400	
Factory manager's salary	2,000	7,150
	Factory Cost	92,650
<i>Office and Administration Overhead:</i>		
Office salaries	1,600	
Director's remuneration	1,500	
Telephone and postage	200	
Office rent and rates	500	
Printing and stationery	100	
Legal charges	150	4,050
	Cost of Production	96,700
<i>Selling and Distribution Overhead :</i>		
Advertisement	1,500	
Salesmen's salaries	2,500	
Showroom rent	500	4,500
	Total Cost (or Cost of Sales)	1,01,200
	PROFIT	14,800
Sales		1,16,000

Treatment of Stocks

Stocks may be of three types : (a) Stocks of raw materials. (b) Stocks of work-in-progress. (c) Stocks of finished goods.

(a) **Stock of Raw Materials.** In cost sheet, materials consumed in production are shown. In calculating the value of raw materials consumed during the period, opening stock of raw material is added in purchases and the value of closing stock is subtracted from purchases. In the following example with assumed figures, the treatment of stock of raw material has been shown :

	₹
Opening stock of raw materials	30,000
Add: Purchases	<u>80,000</u>
	1,10,000
Less: Closing stock of raw materials	<u>17,000</u>
Cost of materials consumed	<u>93,000</u>

(b) **Stock of Work-in-Progress.** This is the stock of semi-finished goods, *i.e.*, the goods which are in manufacturing process. The cost of work-in-progress consists of cost of materials consumed, direct wages and a proportionate part of the factory overhead. Therefore, in the preparation of cost sheet, opening and closing stocks of work-in-progress are adjusted at the stage of factory cost. Opening stock of work-in-progress is added to works cost and closing stock is subtracted from this figure. In the following example, figures have been assumed to show the treatment of the stock of work-in-progress.

	₹
Direct materials consumed	93,000
Direct wages	22,000
Direct expenses	<u>5,000</u>
	Prime Cost
Add: Factory overhead	<u>24,000</u>
	1,44,000
Add : Opening stock of work-in-progress	<u>14,000</u>
	1,58,000
Less: Closing stock of work-in-progress	<u>8,000</u>
	Works Cost or Factory Cost
	<u>1,50,000</u>

(c) **Stock of Finished Goods.** This stock is adjusted after the calculation of cost of production. The opening stock is added to and closing stock is subtracted from the cost of production. The resulting figure will be the Cost of Goods Sold. This is shown below, continuing the same assumed figures :

	₹
	Factory cost
	1,50,000
Add: Administration overhead	<u>10,000</u>
	Cost of Production
	1,60,000
Add : Opening stock of finished goods	<u>30,000</u>
	1,90,000
Less: Closing stock of finished goods	<u>22,000</u>
	Cost of Goods Sold
	<u>1,68,000</u>

Note. In case the value of closing stock of finished goods is not given in the question, it will be valued at the current cost of production.

The treatment of the above three types of stocks is illustrated in the following specimen cost sheet._____

Cost Sheet for the period.....

Production units.

<i>Particulars</i>	<i>Total cost</i> ₹	<i>Cost per unit</i> ₹
Opening stock of raw materials	XXX	
<i>Add:</i> Purchases	XXX	
<i>Add :</i> Expenses on purchases	<u>XXX</u>	
	XXX	
<i>Less :</i> Closing stock of raw materials	<u>XXX</u>	
Cost of material consumed		
Direct wages		
Direct expenses		
	Prime Cost	
<i>Add .</i> Factory overhead		
<i>Add :</i> Opening stock of work-in-progress		
<i>Less:</i> Closing stock of work-in-progress		
	Factory or Works Cost	
<i>Add :</i> Administrative overhead		
	Cost of Production	
<i>Add :</i> Opening stock of finished goods		
<i>Less :</i> Closing stock of finished goods		
	Cost of Goods Sold	
<i>Add :</i> Selling and distribution overhead		
	Cost of Sales	
	Profit (or Loss)	
	Sales	

Illustration 1.4

The Bangalore Ltd. supplies you the following information and requires you to prepare a cost sheet.

	₹
Stock of raw materials on 1st Sept., 2013	75,000
Stock of raw materials on 30th Sept., 2013	91,500
Direct wages	52,500
Indirect wages	2,750
Sales	2,00,000
Work-in-progress on 1st Sept., 2013	28,000
Work-in-progress on 30th Sept., 2013	35,000
Purchases of raw materials	66,000
Factory rent, rates and power	15,000
Depreciation of plant and machinery	3,500
Expenses on purchases	1,500
Carriage outward	2,500
Advertising	3,500
Office rent and taxes	2,500
Travellers' wages and commission	6,500

Stock of finished goods on 1st Sept., 2013	54,000
Stock of finished goods on 30th Sept., 2013	31,000

(B. Com., Delhi, Andhra)

Solution**Cost Sheet***for the Month ending 30th Sept., 2013*

	₹	₹
<i>Add:</i> Opening Stock of raw material (1st Sept.)	75,000	
Purchases	66,000	
Expenses on purchases	1,500	
	1,42,500	
<i>Less:</i> Closing Stock of raw material (30th Sept.)	91,500	
Materials consumed		51,000
Direct wages		52,500
		1,03,500
		28,000
<i>Add:</i> Opening Work-in-progress (1st Sept.)		
Factory Overheads :		
Indirect wages	2,750	
Factory rent, rates and power	15,000	
Depreciation of plant and machinery	3,500	
	21,250	
<i>Less:</i> Closing Work-in-progress (30th Sept.)		1,52,750
		35,000
		1,17,750
		2,500
		1,20,250
<i>Add:</i> Opening Stock of finished goods (1st Sept.)		54,000
		1,74,250
<i>Less:</i> Closing Stock of finished goods (30th Sept.)		31,000
		1,43,250
		2,500
		3,500
		12,500
		1,55,750
		44,250
		2,00,000

ITEMS EXCLUDED FROM COST

The following items are of financial nature and thus not included while preparing a cost sheet:

- | | |
|-------------------------------------|---|
| 1. Cash discount | 7. Transfer to reserves |
| 2. Interest paid | 8. Donations |
| 3. Preliminary expenses written off | 9. Income-tax paid |
| 4. Goodwill written off | 10. Dividend paid |
| 5. Provision for taxation | 11. Profit/loss on sale of fixed assets |
| 6. Provision for bad debts | 12. Damages payable at law, etc. |

Exhaustive Cost Sheet (Detailed)

Units produced

<i>Particulars</i>	<i>Total cost</i> ₹	<i>Cost per unit</i> ₹
Opening Stock of Direct Raw Materials		
<i>Add :</i> Purchases
<i>Add :</i> Carriage Inward
<i>Add :</i> Octroi, Customs Duty and other expenses on purchases
<i>Less :</i> Closing Stock of Direct Raw Materials
<i>Cost of Direct Materials Consumed</i>
Direct or Productive Wages
Direct (or Chargeable) Expenses
Prime Cost
<i>Add :</i> <i>Works or Factory Overheads :</i>	...	
Indirect Materials	...	
Indirect Wages	...	
Leave Wages	...	
Overtime Premium	...	
Fuel and Power	...	
Coal	...	
Factory Rent and Taxes	...	
Insurance	...	
Factory Lighting	...	
Supervision	...	
Works Stationery	...	
Canteen and Welfare Expenses	...	
Repairs	...	
Haulage	...	
Works Salaries	...	
Depreciation of Plant & Machinery	...	
Works Expenses	...	
Gas and Water	...	
Drawing Office Salaries	...	
Technical Director's Fees	...	
Laboratory Expenses	...	
Works Telephone Expenses	...	
Internal Transport Expenses	...	
<i>Less :</i> Sale of Scrap	...	
<i>Add :</i> Operating Stock of Work-in-progress	...	
<i>Less :</i> Closing Stock of Work-in-progress	...	
Works Cost	...	
<i>Add :</i> <i>Office and Administrative Overheads :</i>	...	
Office Salaries	...	
Director's Fees	...	
Office Rent and Rates	...	
Office Stationery and Printing	...	

(Contd...)

<i>Particulars</i>	<i>Total cost ₹</i>	<i>Cost per unit ₹</i>
Sundry Office Expenses	...	
Depreciation and Repairs of Office Equipment	...	
Depreciation of Office Furniture	...	
Subscription to Trade Journals	...	
Office Lighting	...	
Establishment Charges	...	
Director's Travelling Expenses	...	
Postage	...	
Legal Charges	...	
Audit Fees	...	
Cost of Production	...	
<i>Add</i> : Opening Stock of Finished Goods	...	
<i>Less</i> : Closing Stock of Finished Goods	...	
Cost of Goods Sold	...	
<i>Add</i> : <i>Selling and Distribution Overheads</i> :	...	
Advertising	...	
Showroom Expenses	...	
Bad Debts	...	
Salesmen's Salaries and Expenses	...	
Packing Expenses	...	
Carriage Outward	...	
Commission of Sales Agents	...	
Counting House Salaries	...	
Cost of Catalogues	...	
Expenses of Delivery Vans	...	
Collection Charges	...	
Travelling Expenses	...	
Cost of Tenders	...	
Warehouse Expenses	...	
Cost of Mailing Literature	...	
Sales Manager's Salaries	...	
Sales Director's Fees	...	
Showroom Expenses	...	
Sales Office Expenses	...	
Depreciation and Repairs of Delivery Vans	...	
Expenses of Sales Branches	...	
Cost of Sales (or Total Cost)	...	
PROFIT	...	
Sales	...	

Treatment of Scrap

In certain manufacturing industries, scrap arises in the form of cuttings, trimmings, borings from metals or timber, etc. Scrap generally can be sold at a price. The realisable value of scrap is deducted from factory overheads or factory cost while preparing the cost sheet. This is shown in the following illustration.

Illustration 1.5

From the following information prepare a cost sheet to show :

(a) Prime cost; (b) Works cost; (c) Cost of production ; (d) Cost of sales; and (e) Profit.

	₹
Raw materials purchased	32,250
Carriage on purchases	850
Direct wages	18,450
Factory overhead	2,750
Selling overhead	2,450
Office overhead	1,850
Sales	75,000
Sale of factory scrap	250
Opening stock of finished goods	9,750
Closing stock of finished goods	11,100
	(B. Com. Kerala)

Solution**Cost Sheet** for the period

	₹	₹
<i>Add:</i> Raw materials	35,250	
Carriage on purchases	850	36,100
Direct wages		18,450
	(a) Prime Cost	54,550
Factory overhead		2,750
		57,300
<i>Less :</i> Sale of factory scrap		250
	(b) Works Cost	57,050
Office overhead		1,850
	(c) Cost of Production	58,900
<i>Add :</i> Opening stock of finished goods		9,750
		68,650
<i>Less :</i> Closing stock of finished goods		11,100
	Cost of Goods Sold	57,550
Selling overhead		2,450
	(d) Cost of Sales	60,000
	(e) Profit	15,000
Sales		75,000

PRICE QUOTATIONS OR TENDERS AND ESTIMATED COST SHEET

Quite often the management has to quote prices of its products in advance or has to submit tenders for goods to be supplied. For this purpose an estimated cost sheet has to be prepared. Such an estimated cost sheet is prepared to show the estimated cost of products to be manufactured. In this cost sheet, cost of direct materials, direct wages and various types of overheads are pre-determined on

the basis of past costs after taking into account the present conditions and also the anticipated changes in the future price level. Overheads are absorbed on the basis of a suitable method of absorption like percentage of direct materials, or wages or machine hour rate, etc. These methods were discussed in the overhead chapter.

Calculation of Profit. After the total cost has been estimated, a desired percentage of profit is added to arrive at the price to be quoted. Such profit may be given as a percentage of cost or percentage of selling price. In order to calculate the amount of profit, it is easy to assume that figure as 100 on which profit percentage is given and then calculate the amount of profit.

Example 1

Given:	Total cost	= ₹ 50,000
	Profit	= 20% of cost
	Suppose cost	= ₹ 100
	Profit = 100 × 20%	= ₹ 20
∴	When cost is ₹ 50,000	
	Profit = 50,000 × 20% = ₹ 10,000	

Example 2

Given:	Total cost	= ₹ 50,000
	Profit	= 20% of selling price
	Suppose selling price	= ₹ 100
	Profit = 100 × 20%	= ₹ 20
	Cost	= Selling Price – Profit
		= 100 – 20 = ₹ 80

So when profit is 20% or 1/5 of selling price, it is 20/80 = 1/4 or 25% of cost. When total cost is ₹ 50,000, the profit will be calculated as follows:

$$\text{Profit} = 50,000 \times 25\% = ₹ 12,500$$

Example 3

Given:	Selling price	= ₹ 50,000
	Profit	= 20% of cost
	Suppose cost	= ₹ 100
	Profit = 100 × 20%	= ₹ 20
	Selling price	= Cost + Profit
		= 100 + 20 = ₹ 120

So profit of 20% of cost is equal to 20/120 or 1/6 of selling price. Thus, the profit will be calculated as follows :

$$\text{Profit} = 50,000 \times 1/6 = ₹ 8333.33.$$

PROBLEMS AND SOLUTIONS**Problem 1.1**

Mr. Gopal furnishes the following data relating to the manufacture of a standard product during the month of April 2013 :

Raw materials consumed	₹ 15,000
Direct labour charges	₹ 9,000
Machine hours worked	900
Machine hour rate	₹ 5
Administration overheads	20% on works cost
Selling overhead	Re. 0.50 per unit

Units produced 17,100
 Units sold 16,000 at ₹ 4 per unit
 You are required to prepare a cost sheet from the above, showing :
 (a) the cost per unit,
 (b) cost per unit sold and profit for the period.

(B.B.M. & B. Com., Bangalore)

Cost Sheet
 for the month of April 2013

Output : 17,100 units

	Total	per unit
	₹	₹
Direct materials	15,000	0.877
Direct labour	9,000	0.526
	Prime Cost	24,000
Production overheads (900 machine hrs. @ ₹ 5 per hour)	4,500	0.263
	Works Cost	28,500
Administration overhead (@ 20% on works cost)	5,700	0.334
	Cost of Production	34,200
Less: Closing Stock on 30th April, 2008 (1,100 units @ ₹ 2 per unit)	2,200	
	Cost of Goods Sold	32,000
Selling overhead (@Re. 0.50 per unit for 16,000)	8,000	0.500
	Cost of Sales	40,000
Profit	24,000	1.500
Sales (16,000 units)	64,000	4.00

Problem 1.2

From the following information for the month of January, prepare a cost sheet to show the following components : (a) Prime Cost, (b) Factory Cost, (c) Cost of Production, (d) Total Cost.

	₹
Direct material	57,000
Direct wages	28,500
Factory rent and rates	2,500
Office rent and rates	500
Plant repairs and maintenance	1,000
Plant depreciation	1,250
Factory heating and lighting	400
Factory manager's salary	2,000
Office salaries	1,600
Director's remuneration	1,500
Telephone and postage	200
Printing and stationery	100
Legal charges	150
Advertisement	1,500
Salesmen's salaries	2,500
Showroom rent	500
Sales	1,16,000

Solution**Cost Sheet for the month of Jan.**

		₹
Direct materials		57,000
Direct wages		28,500
	Prime Cost	85,500
<i>Factory Overhead :</i>		
Factory rent and rates	2,500	
Plant repair and maintenance	1,000	
Plant depreciation	1,250	
Factory heating and lighting	400	
Factory manager's salary	2,000	7,150
	Factory Cost	92,650
<i>Office and Administration Overhead:</i>		
Office salaries	1,600	
Director's remuneration	1,500	
Telephone and postage	200	
Office rent and rates	500	
Printing and stationery	100	
Legal charges	150	4,050
	Cost of Production	96,700
<i>Selling and Distribution Overhead :</i>		
Advertisement	1,500	
Salesmen's salaries	2,500	
Showroom rent	500	4,500
	Total Cost (or cost of sales)	1,01,200
	PROFIT	14,800
Sales		1,16,000

Problem 1.3

From the following particulars, prepare a cost statement :

	₹
Stock, 1-1-2013: Raw materials	30,500
Finished goods	20,400
Stock, 31-1-2013: Raw materials	48,500
Finished goods	10,000
Purchase of raw materials	25,000
Work-in-progress, 1-1-2013	8,000
Work-in-progress, 31-1-2013	9,000
Sales	95,000
Direct wages	20,400
Factory expenses	10,500
Office expenses	5,400
Selling expenses	3,800
Distribution expenses	2,500

Also calculate the percentage of works expenses to direct wages and the percentage of office expenses to works cost. (B.Com., Bangalore)

Solution

Statement of Costs
for the month ended 31-1-2013

	₹	₹
Stock of raw materials, 1-1-2013	30,500	
Add : Purchase of raw materials	25,000	
	55,500	
Less: Stock of raw materials, 31-1-2013	48,500	
Materials consumed		7,000
Direct wages		20,400
		Prime Cost
Works or factory expenses		27,400
		10,500
		37,900
Add : Work-in-progress, 1-1-2013		8,000
		45,900
Less: Work-in-progress, 31-1-2013		9,000
		Works Cost or Factory Cost
Office expenses		36,900
		5,400
		Cost of Production
Add: Finished Stock, 1-1-2013		42,300
		20,400
		62,700
Less : Finished Stock, 31-1-2013		10,000
		Cost of Goods Sold
Selling and distribution expenses (3,800 + 2,500)		52,700
		6,300
		Cost of Sales
		59,000
		Profit
		36,000
		Sales
		95,000

Calculation of Overhead Rates:

I. *Percentage of works expenses to direct wages*

$$= \frac{\text{Works expenses}}{\text{Direct wages}} \times 100 = \frac{\text{Rs. } 10,500}{20,400} \times 100 = \mathbf{51.47\%}$$

2. *Percentage of office expenses to works cost*

$$= \frac{\text{Office expenses}}{\text{Works costs}} \times 100 = \frac{5,400}{36,900} \times 100 = \mathbf{14.63\%}$$

Problem 1.4

In respect of a factory the following particulars have been extracted for the year 2013 :

	₹	
Cost of materials		6,00,000
Wages		5,00,000

Factory overheads	3,00,000
Administration charges	3,36,000
Selling charges	2,24,000
Distribution charges	1,40,000
Profit	4,20,000

A work order has to be executed in 2014 and the estimated expenses are :

Materials ₹ 8,000, wages ₹ 5,000.

Assuming that in 2014, the rate of factory overheads has gone up by 20%, distribution charges have gone down by 10% and selling and administration charges have gone each up by 15%, at what price should the product be sold so as to earn the same rate of profit on the selling price as in 2013 ?

Factory overheads are based on wages and administration, selling and distribution overheads on factory cost. (B. Com., Delhi, Bangalore)

Solution

Statement of cost for the year 2013

		₹
Direct Materials		6,00,000
Wages		5,00,000
	Prime Cost	11,00,000
Factory Overheads		3,00,000
	Factory or Works Cost	14,00,000
Administration Charges		3,36,000
	Cost of Production	17,36,000
Selling Charges		2,24,000
Distribution Charges		1,40,000
	Total Cost or Cost of Sales	21,00,000
	Profit	4,20,000
	Sales	25,20,000

Calculation of Rates:

1. Factory overhead as a percentage of wages $= \frac{3,00,000}{5,00,000} \times 100 = 60\%$
2. Administration charges as a percentage of factory cost $= \frac{3,36,000}{14,00,000} \times 100 = 24\%$
3. Selling charges as a percentage of factory cost $= \frac{2,24,000}{14,00,000} \times 100 = 16\%$
4. Distribution charges as a percentage of factory cost $= \frac{1,40,000}{14,00,000} \times 100 = 10\%$
5. Profit as a percentage of total cost $= \frac{4,20,000}{21,00,000} \times 100 = 20\%$

Statement of Estimated Cost and Profit on Work Order in 2014

Materials	8,000
Wages	5,000
Prime Cost	13,000
Factory Overheads (60% of wages, increased by 20%, i.e., 72%)	3,600
Factory Cost	16,600
Administration Charges (24% of factory cost, increased by 15%, i.e., 27.6%)	4,581
Cost of Production	21,181
Selling Charges (16% of factory cost, increased by 15%, i.e., 18.4%)	3,054
Distribution Charges (10% of factory cost, decreased by 10%, i.e., 9%)	1,494
Cost of Sales	25,729
Profit (20% on cost of sales)	5,146
Price to be quoted	30,875

Problem 1.5

The accounts of a machine manufacturing company disclose the following information for the six months ending 31st Dec., 2013.

	₹
Materials used	1,50,000
Direct wages	1,20,000
Factory overhead expenses	24,000
Office expenses	17,640

Prepare a Cost Sheet of the machines and calculate the price which the company should quote for the manufacture of a machine requiring materials valued at ₹ 1,250 and expenditure on productive wages of ₹ 750, so that the price may yield a profit of 20% on the selling price.

For the purpose of price quotation, charge factory overhead as a percentage of direct wages and charge office overhead as a percentage of works cost. (B.B.M. Bangalore; B. Com., Madurai Kamraj)

Solution

Cost Sheet

for the period of six months ending 31st Dec. 2013

	₹
Materials used	1,50,000
Direct wages	1,20,000
Prime Cost	2,70,000
Factory overhead expenses	24,000
Works or Factory Cost	2,94,000
Office and general expenses	17,640
Cost of Production	3,11,640

$$\% \text{ of factory overhead to direct wages} = \frac{\text{Factory overheads}}{\text{Direct wages}} \times 100 = \frac{24,000}{1,20,000} \times 100 = \mathbf{20\%}$$

$$\% \text{ of office overhead to factory cost} = \frac{\text{Office overheads}}{\text{Factory cost}} \times 100 = \frac{17,640}{2,94,000} \times 100 = \mathbf{6\%}$$

Statement showing the Quotation of Price of a Machine

Materials		₹
Wages		1,250.00
		<u>750.00</u>
	Prime Cost	2,000.00
Factory overhead (20% on wages)		<u>150.00</u>
	Factory Cost	2,150.00
Office overhead (6% on factory cost)		<u>129.00</u>
	Total Cost or Cost of Production	2,279.00
*Profit (25% of total cost)		<u>569.75</u>
	Selling Price	2,848.75

*Profit of 20% on selling price is equal to 25% of total cost.

Problem 1.6.

The following extracts of costing information relate to commodity X for the year ending 31-12-2013.

Purchases of raw materials	₹	6,000
Direct wages		5,000
Rent, rates and insurance		2,000
Carriage inwards		100
Stock (1-1-2013) :		
Raw materials		1,000
Finished products — 200 tonnes		800
Stock (31-12-2013) :		
Raw materials		1,100
Finished products — 400 tonnes		—
Cost of factory supervision		400
Sale of finished products		15,000
Advertising and selling cost is 40 paise per tonne sold. 3,000 tonnes of the commodity were sold during the year. Prepare a Cost Sheet.		(B.B.M. Bangalore. Adapted)

Solution**Cost Sheet for the year ending 31st Dec., 2013**

Raw Materials: Opening Stock	1,000	₹
Add: Purchases	6,000	
Add: Carriage Inwards	<u>100</u>	
	7,100	
Less: Closing Stock	<u>1,100</u>	
Cost of materials consumed		6,000
Direct wages		5,000
	Prime Cost	11,000
Factory Overheads :		
Rent, insurance, etc.	2,000	
Factory supervision	<u>400</u>	
	Cost of Production	13,400
Add: Opening stock of finished goods		800
		14,200
Less: Closing stock of finished goods (₹ 13,400 $\frac{400 \text{ tonnes}}{3,200 \text{ tonnes}}$)		1,675
	Cost of Goods Sold	12,525
Selling overhead (@ 40 paise per tonne sold for 3,000 tonnes)		1,200
	Cost of Sales	13,725
	Profit	1,275
	Sales	15,000

Problem 1.8

The following details are available from a company's books:

	₹
Stock of raw material on 1-1-2013	10,800
Stock of finished goods on 1-1-2013	28,000
Purchases during the year	2,94,000
Productive wages	1,98,800
Sales of finished goods	5,92,000
Stock of finished goods on 31-12-2013	30,000
Stock of raw material on 31-12-2013	13,600
Works overhead	43,736
Office expenses	35,524

The company is about to send a tender for large plant. The costing department estimates that the material required for its production would cost ₹ 20,000 and wages for making the plant would cost ₹ 12,000. Tender is to be made keeping a net profit of 20% on the selling price. State what would be the amount of the tender, if based on the percentages. (B. Com., Lucknow)

Solution**Cost Sheet for the year ending 31-12-2013**

	₹	₹
<i>Add:</i> Stock of raw material (on 1-1-2013)	10,800	
Purchases	2,94,000	
	3,04,800	
<i>Less:</i> Stock of raw material (on 31-12-2013)	13,600	
Materials consumed		2,91,200
Productive wages		1,98,800
	Prime Cost	4,90,000
Works overhead		43,736
	Works Cost	5,33,736
Office expenses		35,524
	Cost of Production	5,69,260
<i>Add:</i> Stock of finished goods (on 1-1-2013)		28,000
		5,97,260
<i>Less:</i> Stock of finished goods (on 31-12-2013)		30,000
	Cost of Goods Sold	5,67,260
Profit		24,740
Sales		5,92,000

Notes : (a) Percentage of works overheads to productive wages = $\frac{43,736}{1,98,800} \times 100 = 22\%$

(b) Percentage of office expenses to the works cost = $\frac{35,524}{5,33,736} \times 100 = 6.656\%$

Computation of the Amount of Tender

	₹
Material cost	20,000
Wages	12,000
Prime cost	32,000
Works Overhead (22% of wages)	2,640
Works cost	34,640
Office expenses (6.656% of works cost)	2,306
Cost of Production	36,946
Profit 25% of cost or 20% of selling price	9,237
TENDER PRICE	46,183

Problem 1.9

The accounts of Flex Manufacturing Co. for the year ended 31st March, 2013, show the following information :

	₹
Production wages	2,50,000
Direct material used	3,18,200
Chargeable expenses	30,000
Sales	7,80,000
Drawing office salaries	10,000
Counting office salaries	18,800
Cash discount allowed	3,000
Carriage outward	5,400
Bad debts written off	8,500
Rent, rates and taxes	
(i) Office	4,000
(ii) Works	15,400
Travelling expenses	3,600
Travellers' salaries and commission	8,500
Depreciation on plant and machinery	6,500
Depreciation on office furniture	1,000
Directors' fee	12,000
Gas and water (3/4 Factory, 1/4 Office)	2,800
Manager's salary (3/4 Factory, 1/4 Office)	24,000
General expenses	4,000
Hire of crane	5,000
Donations to charitable trust	2,000

Prepare a statement showing (i) Prime Cost (ii) Factory Cost and (iii) Total Cost and (iv) Net Profit.
(B. Com. Adapted)

Solution**Statement of Cost year ended 31 st March, 2013**

<i>Particulars</i>	₹
Direct Material used	3,18,200
Production Wages	2,50,000
Chargeable Expenses	30,000
Prime Cost	5,98,200
Factory Overhead:	
Drawing Office Salaries	10,000
Rent, Rate and Taxes (Works)	15,400
Depreciation on Plant and Machinery	6,500
Gas and Water (3/4)	2,100
Manager's Salary (3/4)	18,000
Hire of crane	5,000
Factory Cost	57,000
	6,55,200
Office and Selling Overhead:	
Counting Office Salaries	18,800
Carriage Outward	5,400
Bad Debts written off	8,500
Rent, Rates and Taxes (Office)	4,000
Travelling Expenses	3,600
Travellers' Salaries and Commission	8,500
Depreciation on Office Furniture	1,000
Directors' Fees	12,000
Gas and Water (1/4)	700
Manager's Salary (1/4)	6,000
General Expenses	4,000
Total Cost	72,500
Net Profit	52,300
Sales	7,80,000

Note : 1. Cash discount allowed and donations are not included in cost.

2. Office and selling overhead have been combined into one category as cost of production is not required in this Problem.

Problem 1.10

The following particulars have been extracted from the books of Calcutta Manufacturing Co. Ltd., Calcutta, for the year ended 31 March 2013

	₹
Stock of materials as on 1 April, 2012	47,000
Stock of materials as on 31 March, 2013	50,000
Materials purchased	2,08,000
Drawing office salaries	9,600
Counting house salaries	14,000
Carriage inwards	8,200
Carriage outwards	5,100
Cash discounts allowed	3,400
Bad debts written off	4,700
Repairs of plant, machinery and tools	10,600
Rent, rates, taxes and insurance (factory)	3,000
Rent, rates, taxes and insurance (office)	1,000

Travelling expenses	3,100
Travelling salaries and commission	8,400
Production wages	1,40,000
Depreciation on plant and tools	7,100
Depreciation written off on furniture	600
Director's fee	6,000
Gas and water charges (factory)	1,500
Gas and water charges (office)	300
General charges	5,000
Manager's salary	12,000

Out of 48 working hours in a week, the time devoted by the manager to the factory and office was on an average 40 hours and 8 hours respectively throughout the accounting year.

You are required to prepare a Cost Sheet.

(B. Com. Delhi)

Solution

Cost Sheet for the year ending 31st March, 2013

Particulars	₹	
Raw materials consumed:		
Stock of materials (l-l-2012)	47,000	
Add: Purchases	2,08,000	
Carriage inwards	8,200	
	2,63,200	
Less: Closing stock	50,000	
	2,13,200	
Production wages	1,40,000	
	3,53,200	3,53,200
	Prime Cost	
Factory Overhead:		
Rent and rates	3,000	
Drawing office salaries	9,600	
Depreciation of plant	7,100	
Repairs of plant	10,600	
Factory gas and power	1,500	
Manager's salary (12,000 × 40/48)	10,000	
	41,800	
	3,95,000	3,95,000
	Factory Cost	
Office and Administration Overhead:		
Office rent and rates	1,000	
Depreciation of furniture	600	
Director's fees	6,000	
Gas and Water	300	
General charges	5,000	
Manager's salary (12,000 × 8/48)	2,000	
Counting house salaries	14,000	
	28,900	
	4,23,900	4,23,900
	Cost of Production	
Selling and Distribution Overhead:		
Carriage outwards	5,100	
Bad debts	4,700	
Travelling expenses	3,100	
Travelling salaries and commission	8,400	
	21,300	
	4,45,200	4,45,200
	Cost of Sales or Total Cost	

Note : Cash discount is not included as it is a purely financial item.

Problem 1.11.

From the books of M/s ZYX Enterprises, the following details have been extracted for the year ending March 31, 2013 :

	₹
Stock or materials— Opening	1,88,000
Closing	2,00,000
Materials purchased during the year	8,32,000
Direct wages paid	2,38,400
Indirect wages	16,000
Salaries to administrative staff	40,000
Freight — Inward	32,000
Outward	20,000
Sales	15,79,800
Cash discount allowed	14,000
Bad debts written off	18,800
Repairs of plant and machinery	42,400
Rent, rates and taxes — Factory	12,000
Office	6,400
Travelling expenses	12,400
Salesmen's salaries and commissions	33,600
Depreciation written off— Plant & Machinery	28,900
Furniture	2,400
Director's fees	24,000
Electricity charges (factory)	48,000
Fuel (for boiler)	64,000
Sale of scrap	500
General charges	24,800
Manager's salary	48,000

The manager's time is shared between the factory and the office in the ratio of 20 : 80.

From the above details you are required to prepare a cost sheet to show :

(a) Prime Cost; (b) Factory Cost; (c) Cost of Production ; (d) Total Cost; (e) Profit.

Solution**Cost Sheet for the year ending 31st March, 2013**

	₹	₹
Opening stock of materials	1,88,000	
<i>Add:</i> Purchases	8,32,000	
Freight inwards	32,000	
	10,52,000	
<i>Less :</i> Closing stock of materials	2,00,000	
Materials consumed		8,52,000
Direct wages		2,38,400
Prime Cost		10,90,400
<i>Factory Overhead:</i>		
Indirect wages	16,000	
Repairs of plant & machinery	42,400	

Factory rent, rates and taxes	12,000	
Depreciation of plant & machinery	28,900	
Electricity charges	48,000	
Fuel	64,000	
Manager's salary (48,000 × 20%)	9,600	
	<u>2,20,900</u>	
<i>Less:</i> Sale of scrap	500	2,20,400
		<u>13,10,800</u>
	Factory Cost	
<i>Administration Overhead:</i>		
Salaries to administrative staff	40,000	
Office rent, rates and taxes	6,400	
Depreciation of furniture	2,400	
Director's fees	24,000	
General charges	24,800	
Manager's salary (48,000 × 80)	38,400	
	<u>1,36,000</u>	
	Cost of Production	14,46,800
<i>Selling and Distribution Overhead:</i>		
Freight outwards	20,000	
Travelling expenses	12,400	
Salesmen's salaries and commission	33,600	
Bad debts	18,800	
	<u>84,800</u>	
	Cost of Sales (Total Cost)	15,31,600
Profit		48,200
	Sales	<u>15,79,800</u>

Note. Cash discount has not been included. Bad debts considered as normal, have been included.

Problem 1.12

E Ltd. furnish the following information for 10,000 units of a product manufactured during the year 2013 :

	₹
Material	90,000
Direct wages	60,000
Power and consumable stores	12,000
Indirect wages	15,000
Factory lighting	5,500
Cost of rectification of defective work	3,000
Clerical salaries and management expenses	33,500
Selling expenses	5,500
Sale proceeds of scrap	2,000
Repairs, maintenance and depreciation of plant	11,500

The net selling price was ₹ 31.60 per unit sold and all units were sold.

As from 1-1-2014, the selling price was reduced to ₹ 31 per unit. It was estimated that production could be increased in 2014 by 50% due to spare capacity.

Rates for materials and direct wages will increase by 10%.

You are required to prepare :

- (a) Cost sheet for the year 2013 showing various elements of cost per unit, and
 (b) Estimated cost and profit for 2014.

Assume that 15,000 units will be produced and sold during the year and factory overheads will be recovered as a percentage of direct wages and office and selling expenses as a percentage of works cost.
 (B. Com., Bangalore, Delhi)

Solution

(a) Cost Sheet for the year 2013

Output : 10,000 units

	Total ₹	Per unit ₹
Materials	90,000	9.00
Wages	60,000	6.00
Prime Cost	1,50,000	15.00
<i>Factory Overheads:</i>		
Power and consumable stores	12,000	1.20
Factory indirect wages	15,000	1.50
Lighting of factory	5,500	0.55
Defective work (cost of rectification)	3,000	0.30
Plant repairs, maintenance and depreciation	11,500	1.15
	47,000	4.70
Less : Sales of scrap	2,000	0.20
	45,000	4.50
Works Cost	1,95,000	19.50
<i>Office and Selling Overheads :</i>		
Clerical salaries and management expenses	33,500	3.35
Selling expenses	5,500	0.55
	39,000	0.55
Cost of Goods Sold	2,34,000	23.40
Profit (balancing figure)	82,000	8.20
Sales	3, 16,000	31.60

Note. It is assumed that defective work is normal.

**(b) Statement of Estimated Cost and Profit
 for the year 2014**

Output 15,000 units

	Total ₹	Per unit ₹
Materials (15,000 × 9) + 10% = 1,48,500	1,48,500	9.90
Wages (15,000 × 6) + 10% = 99,000	99,000	6.60
Prime Cost	2,47,500	16.50
*Factory overheads (75% of wages)	74,250	4.95
Works Cost	3,21,750	21.45
*Office and selling overheads (20% of works cost)	64,350	4.29
Cost of Sales	3,86,100	25.74
Profit	78,900	5.26
Sales	4,65,000	31.00

***Working Notes.**Overheads are absorbed on a percentage basis on 2013 figures as follows :

$$\text{Factory overhead} = \frac{45,000}{60,000} \times 100 = 75\% \text{ of wages}$$

$$\text{Office overhead} = \frac{39,000}{1,95,000} \times 100 = 20\% \text{ of works cost.}$$

Problem 1.13

Bharat Engineering Company manufactured and sold 1,000 sewing machines in 2013. Following are the particulars obtained from the records of the company :

	₹
Cost of materials	80,000
Wages paid	1,20,000
Manufacturing expenses	50,000
Salaries	60,000
Rent, rates and insurance	10,000
Selling expenses	30,000
General expenses	20,000
Sales	4,00,000

The company plans to manufacture 1,200 sewing machines in 2014. You are required to submit a statement showing the price at which machines would be sold so as to show a profit of 10% on the selling price. The following additional information is supplied to you :

- (a) The price of materials will rise by 20 per cent on the previous year's level.
- (b) Wage rates will rise by 5 per cent.
- (c) Manufacturing expenses will rise in proportion to the combined cost of materials and wages.
- (d) Selling expenses per unit will remain unchanged.
- (e) Other expenses will remain unaffected by the rise in output.

(M.Com., Bangalore; B.Com., Kerala; Andhra)

Solution

Statement Showing the Quotation of Price for the year 2014

Particulars	Total (1,200 machines) ₹	Per machine ₹
Materials (₹ 80 + 20% = ₹ 96 per machine)	1,15,200	96.00
Direct wages (₹ 120 + 5% = ₹ 126 per machine)	1,51,200	126.00
Prime Cost	2,66,400	222.00
Manufacturing expenses*	66,600	55.50
Works Cost	3,33,000	277.50
Admn. overhead :		
Rent, rates and insurance	10,000	8.33
Management and staff salaries	60,000	50.00
General expenses	20,000	16.67
Cost of Production	4,23,000	352.50
Selling expenses	36,000	30.00
Cost of Sales	4,59,000	382.50
Profit (10% on selling price)*	51,000	42.50
Selling Price	5,10,000	425.00

***Working Notes :**

$$1. \text{ Mfg. expenses in 2006} = \frac{\text{Materials + Labour in 2006}}{\text{Materials + Labour in 2005}} \times \text{Mfg. exp. in 2005}$$

$$= \frac{222}{200} \times 50 = ₹ 55.50 \text{ per unit.}$$

$$2. \text{ Profit of } 10\% \text{ or } \frac{1}{10} \text{ on selling price is equal to } 1/9 \text{ of total cost} = 382.50 \times \frac{1}{9} = ₹ 42.50 \text{ per machine.}$$

Problem 1.14

Flex Shoe Co. manufacture two types of shoes A and B. Costs for the year ended 31-3-2013 were:

	₹
Direct materials	15,00,000
Direct wages	8,40,000
Production overhead	3,60,000
	27,00,000

There was no work-in-progress at the beginning or at the end of the year. It is ascertained that:

- (a) Direct material in type A shoes consists twice as much as that in type B shoes,
- (b) The direct wages for type B shoes were 60% of those of type A shoes,
- (c) Production overhead was the same per pair of A and B type.
- (d) Administrative overhead for each type was 150% of direct wages,
- (e) Selling cost was ₹ 1.50 per pair.
- (f) Production during the year were : Type A 40,000 pairs of which 36,000 were sold;
Type B 1,20,000 pairs of which 1,00,000 were sold.
- (g) Selling price was ₹ 44 for type A and ₹ 28 for type B per pair.

Prepare a statement showing cost and profit.

(B.Com., Bombay)

Solution :

Statement of Cost and Profit
for the year ending 31st March, 2013

<i>Particulars</i>	<i>Type A</i>		<i>Type B</i>	
	<i>Total</i> ₹	<i>Per pair</i> ₹	<i>Total</i> ₹	<i>Per pair</i> ₹
Direct materials	6,00,000	15.00	9,00,000	7.50
Direct wages	3,00,000	7.50	5,40,000	4.50
Prime Cost	9,00,000	22.50	14,40,000	12.00
Production overhead	90,000	2.25	2,70,000	2.25
Works Cost	9,90,000	24.75	17,10,000	14.25
Administrative expenses	4,50,000	11.25	8,10,000	6.75
Cost of Production	14,40,000	36.00	25,20,000	21.00
Less : Closing stock	1,44,000	-	4,20,000	-
Cost of Goods Sold	12,96,000	36.00	21,00,000	21.00
Selling expenses	54,000	1.50	1,50,000	1.50
Cost of Sales	13,50,000	37.50	22,50,000	22.50
Profit	2,34,000	6.50	5,50,000	5.50
Sales	15,84,000	44.00	28,00,000	28.00

Working Notes :

1. Materials cost has been allocated as follows :

Suppose Type B's material cost is = x

Then Type A's materials = $2x$

$$1,20,000x + 80,000x = ₹ 15,00,000$$

$$2,00,000x = ₹ 15,00,000$$

$$x = ₹ 7.50$$

Type B material cost = ₹ 7.50 per pair

A material cost = ₹ 15.00 per pair

2. Wages

Let labour charges for A be = x

Then labour charges for B = $\frac{60}{100}x$ or $0.6x$

$$\therefore 40,000x + (1,20,000 \times 0.6x) = ₹ 8,40,000$$

$$\therefore 1,12,000x = ₹ 8,40,000$$

$$x = ₹ 7.50$$

\therefore A's labour charges = ₹ 7.50 per pair

B's labour charges = $7.50 \times 60\% = ₹ 4.50$ per pair.

Problem 1.15

From the following particulars, prepare cost sheet showing the comparative cost per tonne for the periods :

	<i>Three months ended 2013</i>	
	<i>31st March</i>	<i>30th June</i>
	₹	₹
Productive wages	72,000	98,000
Administrative expenses	12,000	12,000
Raw materials	36,000	49,000
Taxes and insurance (factory)	750	750
Light and water	1,000	1,000
Direct expenses	9,000	12,500
Depreciation	2,000	2,000
Factory rent	1,500	1,500
Unproductive labour	30,000	41,000
Factory repairs	3,000	4,500
	1,67,250	2,22,250

The tonnage produced in the two quarters was 12,000 and 16,000 respectively.

(B. Com. Bombay)

Solution:**Comparative Cost Sheet for Two Quarters**

Particulars	Three months ended 30th June 2013		Three months ended 31st March 2013	
	12,000 tonnes		16,000 tonnes	
	Total ₹	Cost per tonne ₹	Total ₹	Cost per tonne ₹
Raw materials	49,000	3.06	36,000	3.00
Productive wages	98,000	6.13	72,000	6.00
Direct expenses	12,500	0.78	9,000	0.75
Prime Cost	1,59,500	9.97	1,17,000	9.75
Works Overheads:				
Unproductive labour	41,000	2.56	30,000	2.50
Factory rent	1,500	0.09	1,500	0.13
Factory repairs	4,500	0.28	3,000	0.25
Light and water	1,000	0.06	1,000	0.08
Depreciation	2,000	0.13	2,000	0.17
Taxes and insurances	750	0.05	750	0.06
Works Cost	2,10,250	13.14	1,55,250	12.94
Administrative expenses	12,000	0.75	12,000	1.00
Cost of Production	2,22,250	13.89	1,67,250	13.94

Problem 1.16

Steel Products Company produces a machine that sells for ₹ 300. An increase of 15% in cost of materials and of 10% in cost of labour is anticipated.

If the only figures available are those given below, what must be the selling price to give the same percentage of gross profit as before ?

(a) Material costs have been 45% of cost of sales, (b) Labour costs have been 40% of cost of sales. (c) Overhead costs have been 15% of cost of sales, (d) The anticipated increased costs in relation to the present sale price would cause 35% decrease in the present gross profit. (B.Com. Hons., Delhi)

Solution**Statement of Cost**

(Suppose cost of Sales = ₹100)

	Assumed present cost of sales	Increase	Anticipated cost of sales
Materials	₹ 45	15%	₹ 51.75
Labour costs	₹ 40	10%	₹ 44.00
Overhead costs	₹ 15	-	₹ 15.00
Cost of sales	₹ 100		₹ 110.75

Increase in cost in relation to the assumed present cost of sales = ₹ 110.75 - ₹ 100 = ₹ 10.75

Increase in cost = 35% decrease in the amount of gross profit. This means ₹ 10.75 is equal to 35% of gross profit.

$$\text{Gross profit} = \frac{\text{₹ } 10.75}{35\%} = 30.72$$

$$\text{Gross profit as a percentage of sales} = \frac{30.72}{300} \times 100 = \text{₹ } 10.24\%$$

$$\text{Actual present cost of sales} = \text{₹ } 300 - \text{₹ } 30.72 = \text{₹ } 269.28$$

Taking the anticipated increase :

	Percentage	Present cost ₹	Increase ₹	Anticipated cost ₹
Material	45%	121.18	18.18	139.36
Labour	40%	107.72	10.78	118.50
Overhead	15%	40.38	—	40.38
	100%	269.28		298.24
∴ Anticipated cost of sales with the increase				298.24
Same percentage of gross profit (10.24% of sales)				34.01
∴ Selling price				332.25

Verification :

$$\text{Selling price} = 300 \times \frac{110.75}{100} = \text{₹ } 332.25$$

Problem 1.17

The books of Acme Ltd. present the following data for the month of Jan., 2013.

	₹
Direct labour cost	16,000 (160% of factory overhead)
Cost of goods sold	56,000

Inventory accounts showed the following opening and closing balances :

	January 1	January 31
Raw materials	8,000	8,600
Work-in-progress	8,000	12,000
Finished goods	14,000	18,000
Selling expenses		3,400
General and administration expenses		2,600
Sales for the month		75,000

You are required to prepare a cost sheet showing cost of goods manufactured and sold and profit earned. (B. Com.)

Solution

Note. Purchase of raw materials is not given in the question. It is ascertained as shown below by preparing a reverse cost sheet *i.e.*, working backward from cost of goods sold upto the amount of purchases.

Calculation of Purchases

		₹
Cost of Goods Sold		56,000
<i>Add</i> : Closing stock of finished goods		<u>18,000</u>
		74,000
<i>Less</i> : Opening stock of finished goods.		<u>14,000</u>
	Cost of Production	60,000
<i>Less</i> : General administrative expenses		<u>2,600</u>
	Factory Cost	57,400
<i>Add</i> : Closing stock of work-in-progress		<u>12,000</u>
		69,400
<i>Less</i> : Opening stock of work-in-progress		<u>8,000</u>
		61,400
<i>Less</i> : Factory overhead $\left(16,000 \frac{100}{160}\right)$		<u>10,000</u>
	Prime Cost	51,400
<i>Less</i> : Labour cost		<u>16,000</u>
	Materials Consumed	35,400
<i>Add</i> : Closing stock of raw materials		<u>8,600</u>
		44,000
<i>Less</i> : Opening stock of raw materials		<u>8,000</u>
	Purchases	36,000

Cost Sheet*for the month ending 31st January, 2013*

		₹	₹
Opening stock of raw materials		8,000	
<i>Add</i> : Purchases		<u>36,000</u>	
		44,000	
<i>Less</i> : Closing stock of raw materials		<u>8,600</u>	
			35,400
Materials consumed			16,000
Direct labour cost			51,400
	Prime Cost		<u>10,000</u>
Factory overhead			61,400
<i>Add</i> : Opening work-in-progress			<u>8,000</u>
			69,400
<i>Less</i> : Closing work-in-progress			<u>12,000</u>
			57,400
General administrative expenses			<u>2,600</u>
	Factory Cost		60,000
<i>Add</i> : Opening stock of finished goods			<u>14,000</u>
			74,000
<i>Less</i> : Closing stock of finished goods			<u>18,000</u>
			56,000
Selling expenses			<u>3,400</u>
	Cost of Sales		59,400
	Cost of Sales		<u>15,600</u>
	Profit		75,000
	Sales		75,000

Problem 1.18

The following direct costs were incurred on Job No. 239 of XYL Co. Ltd.

Materials ₹ 6,010

Wages: Deptt. A — 60 hours @ ₹ 30 per hr.

B — 40 hours @ ₹ 20 per hr.

C — 20 hours @ ₹ 50 per hr.

Overhead for these three departments were estimated as follows :

Variable overheads: Deptt. A — ₹ 15,000 for 1,500 labour hours

B — ₹ 4,000 for 200 labour hours

C — ₹ 12,000 for 300 labour hours

Fixed overheads: Estimated at ₹ 40,000 for 2,000 normal working hours.

You are required to calculate the cost of Job No. 239 and quote the price to give profit of 25% on selling price.

(B. Com., Madurai, Adapted)

Solution**Job Cost Sheet**

Job No. 239

	₹	₹
Direct materials		6,010
Wages Deptt. A — 60 hrs. × ₹ 30	1,800	
B — 40 hrs. × ₹ 20	800	
C — 20 hrs. × ₹ 50	1,000	3,600
*Variable Overheads		
Deptt. A — 60 hrs. @ ₹ 10	600	
B — 40 hrs. @ ₹ 20	800	
C — 20 hrs. @ ₹ 40	800	2,200
* Fixed Overheads : 120 hrs. @ ₹ 20 per hour		2,400
	Total Cost	14,210
Profit (25% of sales or 33 ¹ / ₃ % of total cost)		4,737
	Selling Price	18,947

***Working Notes**

Overhead rates per hour are calculated as under:

Variable overhead: Deptt. A ₹ 15,000 ÷ 1,500 hrs. = ₹ 10 per hour

B ₹ 4,000 ÷ 200 hrs. = ₹ 20 per hour

C ₹ 12,000 ÷ 300 hrs. = ₹ 40 per hour

Fixed overhead : ₹ 40,000 ÷ 2000 hrs. = ₹ 20 per hour

Total hours worked on the job = 60 + 40 + 20 = 120 hours.

Problem 1.19

A factory uses job costing. The following data are obtained from its books for the year ended 31st December, 2013.

	₹		₹
Direct materials	90,000	Selling and dist. overheads	52,500
Direct wages	75,000	Administration overheads	42,000
Factory overheads	45,000	Profit	60,900

(a) Prepare a Cost Sheet indicating the Prime cost, Works cost, Production cost, Cost of sales and the Sales value.

(b) In 2014, the factory received an order for a number of jobs. It is estimated that direct materials required will be ₹ 1,20,000 and direct labour will cost ₹ 75,000. What should be the price for these jobs if factory intends to earn the same rate of profit on sales assuming that the selling and distribution overheads have gone up by 15%? The factory recovers factory overheads as a percentage of direct wages and administration, selling and distribution overheads as a percentage of works cost, based on cost rates prevailing in the previous year. (B.Com., Mysore)

Solution**Cost Sheet for the year ended 31st Dec., 2013**

	₹
Direct materials	90,000
Direct wages	75,000
	Prime Cost
Factory overheads	45,000
	Works Cost
Administration overheads	42,000
	Cost of Production
Selling and distribution overheads	52,500
	Cost of Sales
Profit	60,900
	Sales Value
	3,65,400

Calculation of Rates :

- Percentage of factory overheads to direct wages = $\frac{45,000}{75,000} \times 100 = 60\%$
- Percentage of administration overheads to works cost = $\frac{42,000}{2,10,000} \times 100 = 20\%$
- Selling and distribution overheads
Add : 15% increase
Total
Selling and dist. overhead % to works cost = $\frac{60,375}{2,10,000} \times 100 = 28.75\%$
- % of profit to sales = $\frac{60,900}{3,65,400} \times 100 = 16.67\%$ ($\frac{1}{6}$ of sales or $\frac{1}{5}$ of total cost)

Job Cost Sheet

(Statement showing Estimated Cost and Price of Jobs in 2014)

Direct materials		₹
		1,20,000
Direct wages		75,000
	Prime Cost	1,95,000
Factory overheads (60% of direct labour)		45,000
	Works Cost	2,40,000
Administration overheads (20% of works cost)		48,000
	Cost of Production	2,88,000
Selling and distribution overheads (28.75% of works cost)		69,000
	Total Cost	3,57,000
Profit (1/5 of total cost)		71,400
	Selling Price	4,28,400

Problem 1.20

Job No. 718 was commenced on 10th October, 2013 and completed on 1st November, 2013. Materials used were ₹ 600 and labour charged directly to the job was ₹ 400. Other informations were as follows:

Machine No. 215 used for 40 hours; the machine hour rate is ₹ 3.50

Machine No. 169 used for 30 hours; the machine hour rate is ₹ 4

Six welders worked on the job for 5 days of 8 hours each; the direct labour hour rate for welders is 20 paise.

Other expenditures of the concern not apportioned for calculating the machine hour or the direct hour rates amounted to ₹ 20,000, total direct wages for the period being ₹ 20,000.

Ascertain the works cost of Job No. 718.

(B. Com.)

Solution

Job Cost Sheet of Job No. 718

Particulars	₹	₹
Materials		600
Labour		400
	Prime Cost	1,000
Factory overhead :		
Machine No. 215 (40 hrs. @ ₹ 3.50 each)	140	
Machine No. 169 (30 hrs. @ ₹ 4 each)	120	
Welders (6 × 5 × 8 × 0.20)	48	
Other expenses (100% of direct wages*)	400	708
	Works Cost	1,708

*Note: Other expenses are charged at 100% of direct wages as calculated below :

$$\frac{\text{Other expenses}}{\text{Direct wages}} \times 100 = \frac{20,000}{20,000} \times 100 = 100\%$$

EXAMINATION QUESTIONS

Objective Type Questions

(A) *Are the following statements True or False ? Give reasons for your answer.*

1. Cost accounting is a branch of financial accounting.
2. Cost unit and cost centre have the same meaning.
3. Main objective of cost accounting is to determine income.
4. Information provided by cost accounts is given to the company's shareholders.
5. Variable cost per unit remains fixed.
6. Total fixed cost remains unaffected by changes in the volume of output.
7. Salaries paid to salesmen come under direct cost included in prime cost.
8. Abnormal costs are uncontrollable.
9. All the variable expenses are indirect expenses.
10. Cost of leather in shoe making is a direct cost.
11. Main objective of cost accounting is to maximise profit.
12. There is no difference in the meaning of costing and cost accounting.
13. Direct material cost is the material cost which can be allocated to cost centres or cost units.
14. In sugar mill, cost unit is per kg of sugar.
15. Direct material cost is controllable.

Ans. 1. False 2. False 3. False 4. False 5. True
 6. True 7. False 8. False 9. False 10. True
 11. False 12. False 13. True 14. False 15. True

(B) *Fill in the blank spaces.*

1. The techniques and processes of ascertaining cost is known as
2. The aggregate of indirect material, indirect labour and indirect expenses is known as
3. and and are three elements of cost.
4. means a location, a person or an item of equipment (or group of these) for which costs may be ascertained and used for the purpose of cost control.
5. In steel mill cost unit is
6. The total of all direct costs is known as
7. cost is that which can be conveniently identified with a cost unit.
8. Prime cost + Factory overhead =
9. cost is that whose amount does not change with the change in output level.
10. is the cost of remuneration (wages, salaries, commission, bonus etc) of the employees of an undertaking.

Ans. 1. Costing 2. Overhead 3. Material, Labour, Expenses
 4. Cost centre 5. Per tonne of steel 6. Prime cost
 7. Direct 8. Factory cost 9. Fixed
 10. Labour cost

Short Answer Questions

1. Define cost accounting.
2. What are the objectives of costing ?
3. State in brief any three points of difference between cost accounting and financial accounting.
4. Define cost accountancy.
5. State any three limitations of financial accounting.
6. State three advantages of cost accounting to management.
7. What are the objections against cost accounting ?
8. What practical difficulties are faced while installing a cost accounting system?

9. State three important functions of cost accounting.
10. Define cost.
11. What are semi-fixed costs ?
12. What is a cost centre ?
13. What is a cost unit ? Give three examples.
14. Distinguish between controllable and uncontrollable costs.
15. What are the constituents of prime cost ?
16. Define a cost unit.
17. Differentiate between direct and indirect costs.
18. What is semi-variable cost ? Give two examples.
19. Define direct cost and give two examples.
20. What is indirect cost ? Give three examples.
21. What is fixed cost ? Give three items of fixed cost.
22. Fixed cost per unit remains fixed. Do you agree ?
23. What is variable cost ? Give two examples.
24. Total variable cost varies in direct proportion to the volume of output. Do you agree ?
25. Give three items of factory overhead.
26. What are chargeable expenses ? Give two examples.
27. What is prime cost ?
28. Define overhead.
29. State any three methods of classifications of cost.
30. What is works oncost ? How does it differ from works cost ?
31. What is the difference between direct and indirect materials ? Give two examples of each.
32. What are selling overheads ? How these differ from distribution overheads ?
33. What is works cost ? How is it arrived at ?
34. What is a cost sheet ?
35. What are the three elements of cost ?
36. Give examples of selling overheads.

Essay Type Questions

1. "Cost accounting has come to be an essential tool of management." Comment. (B. Com. Kerala)
2. "Cost accounting is an aid to management." Substantiate. (B.B.M. Bangalore)
3. Explain the distinction between cost accounting and financial accounting. (B. Com. Bangalore)
4. Discuss the limitations of financial accounting and importance of cost accounting. (B. Com., Bharathiar)
5. Financial accounting treats costs very broadly while cost accounting does this in much greater detail. Discuss with a suitable example. (B.Com. Andhra)
6. What are the essential principles of a good costing system ? What are the objections to the introduction of a costing system? (B Com. Mysore)
7. "A good system of costing serves as a means of control over expenditure and helps to secure economy in manufacture." Discuss. (B.B.M. Mysore)
8. Define cost accounting and explain its objectives. (B.Com. Delhi)
9. What are the functions of a cost accountant in an industrial organisation ? (B.Com. Karnataka)
10. Money spent on installing a costing system is not an expense but an investment. Give your views. (B.Com. Kerala)
11. What does management expect of a costing system ? (B.Com. Bangalore)
12. It is said, "Cost accounting is a system of foresight and not postmortem examination; it turns losses into profits, speeds up activities and eliminates wastes." Discuss in detail this statement. (B.Com. Hons., Delhi)
13. "A costing system that simply records costs for the purpose of fixing sale prices has accomplished only a small part of its mission." Discuss. What other functions does costing perform ? (B.Com.. Bangalore)
14. "Major policy decisions in business are based on cost factors." Comment on the possible uses of cost information to management. (B.Com. Andhra)
15. State the steps involved in the installation of a costing system in a large manufacturing company.

16. Distinguish between 'cost', 'expense' and 'loss'. (B.Com. Hons., Delhi)
17. Enumerate the characteristics of fixed and variable costs. (B. Com. Hons., Delhi)
18. State the important ways of classification of cost and discuss each of them in detail. (B.Com., Madras)
19. "The classification of costs as controllable and non-controllable depends upon a point of reference". Explain.
20. Distinguish between expired cost and unexpired cost. (B.Com. Hons., Delhi)
21. Explain and illustrate the various elements of cost. (B. Com., Andhra)
22. Distinguish between:
(a) Direct and indirect costs, (b) Fixed and variable costs, (c) Controllable and uncontrollable costs. (B. Com. Bharathidasan)
23. How do you analyse the cost of an article? Attempt at the analysis of cost of a wooden chair. (B.Com., Andhra)
24. What do you mean by elements of cost? Explain the different elements of total cost of a product. (B.Com., S.I. Uni.)
25. What are the elements of cost? Explain the terms with appropriate examples. (B.Com., Bangalore)

Practical Questions

1. From the following particulars,
(a) prepare a Cost Sheet showing : (i) the cost of materials consumed, (ii) Prime Cost (iii) Production Cost, (iv) Total Cost, (v) Profit; and
(b) Calculate : (i) Percentage of production overheads to direct wages, (ii) Percentage of general overheads to production cost, and (iii) Percentage of profit to sales.

	₹
Stock of raw materials — 1st Jan., 2013	30,850
Work-in-progress — 1st Jan 2013	60,850
Purchases of raw materials	1,43,250
Direct wages	1,78,500
Production overhead	1,42,800
General overhead	1,12,700
Stock of raw materials — 31st Dec., 2013	37,700
Work-in-progress — 31st Dec. 2013	67,750
Sales for the year	8,60,625

There is no opening or closing stock of finished goods. (B. Com. Andhra, Bangalore)

[Ans. (a) (i) ₹ 1,36,400; (ii) ₹ 3,14,900; (iii) ₹ 4,50,800; (iv) ₹ 5,63,500; (v) ₹ 2,97,125.

(b) (i) 80%; (ii) 25%; (iii) 34.50%.]

2. From the following particulars, prepare a statement of cost:

Stock of raw materials on 1-1-2013	37,500
Purchase of raw materials	1,25,000
Productive wages	60,000
Stock of finished goods on 1-1-2013	1,07,500
Works expenses	45,000
Administration expenses	67,500
Selling expenses	62,500
Sales during the year	3,75,000
Stock of raw materials on 31-12-2013	42,500
Stock of finished goods on 31-12-2013	1,50,000

Also calculate the percentage of works overhead to productive wages and the percentage of administration expenses to works cost. (B.Com., Bangalore)

[Ans. Profit ₹ 62,500 ; Percentage of works overhead to productive wages = 75%;

Percentage of Admn. expenses to works cost = 30%.]

3. The directors of XYZ & Co. require a statement showing the production results of the business for the month of March 2005. The cost accounts reveal the following information :

	₹
Stock on hand 1st March 2013 :	
Raw material	25,000
Finished goods	17,360
Stock on hand, 31st March 2013	
Raw material	26,250
Finished goods	15,750
Purchase of raw materials	21,900
Work-in-progress, 1st March 2013	8,220
Work-in-progress, 31st March 2013	9,100
Sale of finished goods	73,310
Direct wages	17,150
Non-productive wages	830
Works expenses	8,340
Office and administrative expenses	3,160
Selling and distributive expenses	4,210

You are required to prepare a statement so as to show (a) the value of materials consumed; (b) the total cost of production; (c) the cost of goods sold; (d) the net profit for the month. (B.Com., H.P. Univ.)

[Ans. (a) ₹ 20,650; Prime Cost ₹ 37,800; (b) ₹ 49,250; (c) ₹ 50,860; (d) ₹ 17,240]

4. The following data relate to the manufacturing of a standard product during the four weeks ending on 31st March, 2013.

Raw materials consumed	₹ 20,000
Direct wages	₹ 12,000
Machine hours worked	1,000 hours
Machine hour rate	₹ 2 per hour
Office overhead	20% on works cost
Selling overheads	Re. 0.40 per unit
Units produced	20,000 units
Units sold at ₹ 3 each	18,000 units

Prepare a cost sheet to show : (1) Prime cost, (2) Works cost, (3) Cost of production, (4) Cost of goods sold, (5) Cost of sales, (6) Profit. (B. Com., Delhi; Bangalore Adapted)

[Ans. (1) ₹ 32,000; (2) ₹ 34,000; (3) ₹ 40,800; (4) ₹ 36,720; (5) ₹ 43,920; (6) ₹ 10,080.]

5. The following extract of costing information relates to commodity for the half-year ended 30th June, 2013 :

	₹
Purchase of Raw Materials	1,32,000
Direct Wages	1,10,000
Rent, Rates, Insurance and Works oncost	44,000
Carriage Inward	1,584
Stock on 1st January, 2013 :	
Raw Materials	22,000
Finished Products (1,600 tonnes)	17,600
Stock on 30th June, 2013 :	
Raw Materials	24,464
Finished Products (3,200 tonnes)	35,200
Work-in-Progress :	
1st Jan., 2013	5,280
30th June, 2013	17,600
Cost of Factory Supervision	8,800
Sales of finished production	3,30,000

Advertising and other selling expenses are 75 Paise per tonne sold. 25,600 tonnes of the finished products were produced during the year.

Prepare Cost Sheet and ascertain profit,

(BBM and B. Com., Bangalore, Adapted)

[Ans. Total Profit ₹ 48,000]

6. The following figures relate to the costing of electric fans for a period of three months ending 31st Dec., 2013.

	₹
Finished stock on 1st October, 2013	Nil
Finished stock on 31st December, 2013	20,250
Stock of raw materials, 1st October, 2013	5,000
Stock of raw materials, 31st December, 2013	3,500
Factory wages	75,000
Indirect charges	12,500
Materials purchased	32,500
Sales	1,12,500

The number of fans manufactured during the three months was 3,000.

Prepare a statement, showing the cost per fan and the price to be quoted for 750 fans to realise the same percentage of profit as was realised during the three months referred to above, assuming the same conditions.

[Ans. Cost per fan ₹ 40.50; Price quotation ₹ 33,750] (B. Com. and BBM Bangalore; Calicut)

7. From the following particulars you are required to prepare a Statement showing :

- (i) The cost of materials consumed
- (ii) Prime Cost
- (iii) Works Cost
- (iv) Cost of Production
- (v) Percentage of works oncost to wages.

	₹
April 1, 2013	
Stock of raw materials	33,280
Stock of finished goods	72,800
March 31, 2014	
Stock of raw materials	35,360
Stock of finished goods	78,000
Purchase of raw materials	7,59,200
Sale of finished goods	15,39,200
Productive wage	5,16,880
Works overhead charges	1,29,220
Office and general charges	70,000

(B. Com. Mysore)

[Ans. (i) ₹ 7,57,120; (ii) ₹ 12,74,000; (iii) ₹ 14,03,220; (iv) ₹ 14,73,220, Cost of goods sold ₹ 14,68,020; (v) ₹ 25%]

8. The Modern Manufacturing Company submits the following information on 31st March, 2013 :

Sales for the year	₹ 2,75,000
Inventories at the beginning of the year were :	
Finished goods	₹ 7,000
Work-in-progress	₹ 4,000
Purchases of materials for the year were:	₹ 1,10,000
Materials inventory at the beginning of the year was ₹ 3,000 and at the end of the year ₹ 4,000	
Direct labour	₹ 65,000
Inventories at the end of the year were :	
Work-in-progress	₹ 6,000
Finished goods	₹ 8,000

Other expenses for the year were :

Factory overhead was 60% of the direct labour cost.

Selling expenses 10% of sales

Administration expenses 5% of sales

Prepare Statement of Cost.

[Ans. Profit ₹ 23,750]

9. A factory produces a standard product. The following information is given to you from which you are required to prepare "Cost Sheet" for the period ended 31st July, 2013 :

Consumable materials:		₹
Opening stock		10,000
Purchases		85,000
Closing Stock		4,000
Direct wages		20,000
Other direct expenses		10,000
Factory overheads	100% of direct labour	
Office overheads	10% of works cost	
Selling and distribution expenses	₹ 2 per unit sold	
Units of finished product:		
In hand at the beginning of the period	Units 1,000 (value ₹ 16,000)	
Produced during the period	10,000 units	
In hand at the end of the period	2,000 units	

Also, find out the selling price per unit on the basis that profit mark-up is uniformly made to yield a profit of 20% of the selling price. There was no work-in-progress either at the beginning or at the end of the period.

[Ans. Selling price ₹ 21.96 per unit]

(B.Com. Delhi; Andhra)

10. Z company is manufacturing transistor sets and the following details are furnished in respect of its factory operations for the year ended 31st December, 2013 :

Raw materials :		₹
Purchases		40,000
Opening stock		8,000
Closing stock		6,000
Direct labour		28,000
Manufacturing expenses		8,500
Office and administration expenses		5,300
Work-in-progress :	Opening	Closing
	₹	₹
Materials	1,000	1,500
Labour	1,200	1,400
Manufacturing expenses	600	700
Total	<u>2,800</u>	<u>3,600</u>

During the year, 600 sets are produced. Prepare a Statement of Cost of Production.

[Ans. Cost of production per set ₹ 138.33]

(B.B.M., Bangalore, Adapted)

[Hint. Total amounts of opening and closing stocks of work-in-progress may be adjusted in factory cost.]

11. The following is the summarised Trading and Profit and Loss Account for the year ending 31st March, 2013 in which year 800 waterproofs were sold by the said company.

Trading and Profit and Loss Account

	₹		₹
To Cost of Materials	32,000	By Sales	1,60,000
To Direct Wages	48,000		
To Manufacturing Charges	20,000		
To Gross Profit c/d	60,000		
	<u>1,60,000</u>		<u>1,60,000</u>
To Office Salaries	24,000	By Gross Profit b/d	60,000
To Rent and Taxes	4,000		
To Selling Expenses	8,000		
To General Expenses	12,000		
To Net Profit	12,000		
	<u>60,000</u>		<u>60,000</u>

Following estimates were made by the costing department of the company for the year ending 31st March, 2014 :

- The output and the sales will be 1,000 waterproofs.
- The price of materials will rise by 25% on the previous year's level.
- Wages during the year will rise 12½%.
- Manufacturing cost will rise in proportion to the combined cost of materials and wages.
- Selling cost per unit will remain unchanged.
- Other expenses will remain unaffected by the rise in output.

From the above information, prepare a cost statement showing the price at which the waterproofs would be marketed so as to show a profit of 10% on the selling price. (B.Com. Calicut, Adopted)

[Ans. Selling price per unit ₹ 218.75, Profit ₹ 21.875]

12. A factory produces 100 units of each of the commodities A and B. The costs of production are :

	A ₹	B ₹
Direct materials	12,000	10,000
Direct wages	8,000	5,000
Chargeable expenses	1,000	1,000

The overhead expenses are (i) Factory, ₹ 6,500 and (ii) Office ₹ 3,480. If a profit of 25% on sales is to be realised, what should be the selling price of each article ?

[Ans. Selling price A — ₹ 360, B — ₹ 266.40 per unit]

[Hint : 1. Factory overhead of ₹ 6,500 have been distributed to A and B in the ratio of direct wages i.e. 8 : 5.

2. Office overhead have been apportioned in the ratio of factory cost i.e. 250 : 185]

13. Pee Co. manufactures two types of pens P and Q. The cost data for the year ended 30th Sep. 2013 is as follows :

	₹
Direct materials	4,00,000
Direct wages	2,24,000
Production overhead	96,000
	7,20,000

It is further ascertained that :

- Direct materials in type P cost twice as much direct materials in type Q.
- Direct wages for type Q were 60% of those for type P.
- Production overhead was same for both types.
- Administration overhead for each was 200% of direct labour.
- Selling costs were 50 paise per pen sold for both types.
- Production during the year:

Type P	40,000
Type Q	1,20,000

- (g) Sales during the year:

Type p	36,000
Type Q	1,00,000

- (h) Selling prices were ₹ 14 per pen for the type P and ₹ 10 per pen for the type Q.

Prepare a statement showing total and per unit Cost of Production, Total Cost, Profit and Sales Value for two types of pens P and Q. (B.Com., Adapted)

[Ans. Profit per unit P ₹ 2.90 : Q ₹ 3.30]

[Hint: Refer to Solved Problem 1.14 on 1.48]

14. From the following particulars relating to four jobs of a manufacturer. ascertain the total cost of each job :

	Job No. 141	Job No. 142	Job No. 143	Job No. 144
	₹	₹	₹	₹
Direct material	800	1,000	1,200	1,400
Direct wages	400	500	600	700
Direct expenses	80	100	120	140

Work oncost is 45% of prime cost and office oncost is 15% on works cost. (B. Com., Calicut)

[Ans. Job No. 141 ₹ 2,134.40 : No. 142 ₹ 2,668 : No. 143 ₹ 3,201.60 : No. 144 ₹ 3,735.20]

15. The cost estimator of R.K. Ltd. has produced the following data :

Direct materials	:	34 units @ ₹ 2 per unit.
Direct labour	:	Deptt. A — 12 hours @ ₹ 2 per hour
	:	Dept. B — 12 hours @ ₹ 1.80 per hour

The following additional information is extracted from the company's budget :

Deptt. A :	Variable overhead ₹ 18,000
	Hours to be worked — 18,000
Deptt B :	Variable overhead ₹ 18,000
	Hours to be worked — 10,000

Fixed overhead for the company ₹ 1,00,000

Total hours to be worked 50,000

Profit is taken at 20% of the selling price.

You are required to prepare a cost sheet and determine the price to be quoted.

[Price to be quoted ₹ 300]

16. The following expenses were incurred on Job No. 3664.

(1) Materials: ₹ 9,720

(2) Wages paid:

Deptt. A	40 hours at ₹ 8 per hour
Deptt. B	50 hours at ₹ 9 per hour
Deptt. C	60 hours at ₹ 5 per hour

(3) Works overhead expenses of these departments were estimated as under:

Deptt. A	₹ 9,000 for 6,000 working hours
Deptt. B	₹ 10,000 for 5,000 working hours
Deptt. C	₹ 12,000 for 3,000 working hours

(4) Office expenses were ₹ 75,000 when total direct wages paid in all three departments came to ₹ 2,50,000.

It is the practice to recover office overhead as percentage of direct wages.

You are required to calculate the cost of Job No. 3664 and its price to be quoted which would include 20% profit on selling price. (B. Com, Karnataka, Adapted)

[Ans. Total cost ₹ 11,511 : Profit ₹ 2,877.75; Price ₹ 14,388.75]

17. The following expenses were incurred for a job during the year ended 31st December 2013 :

	₹
Direct materials	3,000
Direct wages	4,000
Chargeable expenses	1,000
Factory overheads	2,000
Selling and distribution overheads	2,000
Administration overheads	3,000

Selling price for the above job was ₹ 18,000.

You are required to prepare a statement showing the profit earned for the year 2013 from the job and an estimated price of a job which is to be executed in the year 2014. Materials, wages and chargeable expenses will be required of ₹ 5,000, ₹ 7,000 and ₹ 2,000 respectively for the job. The various overheads

should be recovered on the following basis while calculating the estimated price.

(a) Factory overheads as a percentage of direct wages.

(b) Administration and selling and distribution overhead as a percentage of factory cost.

(B. Com., Bangalore, Delhi)

[Ans. Profit ₹ 3,000; Factory overhead 50% on direct wages, Adm. overhead 30% on factory cost. Selling and dist. overhead 20% on factory cost. Profit 20% on total cost; Estimated selling price of job ₹ 31,500]

18. From the understated particulars, you are required to prepare a monthly cost sheet of Soap Manufacturers Ltd. showing therein:

(i) Prime cost;	(ii) Works cost;	(iii) Cost of production;
(iv) Cost of sales; and	(v) Profit per unit.	
Opening Inventory (1-1-2013):		₹
Raw materials		6,000
Work-in-progress		9,620
Finished goods (1,000 units)		13,680
Closing Inventory (31-1-2013):		
Raw materials		7,000
Work-in-progress		8,020
Finished goods		?
Donations to home for destitutes		2,100
Raw materials purchased		72,000
Import duty on raw materials purchased		14,400
Productive wages		18,000
Machine hours worked	21,600 hours	
Machine hour rate		₹ 1.50
Chargeable expenses		₹ 2,000
Office and Administration expenses		Re. 1 per unit
Selling expenses		Re. 0.90 per unit
Units sold		8,000 units
Units produced		8,200 units
Profit on sale		10%

[Ans. (i) ₹ 1,05,400; (ii) ₹ 1,39,400; (iii) ₹ 1,47,600; (iv) ₹ 1,46,880; (v) ₹ 2.04. (B. Com. Delhi)]

19. A company makes two distinct types of toys, A & B. The total expenses during a period as shown by the books for the assembly of 600 of the type A and 800 of the type B toys are as under :

	₹
Materials	1,98,000
Direct wages	12,000
Stores overheads	19,800
Running expenses of machine	4,400
Depreciation	2,200
Labour amenities	1,500
Works general overhead	30,000
Administration and selling overhead	26,800

The other data available to you is :

	A : B
Material cost ratio per unit	1 : 2
Direct labour ratio per unit	2 : 3
Machine utilisation ratio per unit	1 : 2

Calculate the cost of each toy per unit giving the bases of apportionment adopted by you.

(B.Com. Hons., Delhi)

[Ans. Cost per toy — A ₹ 138.78, B ₹ 264.28]

[Hint. Material cost and direct wages have been apportioned in the cost ratio per unit multiplied by units produced. For material cost of A and B, the ratio is 3 : 8 and for wages ratio is 1 : 2. Depreciation in the ratio of 3 : 8]

20. The costing records of XYZ Co. Ltd. give the following information relating to Job No. 123:

Material used	₹ 500
Direct Wages:	
Deptt. A	10 hrs. @ ₹ 2.50 per hr.
Deptt. B	8 hrs. @ ₹ 3.00 per hr.

The estimated variable overheads for these departments are as follows:

Deptt. A	₹ 7,000 for 7,000 labour hours
Deptt. B	₹ 6,000 for 3,000 labour hours

Estimated fixed overheads are ₹ 30,000 for 7,500 normal working hours.

Prepare a Cost Sheet providing profit of 25% on total cost.

[Ans. Total cost ₹ 647, Selling price ₹ 808.75]

[Hint. This is similar to solved problem 1.18 in this chapter]

21. From the following prepare a cost sheet and quote a suitable price:

Total production	5,000 tons
Cost of raw material	₹ 20,00,000
Carriage inwards	₹ 2,00,000
Direct wages	₹ 20,00,000
Indirect wages	₹ 1,00,000
Office expenses	₹ 10,00,000
Selling overheads	₹ 10,00,000
Payment of income tax	₹ 3,00,000
Dividend paid	₹ 5,00,000
A profit margin of $33\frac{1}{3}\%$ of sales is desired.	₹ 5,00,000

[Ans. Total cost ₹ 63,00,000, Profit ₹ 31,50,000. Selling price ₹ 1890 per ton.]

[Notes. 1. Profit of $33\frac{1}{3}\%$ of sales is equal to 50% of cost.

2. Payment of income tax and dividend are not included in cost.]





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