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SEBI

Grade A - (Phase 1 & 2)

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Costing & English

SIERRA INNOVATIONS

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1 CHAPTER Introduction

Cost Accounting

- Cost Accounting is a specialized branch of accounting that focuses on recording, classifying, analyzing, and allocating costs related to production or services.
- According to Wheldon, costing involves the systematic classification and recording of expenditure, its proper allocation to determine the cost of products or services, establishing its relationship with sales value, and assessing profitability.

Historical Evolution in India

- **Pre-Independence:** Cost accounting practice was limited, with few professionals trained mainly by ICMA (now CIMA, London).
- **World War II:** Growing need for cost control, especially in defence, led to the demand for an Indian institute.
- **1959:** The Cost and Works Accountants of India Act led to the establishment of The Institute of Cost Accountants of India.
- **1968:** Cost Audit was introduced under Section 233(B) of the Companies Act, 1956 (now Section 148 of Companies Act, 2013).

Key Activities of Cost Accounting

- Determining cost of products, processes, services, or projects.
- Assisting management in planning and control.
- Providing cost analysis for informed decision-making.
- Identifying areas for cost reduction and efficiency improvement.

Purpose of Cost Accounting and Features of Cost Accounting

- Cost accounting enables detailed classification and analysis of expenditure, helping to:
  - ✓ Ascertain total and unit cost.
  - ✓ Break down costs into material, labour, and overheads.
  - ✓ Support pricing and profitability decisions.
- It begins with recording of income and expenditure.
- Ends with preparation of statistical and analytical cost data.
- It includes tools like budgeting, standard costing, variance analysis, and resource utilization.
- Serves as a quantitative tool for planning, control, and decision-making.

Costing

- Costing is the technique and process of ascertaining costs. It involves the collection, classification, and analysis of cost data for effective planning, control, and decision-making.
- For example, a product has a cost of Rs 200
- The daily classification and summarization of cost components defines the costing technique.
- Costing covers all expenses related to:
  - ✓ Production
  - ✓ Selling
  - ✓ Distribution

Types of Costing

- **Direct Costing:** Only variable costs are assigned to products or services, such as material cost which varies with output.
- **Absorption Costing:** Both fixed and variable costs (e.g., rent, insurance) are included in the cost of products.

Cost Accountancy

- Cost Accountancy refers to the application of costing and cost accounting principles, methods, and techniques for cost control and determination of profitability.
- **Nature:**
  - ✓ **Science:** It is based on a systematic body of knowledge.
  - ✓ **Art:** It involves practical application to solve business problems.
  - ✓ **Practice:** It requires continuous professional work, including recording, analysis, and reporting.
- **Related Functions**
  - ✓ **Cost Reduction:** Achieving permanent reduction in unit cost without affecting quality.
  - ✓ **Cost Control:** Monitoring and regulating costs to avoid wastage and inefficiency.
  - ✓ **Cost Audit:** Verifying the accuracy of cost records and ensuring compliance with prescribed principles.

Objectives of Cost Accounting

- **Cost Ascertainment:** To determine the cost of products, processes, or services accurately.
- **Cost Control and Reduction:** To manage and minimize costs while maintaining quality.
- **Fixation of Selling Price:** To assist in pricing decisions.
- **Valuation of Inventory:** To determine the value of closing stock.
- **Profitability Analysis:** To ensure profit from each activity and take corrective measures.
- **Budgeting:** To estimate future costs for planning and control.
- **Performance Evaluation:** To set standards and measure efficiency.
- **Business Expansion:** To provide cost insights for growth decisions.
- **Minimizing Wastage:** To identify and reduce inefficiencies.
- **Improving Efficiency:** To enhance productivity and cost-effectiveness.
- **Managerial Decision-Making:** To support decisions such as make-or-buy, shutdown, or adoption of new methods.

Scope of Cost Accountancy

1. **Cost Ascertainment**
   - ✓ Collection and analysis of cost data.
   - ✓ Measurement of production at different stages.
   - ✓ Linking production with expenses incurred.
   - ✓ Use of historical, estimated, or standard costs to determine actual cost.
2. **Cost Accounting**
   - ✓ Recording of expenditures and preparation of cost data.
   - ✓ Use of historical and predetermined costing methods (standard or estimated).
   - ✓ Reconciliation of cost and financial accounts, if maintained separately.
3. **Cost Control**
   - ✓ Setting cost and performance targets.
   - ✓ Measuring actual performance.
   - ✓ Comparing actual results with standards.
   - ✓ Identifying deviations and taking corrective actions.
4. **Cost Reports**
   - ✓ Preparation of reports for management at all levels.
   - ✓ Assisting in planning, control, and decision-making.
5. **Cost Audit**
   - ✓ Verification of accuracy of cost records.
   - ✓ Ensuring adherence to costing principles and systems.
   - ✓ Facilitating audit by providing reliable cost data.

6. **Statutory Compliances**
   - ✓ Maintenance of cost records as per legal requirements.
   - ✓ Coverage of material, labour, and overhead records related to production or services.

Importance of Cost Accounting

- ➢ Cost accounting provides several advantages for various stakeholders:

1. **For Management:**
   - ✓ Assists in determining pricing strategies.
   - ✓ Helps in preparing accurate cost estimates.
   - ✓ Aligns production processes with cost efficiency.
   - ✓ Minimizes waste and inefficiencies.
   - ✓ Enables comparison across different time periods and products.
   - ✓ Provides regular profit and loss information.
   - ✓ Enhances overall operational efficiency.
   - ✓ Improves control over inventory.
   - ✓ Drives strategies for cost reduction.
   - ✓ Supports growth in productivity.
2. **For Employees:**
   - ✓ Facilitates incentive schemes and bonus plans.
   - ✓ Contributes to job security and better pay.
3. **For Creditors:**
   - ✓ Assists in evaluating profitability and financial health.
4. **For the Economy:**
   - ✓ Helps control costs and reduce inefficiencies.
   - ✓ Contributes to industrial and national economic growth.

Management Accounting

- ➢ Management Accounting is not a specific accounting system but a broad approach aimed at improving business operations' effectiveness and efficiency.
- ➢ It focuses on providing economic and financial data to managers for decision-making and achieving organizational objectives.

Key Definitions:

- ➢ **Anglo-American Council on Productivity** defines it as: "The presentation of accounting information to assist management in creating policy and overseeing daily operations."
- ➢ **ICAI (Institute of Chartered Accountants of India)** states: "Management Accounting involves techniques and procedures that collectively help management in decision-making."
- ➢ **CIMA, London** describes it as: "An integral part of management focused on identifying, presenting, and interpreting information for: (a) strategy formulation, (b) activity planning and control, (c) decision-making, (d) resource optimization, (e) disclosure to external stakeholders, (f) communication with employees, and (g) asset safeguarding."

- ➢ **Nature and Focus**
   - ✓ Primarily concerned with the managerial aspect of accounting.
   - ✓ Focuses on policy development, execution control, and performance assessment.
   - ✓ A relatively recent discipline, formally recognized around 1950.

Objectives of Management Accounting

- ➢ The main goal is to maximize profits and minimize losses through effective management support:

1. **Planning and Policy Formulation**
   - ✓ Involves forecasting, goal setting, and determining action plans.
   - ✓ Uses historical data to forecast future results.

2. **Interpretation Process**
   - ✓ Presents financial data in a clear and digestible format.
   - ✓ Utilizes charts, graphs, and diagrams for better understanding.
3. **Assisting in Decision-Making**
   - ✓ Utilizes modern tools to assess alternatives.
   - ✓ Analyzes costs, revenues, and savings for informed decisions.
4. **Controlling**
   - ✓ Employs standard costing and budget control to monitor performance.
   - ✓ Compares actual outcomes with standards and recommends corrective actions.
5. **Reporting**
   - ✓ Keeps management informed with regular reports on performance.
   - ✓ Highlights the performance of different departments.
6. **Facilitating Organization**
   - ✓ Focuses on Return on Capital Employed (ROCE).
   - ✓ Encourages decentralization through responsibility centers.
7. **Coordination of Operations**
   - ✓ Ensures alignment between functions using budgets and planning.

Scope of Management Accounting

1. **Provides Accounting Information**
   - ✓ Delivers actionable financial data for various levels of management.
2. **Cause and Effect Analysis**
   - ✓ Investigates the reasons behind outcomes, beyond just financial results.
   - ✓ Examines relationships between profits, costs, and capital.
3. **Use of Specialized Techniques**
   - ✓ **Includes:** Standard costing, Budgetary control, Marginal costing, Project appraisal, Control accounting, Financial planning and analysis.
4. **Decision Support**
   - ✓ Provides both historical and projected data for strategic decision-making.
5. **Achievement of Objectives**
   - ✓ Supports goal setting and variance analysis.
   - ✓ Encourages immediate corrective actions when needed.
6. **Increase in Efficiency**
   - ✓ Identifies operational inefficiencies through performance assessments.
7. **Information Provider, Not Decision-Maker**
   - ✓ The management accountant provides data, while the decisions are made by executives.
8. **Future Orientation**
   - ✓ Utilizes historical data to forecast future trends.
   - ✓ Supports strategy development and long-term planning.

Tools of Management Accounting

- Management accountants use a variety of tools, including:
  - ✓ Financial Ratios
  - ✓ Financial Statement Analysis
  - ✓ Management Information Systems (MIS)
  - ✓ Key Performance Indicators (KPIs)
  - ✓ Simulations and What-If Analysis
  - ✓ Financial Modeling
  - ✓ Balanced Scorecards
  - ✓ **Data Analytics and Statistical Methods** that assist in strategic decision-making.

Difference Between Cost Accounting and Management Accounting

Basis	Cost Accounting	Management Accounting
Nature	Focuses solely on quantitative aspects of cost records.	Includes both qualitative and quantitative aspects.
Objective	Tracks the cost of producing goods or services.	Provides data for coordination, control, planning, and decision-making.
Area	Concentrates only on cost-related matters.	Covers a broader scope, including budgeting, financial accounting, planning, etc.
Data	Uses historical and current data for cost calculation.	Uses past and present figures to forecast future trends.
Development	Originated during the industrial revolution.	Developed to meet the needs of modern management.

Difference Between Financial Accounting and Cost Accounting

Basis	Financial Accounting	Cost Accounting
Objective	Provides information about the overall financial performance.	Focuses on calculating costs for control and decision-making.
Nature	Interprets transactions in monetary terms.	Classifies and interprets costs related to production.
Data	Records historical financial data.	Records both historical and predetermined cost data.
Users	Intended for shareholders, creditors, analysts, and government agencies.	Primarily used by internal management and regulatory authorities.
Analysis	Focuses on overall profit or loss.	Focuses on cost per unit (product, job, etc.).
Period	Reports generated at year-end for the financial year.	Reports are generated as needed throughout the year.
(vii) Presentation	Follows a structured, regulated format.	Has no rigid format; presentation is flexible according to need.

Responsibility Centres

- As organizations expand, their operations, functions, and structures become more complex.
- To maintain effective control, management delegates authority and responsibility to various departments or individuals, known as **responsibility centres**.
- These centres are evaluated based on factors such as:
  - ✓ Input-output ratios
  - ✓ Budgets
  - ✓ Organizational goals and performance targets

Types of Responsibility Centres

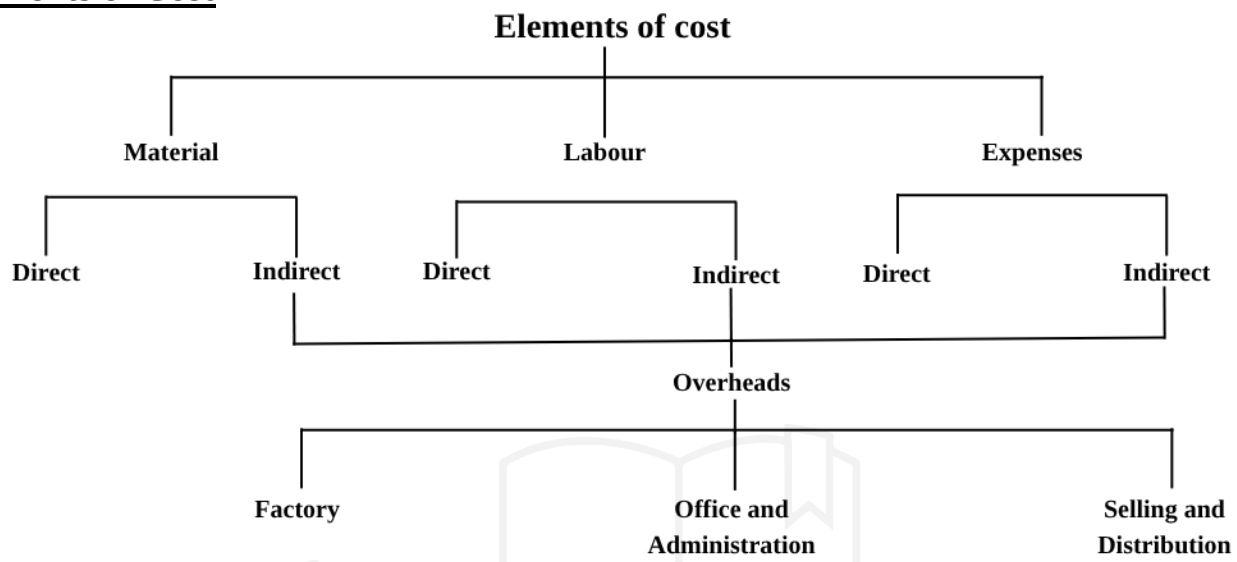
1. **Cost Centres:**
   - ✓ The manager is accountable only for the costs incurred.
   - ✓ Focuses solely on costs without considering revenue.
   - ✓ Example: Maintenance department.
2. **Profit Centres:**
   - ✓ The manager is responsible for both costs (inputs) and revenues (outputs).
   - ✓ Performance is measured by profit.
   - ✓ Example: Regional sales division.
3. **Investment Centres:**
   - ✓ Responsible for both profits and capital investment decisions.
   - ✓ Performance is evaluated based on Return on Investment (ROI).
   - ✓ Example: Maharatna, Navratna, and Miniratna PSUs.

4. **Revenue Centres:**
   - ✓ Accountable for revenue generation.
   - ✓ Has limited control over costs, except for selling-related expenses like commissions.
   - ✓ Example: Sales department.

Cost Unit

- A **Cost Unit** refers to the unit of product, service, or time used for calculating costs. Examples include:
  - ✓ **Electricity**: per kWh
  - ✓ **Transport**: per passenger-km or tonne-km

Elements of Cost



Basic Components of Total Cost

1. **Direct Materials**
   - ✓ Materials that are an integral part of the final product.
   - ✓ Easily traceable to the product.
   - ✓ Examples:
     - Fabric used in garments
     - Packaging materials
     - Job-specific purchased components
2. **Direct Labour**
   - ✓ Labour directly involved in production or service delivery.
   - ✓ It includes:
     - Wages and salaries
     - Overtime and incentives
     - Employer's contribution to Provident Fund (PF)
     - Other benefits (leave, food, travel, etc.)
3. **Direct Expenses**
   - ✓ Expenses that are specific to a cost object, excluding materials and labour.
   - ✓ **Examples:**
     - Royalties
     - Equipment hire charges
     - Design or software costs specific to a job
4. **Indirect Materials**
   - ✓ Materials that do not form part of the final product.
   - ✓ Used for supporting activities like maintenance.
   - ✓ Examples:
     - Lubricants
     - Cotton waste
     - Boiler house and canteen supplies

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5. **Indirect Labour**
   - ✓ Labour that is not directly traceable to a specific product or service.
   - ✓ Examples:
     - Supervisors
     - Maintenance staff
     - Clerical staff, security, transport helpers

6. **Indirect Expenses**
   - ✓ Costs that cannot be directly assigned to a specific cost unit.
   - ✓ Examples:
     - Rent, insurance, telephone, heating
     - Depreciation of plant and machinery

7. **Overheads: The total of all indirect costs**
   - ✓ **Production/Factory Overheads**:
     - Indirect costs incurred in the factory.
     - Includes: Spares, depreciation, repairs, indirect wages, and insurance for raw materials and work-in-progress (WIP).
   - ✓ **Administrative Overheads**:
     - Costs related to management and office functions.
     - Includes: Depreciation of office buildings, salaries of admin staff, utilities, and office supplies.
   - ✓ **Selling Overheads**:
     - Marketing and promotion expenses.
     - Includes: Sales staff salaries, advertising, website maintenance, and market research.
   - ✓ **Distribution Overheads**:
     - Costs related to delivery and dispatch.
     - Includes: Transportation, warehousing, and delivery vehicle expenses.

Classification by Behaviour (Cost Variability)

1. **Fixed Costs**
   - ✓ Do not change with production volume.
   - ✓ Examples: Rent, insurance.
2. **Variable Costs**
   - ✓ Change in direct proportion to production volume.
   - ✓ Examples: Raw materials, direct labour.
3. **Semi-variable Costs**
   - ✓ Have both fixed and variable components.
   - ✓ Examples: Electricity bills, phone charges.

Components of Total Cost

1. **Prime Cost**
   - ✓ The sum of all direct costs: direct materials, direct labour, and direct expenses.
   - ✓ Also known as basic, first, or flat cost.
2. **Factory Cost**
   - ✓ Prime Cost + Factory Overheads.
   - ✓ Also known as work cost or manufacturing cost.
3. **Office Cost**
   - ✓ Factory Cost + Administrative Overheads.
   - ✓ Also referred to as the cost of production.
4. **Total Cost / Cost of Sales**
   - ✓ Office Cost + Selling & Distribution Overheads.
   - ✓ Represents the total cost incurred to sell the product.

Other Important Definitions

1. **Cost Object:** A product, service, project, department, or activity to which costs are assigned.
2. **Cost Estimation:** It is the process of forecasting the cost of a job, product, or service in advance.
   - ✓ Used for budgeting, performance measurement, stock valuation, and pricing decisions.
3. **Cost Ascertainment:** The actual calculation of costs based on historical data.
   - ✓ Estimation = future, Ascertainment = past.
4. **Cost Allotment:** The process of assigning entire cost items to specific cost centres or units.
   - ✓ Example: Allocating wages of service department workers to that department.
5. **Cost Apportionment:** Distributing portions of a cost item among multiple cost centres.
   - ✓ Example: Dividing canteen expenses proportionally across departments.
6. **Conversion Cost:** The sum of direct labour, direct expenses, and overheads.
   - ✓ It is the total production cost minus direct materials.
7. **Sunk Costs:** Historical costs that are irrelevant to current decision-making.
   - ✓ Example: Written down value (WDV) of machinery during a replacement decision.
8. **Opportunity Cost:** The value of the benefit sacrificed by choosing one alternative over another.
   - ✓ Example: Lost interest when withdrawing bank deposits for investment.
9. **Discretionary Costs:** Costs that are not directly linked to output and arise from managerial discretion.
   - ✓ Examples: Training programs, advertising, public relations.

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2 CHAPTER Material Costing

- Material refers to all physical inputs or tangible items used in the production of a final product.
- It represents the starting point of the manufacturing process and constitutes a major portion of total cost in most industries. Materials are broadly classified into direct and indirect categories.

Classification of Materials

Direct Materials

- Direct materials are those which can be conveniently and economically traced to a specific product or cost unit.
- Examples: Leather in shoes, fabric in garments.
- **Key Characteristics:**
  - ✓ Easily identifiable with the final product
  - ✓ Form a significant part of total cost
  - ✓ Directly consumed in the production process

Indirect Materials

- Indirect materials are those which cannot be directly traced to a specific product or cost unit.
- *Examples:* Lubricants, cleaning supplies, cotton waste.
- These are treated as part of factory overheads.

Importance of Material Cost in Cost Accounting

- Material cost holds significant importance because it usually forms the largest component of total production cost.
- Effective control and management of materials help in reducing overall cost, minimizing wastage, ensuring uninterrupted production, and improving profitability.
- It also aids in accurate cost determination, budgeting, and decision-making within the organization.

Factor	Description
(a) Quality of Final Product	Quality output requires quality input (raw material).
(b) Price of Final Product	Material is a major component of cost, influencing selling price.
(c) Production Continuity	Continuous supply is essential; stock-outs disrupt operations.
(d) Stock Holding Cost	Includes opportunity cost, handling loss, obsolescence.
(e) Wastage & Losses	Must be monitored and classified as normal or abnormal.
(f) Decision-making Support	Up-to-date material data supports operational planning and costing.

Material Control

- Material Control refers to the systematic regulation of the purchase, storage, and usage of materials to ensure efficient management of resources.
- Its primary objectives are to maintain optimum inventory levels, minimize losses due to wastage or pilferage, and ensure smooth and uninterrupted production.
- It forms an integral part of overall cost control, with a specific focus on controlling material-related costs.

Objectives of Material Control System

Objective	Description
(i) Avoid Production Disruption	Ensure continuous availability of all material items, including low-cost items.
(ii) Optimise Material Cost	Minimise purchase cost, ordering cost, and holding cost.
(iii) Control Wastage & Losses	Avoid losses from spoilage, theft, obsolescence. Focus on efficient usage.
(iv) Ensure Accurate Information	Maintain real-time records for effective monitoring, loss detection, and planning.
(v) Timely Order Fulfilment	Good material planning enables on-time delivery and enhances customer satisfaction and goodwill.

Elements of an Effective Material Control System

- An efficient material control system ensures proper planning, procurement, storage, and usage of materials. The key elements include:
  - ✓ **Purchase Control:** Ensures procurement from the right source, at the right price, time, and quantity.
  - ✓ **Stores Control:** Involves proper storage and record-keeping through tools like bin cards and stock ledgers.
  - ✓ **Inventory Control:** Maintains optimum stock levels using techniques such as EOQ, reorder levels, and perpetual inventory system.
  - ✓ **Issue Control:** Regulates material issue through methods like FIFO/LIFO and proper documentation such as requisition notes.
  - ✓ **Loss Control:** Focuses on minimizing losses arising from scrap, spoilage, and defective materials.

Materials Procurement Procedure

- The materials procurement procedure is a systematic process of acquiring materials required for production.
- It involves coordination among departments such as Planning, Production, Stores, Purchase, and Accounts, supported by standardized documentation for effective control and communication.
- A sound procurement system ensures: Right quantity, Right quality, Right time, Right source and Right price.

Key Document in Material Procurement Process

1. **Bill of Materials (BOM)**
   - ✓ Also known as the Materials Specification List or Materials List, the Bill of Materials is a detailed document that specifies the type and quantity of materials required for manufacturing a product.
   - ✓ It serves as a basis for planning, purchasing, and controlling material usage.
   - ✓ It is prepared by the engineering / planning department.

2. **Material Requisition Note (MRN)**
   - ✓ It is also known as Material Requisition Slip
   - ✓ It is used to authorize issues of materials from stores.
   - ✓ It is generally department by production department. 0

3. **Purchase Requisition (PR)**
   - ✓ It is a formal request to the Purchase department to acquire material.
   - ✓ It is prepared by the Stores department for regular items production and the technical department for special items.

4. **Goods Received Note (GRN)**
   - ✓ A Goods Received Note (GRN) is a formal document prepared by the Receiving Department to acknowledge that materials have been received in proper condition and in accordance with the purchase order.
   - ✓ It is also known by the name Material Inward Note and Receiving Report.
5. **Material Returned Note (MRN)**
   - ✓ A Material Returned Note (MRN) is issued when materials received are found to be damaged, defective, or not in conformity with the purchase order.
   - ✓ It is used to return such materials to the supplier and is also known as a Material Outward Return Note.

Valuation of Material Receipts

- ➢ Valuation of material receipts refers to the process of determining the actual cost of materials purchased.
- ➢ It includes not only the purchase price but also all expenses incurred to bring the materials to their present location and usable condition.
- ➢ It includes:
  - ✓ Purchase price (net of trade discounts and rebates)
  - ✓ Expenses directly related to procurement and transportation
- ➢ It excludes:
  - ✓ Abnormal or avoidable costs
  - ✓ Financial items such as cash discounts
  - ✓ Non-creditable indirect taxes

Components of Material Valuation (as per ICAI Guidelines)

- ➢ The cost of materials generally comprises:
  - ✓ Purchase price (after deducting admissible discounts)
  - ✓ Freight and transportation charges
  - ✓ Import duties and taxes (non-refundable)
  - ✓ Insurance charges during transit
  - ✓ Cost of containers, if applicable
  - ✓ Brokerage and commission related to purchase
  - ✓ Any other directly attributable expenses necessary to bring materials to their usable condition

Treatment of Items Associated With Material Purchase

S1. No.	Item	Treatment in Cost Valuation
Discounts and Subsidies		
(i)	Trade Discount	Deducted from purchase price (even if not shown in invoice)
(ii)	Quantity Discount	Deducted from purchase price (if not separately shown)
(iii)	Cash Discount	Not deducted - considered as finance income, ignored in costing
(iv)	Subsidy / Grant / Incentives	Deducted from cost of purchase if received from Govt. or others
Duties and Taxes		
(v)	Road Tax / Toll Tax	Included in cost (if borne by buyer)
(vi)	GST	Excluded if input credit is available; included only if credit is not available
(vii)	Customs Duty	Included (as it's noncreditable & compulsory for imports)

Penalties and Charges		
(viii)	Demurrage	Excluded - treated as abnormal loss, not part of material cost
(ix)	Detention Charges / Fines	Excluded - abnormal in nature
(x)	Penalty	Excluded - always abnormal cost
Other Expenditures		
(xi)	Insurance during transit	Included - protects goods en route
(xii)	Commission / Brokerage	Included - directly related to purchase
(xiii)	Freight Inward	Included - necessary to bring goods to the location
(xiv)	Cost of Containers	
➢ Non-returnable: Included		
➢ Returnable (full refund): Excluded		
➢ Returnable (partial refund): ➢ Only shortfall added to cost		
(xv)	Shortage in Material	
➢ **Normal Loss:** Absorbed by good units (e.g., evaporation, spillage)		
➢ **Abnormal Loss:** Charged to **Costing P&L A/c,** not absorbed		

Treatment of GST (Goods and Services Tax) in Material Cost

- **When Input Tax Credit (ITC) is Available:** If the business is eligible to claim input tax credit (e.g., registered under GST), the GST paid on purchases is recoverable. Hence, it is **excluded** from the cost of materials.
- **When Input Tax Credit is Not Available:** If input tax credit cannot be claimed (e.g., exempt supplies or ineligible businesses), the GST paid becomes a part of the cost. Hence, it is **included** in the material cost.

Normal vs Abnormal Shortage

Normal	Unavoidable causes (bulk handling, evaporation)	Cost is borne by good units
Abnormal	Avoidable causes (theft, negligence, mishandling)	Loss charged to Costing Profit & Loss A/c

Types of Store Records

1. **Bin Cards**
   - ✓ **Maintained by:** Store Keeper
   - ✓ **Nature:** Quantitative only
   - ✓ **Definition:** A record card attached to or placed near the storage bin/space, documenting receipts, issues, and balance of materials.
2. **Stock Control Cards**
   - ✓ **Maintained by:** Stores Department (Clerical Staff)
   - ✓ **Nature:** Quantitative
   - ✓ **Definition:** A record that tracks receipts, issues, and stock on hand, maintained in a central register, typically arranged alphabetically or by item code.

3. **Stores Ledger**
   - ✓ **Maintained by:** Cost/Accounts Department
   - ✓ **Nature:** Quantitative + Value
   - ✓ **Definition:** A subsidiary ledger that records both the quantity and cost of materials received, issued, and in stock.

Inventory Control - By Setting Quantitative Levels

- Inventory control involves managing stock levels of materials to:
  - ✓ Prevent stock-outs (shortages)
  - ✓ Minimize carrying costs
  - ✓ Ensure smooth production flow
  - ✓ Achieve cost efficiency in material handling

Stock Levels in Inventory Control

Stock levels help inform key procurement decisions:

Level	Purpose
Re-order Level (ROL)	Determines when to reorder
Re-order Quantity (EOQ)	Specifies how much to order
Maximum Level	Stock ceiling
Minimum Level	Safety limit
Average Stock Level	Typical inventory position
Danger Level	Emergency warning
Buffer Stock	For handling unexpected demand

Re-order Stock Level (ROL)

- The Re-order Level is the inventory level at which a new purchase order should be placed, ensuring replenishment arrives before the stock reaches the minimum level, even under worst-case consumption and delay scenarios.

Formula 1:

- ROL = Maximum Consumption × Maximum Re-order Period
  - ✓ **Maximum Consumption:** Highest usage rate during production
  - ✓ **Maximum Re-order Period:** Longest lead time for replenishment

Alternative Formula 2:

- ROL = Minimum Stock Level + (Average Consumption × Average Re-order Period)
  - ✓ **Minimum Stock Level:** Safety stock maintained at all times
  - ✓ **Average Consumption:** Normal usage per period
  - ✓ **Average Re-order Period:** Normal lead time (Re-order Period = Lead Time)

Re-order Quantity (EOQ)

- Re-order quantity is the quantity ordered each time stock is replenished.
- The optimal order quantity is calculated using the Economic Order Quantity (EOQ) formula, which minimizes the sum of total ordering cost and carrying cost.

EOQ Formula:

- $EOQ = \sqrt{(2 \times A \times O) / C}$
- **Where:**
  - ✓ **A:** Annual Requirement (in units)
  - ✓ **O:** Ordering Cost per order (₹)
  - ✓ **C:** Carrying Cost per unit per annum (₹)

Cost Components

- **Ordering Cost (O):** Includes costs related to placing the order, admin, inspection, transportation, etc.
- **Carrying Cost (C):** Includes costs of capital, storage, insurance, pilferage, obsolescence.

EOQ Assumptions

- Ordering cost per order and carrying cost per unit per annum are fixed and known.
- Anticipated material usage (annual demand) is constant.
- Cost per unit of material is constant.
- The entire order quantity is received instantly (i.e., zero lead time).

Minimum Stock Level

- The minimum stock level is the lowest inventory level that must be maintained at all times to avoid production stoppages due to stock-outs.
- **Formula:** Minimum Stock Level = Re-order Level - (Average Consumption × Average Re-order Period)

Maximum Stock Level

- The maximum stock level represents the upper limit beyond which inventory should not exceed. Maintaining excessive stock leads to:
  - ✓ Blocking of working capital
  - ✓ Higher storage costs
  - ✓ Risk of obsolescence
- **Formula:** Maximum Stock Level = Re-order Level + Re-order Quantity - (Minimum Consumption × Minimum Re-order Period)

Average Inventory Level (Normal Stock Level)

- This represents the typical inventory level maintained during normal consumption and lead times.
- **Formula 1:** Average Stock Level = Minimum Stock Level + (1/2 × Re-order Quantity)
- **Alternative Formula 2:** Average Stock Level = (Maximum Stock Level + Minimum Stock Level) / 2

Danger Level

- This is the inventory level below which normal stock issues are halted, and only emergency issues are allowed. Immediate procurement action is required.
- **Formula:** Danger Level = Average Consumption × Lead Time for Emergency Purchase
- *Note:* Minimum consumption may sometimes be used instead of average consumption.

Buffer Stock (Safety Stock)

- Buffer stock is the extra inventory kept to accommodate unexpected demand or delays in supply, acting as a safety reserve.
  - ✓ No specific formula.
  - ✓ It is determined based on managerial judgment, demand variability, and supplier reliability.

Inventory Stock-Out

- A stock-out occurs when the required item is unavailable in stores at the time of need.

Impacts of Stock-Out

- Loss of contribution margin (overheads + profit)
- Production delays
- Customer dissatisfaction
- Long-term damage to reputation and goodwill

Decision Insight

- When deciding inventory levels, a balance must be struck between:
  - ✓ **Stock-out cost** (loss due to unavailability)
  - ✓ **Carrying cost** (cost of holding inventory)
- The goal is to minimize the total inventory cost.

Just In Time (JIT) Inventory Management

- JIT is an inventory system that aims to maintain zero inventory. Materials are purchased only when they are needed in production.
- **Key Principles of JIT:**
  - ✓ Produce goods only when required.
  - ✓ Deliver products only when the customer needs them.
- It is **also known as**
  - ✓ Demand Pull System or
  - ✓ Pull-Through Production Process
- **JIT Process Flow:**
  - ✓ Customers place a demand.
  - ✓ Production begins to meet the demand.
  - ✓ Material requirements are identified.
  - ✓ The purchase department places the order.
  - ✓ The supplier sends the materials.
  - ✓ Production continues.

Inventory Control by Relative Classification

1. ABC Analysis

Classifies inventory based on the value and frequency of items.

Category	% of Items	% of Inventory Value	Control Required
A Items	~10%	~70%	Very high: frequent review, budget planning, fixed stock levels
B Items	~20%	~20%	Moderate: periodic review, selective ordering
C Items	~70%	~10%	Low: occasional ordering, focus on reducing ordering cost

- ✓ **A Items**: High-value, low-quantity, critical.
- ✓ **B Items**: Moderate value and importance.
- ✓ **C Items**: Low-value, bulk items.

2. Other Inventory Classification Methods:

- ✓ **FSN Analysis (Fast-Moving, Slow-Moving, Non-Moving)**
  Based on turnover and frequency of usage.
  - **Fast-Moving:** Frequently used, stored near issue points, reviewed regularly for timely reordering.
  - **Slow-Moving:** Used occasionally, stored further away, reviewed periodically for obsolescence.
  - **Non-Moving:** Rarely used, held for disposal or write-off, may require provision for loss.
- ✓ **VED Analysis (Vital, Essential, Desirable)**
  Based on the criticality of items to the production or service function.
  - **Vital:** Non-availability leads to immediate production stoppage, strict control required.
  - **Essential:** Absence causes inefficiency or quality issues, moderate control required.
  - **Desirable:** Unavailability doesn't affect production, low priority.

- ✓ **Examples in Healthcare:**
  - **Vital:** Life-saving drugs
  - **Essential:** General-use essential chemicals
  - **Desirable:** Optional or substitute drugs
- ✓ **HML Analysis (High Cost, Medium Cost, Low Cost)**
  Based on the unit price of items.
  - **High-Cost Items:** Require strict monitoring and control.
  - **Medium-Cost Items:** Moderate control and regular reporting.
  - **Low-Cost Items:** Lower priority for control, can be purchased and stored in bulk.

Physical Control of Inventory

1. **Two Bin System:** This is a visual and physical inventory control method where each bin is divided into two sections:
   - ✓ **Smaller Section:** Contains a quantity equal to the minimum stock level or re-order level.
   - ✓ **Larger Section:** Contains the remaining stock.

Procedure

- Materials are issued from the larger section first.
- When stock enters the smaller section, it signals the need to place a fresh purchase order.
- This method complements Bin Cards and Stores Ledger Cards.

2. **Establishment of a System of Budgets:** Inventory budgets are prepared to forecast material needs in advance, based on production schedules and plans.

Purpose

- Helps control excessive inventory investments.
- Ensures material availability when needed.

3. **Perpetual Inventory Records and Continuous Stock Verification:** Perpetual inventory is a system that maintains real-time inventory records, continuously updated by the stores department. It involves **bin cards and stores ledger**

Key Success Factors

- Accurate recording of quantities and values in the Stores Ledger.
- Maintenance of Stock Control Cards (Bin Cards).
- Regular reconciliation between bin cards and ledger.
- Daily physical checking of selected items on a rotating basis.
- Timely identification and resolution of discrepancies.
- Corrective actions and preventive measures to stop future discrepancies.

Valuation of Material Issues

- When materials are issued, they should ideally be priced based on their stock value.
- However, since purchases are made at varying prices, times, and conditions, a consistent method is required to value the issues.

Cost Price Methods

1. **Specific Price Method**
   - ✓ Materials are charged to a specific job or work order at the exact price at which they were purchased for that job.
   - ✓ **Applicability:**
     - Used for job-specific purchases.
     - Requires separate storage and tracking for each lot.

- ✓ **Advantages:**
  - Accurate cost allocation for specific jobs.
  - Most suitable for customized or non-standard production.
- ✓ **Disadvantages:**
  - Difficult to manage when issues and purchases are frequent.
  - Requires detailed tracking and separate storage for each lot.

2. **First-In, First-Out (FIFO) Method**
   - ✓ Materials are issued in the order they are received, with the oldest stock being issued first.
   - ✓ **Impact Based on Market Conditions:**
     - **Falling Prices:** Production costs increase, stock value decreases - considered favorable.
     - **Rising Prices:** Production costs decrease, closing stock value increases - may result in overstated profits.
   - ✓ **Advantages:**
     - Simple to apply.
     - Issues priced at actual purchase costs.
     - Closing stock reflects current market value.
     - Ideal in periods of falling prices.
   - ✓ **Disadvantages:**
     - Can lead to clerical errors if prices change frequently.
     - Job costs may vary over time for the same job.
     - In rising prices, profits may appear inflated, making future purchases harder to finance.
3. **Last-In, First-Out (LIFO) Method**
   - ✓ Under this method, the most recently purchased (last) materials are issued first. The older stock remains in inventory until the newer stock is used up.
   - ✓ This method reflects current or near-current market rates for material issues, while the closing stock consists of older priced items.
   - ✓ It is particularly useful in inflationary conditions to match current costs with current revenues.
4. **Base Stock Method**
   - ✓ A minimum quantity of inventory, called base stock, is always maintained as a reserve for emergencies.
   - ✓ The base stock is valued at the cost of the first lot purchased and is unaffected by subsequent market price fluctuations.
   - ✓ The base stock remains constant and is not issued under normal circumstances.
   - ✓ Materials beyond the base stock are valued using other methods, like FIFO or LIFO.
   - ✓ **Key Points:**
     - Base stock is valued at the original (first lot) price.
     - Remaining inventory is valued using another chosen method (e.g., FIFO or LIFO).

Average Price Methods

1. **Simple Average Price Method**
   - ✓ Materials are priced at the average of all purchase prices, without considering the quantity purchased in each lot.
   - ✓ **Calculation:** Add the prices of all lots and divide by the number of lots.
   - ✓ **Key Characteristics:**
     - Quantity is ignored; each lot is equally weighted.
     - Suitable for materials bought in standard quantities with stable prices.