B.COM
Year – I
Semester – II
Paper - V

Cost Accounting

Course Coordinator
Dr. J. Santhi
Associate Professor

Centre for Distance and Online Education

श्रीचन्द्रशेखरेन्द्रसरस्वतीविश्वमहाविद्यालयः

Sri Chandrasekharendra Saraswathi Viswa Mahavidyalaya

Deemed to be University u/s 3 of UGC Act 1956 - Accredited with 'A' grade by NAAC

Enathur, Kanchipuram 631561.

Sponsored and run by Sri Kanchi Kamakoti Peetam Charitable Trust

Cost Accounting

Objective

The objective of the course is to familiarize the students with the basic cost accounting principles and practices.

UNIT I

Introduction: Nature and scope of cost accounting: Cost concepts and classification: Methods and techniques: Installation of costing system- cost sheet.

UNIT II

Accounting for Material: Material purchase- Inventory Levels – EOQ – Reorder Level - Maximum Level – Minimum Level – Average Stock Level – Emergency Level - Bin Card- Pricing of material issues: FIFO – LIFO – HIFO - SAM – WAM – Standard Price Method – Inflated Price Method – Base Stock Method – Specific Price Method - Treatment of material losses.

UNIT III

Accounting for Labour: Labour cost control procedure: labour turnover: Idle time and overtime- Methods of wage payment-time and piece rates- incentive schemes.

UNIT IV

Accounting for Overheads: A brief introduction of Allocation and apportionment of overheads – Primary Distribution and Secondary Distribution – absorption of overheads – Machine Hour Rate

Unit V

Cost Ascertainment: Unit costing: Job, batch and contract costing: Operating costing: Process costing [excluding inter-process profits, and joint and by products].

Text Book

1. Arora M.N: Cost Accounting-Principles and practice: Vikas New Delhi.
2. Jain S.P. and Narang K.L. Cost Accounting: Kalyani New Delhi.
3. Cost accounting Text and Problems 12 edition - M C Shukla, T S Grewal and M P Gupta, S Chand Publication.

Reference Books

1. Anthony Robert, Reece, et al: Principles of Cost and Management Accounting Richard D. Irwin Inc, Illionis.
2. Hongren, Charles, Foster and Datar: Cost accounting-A Managerial Emphasis; Prentice-Hall of India, New Delhi.
3. Dr. N. Gurusamy, Cost Accounting, Vijay Nicole Publications.

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B. Com

ODL/OL Mode

Self-Learning Material

Cost Accounting

II Semester

Prepared by

Dr. J. Santhi

Associate Professor & Head

Department of Commerce

INTRODUCTION TO COST ACCOUNTING

Structure

Overview

Cost accounting plays a vital role in the financial and operational decision-making of a business. This unit introduces the scope, nature, and significance of cost accounting. It also discusses the various types of costs, costing methods and techniques, the essentials of installing a costing system, and the preparation of a cost sheet.

Learning Objectives

By the end of this unit, learners will be able to:

- Understand the nature and objectives of cost accounting.
- Identify different types of costs and their classifications.
- Distinguish between various costing methods and techniques.
- Recognize the essential steps in installing a costing system.
- Prepare a basic cost sheet.

1.1 Introduction to Cost Accounting

Cost Accounting emerged as a specialized branch of accounting to overcome the limitations of traditional financial accounting. While financial accounting focuses on preparing financial statements like the Profit and Loss Account and Balance Sheet, it does not offer detailed insights into the operational efficiency of departments or cost behaviour. It mainly serves external stakeholders and provides historical data, which often falls short in aiding managerial decision-making and cost control. These gaps necessitated the development of cost accounting, which supports internal control, cost analysis, and performance evaluation.

1.2 Limitations of Financial Accounting

Lack of Operational Insight

Financial accounting does not explain whether profit or loss results from operational performance or external factors such as inflation or recession.

No Departmental Performance Analysis

Since it presents aggregate results, it fails to identify underperforming departments or processes.

Inadequate Pricing Information

Though it captures overall production cost, financial accounting does not assist in pricing individual products or services accurately.

No Classification of Costs

It does not differentiate between direct and indirect costs or provide cost data for specific departments, processes, or cost units.

Limited Decision Support

It lacks the cost-related data required for key managerial decisions like make-or-buy analysis, pricing during special offers, or product discontinuation.

No Cost Control Mechanism

Financial accounting does not track or control expenses related to materials, labour, or overheads on a real-time basis.

No Performance Benchmarks

It doesn't establish standards for evaluating departmental or individual performance against defined cost norms.

Historical Focus

Financial accounting records past transactions and doesn't provide timely information to support day-to-day operational planning.

1.3 Definition of Cost Accounting

According to the **Institute of Cost and Works Accountants (ICWA)**, cost accounting is "the technique and process of ascertaining costs."

The **Chartered Institute of Management Accountants (CIMA), London** defines cost accounting as:

"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 centers and cost units. It includes cost control and the presentation of relevant statistical and financial data."

Wheldon defines cost accounting as:

"The classification, recording, and appropriate allocation of expenditure for the determination of the cost of products or services and the presentation of suitably arranged data for control and guidance of management."

1.4 Key Objectives of Cost Accounting

Cost accounting aims to support managerial functions by providing detailed cost data and enabling operational control. The primary objectives include:

1. To systematically analyze and group expenditures based on their nature and purpose.
2. To calculate the cost of each unit, job, process, or department and establish cost standards.
3. To identify unproductive activities and recommend corrective actions for reducing material, labour, and time wastage.
4. To generate periodic (weekly/monthly) profit or loss statements for the entire organization or specific departments.
5. To evaluate production methods, equipment utilization, and layouts to identify areas for cost savings.
6. To provide accurate cost data to support pricing decisions under different market conditions.
7. To compare actual performance with predetermined standards and analyze deviations.
8. To assist in setting budgets, comparing actual performance, and identifying areas of improvement.
9. To monitor the productivity of machinery and recommend replacements if required.
10. To maintain real-time records of material usage and inventory levels, aiding inventory control and production planning.

1.5 Importance of Cost Accounting

Cost accounting has gained prominence as a managerial tool, especially in addressing the shortcomings of financial accounting. Regardless of the type or scale of business, every organization incurs expenses on materials, labour, and overheads. Effective control over these costs is essential to prevent inefficiencies, reduce waste, and improve overall

productivity. Cost accounting plays a crucial role in ensuring that resources are utilized optimally and that financial performance is systematically monitored.

An efficient cost accounting system benefits not only management but also external stakeholders such as creditors, financial institutions, and employees. It ultimately contributes to organizational success and, at a broader level, supports economic development. The significance of cost accounting can be analysed under the following headings:

Nature of Cost Accounting

- **Analytical:** Breaks down costs into elements.
- **Predictive:** Helps in cost estimation and budgeting.
- **Control-Oriented:** Focuses on cost control and reduction.
- **Decision-Supportive:** Assists in managerial decision-making.

Scope of Cost Accounting

- Cost ascertainment
- Cost control
- Cost reduction
- Decision-making support
- Inventory valuation
- Performance measurement

1.6 Cost Concepts and Classification

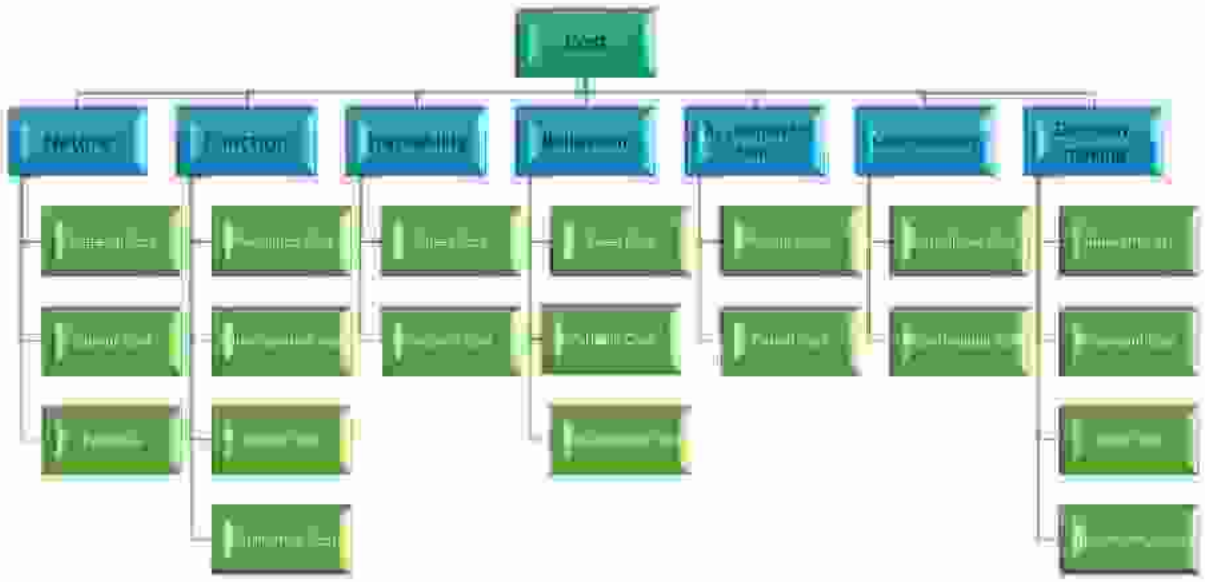
Cost

The amount of expenditure (actual or notional) incurred on or attributable to a specified thing or activity.

Classification of Costs

Costs in a business can be grouped in various ways depending on the purpose of analysis, type of industry, and the information needs of management. Classifying costs

appropriately is essential for accurate cost ascertainment, control, and decision-making. Below are the main classifications of cost:



a. By Nature, or Elements

This classification divides costs based on the types of resources consumed:

- **Material Cost:** Includes raw materials, components, consumables, and packaging.

- **Labour Cost**: Wages paid to workers engaged in production.
- **Expenses**: All other costs such as power, rent, and insurance not included under material or labour.

This categorization helps in analyzing the proportion of each element in the total cost.

b. By Function

Costs can be grouped based on the activities or departments that incur them:

- **Production or Manufacturing Costs**: Incurred during the process of converting raw materials into finished goods.
- **Administrative Costs**: Costs related to general management and office operations.
- **Selling and Distribution Costs**: Costs incurred to promote, sell, and deliver products.

c. By Traceability to Cost Unit

This method classifies costs based on whether they can be directly traced to a product or service:

- **Direct Costs**: Clearly attributable to specific products (e.g., raw materials, direct labour).
- **Indirect Costs**: Incurred for general operations and not directly traceable (e.g., factory rent, utilities).

d. By Behaviour with Activity Level

Costs can vary with changes in the volume of production:

Type	Description
Fixed Costs	Remain constant in total despite changes in output. Per unit cost decreases with higher output. (e.g., Rent)

Type	Description
Variable Costs	Vary in direct proportion to changes in production volume. (e.g., raw materials)
Semi-variable Costs	Contain both fixed and variable components. (e.g., electricity, maintenance)

e. By Relation to Time Period

- **Product Costs**: Costs that are included in inventory valuation (e.g., raw material, factory overhead).
- **Period Costs**: Costs not tied to production and charged against the revenue of a specific period (e.g., administrative expenses).

f. By Controllability

- **Controllable Costs**: Can be influenced by a specific individual or department (e.g., raw material usage).
- **Uncontrollable Costs**: Not subject to the direct control of any individual (e.g., allocated factory rent).

g. By Normality

- **Normal Costs**: Expected to be incurred under normal operating conditions.
- **Abnormal Costs**: Arise from unexpected or extraordinary events (e.g., machine breakdowns, natural calamities).

h. By Accounting Period

- **Capital Costs**: Incurred for acquiring or enhancing fixed assets. Benefits extend over several periods (e.g., machinery).
- **Revenue Costs**: Incurred for day-to-day operations and consumed within the same period (e.g., wages, utilities).

i. By Time of Recording

- **Historical Costs**: Actual costs recorded after they are incurred.
- **Predetermined Costs**: Estimated in advance for budgeting and standard costing purposes

Illustration: Classification of Cost

A manufacturing firm produces 1000 units. The following costs were incurred:

- Direct Materials: ₹40,000
- Direct Labour: ₹25,000
- Factory Rent: ₹10,000
- Indirect Materials: ₹5,000
- Electricity (40% fixed): ₹10,000

Classification:

- **Direct Cost:** ₹40,000 (Materials) + ₹25,000 (Labour)
- **Indirect Cost:** ₹10,000 (Rent) + ₹5,000 (Indirect Mat.) + ₹10,000 (Electricity)
- **Fixed Cost:** ₹10,000 (Rent) + ₹4,000 (Electricity)
- **Variable Cost:** ₹40,000 (Mat.) + ₹25,000 (Labour) + ₹6,000 (Electricity)

1.7 Methods and Techniques of Costing

Costing Methods

Method	Used In
Job Costing	Printing, repair shops
Process Costing	Chemicals, textiles
Contract Costing	Construction companies
Batch Costing	Pharmaceuticals, toys

Method	Used In
Operation Costing	Transport, hospitality

Costing Techniques

Techniques	Used for
Marginal Costing	Considers variable cost for decision-making
Standard Costing	Sets predetermined costs to compare with actuals
Budgetary Control	Planning and controlling costs through budgets

Difference between Cost Accounting and Financial Accounting

Basis of Comparison	Financial Accounting	Cost Accounting
Objective	Aims to present financial performance and position to stakeholders like shareholders, creditors, etc.	Provides cost-related data for internal management to aid in planning, control, and decisions
Legal Requirement	Maintained to comply with statutory laws such as the Companies Act and Income Tax Act	Maintained primarily for internal use; legally required only in specific industries
Focus Area	Focuses on calculating overall profit or loss for the business	Focuses on determining cost per unit, job, or department

Basis of Comparison	Financial Accounting	Cost Accounting
Scope of Reporting	Reports results for the entire organization	Reports on individual products, jobs, or services
Users	External users (investors, regulators, tax authorities)	Internal users (managers, executives, operational teams)
Nature of Data	Primarily based on actual, historical data	Based on both actual and estimated data
Recording Approach	Records and classifies transactions by nature (subjective classification)	Records transactions based on purpose or cost center (objective classification)
Type of Transactions	Deals with external transactions like sales, purchases, and expenses	Focuses on internal transactions such as usage of materials, labor hours, etc.
Granularity of Cost Information	Aggregated cost information is reported	Costs are detailed to unit, batch, process, or job level
Efficiency Measurement	Does not measure or report efficiency of specific departments or resources	Provides insights into performance and efficiency of resources, departments, and processes
Inventory Valuation	Stocks are valued at cost or market price, whichever is lower	Stocks are valued strictly at cost
Reporting Frequency	Usually reports annually or quarterly	Provides reports as frequently as needed by management (daily, weekly, monthly)

Difference between Management Accounting and Cost Accounting

Basis of Comparison	Cost Accounting	Management Accounting
Primary Objective	To determine, record, and control the cost of production or services.	To provide relevant information for managerial planning, control, and decision-making.
Scope	Limited to cost-related data.	Broader in scope – includes cost accounting, financial accounting, budgeting, forecasting, and performance analysis.
Data Used	Uses only **quantitative data** that can be measured in monetary terms.	Utilizes both **quantitative and qualitative data**, including customer feedback, risk factors, and market trends.
Time Orientation	Focuses mainly on historical and recent cost data.	Forward-looking; uses projections, forecasts, and future-oriented analysis.
Type of Information	Mainly concerned with cost classification and analysis.	Involves interpretation and synthesis of data for strategic and operational decisions.
Reporting	Generates detailed cost reports for various departments, products, or processes.	Prepares customized managerial reports for planning, control, and performance evaluation.
Users	Data is used by **internal management** and sometimes external stakeholders (auditors, regulators).	Used **exclusively by internal management** for tactical and strategic decisions.

Basis of Comparison	Cost Accounting	Management Accounting
Tools and Techniques	Techniques include cost sheets, variance analysis, cost control, and cost centers.	Uses tools like break-even analysis, budgetary control, ratio analysis, key performance indicators (KPIs), etc.
Legal Requirement	Sometimes legally mandated (especially in manufacturing sectors).	Not mandatory; maintained purely for internal management purposes.

1.8 Installation of Costing System

Key Factors to Consider While Installing a Costing System

1. Purpose and Objectives of the System
2. Type of Business and Product Characteristics
3. Organizational Structure
4. Existing Methods and Procedures
5. Information and Reporting Mechanism
6. Standardization of Procedures
7. Simplicity and Flexibility
8. Interdepartmental Cooperation
9. Integration and Reconciliation

1.8.1 Characteristics of an Ideal Costing System

(Also known as Requisites of a Good Costing System)

A well-designed costing system plays a vital role in achieving cost efficiency, operational control, and informed managerial decisions. An ideal costing system is one that not only meets the internal needs of the organization but also adapts to changing business

conditions while complying with external regulatory requirements. Below are the essential features or requisites of an effective costing system:

1. Business Suitability

The system must be appropriately designed to suit the nature, size, and complexity of the business. It should align with the type of products, processes, and industry practices, ensuring relevance and usefulness.

2. Simplicity

A good costing system should be easy to understand and operate. Information should be presented clearly and concisely, allowing even non-expert staff to follow procedures without confusion or error.

3. Flexibility

As businesses evolve, so must their costing systems. The ideal system should be adaptable to future changes in operations, production methods, and organizational structure without requiring complete overhauls.

4. Cost-Effectiveness

The benefits derived from the system must outweigh its implementation and operational costs. It should be financially viable and proportionate to the organization's scale and requirements.

5. Comparability

The system should enable meaningful comparison of data—over time, across departments, or with industry standards. This helps management evaluate performance and identify trends or inefficiencies.

6. Timely Information

To support decision-making and corrective action, the system must produce accurate and up-to-date information in a timely manner. Delayed reporting reduces the relevance of cost data.

7. Interdepartmental Support

A successful costing system requires cooperation and participation from all departments. Executive endorsement and staff involvement are crucial for implementation and continuous improvement.

8. Avoidance of Unnecessary Complexity

Excessive detail can overburden staff and dilute the usefulness of cost data. The system should balance comprehensiveness with practicality, focusing only on information that adds value.

9. Phased Implementation

Introducing the system should follow a well-planned schedule. Project management tools like network analysis can help ensure a structured and efficient rollout with minimal disruption.

10. Minimal Organizational Disruption

The costing system should integrate smoothly into the existing organizational framework. It should support current workflows and minimize the need for restructuring authority and responsibilities.

11. Standardized Forms and Documents

Uniform formats, sizes, and procedures for forms and reports improve efficiency. Color-coded or pre-printed forms with usage instructions can aid quick identification and reduce clerical errors.

12. Reduced Clerical Load

Forms should be simple and quick to fill, especially for workers with limited educational backgrounds. Original entries must be verifiable and, where possible, authenticated by supervisors.

13. Strong Material Control System

Since materials form a large part of manufacturing cost, effective inventory management and valuation techniques (e.g., FIFO, weighted average) must be an integral part of the system.

14. Streamlined Wage Procedures

An efficient wage accounting process should exist for recording time worked, preparing payrolls, and ensuring timely wage payments. This ensures control over labor costs and payroll accuracy.

15. Departmental Allocation of Overheads

There must be clear mechanisms for collecting, allocating, and absorbing indirect costs across departments to ensure precise product or service costing.

16. Reconciliation with Financial Accounts

Where cost and financial records are maintained separately, the system must allow for easy reconciliation. Preferably, both should be integrated to minimize discrepancies and duplication.

17. Consideration of External Regulations

While internal business needs guide system design, external compliance—such as cost accounting rules issued by government or regulatory bodies—must also be taken into account.

1.8.2. Steps in Installation

1. Preliminary Investigation
2. Design of Costing System
3. Selection of Methods
4. Classification of Accounts
5. Integration with Financial Accounting
6. Training of Staff
7. Trial Run and Review

Practical Challenges in Installing a Costing System

Despite the benefits, organizations may face several challenges when implementing a costing system:

a) Lack of Support from Top Management.
b) Resistance from Existing Accounting Staff.
c) Non-Cooperation from Other Departments.
d) Shortage of Skilled Costing Personnel
e) High Implementation Cost

1.9. Cost Centre, Cost Unit, and Profit Centre

1.9.1 Cost Centre

The **Chartered Institute of Management Accountants (CIMA), London** defines a **cost centre** as:

"A location, person or item of equipment (or group of these) for which costs may be ascertained and used for the purpose of cost control."

A **cost centre** is the smallest segment within an organization for which separate cost records are maintained. It allows for precise cost tracking and helps in analyzing operational efficiency.

A cost centre may be:

- A **department** (e.g., Assembly or Finishing department),
- A **machine or equipment** (e.g., a lathe machine),
- A **person** (e.g., a supervisor), or
- A **group of persons** (e.g., a team of technicians).

Example: In an automobile plant, each assembly line can be treated as a separate cost centre even if multiple lines are supervised by a single foreman.

1.9.1.1. Factors Influencing Selection of Cost Centres

1. Structure and layout of the factory
2. Cost incidence and traceability
3. Suitability of costing method
4. Availability of data and documentation

5. Management's policy and control objectives

Examples of Cost Units

Industry / Product	Cost Unit Basis
Automobile	Per vehicle or number
Cement	Per tonne
Sugar	Per tonne
Brick manufacturing	Per 1,000 bricks
Steel	Per tonne
Chemical manufacturing	Per litre, gallon, or kilogram
Transport	Per passenger-kilometre or tonne-kilometre

1.9.2 Profit Centre

A **profit centre** refers to a business segment or division that is accountable for both generating revenue and controlling costs, thereby contributing to the organization's overall profitability.

A profit centre operates like a mini-business within the company, responsible for its own performance.

It enables better delegation of authority and facilitates performance measurement of individual managers or departments.

Examples of Profit Centres:

- A regional sales office
- A product division (e.g., smartphone or accessories division)
- A retail branch or outlet
- A subsidiary company in a corporate group

1.9.3. Difference between Cost Centre and Profit Centre

Point of Difference	Cost Centre	Profit Centre
Definition	Smallest unit for which only costs are accumulated and monitored.	A business segment responsible for both revenue generation and cost control.
Purpose	Designed primarily for controlling and analyzing costs.	Created to decentralize operations and measure profitability at segment level.
Autonomy	Operates under centralized control.	Functions with a certain degree of independence or decision-making authority.
Performance Target	Focuses on cost minimization, with no explicit revenue goals.	Has predefined profit targets and the freedom to adopt strategies to achieve them.
Structure	A department or unit (e.g., machine shop, maintenance).	May encompass multiple cost centres (e.g., a branch office or product line).

1.10. Cost Sheet – Meaning and Preparation

Definition:

A cost sheet is a statement that shows the various components of total cost for a product.

A **cost sheet** is a structured statement that outlines the various components involved in the total cost of a product or service. It is used to record, classify, and analyze all elements of cost in a logical format. In addition to total cost, the cost sheet also shows **cost per unit**, enabling better cost tracking and price setting.

Cost sheets are typically prepared using either:

- **Historical Costs** – Based on actual expenses incurred during a past period.

- **Estimated Costs** – Based on forecasted costs, useful for planning and tendering.

1.10.1. Types of Cost Sheet

1. **Historical Cost Sheet**

Prepared after the production activity is completed, it reflects the **actual costs incurred** for materials, labor, and overheads.

2. **Estimated Cost Sheet**

Prepared **before production begins**, it projects the costs based on past trends and anticipated requirements. This type is particularly useful for **tender preparation**, budgeting, and decision-making.

1.10.2. Importance of Cost Sheet

A cost sheet is a key tool in cost accounting, offering the following advantages:

1. Cost Determination

It helps in determining the cost of production of a product or job either based on actual data (historical) or on projections (estimated).

2. Selling Price Fixation

By clearly detailing the cost elements, it aids management in setting the selling price by adding the desired margin to the cost of sales.

3. Cost Control

Cost sheets highlight material, labor, and overhead expenses, making it easier to monitor and control these costs during different stages of production.

4. Managerial Decision-Making

It supports strategic decisions like:

- Make-or-buy analysis
- Accepting special job orders or tenders
- Replacement or retention of machinery
- Cost reduction programs

1.10.3. Elements of Cost

To facilitate better analysis and control, total cost is broken down into key **cost elements**, based on the nature of expenditure:

Element	Description
Direct Material	Raw materials directly used in production.
Direct Labour	Wages paid to workers directly engaged in manufacturing.
Direct Expenses	Any direct cost (other than material and labour) tied to the product.

Together, these make up the **Prime Cost.**

1.10.4. Components and Structure of a Cost Sheet

The elements of cost are grouped to compute various levels of total cost, as shown below:

1. **Prime Cost**

   = Direct Materials + Direct Labour + Direct Expenses

2. **Factory/Works Cost**

   = Prime Cost + Factory Overheads (e.g., power, supervision, depreciation on plant)

3. **Cost of Production**

   = Factory Cost + Administrative Overheads (related to production activities)

4. **Total Cost / Cost of Sales**

   = Cost of Production + Selling and Distribution Overheads

Profit or Loss = Selling Price – Total Cost

Format of Cost Sheet:

Particulars	Amount (₹)
Direct Material	xxxx
Direct Labour	xxxx
Direct Expenses	xxxx
Prime Cost	xxxx
Add: Factory Overhead	xxxx
Factory/Works Cost	xxxx
Add: Administrative Overhead	xxxx
Cost of Production	xxxx
Add: Selling & Distribution Overhead	xxxx
Total Cost / Cost of Sales	xxxx

1.10.5. Types of Overheads

In cost accounting, **overheads** refer to all **indirect costs** that cannot be directly attributed to a specific product, job, or service. These include indirect materials, indirect labour, and other indirect expenses required for the day-to-day functioning of the business.

Overheads can be classified in several ways; one of the most widely used classifications is based on **functions**. Under this method, overheads are categorized according to the business activity in which they are incurred.

Type of Overhead	Meaning	Example
Factory or Works Overhead	Also known as manufacturing or production overhead, this includes all indirect expenses related to the production process but not	• Wages of factory supervisors, maintenance staff, and

	directly attributable to a specific product.	helpers (excluding direct labour) • Indirect materials (lubricants, tools, cleaning supplies) • Rent, rates, and taxes of the factory premises • Depreciation on factory buildings and equipment • Factory insurance • Canteen expenses for factory workers • Employee welfare expenses in the factory • Factory lighting, heating, and security costs • Excise duty
Administration Overhead	All indirect expenses related to the general management and administration of the organization.	• Salaries of administrative and clerical staff • Rent and maintenance of office buildings • Office lighting and utilities • Stationery and office supplies • Postage, telephone, internet, and courier expenses

		• Depreciation of office furniture and equipment • Audit, legal, and professional service charges • Insurance of office premises
Selling Overhead	These are the expenses incurred to create demand and promote the sale of products. They include all costs related to the marketing and sales force.	• Salaries and commissions of sales personnel • Advertisement and promotional expenses • Rent and maintenance of showrooms or sales offices • Traveling and lodging expenses of sales teams • Costs incurred in participating in trade fairs and exhibitions • Sales office depreciation • Free gifts and discounts to customers • Free after-sales services • Normal bad debts and sales incentives
Distribution Overhead	These expenses are incurred after the product is sold and relate to the delivery of goods to customers.	• Expenses of delivery vans (fuel,

		maintenance, driver salary) • Packing and packaging charges for delivery • Loading and unloading costs • Freight and transportation charges • Insurance during transit • Customs duties (in case of international delivery) •

Illustration 1: Prepare a Cost Sheet

Given:

- Direct Material: Rs. 50,000
- Direct Labour: Rs.30,000
- Direct Expenses: Rs.5,000
- Factory Overheads: Rs.10,000
- Administration Overheads: Rs.7,000
- Selling & Distribution: Rs. 8,000

Solution:

Particulars	**Amount (**Rs.**)**
Direct Material	50,000
Direct Labour	30,000

Particulars	Amount (Rs.)
Direct Expenses	5,000
Prime Cost	85,000
Add: Factory Overhead	10,000
Factory/Works Cost	95,000
Add: Administrative Overhead	7,000
Cost of Production	1,02,000
Add: Selling & Distribution Overhead	8,000
Total Cost / Cost of Sales	1,10,000

Illustration 2

From the following information, prepare a **Cost Sheet** for the month of June and calculate **cost per unit** and **profit per unit** for 1,000 units produced.

- Direct Material: ₹50,000
- Direct Labour: ₹30,000
- Direct Expenses: ₹5,000
- Factory Overheads: 60% of Direct Labour
- Administration Overheads: ₹15,000
- Selling & Distribution Overheads: ₹10,000
- Units Produced: 1,000
- Selling Price per Unit: ₹130

Solution:

Cost Sheet for the Month of June

Particulars	**Amount (₹)**
Direct Material	50,000
Direct Labour	30,000
Direct Expenses	5,000
Prime Cost	**85,000**
Add: Factory Overheads (60% of DL)	18,000
Works / Factory Cost	**1,03,000**
Add: Administration Overheads	15,000
Cost of Production	**1,18,000**
Add: Selling & Distribution Overheads	10,000
Total Cost / Cost of Sales	**1,28,000**
Add: **Profit** (₹130 × 1,000 – ₹1,28,000)	2,000
Sales (1,000 units × ₹130)	**1,30,000**

Cost per unit = ₹1,28,000 / 1,000 = ₹128

Profit per unit = ₹130 – ₹128 = ₹2

Illustration 3: Estimated Cost Sheet (for Tender Quotation)

XYZ Ltd. provides the following estimated cost data for a new job to be executed:

- Estimated Direct Material: ₹75,000
- Estimated Direct Labour: ₹50,000
- Direct Expenses: ₹10,000

- Factory Overhead: 80% of Direct Labour
- Administration Overhead: 10% of Works Cost
- Selling Overhead: 5% of Cost of Production
- Desired Profit: 20% on Selling Price

⁂ Prepare an Estimated Cost Sheet and compute the **selling price** of the job.

Solution

Estimated Cost Sheet

Particulars	**Amount (₹)**
Direct Material	75,000
Direct Labour	50,000
Direct Expenses	10,000
Prime Cost	**1,35,000**
Add: Factory Overhead (80% of DL)	40,000
Works Cost	**1,75,000**
Add: Admin Overhead (10% of Works Cost)	17,500
Cost of Production	**1,92,500**
Add: Selling Overhead (5% of COP)	9,625
Total Cost / Cost of Sales	**2,02,125**

Let **Selling Price = x**

Since **Profit = 20% of Selling Price**,

⇒ Profit = 20% of x = 0.20x

And we know:

Cost = Selling Price – Profit = x – 0.20x = 0.80x

So,

0.80x = ₹2,02,125

⇒ x = ₹2,02,125 ÷ 0.80 = ₹2,52,656.25

Estimated Selling Price = ₹2,52,656.25

Estimated Profit = ₹50,531.25

Illustration 4: Finding Missing Elements

A company produced 500 units. The total cost of sales is ₹75,000 and profit earned is ₹15,000. Selling and distribution overhead is ₹5,000. Calculate:

a) Cost of Production
b) Cost per unit
c) Selling price per unit

Solution

Cost of Sales = Cost of Production + Selling & Distribution Overhead

₹75,000 = Cost of Production + ₹5,000

⇒ Cost of Production = ₹70,000

a) **Cost of Production = ₹70,000**
b) **Cost per unit = ₹70,000 / 500 = ₹140**
c) **Selling Price = Total Cost + Profit = ₹75,000 + ₹15,000 = ₹90,000**

⇒ Selling Price per unit = ₹90,000 / 500 = ₹180

Summary

This unit introduced cost accounting, its nature, and the types of cost classification. It explained the various methods and techniques used in costing, steps for installing a costing system, and the preparation of cost sheets. The knowledge gained forms a foundation for managerial decisions in controlling and reducing cost.

Check Your Progress

1. Define cost accounting and explain its scope.
2. Classify the following into fixed and variable cost: Rent, Direct Materials, Electricity, Supervisor Salary.
3. Differentiate between Job and Process Costing.
4. State the steps involved in the installation of a costing system.
5. Prepare a cost sheet from the following data:
    - Direct Material ₹20,000, Direct Labour ₹15,000, Factory Overheads ₹5,000, Admin OH ₹3,000, Selling OH ₹2,000.

Glossary

- **Cost Accounting:** Accounting branch dealing with cost calculation.
- **Prime Cost:** Total of direct costs.
- **Overheads:** Indirect costs such as admin or selling expenses.
- **Marginal Costing:** Costing based on variable cost.
- **Cost Sheet:** A statement showing elements of cost.

Answers to Check Your Progress

1. Cost accounting involves collection, classification, analysis of cost data. Scope includes costing, control, and decision-making.
2. Fixed: Rent, Supervisor Salary; Variable: Direct Materials, part of electricity.
3. Job Costing: For unique products; Process Costing: For continuous mass production.
4. Steps: Investigation, system design, classification, training, review.
5. Cost Sheet Total: ₹20,000 + ₹15,000 = ₹35,000 (Prime)

Add Factory OH ₹5,000 = ₹40,000

Add Admin ₹3,000 = ₹43,000

Add Selling ₹2,000 = ₹45,000 (Total Cost)

Suggested Reading

1. Jain & Narang – *Cost Accounting* – Kalyani Publishers
2. T.S. Reddy & Y. Hari Prasad Reddy – *Cost Accounting* – Margham Publications
3. M.N. Arora – *A Textbook of Cost and Management Accounting* – Vikas Publishing
4. S.P. Iyengar – *Cost Accounting: Principles and Practice* – Sultan Chand & Sons
5. Bhabatosh Banerjee – *Cost Accounting: Theory and Practice* – PHI Learning

Exercises

Part – A: Short Answer Questions (2 Marks)

1. Define the term 'costing'.
2. What is cost accounting?
3. What is fixed cost and variable cost?
4. State the functions of cost accounting.
5. State the objectives of cost accounting.
6. What are the advantages of cost accounting?
7. List the limitations of cost accounting.
8. Write short notes on profit centres.
9. What is controllable cost and uncontrollable cost?
10. Write a short note on cost centres.

Part – B: Long Answer / Essay Questions (10 Marks)

1. Briefly discuss the requisites of a good costing system.
2. Explain the nature and scope of cost accounting.
3. Discuss the necessary steps to install the costing system.
4. Discuss the advantages of cost accounting.

5. Explain the difficulties in installing a costing system.
6. Broadly discuss the classification of cost.
7. Differentiate financial accounting and cost accounting.
8. How can the practical difficulties in installing a costing system be overcome?
9. Explain the common objections raised against cost accounting.
10. Discuss the various methods of costing.

Practical Problems

1. From the following information prepare cost sheet.

Details	Amount Rs.
Direct Materials	1,00,000
Direct Wages	30,000
Factory Expenses	10,000
Office Expenses	2000
Selling Expenses	1000

[Ans: Prime Cost Rs.1,30,000; Works Cost Rs.1,40,000; Cost of Production Rs.1,42,000; Cost of Sales Rs.1,43,000]

2. Prepare cost sheet

Details	Amount Rs.
Direct Materials	60,000
Direct Wages	15,000
Factory Expenses	100% of wages
Office Expenses	25% of works cost
Selling Expenses	10% of cost of production

[Ans: Cost of sales Rs.1,23,750]

3. The following information relates to XYZ Ltd. for the month of June 2025:

Details	Amount
Direct Materials	1,20,000

Direct Labour	80,000
Factory Overheads	40,000
Office and Administrative Overheads	30,000
Selling and Distribution Overheads	20,000
Units Produced and Sold	1000

Prepare a simple cost sheet and calculate the cost per unit.

[Ans: Total Cost = ₹1,20,000 + ₹80,000 + ₹40,000 + ₹30,000 + ₹20,000 = ₹2,90,000

Cost per unit = ₹2,90,000 / 1,000 = **₹290**

4. Cost Sheet with Opening and Closing Stock of Raw Materials

ABC Ltd. provides the following data:

- Opening Stock of Raw Materials: ₹25,000
- Purchases of Raw Materials: ₹1,50,000
- Closing Stock of Raw Materials: ₹20,000
- Direct Labour: ₹60,000
- Factory Overheads: ₹30,000

Calculate the Prime Cost.

[Ans: Raw Materials Consumed = ₹25,000 + ₹1,50,000 - ₹20,000 = ₹1,55,000

Prime Cost = ₹1,55,000 + ₹60,000 = **₹2,15,000]**

5. Cost Sheet with Stock of Finished Goods

Problem:

Following are the details of DEF Ltd. for April 2025:

- Total Cost of Production: ₹3,50,000
- Opening Stock of Finished Goods: ₹45,000
- Closing Stock of Finished Goods: ₹55,000

Calculate the Cost of Goods Sold.

[Ans: COGS = ₹3,50,000 + ₹45,000 - ₹55,000 = **₹3,40,000]**

6. Cost Sheet Including Profit

Problem:

GHI Ltd. has the following data:

- Cost of Production: ₹4,00,000
- Selling and Distribution Overheads: ₹40,000
- Profit is 20% on sales

Calculate the selling price.

[Ans: Total Cost = ₹4,00,000 + ₹40,000 = ₹4,40,000

Let Sales = x → Profit = 20% of x = 0.20x

So, x - 0.20x = ₹4,40,000 → 0.80x = ₹4,40,000

x = ₹4,40,000 / 0.80 = **₹5,50,000]**

7. Cost Sheet with Abnormal Loss

Problem:

LMN Ltd. gives you the following information:

- Total Production Cost: ₹2,00,000
- Number of Units Produced: 1,000
- Abnormal Loss: 50 units (fully completed)

Calculate the cost per good unit produced.

[Ans: Total Units Considered = 1,000 - 50 = 950 units

Cost per unit = ₹2,00,000 / 950 = **₹210.53]**

8. Cost Sheet with Tenders and Quotations

Problem:

JK Ltd. manufactures a product at a total cost of ₹5,00,000 for 10,000 units. The company wants to submit a tender for a new order of 5,000 units. They expect an increase of 10% in material cost and 5% in labour cost, but overheads will remain the same per unit.

- Material Cost per unit (current): ₹25
- Labour Cost per unit (current): ₹15
- Overheads per unit: ₹10
- Company wants a profit of 20% on cost.

Calculate the Quotation Price for the tender.

[Ans: Total Cost for 5,000 units = ₹53.25 × 5,000 = ₹2,66,250

Profit @ 20% on cost = ₹2,66,250 × 20% = ₹53,250

Quotation Price = ₹2,66,250 + ₹53,250 = ₹3,19,500]

9. Cost Sheet with Sale Price Computation

Problem:

A company incurred the following per unit costs:

- Prime Cost: ₹60
- Factory Overheads: ₹20
- Administrative Overheads: ₹10
- Selling and Distribution Overheads: ₹10
- Desired profit is 25% on **selling price**.

Compute the Selling Price per unit.

[Ans: = ₹133.33]

10. Cost Sheet with Opening and Closing Stock of Raw Material

Problem:

MNO Ltd. gives the following for May 2025:

- Opening Stock of Raw Material: ₹50,000
- Purchases: ₹2,00,000
- Closing Stock of Raw Material: ₹40,000
- Direct Wages: ₹1,00,000

Calculate the Prime Cost.

[Ans: ₹3,10,000]

11. Cost Sheet with Opening and Closing Work-in-Progress (WIP)

Problem:

RST Ltd. provides the following:

- Total Factory Cost (before WIP adjustment): ₹4,50,000
- Opening WIP: ₹60,000
- Closing WIP: ₹40,000

Calculate the Factory Cost after WIP adjustment.

[Ans: Adjusted Factory Cost = ₹4,70,000]

12. Cost Sheet with Opening and Closing Stock of Finished Goods

Problem:

The following figures are provided for UVW Ltd.:

- Cost of Production: ₹7,00,000
- Opening Stock of Finished Goods: ₹80,000
- Closing Stock of Finished Goods: ₹1,00,000

Calculate the Cost of Goods Sold (COGS).

[Ans: COGS = ₹7,00,000 + ₹80,000 - ₹1,00,000 = ₹6,80,000]

UNIT II ACCOUNTING FOR MATERIAL

Structure

Overview

Material constitutes a major part of the total cost in manufacturing. Efficient control over material ensures cost efficiency and timely production. This unit focuses on material procurement, inventory levels, pricing methods for material issues, and the accounting treatment of material losses.

Learning Objectives

By the end of this unit, learners will be able to:

- Understand material purchase procedures and control.
- Compute inventory levels like EOQ, reorder level, maximum and minimum levels.

- Apply various pricing methods for material issues.
- Prepare and interpret bin cards.
- Account for material losses.

2.1 Introduction to Material Control

Material control involves regulating and managing inventory levels to ensure uninterrupted production with minimal investment.

Objectives:

- Ensure continuous production.
- Avoid overstocking and understocking.
- Minimize wastage and losses.
- Achieve optimum utilization of materials.

2.2 Inventory Control Levels

Economic Order Quantity (EOQ)

Definition: EOQ is the order quantity that minimizes the total cost of ordering and holding inventory.

🔷 **Formula:**

$$EOQ = \text{Root of whole thing} \quad \frac{2 \times \text{Annual Demand} \times \text{Ordering Cost}}{\text{Carrying cost per unit per annum}}$$

Where:

- A = Annual usage (units)
- B = Ordering cost per order
- C = Cost per unit
- S = Storage/Carrying cost %

Example:

- Annual Demand = 5,000 units
- Ordering Cost = ₹50/order
- Cost per unit = ₹10
- Carrying Cost = 10%

EOQ= 224 units

Inventory Levels

Level	**Formula**
Reorder Level	Maximum consumption × Maximum Re-order period
Minimum Level	Reorder level – (Normal usage × Normal Re-order period)
Maximum Level	Reorder level + Reorder quantity – (Minimum usage × Minimum Re-order period)
Average Stock	(Minimum level + Maximum level) / 2
Emergency Level	(Optional) Defined by company policy, below minimum stock

Example:

- Max Consumption = 150 units/week
- Min Consumption = 100 units/week
- Normal Consumption = 120 units/week
- Max Lead Time = 4 weeks
- Min Lead Time = 2 weeks
- Normal Lead Time = 3 weeks
- Reorder Quantity = 600 units

Solution

a. Reorder Level=Maximum Consumption × Maximum Re-order period

Reorder Level=150 ×4 = 600 units

b. Minimum Level=Reorder Level−(Normal Consumption×Normal Lead Time)

Minimum Level=600 −(120 × 3)

Minimum Level=600= 360 = 240 units

c. Maximum Level=Reorder Level + Reorder Quantity − (Minimum Consumption × Minimum Lead Time]

Maximum Level = 600 + 600 − [100 × 2]

Maximum Level=1200 − [200] = 1000 units

d. Average Level= [Minimum Level + Maximum Level] / 2

Average Level = [240 + 1000] / 2 = 620 units

2.3 Bin Card

A **Bin Card** is a quantitative record of the receipt, issue, and balance of materials kept at the storage location.

Date	Receipts	Issues	Balance	Signature
01-06	500 units	—	500	Storekeeper
04-06	—	200	300	Production
07-06	300	—	600	Purchase

Note: Bin Cards do **not** show value—only quantity.

2.4 Pricing of Material Issues

Methods of Pricing:

Method	Description	Suitable For
FIFO	Issues from first purchase batch	Perishable or fast-moving goods
LIFO	Issues from last received batch	Rising price environment
HIFO	Issues at highest price	Max cost recognition
SAM (Simple Avg. Method)	Average of prices without considering qty	Irregular issues
WAM (Weighted Avg.)	Weighted average considering qty	Uniform costing
Standard Price	Predetermined price for standard costing	Standard costing systems
Inflated Price	Price + markup for storage losses	Emergency costing
Base Stock	Maintain base stock at fixed price	Strategic inventory
Specific Price	Issue at actual purchase price	Custom order industries

FIFO Method: Solved Problem

Given:

- June 1: 100 units @ ₹10
- June 5: 200 units @ ₹12
- June 10: Issued 250 units

FIFO Issue Valuation:

- First 100 units @ ₹10 = ₹1,000

- Next 150 units @ ₹12 = ₹1,800

  Total: ₹2,800

WAM Method: Solved Problem

Given:

- Opening Stock: 100 units @ ₹10
- Purchase: 200 units @ ₹12
- Issue: 150 units

Weighted Average Price:

= No. of units x Price per unit/Total number of Units

Issue Value = 150 × ₹11.33 = ₹1,699.50

Comparison of Inventory valuation Methods

Method	Advantages	Disadvantages
FIFO (First-In, First-Out)	Simple and logical Closing stock reflects current market prices Accepted by most tax laws and accounting standards Suitable where goods are perishable or time-sensitive	During inflation, results in higher profits and higher taxes. Older cost does not match current revenues (mismatching cost concept).
LIFO (Last-In, First-Out)	Matches latest costs with current revenues. Reduces taxable income during inflation. Useful in industries with non-perishable goods	Closing stock is undervalued during rising prices. Not allowed under IFRS. More complex to maintain.
Simple Average Method	Easy to calculate. Smoothens price fluctuations.	Does not consider quantities purchased.

Method	Advantages	Disadvantages
	Useful when prices are stable or moderately varying	May not reflect actual inventory cost accurately
Weighted Average Method (WAM)	Considers both price and quantity. More accurate than simple average. Smoothens cost fluctuations. Suitable for bulk items with indistinct identity.	Slightly more complex calculation. May not reflect exact market price if prices vary widely. Cost layers not preserved

2.5 Treatment of Material Losses

Type of Loss	Description	Accounting Treatment
Normal Loss	Inevitable due to nature of material	Charged to production or overhead
Abnormal Loss	Unexpected and avoidable losses	Debited to costing profit & loss A/c
Waste	Material lost in processing (no value)	Treated as part of cost of production
Scrap	Residual with small sale value	Sale value credited to cost
Spoilage	Damaged material that may need rework	If recoverable: include in cost; else loss
Defectives	Units failing quality control	Cost of rectification is added to cost

Summary

This unit discussed material procurement, inventory levels, EOQ, reorder point, and safety levels. It explained various material pricing methods like FIFO, LIFO, WAM, etc., and the preparation of bin cards. The unit also dealt with accounting treatments for different types of material losses.

Check Your Progress

1. Define EOQ and explain its significance.
2. Compute EOQ for the following: Annual usage = 4000 units, Ordering cost = ₹50, Cost/unit = ₹20, Carrying cost = 10%.
3. Differentiate between FIFO and LIFO methods.
4. What is a Bin Card? What are its features?
5. How are abnormal material losses treated in cost accounting?

Glossary

- **EOQ:** Optimal order quantity that minimizes total cost.
- **Reorder Level:** Stock level at which new order is placed.
- **Bin Card:** Store record showing quantities of materials.
- **FIFO/LIFO:** Material issue methods based on entry sequence.
- **Scrap:** Residual waste with minimal value.

Answers to Check Your Progress

1. EOQ is the order size that minimizes the total ordering and holding costs.
2. EOQ = 447 units
3. FIFO issues old stock first; LIFO issues recent stock first.
4. A Bin Card records quantity only—no value; maintained by the storekeeper.
5. Abnormal losses are charged to Costing P&L A/c as they are not part of production cost.

Suggested Reading

1. Jain & Narang – *Cost Accounting* – Kalyani Publishers
2. M.N. Arora – *A Textbook of Cost and Management Accounting* – Vikas Publishing
3. T.S. Reddy & Y. Hari Prasad Reddy – *Cost Accounting* – Margham Publications
4. Maheshwari S.N. – *Cost Accounting* – Sultan Chand

5. Horngren, Datar & Rajan – *Cost Accounting: A Managerial Emphasis* – Pearson

ADDITIONAL PROBLEMS & SOLUTIONS

Problem 1: EOQ Calculation

A producer requires **200 units of a** specific component **each month**, which he **procures from an external supplier. The cost incurred each time an order is placed and received is ₹100, while the annual cost to hold one unit in inventory is ₹12.** Based on this information, determine the **Economic Order Quantity (EOQ).**

Solution:

Step 1: Identify the given values:

- Monthly Demand = 200 units
- So, Annual Demand (D) = 200 × 12 = 2400 units
- Ordering Cost (S) = ₹100 per order
- Carrying Cost per unit per year (H) = ₹12

Applying the formula, EOQ = 200 units

Problem 2: Inventory Levels

Given:

- Maximum consumption = 200 units/week
- Minimum consumption = 100 units/week
- Normal consumption = 150 units/week
- Maximum lead time = 6 weeks
- Minimum lead time = 2 weeks
- Normal lead time = 4 weeks
- Reorder quantity = 1,200 units

Calculate: Reorder Level, Minimum Level, Maximum Level, Average Stock Level.

Solution:

- **Reorder Level** = Max Consumption × Max Lead Time = 200 × 6 = **1,200 units**
- **Minimum Level** = Reorder Level – (Normal Consumption × Normal Lead Time) = 1,200 – (150 × 4) = 1,200 – 600 = **600 units**
- **Maximum Level** = Reorder Level + Reorder Quantity – (Min Consumption × Min Lead Time) = 1,200 + 1,200 – (100 × 2) = 2,400 – 200 = **2,200 units**
- **Average Level** = (Minimum + Maximum) / 2 = (600 + 2,200) / 2 = **1,400 units**

Problem 3: FIFO vs. LIFO

Inventory movements are as follows:

- June 1: Opening stock = 100 units @ ₹10
- June 5: Purchase = 200 units @ ₹12
- June 10: Issue = 250 units

Calculate issue value using:

a) FIFO
b) LIFO

Solution:

a) FIFO:

- 100 @ ₹10 = ₹1,000
- 150 @ ₹12 = ₹1,800

Total = ₹2,800

b) LIFO:

- 200 @ ₹12 = ₹2,400
- 50 @ ₹10 = ₹500

Total = ₹2,900

Problem 4: Weighted Average Method

- June 1: Opening = 100 units @ ₹5
- June 3: Purchase = 200 units @ ₹6
- June 5: Issue = 150 units

Calculate issue price and closing stock using WAM.

Solution:

Total Cost = (100 × ₹5) + (200 × ₹6) = ₹500 + ₹1,200 = ₹1,700

Total Qty = 300 units

WAP = ₹1,700 / 300 = ₹5.67 (approx)

Issue = 150 × ₹5.67 = ₹850.50

Closing Stock = (300 – 150) × ₹5.67 = ₹850.50

Problem 6: Bin Card Entries

Record the following in Bin Card:

- Jan 1: Opening Balance = 300 units
- Jan 3: Issued = 100 units
- Jan 6: Received = 200 units
- Jan 9: Issued = 250 units

Solution:

Date	Receipts	Issues	Balance
Jan 1	—	—	300
Jan 3	—	100	200
Jan 6	200	—	400
Jan 9	—	250	150

UNIT III: ACCOUNTING FOR LABOUR

Structure

Overview

Labour is a critical component of production. Efficient management of labour cost ensures profitability and productivity. This unit provides insight into procedures to control labour cost, different types of wage payments, incentive schemes, and treatment of idle time and overtime.

Learning Objectives

By the end of this unit, learners will be able to:

- Explain labour cost control procedures.
- Understand the concept and calculation of labour turnover.
- Account for idle time and overtime.
- Compare time rate and piece rate wage systems.

- Evaluate incentive schemes for workers.

3.1 Labour Cost and Its Control

Labour Cost is the cost incurred in the form of wages, salaries, and other benefits paid to employees.

Components of Labour Cost:

- **Direct Labour**: Labour directly involved in production.
- **Indirect Labour**: Workers not directly involved in production (supervisors, storekeepers).

Labour Cost Control Procedure:

Stage	Control Measures
Recruitment	Proper selection and placement
Timekeeping	Attendance and time recording systems
Time booking	Job cards or time tickets
Payroll preparation	Calculation and verification of wages
Labour analysis	Efficiency, idle time, and productivity reports

3.2 Labour Turnover

Definition: Labour turnover is the rate at which employees leave and are replaced.

Formulae:

Method	Formula
Separation Method	(No. of Separations / Average No. of Workers) × 100
Replacement Method	(No. of Replacements / Average No. of Workers) × 100

Method	Formula
Flux Method	[(Separations + Replacements) / Average No. of Workers] × 100

Illustration:

A company had:

- 100 employees at beginning, 120 at end
- 10 separations, 8 replacements

Average workers=100+1202=110\text{Average workers} = \frac{100 + 120}{2} = 110

Separation Rate = (10 / 110) × 100 = **9.09%**

Replacement Rate = (8 / 110) × 100 = **7.27%**

Flux Rate = (18 / 110) × 100 = **16.36%**

3.3 Idle Time and Overtime

Idle Time

Meaning: Time paid for but not utilized in production.

Types:

- **Normal Idle Time**: Unavoidable (e.g., machine setup, breaks) → charged to **Overheads**.
- **Abnormal Idle Time**: Avoidable (e.g., machine breakdown) → charged to **Costing P&L A/c**.

Overtime

Meaning: Time worked beyond normal hours.

Treatment:

- **Job Specific**: Charged to that job.
- **General Production**: Charged to overheads.
- **Abnormal**: Charged to Costing P&L A/c.

3.4 Methods of Wage Payment

Time Rate System – Unique Problem

Problem:

A worker is employed for 6 days a week, working 8 hours daily. His wage rate is ₹120 per hour. Calculate his weekly wages under the **Time Rate System**.

Solution:

Total Hours Worked=6×8=48 hours

Rate per hour = ₹120

Wages payable = 48 hours x ₹120 = 5760

A. Time Rate System

Workers are paid based on time worked (hour, day, week).

Formula:

Earnings=Time worked X Rate per hour

Pros: Simple, ensures quality.

Cons: No incentive for efficiency

B. Piece Rate System

Workers are paid based on output.

Formula:

Earnings=Units produced X Rate per unit

Pros: Encourages higher output.

Cons: May affect quality

3.5 Incentive Schemes

1. Halsey Plan

- Standard Time (S)

- Actual Time Taken (T)
- Time Saved = S – T
- Rate per Hour = R

Formula:

Earnings=(T×R)+50% of (S–T)×R

2. Rowan Plan

Formula:

Earnings=T×R+(S–T/S×T×R)

Illustration – Halsey and Rowan

Data:

- Standard time = 10 hours
- Time taken = 8 hours
- Rate = ₹20/hour

Halsey Plan:

Earnings=8×20+50% X (2×20)

=₹160+₹20=₹180

= 8 × 20 + 50% × (2 × 20) = ₹160 + ₹20 = ₹180

Rowan Plan:

Earnings=8×20+(210×8×20) =₹160+₹32=₹192

= ₹160 + ₹32 = ₹192

Summary

This unit explained various aspects of labour cost management, including cost control procedures, labour turnover, idle time, and overtime. It compared wage systems and explained incentive schemes like Halsey and Rowan, with numerical illustrations.

Check Your Progress

1. Define labour turnover. State its three methods of measurement.
2. Distinguish between time rate and piece rate systems.
3. What is idle time? How is it treated in cost accounting?
4. Calculate earnings under Halsey and Rowan Plan for:
    - Standard Time = 9 hrs, Actual Time = 6 hrs, Rate = ₹25/hr.
5. What are the objectives of labour cost control?

Glossary

- **Labour Turnover:** Rate of replacement of employees.
- **Idle Time:** Paid time not worked.
- **Time Rate:** Wage paid based on hours worked.
- **Piece Rate:** Wage based on output produced.
- **Incentive Schemes:** Plans to reward efficiency/productivity.

Answers to Check Your Progress

1. See section 3.2 for methods: Separation, Replacement, Flux.
2. Time rate is based on hours; piece rate is based on output.
3. Idle time is paid but unproductive time; normal idle = overheads, abnormal = Costing P&L.
4.
    - **Halsey**: ₹150 + 50% of (3 × 25) = ₹150 + ₹37.50 = ₹187.50
    - **Rowan**: ₹150 + (3/9 × 6 × 25) = ₹150 + ₹50 = ₹200
5. To reduce labour cost, improve efficiency, minimize idle time, and ensure timely wage payment.

Suggested Reading

1. Jain & Narang – *Cost Accounting* – Kalyani Publishers
2. M.N. Arora – *Cost and Management Accounting* – Vikas Publishing
3. S.P. Iyengar – *Cost Accounting* – Sultan Chand & Sons
4. T.S. Reddy & Y. Hari Prasad Reddy – *Cost Accounting* – Margham Publications
5. Horngren et al. – *Cost Accounting* – Pearson

Problems and Solutions

Overtime Wages

Overtime premium is paid to the workers for the extra time worked than the normal working hours specified in the Factories Act, 1948 or work agreement with the union. The extra time is paid at a higher rate than the normal time rate, for example, if a worker works beyond 8 hours in a day or 48 hours in a week, he is paid with double the wages for the extra time worked.

The overtime wages consist of two elements:

(i) Normal wages for extra time, and(ii) Additional wages paid for the overtime worked.

Accounting Treatment of Overtime Premium:

(1) Overtime hours at the normal rate are treated as direct labour cost and charged to production on the same basis as time worked during normal hours but the premium paid during the overtime period is not a direct charge against production but is recovered as production overhead through overhead recovery rate.

(2) Where the overtime is worked on a specific job to meet the time schedules or to carry out specific rush orders for which extra price is recovered, then the entire labour cost can be charged as direct labour cost to that job.

(3) If overtime wages paid due to negligence or delay of worker of a particular department, it may be charged to the concerned department. (4) If the overtime premium is paid due to abnormal causes, it should be charged to Costing Profit and Loss Account.

Control of Overtime Premium:

To control the overtime premium, the following may be given due consideration:

(a) Careful production planning and scheduling.

(b) Analysis of reasons for overtime working. (c) Frequency of overtime working in each department.

(d) If it is due to shortage of labour, steps may be taken to recruit more workers.

(e) If overtime working is due to limiting machine hours available in the production depart-ments, purchase extra machines, working extra shift, sub-contracting etc. may be consid-ered.

(f) Appropriate authority should sanction for overtime working. (g) Maintenance of proper records for overtime working and payments made for it will help in control of overtime.

(h) Only in urgencies and real necessities the overtime workers may be engaged otherwise the practice of overtime working should be discouraged.

Disadvantages of Overtime Working:

The drawbacks due to overtime working are as follows:

(a) The overtime working increases the fatigue and reduces the efficiency of the workers causing low productivity and higher production cost. (b) The workers will try to avoid work during normal time and prefers to work overtime for extra earnings.

(c) If overtime working frequently allowed, it becomes a practice of working and workers may desist for any steps to control overtime.

(d) It increases the administrative overhead costs.

(e) Due to overtime working, it may not be possible for carry maintenance work of the plant and machinery and it may lead to sudden major breakdown of plant and machinery causing stoppage of production.

(f) The continuous overtime working may lead to health hazards to workers and it may increase the accident rate at work place.

(g) The uneven distribution of overtime working among the workers may cause discontent in other workers.

(h) It increases the rate of depreciation of plant and machinery.

Problem No. 1

Calculate the normal and overtime wages payable to a workman from the following data:

Day	Hours worked
Monday	7
Tuesday	8
Wednesday	10
Thursday	9
Friday	8
Saturday	5
Total	47

Normal working hours – 7 hours per day

Normal Wage Rate – Rs.10 per hour

Overtime Wage Rate – Up to 8 hours in a day at single rate and over 8 hours in a day at double rate [or] up to 42 hours in a week at single rate and over 42 hours at double rate, whichever is beneficial to the employee.

Solution

Statement showing overtime hours

Day	Total Hours	Normal Working Hours	Overtime Hours	
			At Single Rate	At Double Rate
Monday	7	7	--	--
Tuesday	8	7	1	--
Wednesday	10	7	1	2
Thursday	9	7	1	1
Friday	8	7	1	--
Saturday	5	5	--	--
Total	47	40	4	3

Computation of Earnings to the worker

Daily Basis

Normal Wages [40 Hours @ Rs.10 per hour] – Rs.400

Add:

Overtime wages at Single Rate

[i.e. 4 Hours @ Rs.10 Per hour] - Rs. 40

Overtime at Double Rate

[i.e. 3 Hours @ Rs.20 per hour] -Rs.60

Total Earnings of the worker Rs.500

Weekly Basis

Normal Wages [42 Hours @ Rs.10 per hour] - Rs.420

Overtime wages [5 hours @ Rs.20 per hour] - Rs. 100

Total earnings of the worker - Rs.520

Problem 2

Find out the value wages under Time rate system with OVER TIME

Day	No of Hours Worked
Monday	4
Tuesday	4
Wednesday	4
Thursday	7
Friday	6
Saturday	4

Actual Standard hour is 4 hours in a day

Rate per Hour is Rs.150 and Over Time Rate is Rs.200 if crossed more than 4 Hours in a day. (Standard hour).

Solution

Day	Total No of Hours Worked	Actual Hours	Over Time
Monday	4	4	0
Tuesday	4	4	0
Wednesday	4	4	0
Thursday	7	4	3
Friday	6	4	2
Saturday	4	4	0
Total	29	24	5

So, Total of Normal Working Hours in a week is 24 Hours Total of Overtime in a Week is 5 Hours Wages for standard working Hours = 24 * 150 = Rs.3600 Wages for Overtime Working Hours = 5 * 200 = Rs.1000 So, The Total wages of the Worker is = Rs.4600 (3600+ 1000)

Problem No 3

Calculate the earnings of workers X and Y under (A) Straight piece rate system and (B) Taylors Differential Piece rate system from the following details:

Standard time per unit = 12 minute

Standard rate per hour = Rs.60

Differentials to be used 80% and 120%

In a particular day of 8 Hours, worker 'X' Produced 30 units and worker 'Y' Produced 50 Units.

Solution

i) Level of Performance of Workers

Standard production for 12 minutes = 1 unit

So standard production per hour = 60 minutes /12 minutes= 5 units

Standard production per day of 8 Hours = 8 hours * 5 Units = 40 units

So, Worker X who produced 30 units is below standard

Worker Y who produced 50 units is above standard

ii) Calculation of piece rates

Standard rate per hour = Rs.60

Straight piece rate = Rs.60 / 5 units per hour = Rs.12 per unit

Low piece rate for below standard production = Straight piece rate * Lower differential

= Rs. 12 * 80% = Rs.9.60 per unit

High piece rate for above standard production = Straight piece rate * Higher differential

= Rs.12 * 120% = Rs.14.40 per unit.

A) Earning of workers under straight piece rate system

Earnings = Production of worker * Straight piece rate

Worker X : 30 Units * Rs.12 per Unit = Rs.360

Worker Y : 50 Units * Rs.12 per Unit = Rs.600

(B) Earning of workers under Taylors Differential Piece rate system

Earnings = Production of worker * Differential piece rate

Worker X : 30 Units * Rs.9.60 per Unit = Rs.288

Worker Y : 50 Units * Rs.14.40 per Unit = Rs.720

Problem No. 4

From the following data given by the Personnel department, calculate the labour turnover rate by applying:

a) Separation method b) Replacement Method c) Flux method

No of workers in the payroll:

At the beginning of the month 900

At the end of the month 1,100

During the month 10 workers left; 40 workers were discharged and 150 workers were recruited. Of these, 25 workers are recruited in the vacancies of those leaving while rests were engaged for an expansion scheme.

Solution

Average No of workers during the year: = (No of workers at the beginning of the Month+ No of workers at the end of the Month) / 2

=900 (+) 1100 / 2 = 1000

(a) Labor Turnover rate in Separation Method:

= (No of Separations / Average no of workers) *100

= (10 + 40 /1000)*100 = 5%

(b) Labor Turnover rate in Replacement Method:

= (No of Workers replaced / Average no of workers) *100

= (25 / 1000) * 100 = 2.5 %

(C) Labor Turnover rate in Flux Method:

= (No of Addition + No of Separations / Average no of workers) *100

(150 + 40 + 10) / 1000 =20%

Cash required for wage payment

Problem No.5

From the following data ascertain the amount of cash required for payment of salaries in a firm for the month of April:

I.	Normal time salaries	Rs. 75,000
II.	Dearness Allowance	15% of I above
III.	Leave salary	6% of I and II above
IV.	Employee's contribution to ESI and P.F 3% and 5% respectively on I and II above.	
V.	Income tax deducted at source Rs.4500	

VI. Deduction for insurance premium Rs.5750

VII. Festival advance to be recovered from 50 employees at Rs.125 per employee.

VIII. Employer also contributes an equal amount towards ESI & P.F.

Solution

Statement showing computation of cash required for payment of wages

Particulars	**Amount Rs.**	**Amount Rs.**
Normal Salary		75,000
Dearness Allowance [@15% on Rs.75,000]		11,250
Leave Salary [@6% on Rs.86,250]		5175
Total Salary Payable		91,425
Less: Deductions		
Employee's Contribution to ESI [@3% on Rs.86,250]	2588	
Employee's Contribution to P.F [@5% on Rs.86,250]	4313	
Income Tax deducted at source	4500	
Deduction for Insurance Premium	5750	
Festival Advance [@Rs.125 from 50 employees]	6250	23,401
Cash required to make wage payment		68,024

Labour cost per man-day

Problem No. 6

From the following data, prepare a statement showing the cost per man-day of eight hours:

a) Basic salary and dearness allowance – Rs. 300 per month

b) Leave salary to the workman – 6% of the basic and D.A

c) Employer's contribution to P.F – 6% of (a) and (b)

d) Employee's contribution to P.F – 6% of (a) and (b)

e) Pro rata expenditure on amenities to labour Rs.25 per head per month

f) Number of working hours in a month 200 hours

Solution

Statement showing labour cost per man-day of 8 hours

Particulars	Amount Rs.
Basic Salary and Dearness Allowance	300
Leave Salary [@6% on Rs. 300]	18
Employer's Contribution to P.F [@6% on Rs.318]	19
Pro rata Expenditure on Amenities	25
Labour Cost per month	362
Cost per man-day of 8 hours [Rs.362/200 hours] Rs.1.81	

Problem No.7

From the following particulars calculate the labour cost per man-day of 8 hours:

I. Basic salary Rs. 5 per day

II. Dearness allowance 20 paise per every point over 100 [cost of living index for workers] current cost of living index is 800 points.

III. Leave salary 5% of I and II above.

IV. Employer's contribution to P.F 8% of I and II above.

V. Employer's contribution to state insurance 5% of I, II and III above.

VI. Number of working days in a month 25 days of 8 hours each.

Particulars	Amount Rs.
Basic Salary	5.0
Dearness Allowance [700 points@ Re.0.20 = Rs.140/25 days]	5.60
Leave Salary [@5% on Rs. 10.60]	0.53
Employer's Contribution to P.F [@8% on Rs.10.60]	0.85
Employer's Contribution to ESI [@5% onRs.11.43]	0.56
Labour Cost per Day	12.54

UNIT IV ACCOUNTING FOR OVERHEADS

Structure

Overview

Overheads form a major part of the total cost in most organisations. Unlike direct costs, they cannot be directly traced to a single product, job, or process. Instead, they are incurred for multiple activities and must be apportioned and absorbed fairly. They must be appropriately distributed and absorbed into product cost. This unit introduces the concept, classification, accounting treatment, and practical application of overhead costs. It also covers methods of allocation, apportionment, absorption, and treatment of over/under absorption, with numerical illustrations. This unit introduces the concepts of allocation, apportionment, distribution, absorption of overheads, and the use of machine hour rate.

Learning Objectives

After studying this unit, learners will be able to:

- Understand the classification and importance of overheads.
- Apply techniques of allocation and apportionment.
- Perform primary and secondary distribution.
- Absorb overheads using appropriate bases.
- Calculate machine hour rate.

4.1 Introduction to Overheads

In every business, certain expenses are essential for operations but cannot be linked to one specific unit of output. These are called overheads or indirect costs. Examples include factory lighting, supervisor's salary, canteen expenses, or depreciation of machinery. Overheads are all indirect costs incurred in the production or operation of a business, which cannot be directly traced to a cost unit. Overhead costing ensures that such costs are fairly shared between products, jobs, or services to determine the true cost of each. Overheads are all indirect costs incurred during production but not directly traceable to a particular product or service.

Definition:

As per CAS-3, overheads are the aggregate of indirect material cost, indirect employee cost, and indirect expenses that cannot be conveniently identified with a specific cost unit.

Features of Overhead

- ❖ They are indirect in nature.
- ❖ They are essential for operations but not traceable to one specific product or job.
- ❖ They must be fairly and logically allocated to products or services.

Examples:

- Factory rent
- Indirect materials (lubricants, cleaning supplies)
- Salary of factory supervisor

- Electricity for production floor
- Depreciation of machinery

Classification of Overheads

Overheads can be classified in different ways for control and analysis:

a) Functional Classification

Category	Examples
Production Overheads	Factory rent, supervisor salary, machine maintenance
Administration Overheads	Office salaries, stationery, audit fees
Selling Overheads	Sales commission, advertisements
Distribution Overheads	Warehouse rent, delivery van fuel

b) Behavioural Classification

Type	Meaning	Example
Fixed	Remain constant irrespective of production volume	Rent, salaries
Variable	Vary directly with production	Indirect materials, power costs
Semi-variable	Partly fixed and partly variable	Telephone bills, repairs

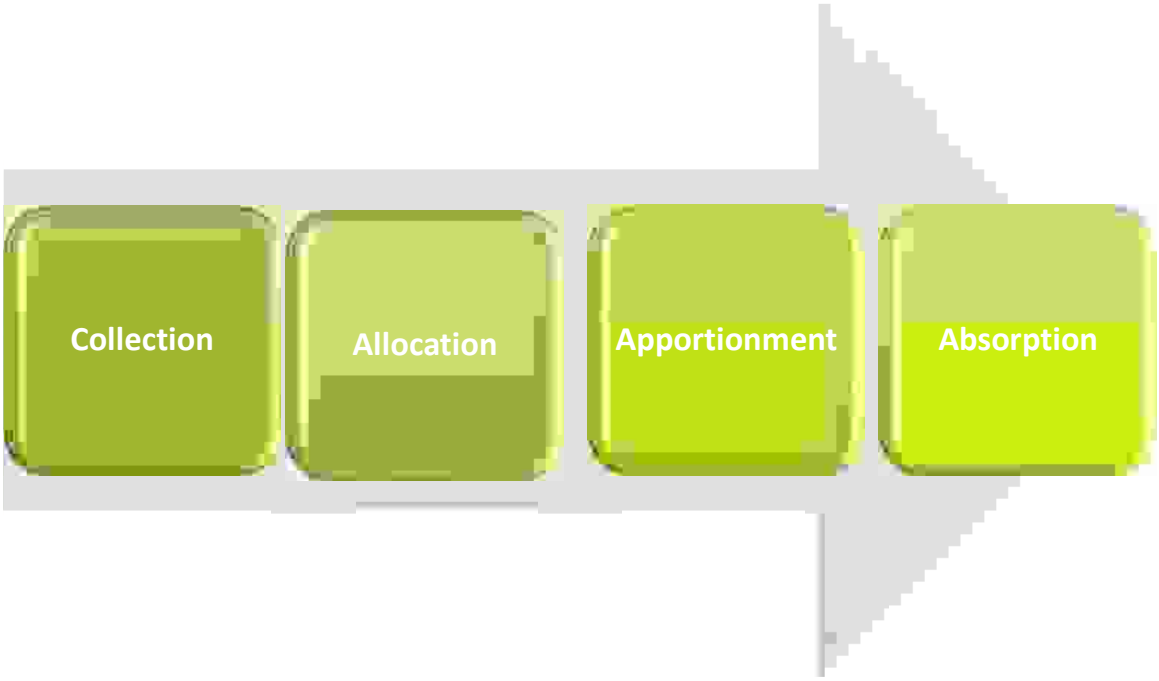
Other Classifications

- Controllable vs. Uncontrollable
- Normal vs. Abnormal
- Revenue vs. Capital

4.2. Overhead Accounting Process (CAS-3)

Overhead costs are handled through four main stages which has been given as pictorial form hereunder.

Stages in Overhead Accounting Process



5.1 Collection

This is the first stage, where all overhead costs are gathered from various source documents and recorded under relevant heads.

Purpose

- To ensure all indirect costs are identified.
- To group similar costs for later allocation/apportionment.

Sources of Data:

- Purchase invoices (for indirect materials like lubricants, cleaning supplies).
- Wages analysis sheets (for indirect labour like supervisors).
- Utility bills (electricity, water).

- ❖ Journal vouchers for non-cash costs (depreciation).

5.2 Allocation

Allocation is the process of charging the entire amount of a specific overhead to one cost centre because it is directly traceable to that centre. Allocation is direct assignment — no sharing is involved. It is possible only when the cost can be identified with a single cost centre. Allocation is considered important since it ensures that costs which clearly belong to a department are not wrongly shared with others.

Example:

If a machine belongs only to Department A and its depreciation is ₹10,000, this full amount is allocated to Department A.

5.3 Apportionment

Apportionment means distributing a common cost among two or more cost centres on an equitable basis. Some expenses benefit more than one department and hence it is essential to split the same logically to reflect actual usage. The process of apportionment prevents cost distortion and reflects fair share of indirect costs in each department.

Common bases of apportionment:

Expense	**Common Basis of Apportionment**
Rent, rates	Floor area (sq. metres)
Power	Kilowatt hours / Machine hours
Canteen expenses	Number of employees
Depreciation of machinery	Value of machinery
Lighting	Number of light points

5.4 Absorption

Absorption is the process of charging the overheads from a cost centre to the products, jobs, or services produced in that centre. Once the total overheads for a department are known, they must be spread over units of output to find the cost per unit.

Formula:

$$\text{Overhead Absorption Rate} = \frac{\text{Total Overheads of Cost Centre}}{\text{Total Units of Base}}$$

Bases for Absorption:

Labour hour rate = Overhead ÷ Total labour hours.

Machine hour rate = Overhead ÷ Total machine hours.

Per unit rate = Overhead ÷ Units produced.

% of direct material cost = Overhead ÷ Direct material cost × 100.

Key differences between allocation, apportionment and absorption

Aspect	Allocation	Apportionment	Absorption
Scope	One cost centre	Multiple cost centres	From cost centre to products
Nature	Direct	Indirect sharing	Charging to output
Example	Supervisor salary (one dept)	Rent for shared building	Charging per machine hour

4.3 Primary and Secondary Distribution of Overheads

Primary Distribution:

Distribution of **allocated and apportioned overheads** among production and service departments is called as primary distribution.

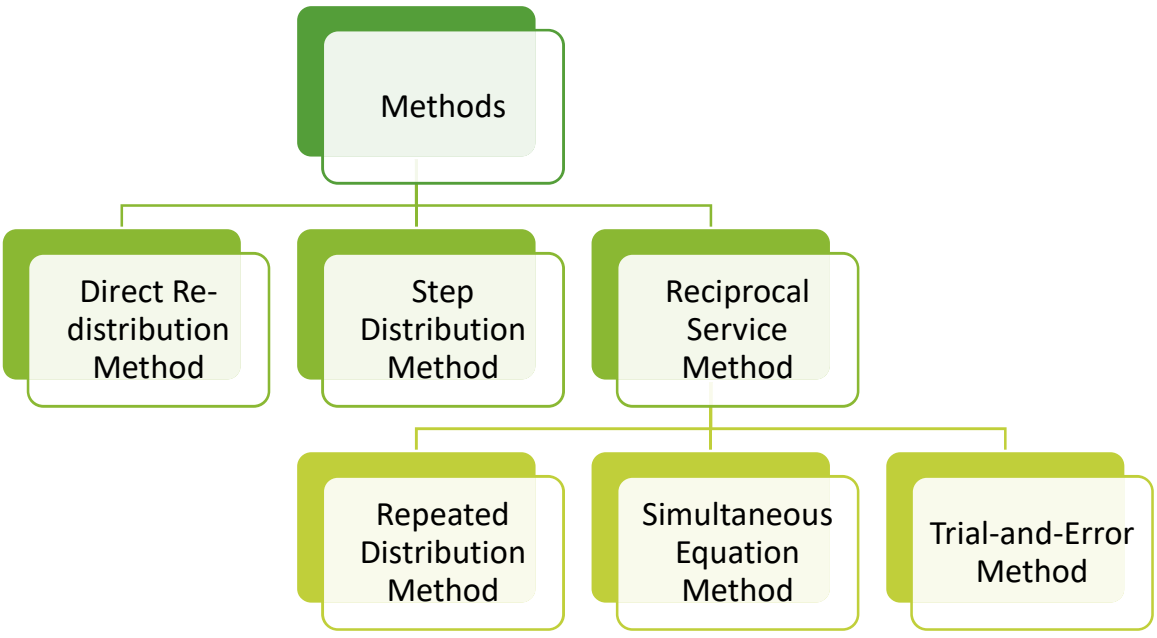
Department	Floor Area (sq.ft)	No. of Workers	Value of Equipment
Production A	2,000	20	₹50,000
Production B	1,500	15	₹30,000
Service C	500	5	₹10,000

Overheads like rent, canteen, depreciation, etc. are distributed based on the above data.

Secondary Distribution

Re-apportionment, also known as secondary distribution, refers to the transfer of service department overheads to production departments. After the primary distribution is completed, the costs accumulated in service departments are redistributed to the production departments, since only production departments' costs are finally absorbed into products or jobs. This process involves allocating and apportioning the expenses of service cost centres to production cost centres, ensuring that all overheads are eventually borne by production.

Methods of Re-apportionment



1. Direct Re-distribution Method

In this method, the costs of service departments are directly apportioned to production departments, ignoring any services exchanged between service departments themselves.

Example: If the Canteen Department also serves the Maintenance Department, that service is not considered — all canteen costs go straight to production departments.

2. Step Distribution Method

Here, the service department that provides the highest proportion of services to other departments is dealt with first. Its costs are apportioned to both production departments and remaining service departments. The next most serviceable department is then selected, and the process continues until all service departments' costs are fully transferred to production departments.

3. Reciprocal Service Method

This method acknowledges that service departments often render services to each other. The cost of these interdepartmental services must be considered before final apportionment to production departments.

Approaches under this method:

(a) Simultaneous Equation Method

This uses algebraic equations to determine the true total cost of each service department after considering mutual services. Once these total costs are calculated, they are apportioned to production departments according to the given basis or percentages.

(b) Repeated Distribution Method

In this approach, the overheads of each service department are repeatedly apportioned to both production and other service departments according to the given percentages. The process continues in cycles until the remaining figures are too small to affect the totals.

(c) Trial-and-Error Method

One service department's cost is apportioned to another service department. That second department's costs (including the portion received from the first) are then apportioned

back to the first department. This back-and-forth process continues until the amounts left to apportion become negligible or zero.

Methods:

1. **Direct Method** – Service departments distributed directly to production departments.
2. **Step Ladder Method** – Distributes one service department at a time (starting with one serving most others).
3. **Reciprocal Method** – Considers mutual services between service departments.

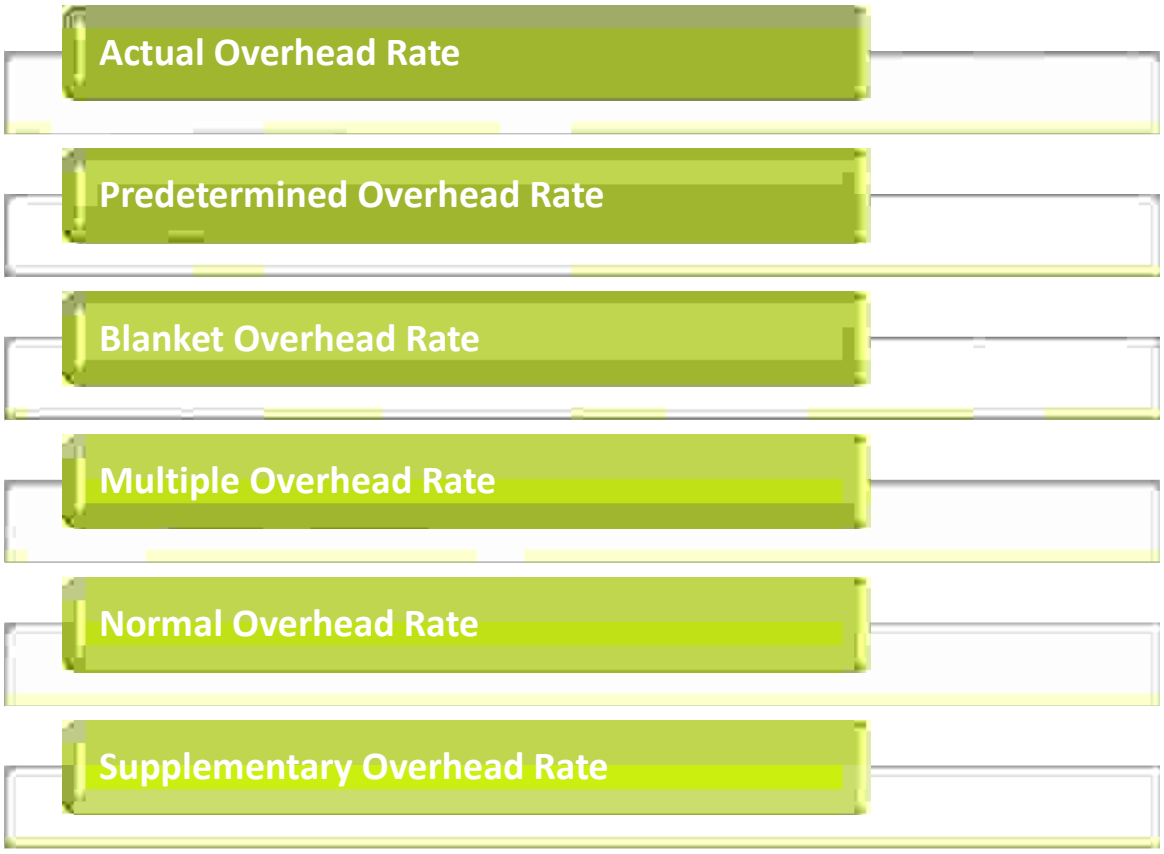
4.4 Absorption of Overheads

Absorption of overhead — also referred to as levy, recovery, or application of overhead — is the process of charging the overheads assigned to a cost centre or production department to the units produced. In other words, once overheads are allocated and apportioned to departments, they must be distributed to cost units (jobs, processes, or products). This final stage of charging overheads to output is known as overhead absorption.

Overhead Rate

To absorb overheads into cost units, a suitable base such as units of output, direct material cost, prime cost, labour hours, or machine hours is chosen. Using this base, a rate is computed for the period, known as the Overhead Absorption Rate (OAR).

Types of Overhead Rates



a. Actual Overhead Rate

Actual overhead rate is also called as the historical rate. It is calculated after the period ends by dividing the actual overhead incurred by the actual quantity of the chosen base.

$$\text{Actual OAR} = \frac{\text{Actual Overhead Incurred}}{\text{Actual Base Quantity}}$$

b. Predetermined Overhead Rate

This overhead rate is calculated before production begins based on budgeted overheads and budgeted base for the period.

$$\text{Predetermined OAR} = \frac{\text{Budgeted Overheads}}{\text{Budgeted Base Quantity}}$$

c. Blanket Overhead Rate

A single overhead rate for the entire factory, regardless of departments or processes will be levied under this blanket overhead rate method.

d. Multiple Overhead Rates

The separate rates are being computed for each department, cost centre, product line, or cost element.

e. Normal Overhead Rate

Based on the overheads expected at normal capacity of production, smoothing out seasonal or abnormal variations.

f. Supplementary Overhead Rate

This overhead rate is used to adjust differences between absorbed overheads and actual overheads. It can be positive (for under-absorption) or negative (for over-absorption).

Methods of Absorbing Manufacturing Overhead

The method selected depends on the nature of the production process and the most appropriate cost driver.

Direct Material Cost Method

Overheads are absorbed as a percentage of direct material cost. The formula is:

$$\text{Overhead Rate} = \frac{\text{Factory Overhead}}{\text{Direct Material Cost}} \times 100$$

Direct Labour Cost Method (Direct Wages Method)

Overheads are absorbed as a percentage of direct labour cost. The formula is:

$$\text{Overhead Rate} = \frac{\text{Factory Overhead}}{\text{Direct Labour Cost}} \times 100$$

Direct Labour Hours Method

Overheads are absorbed based on the number of direct labour hours worked. Suitable when manual or skilled labour predominates in production.

$$\text{Rate per Labour Hour} = \frac{\text{Factory Overhead}}{\text{Total Direct Labour Hours}}$$

Prime Cost Method

Overheads are absorbed as a percentage of total prime cost (Direct Material + Direct Labour).

$$\text{Overhead Rate} = \frac{\text{Factory Overhead}}{\text{Prime Cost}} \times 100$$

Unit of Output Method (Production Unit Method)

Under this method overheads are absorbed per unit of output. This method will be best suited where units are homogeneous.

$$\text{Rate per Unit} = \frac{\text{Factory Overhead}}{\text{Units Produced}}$$

Machine Hour Rate

Overheads are absorbed based on the number of machine hours used. Most suitable for machine-intensive production.

$$\text{Machine Hour Rate} = \frac{\text{Factory Overhead}}{\text{Total Machine Hours}}$$

As per the CIMA (UK) definition, this is "an actual or predetermined rate of cost apportionment or overhead absorption, calculated by dividing the cost to be apportioned or absorbed by the number of machine hours used or to be used."

Calculation of Machine Hour Rate

The Machine Hour Rate method calculates the cost of running a machine for one hour, including both fixed and variable expenses associated with it. The following steps are generally followed to compute the rate:

Steps in Calculation

a. Identify Relevant Overhead Expenses

Collect all costs that relate specifically to the machine or group of machines for which the rate is being calculated.

b. Treat Each Machine (or Group) as a Cost Centre

Each machine is considered a separate cost centre so that costs can be tracked and allocated accurately.

c. Classify Manufacturing Overheads

Overhead costs are grouped into:

Fixed or Standing Charges: These remain constant regardless of usage, e.g., rent, insurance, rates, and supervision.

Variable Machine Expenses: These vary directly with the operation of the machine, e.g., power consumption, depreciation, and repairs.

d. Compute Hourly Fixed Cost

Add up all fixed charges and divide by the machine's normal working hours to find the hourly fixed charge.

e. Determine Normal Working Hours

Include time for both productive work and normal idle time such as maintenance, setup, and adjustments.

f. Calculate Hourly Variable Cost

Work out a separate hourly rate for each variable expense (e.g., per hour power cost, repairs cost, depreciation).

g. Arrive at the Machine Hour Rate

Add the hourly fixed charge and the hourly variable cost.

Machine Hour Rate = Hourly Fixed Charges + Hourly Variable Charges

Advantages

- Measures the relative efficiency of different machines.
- Enables cost comparison between machines.
- Identifies idle time and its related cost.
- A scientific method that takes into account the time factor in cost allocation.

Disadvantages

- Requires extensive clerical work to track actual machine hours.
- May be less effective when expenses are not directly proportional to machine usage.
- Not suitable for processes or jobs completed without operating machinery.

Illustration 1 – Primary Distribution of Overheads

Data:

A factory has three production departments (A, B, C) and two service departments (X, Y). Overheads for the month and apportionment bases are:

Particulars	Amount (₹)	Basis for Apportionment
Rent	50,000	Floor area
Power	30,000	Machine hours
Canteen expenses	10,000	No. of employees
Insurance	12,000	Asset value

Department wise other details

Dept.	Floor Area (sq.m)	Machine Hours	No. of Employees	Asset Value (₹)
A	1,200	800	50	3,00,000
B	800	600	30	2,00,000

Dept.	Floor Area (sq.m)	Machine Hours	No. of Employees	Asset Value (₹)
C	1,000	400	20	1,00,000
X	600	200	15	50,000
Y	400	0	10	50,000

Calculate apportionment rates for each expense and apply to departments and the total overheads for each department after primary distribution.

Expense	Rate (₹)	A	B	C	X	Y
Rent	₹50,000 ÷ 4,000 sq.m = ₹12.50/sq.m	15,000	10,000	12,500	7,500	5,000
Power	₹30,000 ÷ 2,000 hrs = ₹15/hr	12,000	9,000	6,000	3,000	0
Canteen	₹10,000 ÷ 125 emp = ₹80/emp	4,000	2,400	1,600	1,200	800
Insurance	₹12,000 ÷ ₹7,00,000 = 1.714%	5,142	3,428	1,714	857	857
Total		36,142	24,828	21,814	12,557	6,657

Illustration 2 – Secondary Distribution (Step Method)

Using the totals from Illustration 1 and the following service department usage:

- X serves A, B, C, Y in the ratio 4:3:2:1
- Y serves A, B, C in the ratio 2:3:5

Steps:

1. Distribute X's cost to A, B, C, Y using given ratio.
2. Distribute Y's total to A, B, C using given ratio.

Final Overhead Totals:

- A = ₹43,142
- B = ₹30,028

- C = ₹27,071

Illustration 3 – Absorption Rate (Labour Hour Method)

Estimated overhead for Dept. A = ₹1,00,000; Estimated labour hours = 25,000.

$$\text{Rate per Labour Hour} = \frac{\text{Factory Overhead}}{\text{Total DIrect Labour Hours}}$$

$$\text{Rate per Labour Hour} = \frac{₹1,00,000}{25,000 \text{ Hours}} = ₹4 \text{ per Labour Hour}$$

Illustration 4 – Machine Hour Rate Calculation

- Rent for shop: ₹24,000 (10 machines, equal share)
- Insurance: ₹6,000 (for all machines equally)
- Supervisor salary: ₹1,20,000 (allocated equally)
- Depreciation of machine: ₹10,000 per year
- Power: ₹40/hour
- Repairs: ₹4,000/year
- Normal working hours/year: 2,000 hrs (includes maintenance time)

Solution:

Particulars	Amount ₹p.a.	Amount ₹p.hr
Fixed Charges		
Rent per machine	2400	1.20
Insurance per machine	600	0.30
Supervisor	12,000	6.0
Depreciation	10,000	5.0
Repairs	4000	2.0
Total Fixed Charges		

Fixed Charges:

Rent per machine = ₹24,000 ÷ 10 = ₹2,400/year = ₹1.20/hour

Insurance per machine = ₹600/year = ₹0.30/hour

Supervisor = ₹12,000/year per machine = ₹6/hour

Depreciation = ₹10,000/year = ₹5/hour

Repairs = ₹4,000/year = ₹2/hour

Variable Charges:

Power = ₹40/hour

Total Machine Hour Rate:

= Fixed (₹1.20 + ₹0.30 + ₹6 + ₹5 + ₹2) + Variable (₹40)

= ₹54.50/hour

Exercise Problems

Q1 – Primary Distribution

Given overheads and bases for apportionment, allocate costs to 2 production departments (P1, P2) and 2 service departments (S1, S2).

(Data provided in SLM format for student calculation.)

Q2 – Secondary Distribution (Direct Method)

Using totals from Q1, redistribute S1 and S2 costs to P1 and P2 directly (ignore mutual services).

Q3 – Absorption Rate (Machine Hour Method)

Estimated overhead = ₹1,80,000; Estimated machine hours = 12,000. Calculate the rate and overhead for a job using 300 machine hours.

Q4 – Over/Under Absorption

Applied overhead = ₹2,50,000; Actual overhead = ₹2,40,000. Find amount of over/under absorption and suggest treatment.

Q5 – Machine Hour Rate

Given fixed and variable costs for a machine and total hours worked, compute the machine hour rate.

Answers to Exercise Problems (For Self-Check)

A1: (Students compare with teacher's key)

A2: Final totals for P1, P2 will differ based on apportionment base.

A3: Rate = ₹15/hour; Overhead for job = ₹4,500.

A4: Over-absorption of ₹10,000; adjust through Costing P&L.

A5: Total rate = ₹52/hour (based on given figures).

Summary

This unit explained the nature and classification of overheads, their allocation and apportionment among departments, primary and secondary distribution, methods of overhead absorption, and calculation of machine hour rate with illustrations.

Check Your Progress

1. Define allocation and apportionment of overheads with examples.
2. Explain the difference between primary and secondary distribution.
3. What is the purpose of overhead absorption?
4. Calculate the overheads absorbed for a job requiring 8 machine hours if the rate is ₹25/hour.
5. Compute Machine Hour Rate from:
    - Depreciation ₹5,000; Power ₹3,000; Repairs ₹2,000; Insurance ₹1,000; Machine hours: 500

Glossary

- **Overheads:** Indirect costs not directly traceable to products.
- **Allocation:** Assigning whole overheads to one department.
- **Apportionment:** Sharing overheads among multiple departments.
- **Absorption:** Charging overheads to output units.
- **Machine Hour Rate:** Cost of operating a machine per hour.

Answers to Check Your Progress

1. Allocation assigns entire cost (e.g., supervisor salary); apportionment divides cost (e.g., rent by area)
2. Primary: Apportion to all departments; Secondary: redistribute service dept. costs to production depts.
3. To include overheads in product cost fairly and systematically.
4. 8 × ₹25 = ₹200
5. Total Overheads = ₹5,000 + ₹3,000 + ₹2,000 + ₹1,000 = ₹11,000
   MHR = ₹11,000 / 500 = ₹22/hour

Suggested Reading

1. Jain & Narang – *Cost Accounting* – Kalyani Publishers
2. M.N. Arora – *Cost and Management Accounting* – Vikas Publishing
3. S.P. Iyengar – *Cost Accounting* – Sultan Chand & Sons
4. T.S. Reddy & Y. Hari Prasad Reddy – *Cost Accounting* – Margham Publications
5. Horngren et al. – *Cost Accounting: A Managerial Emphasis* – Pearson

UNIT V: COST ASCERTAINMENT

Structure

Overview

Cost ascertainment is the core of cost accounting. It helps determine the cost per unit under various production environments using appropriate methods. This unit discusses unit, job, batch, contract, operating, and process costing with real-world applications and solved illustrations.

Learning Objectives

By the end of this unit, learners will be able to:

- Apply unit costing for single-product environments.
- Understand and compute cost under job, batch, and contract costing systems.
- Use operating costing for service industries.
- Prepare process accounts and ascertain cost per unit.

5.1 Introduction to Cost Ascertainment

Meaning

Cost ascertainment refers to the process of determining the actual cost of producing goods or rendering services. It is a fundamental objective of cost accounting and involves systematic collection, classification, allocation, apportionment, and absorption of costs to arrive at the cost per unit of output or service.

The process ensures that management knows how much it costs to manufacture a product, execute a job, operate a process, or provide a service. This enables informed decision-making regarding pricing, cost control, budgeting, and performance evaluation.

Definition

Cost ascertainment is the process of determining the cost of a product, job, service, or process. Different industries use different methods based on production nature.

Objectives of Cost Ascertainment

1. **Determine Product/Service Cost**: To compute total and per unit cost of production or service rendered.
2. **Aid Pricing Decisions**: Helps management fix selling price logically by adding margin to cost.
3. **Cost Control**: By identifying cost components, inefficiencies can be detected and controlled.
4. **Decision-Making**: Provides a sound base for make-or-buy decisions, tendering, and resource allocation.
5. **Profit Measurement**: Assists in comparing cost with revenue to ascertain profitability.

Methods of Cost Ascertainment

The method adopted depends upon the nature of business and type of output. The major methods include:

Method of Costing	Suitability
Unit Costing (Output Costing)	Used where identical products are manufactured in bulk. Cost per unit is determined using a **cost sheet.** Examples: Cement, bricks, electricity, textiles.
Job Costing	Applied when work is undertaken as per specific customer orders. Costs are accumulated job-wise. Examples: Printing, furniture making, specialized machinery.
Batch Costing	Used when similar items are produced in batches. Cost per unit = Total Batch Cost ÷ Units in Batch. Examples: Pharmaceuticals, spare parts, garments.
Contract Costing	Used in large-scale, long-term works like construction and engineering. Costs recorded in Contract Account; profit transferred based on completion stage.
Process Costing	Suitable for industries with continuous and homogeneous production. Costs collected for each process/department and averaged per unit. Examples: Oil refining, chemicals, sugar, textiles.
Operating Costing (Service Costing)	Applied in service industries. Costs classified into standing, running, and maintenance charges. Cost per service unit (passenger-km, tonne-km, bed-day, etc.) is computed

Steps in Cost Ascertainment

1. **Collection of Costs** – Gathering data on materials, labour, and expenses.
2. **Classification of Costs** – Segregating into direct and indirect costs.
3. **Allocation & Apportionment** – Assigning direct costs directly, and distributing indirect costs to cost centres.
4. **Absorption** – Charging overheads to cost units using absorption rates.
5. **Cost Sheet or Account Preparation** – Presenting costs in a structured form to show cost per unit.

Importance of Cost Ascertainment

- Provides a basis for scientific pricing.
- Facilitates budgeting and cost control.
- Helps in comparative analysis between departments, products, or periods.
- Essential for statutory reporting in certain industries.
- Provides a foundation for advanced techniques such as standard costing, marginal costing, and budgetary control.

Cost ascertainment is the cornerstone of cost accounting. By applying suitable methods such as unit costing, job costing, batch costing, contract costing, process costing, and operating costing, organizations can compute reliable product and service costs. This not only helps in fixing fair prices but also improves cost control, efficiency, and profitability analysis.

5.2 Unit Costing (Output Costing)

Meaning

Unit costing, also known as *output costing* or *single costing*, is a costing method applied in industries where products are manufactured on a large scale in continuous and uniform production. Costs are collected for a given period and expressed on a per-unit basis.

Features of Unit Costing

- Production is standardized and continuous.
- The output is homogeneous (all units identical).
- A single cost unit is used (per tonne, per litre, per bag, per metre, per kWh, etc.).
- Costs are accumulated periodically (weekly, monthly, quarterly).
- The main tool is the Cost Sheet, which classifies costs into Prime Cost, Factory Cost, Cost of Production, and Cost of Sales.

Industries Using Unit Costing

- Cement, bricks, and steel industries
- Sugar mills, paper mills, and chemical plants
- Textile mills, power generation units, and transport services

Objectives of Unit Costing

- To ascertain total and per unit cost of production
- To provide a basis for pricing decisions
- To compare costs across different periods (cost control)
- To facilitate standard costing and variance analysis

Advantages and Limitations of Unit Costing

Advantages	Limitations
Simple to understand and operate Provides reliable unit cost, useful for fixing selling price Facilitates periodical cost comparison and trend analysis. Ensures better cost control due to classification of costs.	Not suitable for industries with varied or customized production Ignores inter-departmental cost differences if one blanket rate is applied. Less informative compared to Job/Process costing where detail is higher.

Format of Cost Sheet

Particulars	Amount [₹]	Amount [₹]
Direct Materials	XXX	
Direct Labour	XXX	
Direct Expenses	XXX	
Prime Cost		XXX
Add: Factory Overhead		XXX
Factory Cost		XXX
Add: Administration Overhead		XXX
Cost of Production		XXX
Add: Selling & Distribution Overhead		XXX
Cost of Sales		XXX

Formula

$$\text{Cost Per Unit} = \frac{\text{Total Cost}}{\text{No. of Units Produced}}$$

Illustration

- Total cost: ₹50,000
- Units produced: 10,000

Unit Cost=₹50,000/10,000=₹5perunit

Illustration 1: Simple Cost Sheet

A factory produces 10,000 units in April.

- Direct Materials = ₹50,000
- Direct Labour = ₹30,000
- Factory Overheads = ₹20,000
- Admin & Selling Overheads = ₹10,000

Prepare a cost sheet and find cost per unit.

Particulars	Amount Rs.	Amount Rs.
Direct Material	50,000	
Direct Labour	30,000	
Prime Cost		80,000
Add: Factory Overhead		20,000
Works Cost		1,00,000
Add: Administration Overhead		10,000
Cost of Production		1,10,000
Cost per Unit = Total Cost/No. of Units Produced		
₹ 1,10,000/10,000 units = ₹11		

Illustration 2: Including Opening and Closing Stock

A factory produces 5,000 units.

- Direct Materials = ₹40,000
- Direct Labour = ₹25,000
- Factory Overheads = 50% of Labour
- Admin OH = ₹5,000
- Opening stock = 200 units; Closing stock = 300 units

Find cost of sales per unit.

Solution

Particulars	Amount ₹	Amount ₹
Direct Material	40,000	
Direct Labour	25,000	
Prime Cost		65,000
Add: Factory Overhead [@50% on Labour]		12,500
Works Cost		77,500
Add: Administration Overhead		5,000
Cost of Production		82,500
Add: Opening stock of Finished Goods		3300

[82,500/5000*200]		
		85,800
Less: Closing Stock of Finished Goods		4950
[82,500/5000*300]		80,850

Illustration 3: Profit as % of Cost

A company makes 1,000 units at total cost ₹1,20,000. Profit is 25% on cost. Find selling price per unit.

Solution

Selling Price = Cost + Profit

That is, S.P = ₹1,20,000 + 25% on 1,20,000

= ₹1,20,000 + ₹30,000

Selling price per unit = Sales/No. of units sold

= ₹1,50,000/1000 = ₹150

Illustration 4: Cost per Tonne

A cement factory produces 1,200 tonnes of cement. Costs:

- Materials ₹4,00,000
- Labour ₹2,00,000
- Overheads ₹1,20,000
- Admin & Selling ₹80,000

Find cost per tonne.

Solution

Particulars	Amount ₹	Amount ₹
Direct Material	4,00,000	
Direct Labour	2,00,000	
Prime Cost		6,00,000
Add: Factory Overhead		1,20,000
Works Cost		

Add: Administration Overhead		7,20,000
Cost of Production		80,000
Cost per tonne = ₹8,00,000/1200 tonnes		8,00,000
		666.67

Illustration 5: Comparative Cost Sheet

A sugar mill produced 5,000 quintals in 2023 and 6,000 quintals in 2024.

- Direct Materials: ₹5,00,000 (2023), ₹6,00,000 (2024)
- Labour: ₹3,00,000 (2023), ₹3,60,000 (2024)
- Overheads: ₹2,00,000 (2023), ₹2,40,000 (2024)

Find cost per quintal for both years.

Solution

Particulars	2023 Amount ₹	2024 Amount ₹
Direct Material	5,00,000	6,00,000
Direct Labour	3,00,000	3,60,000
Prime Cost	8,00,000	9,60,000
Add: Overhead	2,00,000	2,40,000
Cost of Production	10,00,000	12,00,000
Cost per tonne = Cost of production/ No. of Quintals produced	200	200

5.3 Job, Batch, and Contract Costing

5.3.1. Job Costing

Meaning

Job costing is a method of costing applied when production is undertaken to meet specific customer requirements. Each job (or order) is treated as a distinct cost unit, and costs are

accumulated separately for each job. Used when jobs are customized and distinct (e.g., printing, furniture).

Features of Job Costing

- Each job is unique and separately identifiable.
- Costs are collected and recorded against each job number.
- Overheads are absorbed using an appropriate base (labour hours, machine hours, etc.).
- A Job Cost Sheet is prepared for each job to show material, labour, overhead, and profit.
- Comparison is made between actual and estimated cost.
- Job costing is ideal for customized production.
- Useful for quotations, profitability analysis, and control.
- Provides detailed insight, but requires high record keeping.

Industries Using Job Costing

- Printing presses
- Furniture workshops
- Automobile repair garages
- Engineering workshops
- Shipbuilding, interior decoration

Objectives of Job Costing

- To determine the cost of each specific job.
- To help in preparing quotations for future jobs.
- To compare estimated and actual cost for efficiency control.
- To analyze profitability of individual jobs.

Advantages and Limitations of Job Costing

Advantages	Limitations
Helps ascertain accurate cost per job. Assists in fixing prices for future jobs. Provides detailed information for cost control. Identifies profitable and unprofitable jobs.	Requires detailed record-keeping and documentation. Overhead absorption may not always be accurate. Unsuitable for continuous production industries. Cost per job may fluctuate due to small variations in expenses.

Format of Job Cost Sheet

Particulars	Amount [₹]	Amount [₹]
Direct Materials	XXX	
Direct Labour	XXX	
Direct Expenses	XXX	
Prime Cost		XXX
Add: Factory Overhead		XXX
Factory Cost		XXX
Add: Administration Overhead		XXX
Cost of Production		XXX
Add: Selling & Distribution Overhead		XXX
Cost of Sales		XXX
Add: Profit		XXX
Sales		

Illustration 1: Simple Job Cost Sheet

Job #25 has the following details:

- Direct Materials = ₹15,000
- Direct Labour = ₹10,000
- Factory Overheads = 50% of Direct Labour
- Admin Overheads = 10% of Factory Cost

Solution

Particulars	Amount [₹]	Amount [₹]
Direct Materials	15,000	
Direct Labour	10,000	
Prime Cost		25,000
Add: Factory Overhead [@50% on Labour]		5000
Factory Cost		30,000
Add: Administration Overhead [@10% on Factory Cost]		3000
Cost of Production		33,000

Illustration 2: Including Selling OH & Profit

Job #18 details:

- Direct Materials = ₹25,000
- Direct Labour = 1,500 hrs @ ₹20/hr
- Factory OH = ₹30/hr
- Admin OH = 10% of Factory Cost
- Selling OH = 5% of Cost of Production
- Profit = 20% of Cost of Sales

Solution

Particulars	Amount [₹]	Amount [₹]
Direct Materials	25,000	
Direct Labour [@₹20/hr for 1500 hrs]	30,000	
Prime Cost		55,000
Add: Factory Overhead [@₹30/hr for 1500 hrs]		45,000
Factory Cost		1,00,000
Add: Administration Overhead [@10% on Factory cost]]		10,000
Cost of Production		1,10,000
Add: Selling & Distribution Overhead [@5% on Cost of Production]		5500
Cost of Sales		1,15,500
Add: Profit@ 20% on Cost of Sales]		23,100
Sales		1,38,600

Illustration 3: Multiple Jobs

Company executes Jobs A and B:

- Materials: A ₹10,000, B ₹15,000
- Labour: A 500 hrs @ ₹50, B 400 hrs @ ₹60
- OH absorption rate: ₹40/hr

Solution

Particulars	Job A Amount [₹]	Job B Amount [₹]
Direct Materials	10,000	15,000
Direct Labour [A = @₹50/hr for 500 hrs]	25,000	24,000
[B = @₹60/hr for 400 hrs]		
Prime Cost	35,000	39,000
Add: Overhead [A = @₹40/hr for 500 hrs]	20,000	16,000
[B = @₹40/hr for 400 hrs]	55,000	55,000
Cost of Production		

Illustration 4: Quotation for New Job

A completed Job #20 costed: Materials ₹50,000; Labour ₹30,000; Factory OH ₹20,000; Admin & Selling OH ₹10,000. Company expects 25% profit on cost. Find price for new job with estimated cost = ₹80,000.

Solution

Past Job Total Cost = 1,10,000;

Profit = 27,500 (25%)

Sales = 1,37,500 → Profit/Cost ratio = 25%

Therefore, New Job Sales Price = 80,000 + 20,000 = ₹1,00,000

Illustration 5: Job Cost with Machine Hours

Job #30 requires 1,000 machine hours.

- Machine OH rate = ₹40/hr
- Direct Material = ₹60,000
- Direct Labour = ₹25,000

Solution

Particulars	Amount [₹]	Amount [₹]
Direct Materials	60,000	
Direct Labour	25,000	
Prime Cost		85,000
Add: Overhead [@₹40/hr for 1000 machine hrs]		40,000
Works Cost		1,25,000

Exercise 1

Job #45 requires: Direct Material ₹12,000; Direct Labour ₹8,000; Factory OH = 60% of Labour. Find cost of job. [Ans: ₹24,800]

Exercise 2

Direct Materials = ₹20,000; Direct Labour = 1,000 hrs @ ₹50/hr; Factory OH = ₹25/hr. Find total job cost. [Ans: Job Cost ₹95,000]

Exercise 3

Job #50 has Direct Materials ₹40,000; Direct Labour ₹20,000; Factory OH ₹15,000; Admin OH ₹5,000; Selling OH ₹2,000. Find Cost of Sales. [Ans: ₹82,000]

Exercise 4

Estimated Job Cost = ₹2,00,000; Company adds 25% profit on cost. Find quotation price. [Ans: ₹2,50,000]

Exercise 5

Job #55: Direct Materials ₹15,000; Direct Labour ₹12,000; Overheads absorbed on Labour @ 150%. Find job cost. [Ans: ₹45,000]

5.3.2. Batch Costing

Meaning

Batch costing is an extension of job costing. Instead of ascertaining cost for each individual job, costs are collected and ascertained for a batch (a group of identical units). The cost per unit is determined by dividing the total batch cost by the number of units in the batch.

Features of Batch Costing

- A batch is treated as one cost unit.
- Suitable where goods are produced in definite lots.
- Batch cost includes material, labour, and overhead.
- Cost per unit is derived by dividing batch cost by batch size.
- Often applied in industries producing small standardised components in batches.
- Batch costing is useful for industries producing in groups of identical items.
- EBQ helps in minimizing total setup + carrying cost.
- Cost sheet for batches aids pricing and cost control.
- Balances efficiency between production and inventory.

Industries Using Batch Costing

- Pharmaceuticals (tablets, capsules)
- Biscuit manufacturing
- Automobile spare parts
- Toys and garments
- Electronics and hardware

Objectives of Batch Costing

- To ascertain the total and per-unit cost of a batch.
- To determine the economic batch quantity (EBQ) for cost efficiency.

- To facilitate pricing decisions.
- To control costs in batch-oriented industries.

Advantages and Limitations of Batch Costing

Advantages	Limitations
Economical when producing large numbers in batches.	Not suitable where production is continuous without batches.
Simplifies costing as the batch is treated as a cost unit.	Large batch sizes may lead to higher inventory costs.
Facilitates determination of optimum batch size (EBQ).	Small batch sizes may increase setup cost per unit
Enables better overhead absorption	

Economic Batch Quantity (EBQ) Formula

$$EBQ = \sqrt{2AS/C}$$

Where:

- A= Annual Demand (units)
- S = Setup Cost per batch
- C = Carrying Cost per unit per annum

Illustration 1: Simple Batch Cost

A batch of 500 units incurred:

- Direct Materials ₹50,000
- Direct Labour ₹25,000
- Factory OH ₹15,000

Find (a) Batch Cost and (b) Cost per unit.

Solution

Batch Cost = ₹50,000 + ₹25,000 + ₹15,000 = ₹90,000

Cost per unit = ₹90,000 ÷ 500 = ₹180

Illustration 2: Batch Cost with Admin OH

Batch of 1,000 units: Materials ₹40,000; Labour ₹20,000; Factory OH = 100% of Labour; Admin OH = 10% of Factory Cost.

Solution

Prime Cost = ₹60,000

Factory OH = ₹20,000

Factory Cost = ₹80,000

Admin OH = ₹8,000

Batch Cost = ₹88,000

Cost/unit = ₹88,000 ÷ 1,000 = **₹88**

Illustration 3: EBQ Calculation

Given: Annual Demand = 48,000 units; Setup cost per batch = ₹600; Carrying cost/unit/year = ₹2.

$$EBQ = \sqrt{2AS/C}$$

$$EBQ = \sqrt{2 \times 48{,}000 \text{ units} \times 600/2}$$

= 3794 units [approx.]

Illustration 4: Multiple Batches

Two batches X (200 units) and Y (300 units):

- Materials X ₹20,000; Y ₹30,000
- Labour X ₹10,000; Y ₹15,000

- OH absorbed @ 50% of Labour

Solution

Particulars	Batch X Amount ₹	Batch Y Amount ₹
Direct Material	20,000	30,000
Labour	10,000	15,000
Prime Cost	30,000	45,000
Add: Overhead @50% on Labour	5000	7500
Cost of Production	35,000	52,500

Batch X = Cost/unit = ₹35,000/200 units = ₹175

Batch Y = Cost/Unit = ₹52,500 /300 units = ₹175

Illustration 5: Quotation Based on Batch Cost

Batch of 1,200 units costed: Materials ₹60,000; Labour ₹30,000; OH ₹20,000. The company wants 25% profit on cost.

Particulars	Amount ₹	Amount ₹
Direct Material	60,000	
Labour	30,000	
Prime Cost		90,000
Add: Overhead		20,000
Cost of Production		1,10,000
Add: Profit @25% on Cost		27,500
Sales		1,37,500
Selling price per unit		114.58

Exercise 1

Batch of 400 units: Materials ₹24,000; Labour ₹16,000; Factory OH = 50% of Labour. Find cost per unit. [Ans: ₹120]

Exercise 2

Batch of 2,000 units: DM ₹80,000; DL ₹40,000; OH ₹30,000; Admin OH ₹10,000. Find batch cost and per unit. [Ans: ₹80]

Exercise 3

Annual Demand = 24,000 units; Setup = ₹400; Carrying = ₹2. Find EBQ. [Ans: 2191 units]

Exercise 4

Batch of 600 units: Materials ₹36,000; Labour ₹18,000; Factory OH @ 150% of Labour. Find cost/unit. [Ans: ₹135]

Exercise 5

Past Batch of 1,000 units costed ₹90,000. A new batch of 2,000 units is expected with 20%

5.3.3 Contract Costing

Meaning

Contract costing is a specialized form of job costing used for long-term, large-scale works such as construction, civil engineering, shipbuilding, and infrastructure projects. Each contract is treated as a separate cost unit and costs are accumulated for each contract separately.

Features of Contract Costing

- Applied to construction and long-term contracts.
- Work is executed at contract site (not factory).
- High value, low volume projects.
- Costs recorded in Contract Accounts.
- Progressive payments based on Work Certified.
- Retention money withheld by contractee until completion.
- Profit is transferred to P&L cautiously (depending on stage of completion).
- Contract costing applies to large-scale construction projects.
- Contract Accounts show costs, work certified, uncertified, and profit/loss.
- Profit recognition depends on completion stage, following conservative principles.
- Ensures fair profit transfer while protecting against overstatement.

Important Terms

- **Work Certified**: Portion of work approved by contractee's architect/surveyor.
- **Work Uncertified**: Work completed but not yet approved.
- **Retention Money**: % of work certified withheld until satisfactory completion.
- **Notional Profit**: Value of work certified + uncertified – (cost incurred).
- **Estimated Profit**: Contract price – (Cost to date + Estimated future cost).

Rules for Profit Transfer

Percentage of Work Completed	Profit Transferred
Work < 25% complete	No profit transferred
Work 25% – 50% complete	Transfer 1/3 × Notional Profit × (Cash Received / Work Certified)
Work 50% – 90% complete	Transfer 2/3 × Notional Profit × (Cash Received / Work Certified).
Work almost complete	Transfer Estimated Profit × (Work Certified / Contract Price) × (Cash Received / Work Certified)

Format of Contract Account

Dr Cr

Particulars	Amount ₹	Particulars	Amount ₹
To Material	xxx	By Material Returned	xxx
To Expenses on Purchases	xxx	By Material Lost	xxx
To Carriage Inward	xxx	By Material sold	xxx
To Labour	xxx	By Material returned to stores	xxx
To Plant at Cost	xxx	By Closing Stock of Material	xxx
To Overheads	xxx	By Closing value of Plant	xxx
To Notional Profit c/d	xxx	By WIP	
		Work Certified	xxx
		Work Uncertified	xxx
To Profit & Loss A/c	xxx	By Notional Profit b/d	xxx
To WIP [Reserve]	xxx		
	xxx		xxx

Illustration 1: Basic Contract Account

Contract Price ₹5,00,000. Expenditure: Materials ₹1,50,000; Wages ₹1,00,000; Plant ₹50,000; OH ₹20,000. Work Certified ₹3,00,000; Work Uncertified ₹20,000. Cash received = 80% of Work Certified.

Contract Account

Dr Cr

Particulars	Amount ₹	Particulars	Amount ₹
To Material	1,50,000	By WIP	
To Wages	1,00,000	Work Certified	3,00,000
To Plant at Cost	50,000	Work Uncertified	20,000
To Overheads	20,000		
To Notional Profit c/d	Nil		
	3,20,000		3,20,000

Illustration 2: Profit on Incomplete Contract

Contract Price = ₹10,00,000. Expenditure: Materials ₹2,00,000; Wages ₹1,50,000; OH ₹50,000. Work Certified ₹5,00,000; Cash Received = 4,00,000 (80%) Work Uncertified ₹30,000.

Contract Account

Dr Cr

Particulars	Amount ₹	Particulars	Amount ₹
To Material	2,00,000	By WIP	
To Labour	1,50,000	Work Certified	5,00,000
To Overheads	50,000	Work Uncertified	
To Notional Profit c/d	1,30,000		30,000
	5,30,000		5,30,000
To Profit & Loss A/c [2/3 × 1,30,000 × (4,00,000 ÷ 5,00,000)]	69,333	By Notional Profit b/d	1,30,000
To WIP [Reserve]	60,667		
	1,30,000		1,30,000

Illustration 3: Contract Near Completion

Contract Price = ₹20,00,000.

Cost to Date = ₹15,00,000; Estimated Cost to Complete = ₹3,00,000.

Work Certified = ₹16,00,000; Cash Received = ₹14,00,000.

Solution

Estimated Profit = Contract Price – (Cost to Date + Cost to Complete)

= 20,00,000 – (15,00,000 + 3,00,000) = ₹2,00,000

Profit transfer = Estimated Profit × (Work Certified / Contract Price) × (Cash Received / Work Certified)

= 2,00,000 × (16,00,000 ÷ 20,00,000) × (14,00,000 ÷ 16,00,000)

= 2,00,000 × 0.8 × 0.875 = **₹1,40,000**

Illustration 4: Retention Money

Contract Price = ₹12,00,000.

Work Certified = ₹6,00,000; Work Uncertified = ₹1,00,000; Cost Incurred = ₹5,50,000.

Cash Received = 75% of Work Certified.

Solution

Notional Profit = (6,00,000 + 1,00,000) – 5,50,000 = ₹1,50,000.

Since Work Certified = [50% of work is completed] → Transfer = 2/3 × 1,50,000 × (Cash Received / Work Certified).

= 1,00,000 × (4,50,000 ÷ 6,00,000) = **₹75,000**.

Illustration 5: Contract Account with Depreciation

Contract Price = ₹15,00,000.

Materials = ₹4,00,000; Wages = ₹3,00,000; Plant at site = ₹2,00,000 [depreciated 10%];

OH = ₹1,00,000; Work Certified = ₹8,00,000; Work Uncertified = ₹50,000; Cash Received = ₹6,40,000.

Contract Account

Dr Cr

Particulars	Amount ₹	Particulars		Amount ₹
To Material	4,00,000	By Plant	2,00,000	
To Labour	3,00,000	Less: Depreciation	20000	1,80,000
To Plant at site	2,00,000	By WIP		
To Overheads	1,00,000	Work Certified		8,00,000
To Notional Profit c/d	30,000	Work Uncertified		50,000
	10,30,000			10,30,000
To Profit & Loss A/c	25,000	By Notional Profit b/d		30,000
[2/3 × 30,000 × (8,00,000 ÷ 6,40,000)]				
To WIP [Reserve]	5000			
	30,000			30,000

Exercise 1

Contract Price ₹8,00,000.

Costs: Materials ₹2,00,000; Wages ₹1,50,000; OH ₹50,000.

Work Certified ₹4,00,000; Work Uncertified ₹20,000. Cash Received = 3,20,000.

Solution

Total Cost = 4,00,000

Value of Work = 4,20,000

Notional Profit = 20,000

Transfer = 1/3 × NP × (Cash/Certified) = 1/3 × 20,000 × (3,20,000 ÷ 4,00,000) = ₹5,333

Exercise 2

Contract Price ₹6,00,000.

Work Certified = ₹2,40,000; Work Uncertified = ₹60,000.

Costs = ₹2,50,000. Cash = ₹1,92,000.

Solution

Work Value = 3,00,000; Cost = 2,50,000 → Notional Profit = 50,000

Work Certified [40% of the work completed] → Transfer = 1/3 × 50,000 × (1,92,000 ÷ 2,40,000) = ₹13,333

Exercise 3

Contract Price = ₹15,00,000.

Cost to date = ₹10,00,000; Estimated to complete = ₹4,00,000.

Work Certified = ₹12,00,000; Cash Received = ₹10,00,000.

Solution

Estimated Profit = 15,00,000 − 14,00,000 = 1,00,000

Transfer = 1,00,000 × (12,00,000 ÷ 15,00,000) × (10,00,000 ÷ 12,00,000) = **₹66,667**

Exercise 4

Costs: Materials ₹3,00,000; Wages ₹2,00,000; OH ₹1,00,000.

Work Certified ₹6,00,000; Cash = 4,80,000. Contract Price = ₹10,00,000.

Solution

Total Cost = 6,00,000

Notional Profit = 0 (Work Certified = Cost same). **No Profit transfer.**

Exercise 5

Contract Price ₹20,00,000.

Work Certified ₹15,00,000; Cash Received ₹12,00,000; Cost = ₹13,50,000.

Solution

NP = 15,00,000 − 13,50,000 = 1,50,000

Work Certified = 75% → Transfer = 2/3 × 1,50,000 × (12,00,000 ÷ 15,00,000) = **₹80,000**

5.4 Operating Costing (Service Costing)

Meaning

Operating costing (or service costing) is a method of costing used in service industries where services, rather than tangible goods, are provided. The cost per unit of service is ascertained (e.g., per passenger-kilometre, per tonne-kilometre, per bed-day).

Features

- Applied where services are rendered (transport, hospitals, power supply, etc.).
- Costs are accumulated understanding (fixed) and running (variable) charges.
- Cost unit depends on nature of service (passenger-km, tonne-km, per bed-day).
- Composite units (e.g., passenger-km) combine service rendered with distance.
- Cost per unit = (Total Cost ÷ Total Service Units).
- Operating costing is applied in service industries.
- Costs are divided into standing, running, and maintenance charges.
- Service units (passenger-km, tonne-km, bed-days, room-days, kWh) are used.
- Cost/unit = Total Cost ÷ Service Units.
- Useful for pricing, cost control, and efficiency comparison.

Industries Using Operating Costing

- Transport undertakings (buses, trucks, airlines, railways).
- Power supply undertakings.
- Hospitals (per patient-day).
- Hotels (per room-day).
- Schools (per student-year).

Objectives

- To ascertain cost per service unit.
- To aid pricing of services (fares, tariffs, room charges).

- To control costs of service operations.
- To compare efficiency across time or services.

Cost Classification

Type of Cost	Example
Standing Charges (Fixed)	Rent, insurance, licenses, salaries, depreciation, interest.
Running Charges (Variable)	Fuel, oil, tyres, repairs, maintenance
Maintenance Charges	Wages of drivers, cleaners, helpers; servicing expenses

Cost Units

Type of Service	Cost Unit
Passenger transport	Cost per passenger-km
Goods transport	Cost per tonne-km
Electricity	Cost per kWh
Hospital	Cost per bed-day
Hotel	Cost per room-day.

Formulae

- **Passenger-km** = No. of passengers × Kilometres travelled
- **Tonne-km** = Weight carried (tonnes) × Kilometres travelled
- **Cost per unit** = Total Cost ÷ Total Units

Illustration 1: Passenger Cost per km

A bus runs 25 km one way, 4 trips per day, 25 days a month. Seating capacity 50, average occupancy 80%. Monthly cost = ₹1,00,000. Calculate cost per passenger KM.

Solution

Total passenger-km = 25 × 2 × 4 × 25 × 50 × 0.8 = 1,00,000 passenger-km.

Cost/passenger-km = 1,00,000 ÷ 1,00,000 = ₹1 per passenger-km.

Illustration 2: Goods Transport (Tonne-km)

A truck carries 10 tonnes, distance 100 km, 20 trips in a month. Total cost = ₹50,000.

Solution

Tonne-km = 10 × 100 × 20 = 20,000 tonne-km.

Cost per tonne-km = 50,000 ÷ 20,000 = ₹2.50 per tonne-km.

Illustration 3: Cost per Bed-Day (Hospital)

Hospital with 100 beds, average occupancy 80%, 30 days. Total cost = ₹12,00,000.

Solution

Bed-days = 100 × 0.8 × 30 = 2,400.

Cost/bed-day = 12,00,000 ÷ 2,400 = ₹500 per bed-day.

Illustration 4: Power Supply Costing

Power house produces 1,00,000 units. Cost: Fuel ₹2,00,000; Salaries ₹50,000;

Depreciation ₹30,000; Other OH ₹20,000.

Solution

Total cost = 3,00,000.

Cost/unit = 3,00,000 ÷ 1,00,000 = ₹3 per kWh.

Illustration 5: Hotel Costing

Hotel with 40 rooms, 30 days, occupancy 75%. Total monthly expenses ₹12,00,000.

Solution

Room-days = 40 × 30 × 0.75 = 900.

Cost/room-day = 12,00,000 ÷ 900 = ₹1,333.33.

Exercise 1: Passenger Transport

A bus runs 20 km each way, 3 trips/day, 25 days, 40 seats, 75% occupancy. Total monthly cost ₹72,000.

Solution

Passenger-km = 20 × 2 × 3 × 25 × 40 × 0.75 = 36,000.

Cost/unit = 72,000 ÷ 36,000 = ₹2 per passenger-km.

Exercise 2: Goods Transport

A lorry of 5-tonne capacity makes 25 trips of 50 km each. Total cost ₹62,500.

Solution

Tonne-km = 5 × 50 × 25 = 6,250.

Cost/unit = 62,500 ÷ 6,250 = ₹10 per tonne-km.

Exercise 3: Hospital

Hospital has 200 beds, 75% occupancy, 30 days. Total cost ₹36,00,000.

Solution

Bed-days = 200 × 0.75 × 30 = 4,500.

Cost/unit = 36,00,000 ÷ 4,500 = ₹800 per bed-day.

Exercise 4: Hotel

Hotel has 50 rooms, 30 days, occupancy 60%. Total monthly expenses ₹9,00,000.

Solution

Room-days = 50 × 30 × 0.6 = 900.

Cost/unit = 9,00,000 ÷ 900 = ₹1,000 per room-day.

Exercise 5: Electricity

Plant produces 50,000 kWh. Costs: Fuel ₹75,000; Salaries ₹25,000; Depreciation ₹10,000; Others ₹15,000.

Solution

Total cost = 1,25,000.

Cost/unit = 1,25,000 ÷ 50,000 = ₹2.50 per kWh.

5.5 Process Costing

Meaning

Process costing is a costing method applied in industries where production is continuous, standardized, and homogeneous. Costs are accumulated for each process, department, or stage of production, and the average cost per unit is determined.

Features

- Production is continuous and mass scale.
- Output is uniform and standardized.
- Costs are collected process-wise.
- The cost per unit = (Total Cost of Process ÷ Units Produced).
- By-products, joint products, and inter-process profits may arise (excluded here as per syllabus).
- Process costing applies to continuous production industries.
- Normal loss → absorbed in good units.
- Abnormal loss/gain → transferred to P&L.
- Cost per unit derived by average method.
- Equivalent units used for WIP valuation.

Industries Using Process Costing

- Chemicals, petroleum, oil refining
- Textiles, paper, sugar
- Paint, cement, food processing
- Electricity, steel, rubber

Objectives

- To ascertain cost per process, per department, per unit.
- To control costs at each stage.

- To facilitate transfer pricing between processes.
- To provide basis for pricing decisions in continuous industries.

Advantages and Limitations of Process Costing

Advantages	Limitations
Suitable for industries with mass production.	Averaging may hide inefficiencies.
Helps determine accurate cost per unit.	Not suitable for customized production.
Enables inter-process cost control.	Abnormal losses/gains need careful treatment.
Simplifies valuation of work-in-progress.	

Treatment of Losses

- **Normal Loss:** Expected loss (e.g., evaporation, wastage). Cost is absorbed by good units.
- **Abnormal Loss:** Unexpected loss due to avoidable reasons (e.g., accident). Charged to Costing P&L.
- **Abnormal Gain:** When actual loss < normal loss; credited to Costing P&L.

Steps in the preparation of Process Account

1. Prepare Process A/c for each stage.
2. Include all direct costs + share of indirect costs.
3. Normal loss is expected and absorbed in cost.
4. Abnormal loss/gain is transferred to Costing P&L.

Format for Process Account

Dr **Cr**

Particulars	Units	Amount	Particulars	Units	Amount
To Material			By Normal Loss		
To Labour			By Abnormal Loss [if any]		
To Expenses			By Finished Goods		

Illustration 1: Simple Process Account

Material issued = 1,000 units @ ₹10/unit.

Labour = ₹5,000.

OH = ₹2,000.

Normal Loss = 10% of input (100 units). Scrap value = ₹2/unit.

Output = 880 units.

Process Account

Dr **Cr**

Particulars	Units	Amount	Particulars	Units	Amount
To Material	1000	10,000	By Normal Loss	100	200
To Labour		5000	By Abnormal Loss [if any]	20	370
To Expenses		2000	By Finished Goods	880	16,430
					17,000

Working Notes

Calculation of Abnormal Loss/Gain Units

Units Introduced	1000
Less: Normal Loss	100
Normal Output	900
Actual Output	880
Abnormal Loss	20

Formula for Value of Abnormal Loss

$$\text{Value of Abnormal Loss} = \frac{\text{Normal Cost of Normal Output}}{\text{Normal Output}} \times \text{Abnormal Loss Units}$$

Illustration 2: Two Processes

Process I: Input 1,000 units @ ₹20 = 20,000; Labour 10,000; OH 5,000; Normal Loss 10% (scrap value ₹2). Output transferred = 900 units.
Process II: Additional Labour = 8,000; OH = 4,000; Normal Loss 10% (scrap value ₹3). Output transferred = 800 units.

Solution

Process I Account

Dr **Cr**

Particulars	Units	Amount ₹	Particulars	Units	Amount ₹
To Material	1000	20,000	By Normal Loss	100	200
To Labour		10,000	By Process II A/c	900	34,800
To Overheads		4000	Cost per unit = 34,800/900		
		35,000	₹38.67 per unit		35,000

Process II Account

Dr **Cr**

Particulars	Units	Amount ₹	Particulars	Units	Amount ₹
To Process I A/c	900	34,800	By Normal Loss	90	270
To Labour		8000	By Abnormal Loss [if any]	10	550
To Expenses		2000	By Finished Goods	800	43,980
		44,800			44,800

Working Notes

Calculation of Abnormal Loss/Gain Units

Units Introduced	900
Less: Normal Loss	90
Normal Output	810
Actual Output	800
Abnormal Loss	10

Formula for Value of Abnormal Loss

$$\text{Value of Abnormal Loss} = \frac{\text{Normal Cost of Normal Output}}{\text{Normal Output}} \times \text{Abnormal Loss Units}$$

= ₹44,530/810 x 10 = ₹550

Illustration 3: Abnormal Loss

Input = 500 units @ ₹50 = 25,000.

Labour = 10,000; OH = 5,000.

Normal Loss = 10% (50 units), scrap = ₹20/unit.

Actual Output = 420 units.

Solution

Process II Account

Dr **Cr**

Particulars	Units	Amount ₹	Particulars	Units	Amount ₹
To Process I A/c	500	25,000	By Normal Loss	50	100
To Labour		10,000	By Abnormal Loss [if any]	30	2660
To Expenses		5000	By Finished Goods	420	37,240
		40,000			40,000

Working Notes

Calculation of Abnormal Loss/Gain Units

Units Introduced	500
Less: Normal Loss	50
Normal Output	450
Actual Output	420
Abnormal Loss	30

Formula for Value of Abnormal Loss

$$\text{Value of Abnormal Loss} = \frac{\text{Normal Cost of Normal Output}}{\text{Normal Output}} \times \text{Abnormal Loss Units}$$

$$= ₹39,900/450 \times 30 = ₹2660$$

Illustration 4: Abnormal Gain

Input 1,000 units; Cost ₹30,000; Normal Loss 10% scrap = ₹5/unit. Output = 920 units (instead of 900).

Process II Account

Dr **Cr**

Particulars	Units	Amount ₹	Particulars	Units	Amount ₹
To Process I A/c	1000	30,000	By Normal Loss	100	500
To Abnormal Gain	20	655	By Finished Goods	920	31,155
		30,655			30,655

Working Notes

Calculation of Abnormal Loss/Gain Units

Units Introduced	1000
Less: Normal Loss	100
Normal Output	900
Actual Output	920
Abnormal gain	20

Formula for Value of Abnormal gain

$$\text{Value of Abnormal Loss} = \frac{\text{Normal Cost of Normal Output}}{\text{Normal Output}} \times \text{Abnormal Gain Units}$$

= ₹29,500/900 x 20 = ₹655

Exercise 1

Input = 2,000 units @ ₹10 = 20,000.

Labour = 8,000; OH = 4,000.

Normal Loss = 10% (200 units) scrap ₹2/unit.

Output = 1,750 units.

[Ans: Abnormal Loss = 50 units @17.56 = 878]

Exercise 2

Input = 1,000 units @ ₹25; Labour 10,000; OH 5,000.

Normal Loss = 10% scrap = ₹3/unit.

Output = 880.

[Ans: Abnormal Loss 20 units @ 44.11 = 882]

Exercise 3

Process I: Input 1,200 units @ ₹15; Labour 6,000; OH 4,000.

Normal Loss = 10% scrap @ ₹2.

Output = 1,000 units.

[Ans: Abnormal Loss 80 units@ 25.70 = 2056]

Exercise 4

Input = 1,500 units @ ₹10 = 15,000; Labour 5,000; OH 3,000.

Normal Loss = 5% (75 units) scrap ₹2.

Output = 1,400.

[Ans: Abnormal Loss 25 units @ 16.04 = 401]

Exercise 5

Input = 1,000 units; Costs: Materials ₹20,000; Labour ₹15,000; OH ₹10,000. Output = 950 units; Normal Loss = 5% scrap ₹5/unit.

[Ans: Output 950 units @ 47.11 = 44,750]

Summary

This unit covered cost ascertainment under multiple methods—unit, job, batch, contract, operating, and process costing. It explained each method's scope, calculation steps, and application with illustrations to help learners apply the right costing method in different industrial situations.

Check Your Progress

1. Define unit costing. Where is it applicable?
2. What is the difference between job costing and contract costing?
3. Calculate cost per unit for a batch costing ₹25,000 with 2,000 units.
4. Explain the basis of operating costing in a transport company.
5. Compute process costing per unit when:
    - Input = 1,200 units, Material = ₹24,000, Labour = ₹12,000, OH = ₹4,800, Normal loss = 10%

Exercise 1 – Cost Sheet & Cost per Unit

Given: 8,000 units; DM ₹2,00,000; DL ₹1,00,000; Factory OH ₹50,000; Admin OH ₹30,000.

Cost Sheet (for 8,000 units)

- Direct Materials ..... ₹2,00,000
- Direct Labour ..... ₹1,00,000
- **Prime Cost** ..... ₹3,00,000
- Add: Factory Overheads ..... ₹50,000

- **Factory Cost** ..... **₹3,50,000**
- Add: Administration OH ..... **₹30,000**
- **Cost of Production (Total Cost)** ..... **₹3,80,000**

Cost per unit = 3,80,000 ÷ 8,000 = **₹47.50**

Exercise 2 – Cost Sheet & Cost per Metre

Given: 10,000 metres; DM ₹4,50,000; DL ₹2,50,000; Factory OH = 100% of DL = ₹2,50,000; Admin OH ₹50,000.

Cost Sheet (for 10,000 metres)

- Direct Materials ..... ₹4,50,000
- Direct Labour ..... ₹2,50,000
- Prime Cost ..... ₹7,00,000
- Add: Factory Overheads ..... ₹2,50,000
- Factory Cost ..... ₹9,50,000
- Add: Administration OH ..... ₹50,000
- Cost of Production (Total Cost) ..... ₹10,00,000

Cost per metre = 10,00,000 ÷ 10,000 = **₹100**

Exercise 3 – Selling Price per Bag (Profit on Sales)

Given: 20,000 bags; Total Cost (Cost of Sales) ₹24,00,000; Profit = 20% on Sales.

When profit is on sales,

Sales = Cost ÷ (1 – Profit%) = 24,00,000 ÷ 0.80 = ₹30,00,000

Selling price per unit = 30,00,000 ÷ 20,000 = ₹150 per bag (Profit per bag = 150 – (24,00,000 ÷ 20,000 = 120) = ₹30)

Exercise 4 – Cost of Sales & Cost of Sales per Unit

Given: Units produced = 1,000; Opening stock = 100; Closing stock = 50; Total Cost of Production ₹3,00,000.

1. Cost per unit of production = 3,00,000 ÷ 1,000 = ₹300
2. Units sold (COGS units) = Produced + Opening – Closing = 1,000 + 100 – 50 = 1,050 units
3. Cost of Sales (Total) = 1,050 × ₹300 = ₹3,15,000
4. Cost of Sales per unit = 3,15,000 ÷ 1,050 = ₹300 per unit

Exercise 5 – Cost Sheet & Cost per Tonne

Given: 500 tonnes; DM ₹5,00,000; DL ₹3,00,000; Factory OH ₹2,50,000; Admin OH ₹1,50,000.

Cost Sheet (for 500 tonnes)

- Direct Materials ..... ₹5,00,000
- Direct Labour ..... ₹3,00,000
- Prime Cost ..... ₹8,00,000
- Add: Factory Overheads ..... ₹2,50,000
- Factory Cost ..... ₹10,50,000
- Add: Administration OH ..... ₹1,50,000
- Cost of Production (Total Cost) ..... ₹12,00,000

Cost per tonne = 12,00,000 ÷ 500 = ₹2,400

Glossary

- **Job Costing:** Costing for unique, customized jobs.
- **Batch Costing:** Costing per unit of a batch of identical items.
- **Contract Costing:** Costing used for large, long-duration jobs.
- **Operating Costing:** Used for service-based operations.
- **Process Costing:** Used in continuous, homogeneous production.

Answers to Check Your Progress

1. Total cost ÷ output; used in cement, mines, oil.

2. Job: short-term, small-scale; Contract: long-term, site-based.
3. ₹25,000 / 2,000 = ₹12.50 per unit.
4. Cost per passenger-km or tonne-km.
5.
    - Total Cost = ₹24,000 + ₹12,000 + ₹4,800 = ₹40,800
    - Normal Loss = 10% of 1,200 = 120
    - Effective output = 1,080
    - Cost per unit = ₹40,800 / 1,080 = ₹37.78

Suggested Reading

1. Jain & Narang – *Cost Accounting* – Kalyani Publishers
2. M.N. Arora – *Cost Accounting* – Vikas Publishing
3. Bhabatosh Banerjee – *Cost Accounting* – PHI
4. T.S. Reddy & Y. Hari Prasad Reddy – *Cost Accounting* – Margham Publications
5. Horngren et al. – *Cost Accounting: A Managerial Emphasis* – Pearson