

GOVERNMENT ARTS COLLEGE
FOR WOMEN, SALEM-8
PG & RESEARCH DEPARTMENT
OF COMMERCE

III-B.COM COST ACCOUNTING (V- SEMESTER)

UNIT – I - COST SHEET, TENDERS AND
QUOTATIONS

UNIT – II – MATERIALS

UNIT – III – LABOUR

UNIT – IV – OVERHEADS

UNIT-V – PROCESS COSTING – JOINT PRODUCT
AND BY PRODUCT

Material Prepared by,

Dr.B.SUBATRA

ASST.PROFESSOR, GACW-SALEM-8

Dr.J.SELVAKUMARI

GUEST LECTURER GACW, SALEM-8

SEMESTER – V
PAPER – XXIX
COST ACCOUNTING

UNIT – I

Cost Accounting – Meaning, Scope, objectives – advantages and limitations – Difference between cost accounting and financial accounting – Elements of cost – Preparation of cost sheet.

UNIT – II

Material Management – Purchase procedure – Various stock levels – Economic order quantity – Bin card and stores ledger – Pricing of issues – FIFO, LIFO, Simple Average and weighted average methods.

UNIT – III

Labour cost – Importance – Various methods of labour cost control – methods Of wage payment – various incentive schemes – labour turnover.

UNIT – IV

Overheads – Classification – apportionment of overheads – redistribution of Overheads – absorption of overheads – calculation of machine hour rate.

UNIT – V

Process costing – normal loss – abnormal loss and abnormal gain – Joint Product and by products.

Note: Distribution of marks – Problem 80% and Theory 20%

TEXT BOOKS:

Cost Accounting – Jain & Narang, Kalyani Publishers Ludhiana.

Cost Accounting – Reddy & Hari Prasad Reddy, Margham Publications, Chennai-17.

REFERENCE BOOKS:

Cost Accounting, - Pillai & Bagavathi, Sultan Chand & Sons, New Delhi.

Cost Accounting – Murthy & Gurusamy, Tata McGraw Hill Ltd

Cost Accounting – Bhattacharya, PHI Learning Pvt. Ltd, New Delhi.

COST ACCOUNTING

Unit - 1 : Introduction to Cost Accounting

Objectives

After completing this unit, you will be able to:

- To ascertain and control cost.
- Determining selling price.
- Facilitating preparation of financial and other statements.
- To reduce cost.
- To provide base for operating policies

Introduction

In the initial stages cost accounting was merely considered to be a technique for ascertainment of cost of products or services on the basis of historical data. In course of time due to competitive nature of the market, it was realized that ascertainment of cost is not as important as controlling costs. Hence, cost accounting started to be considered more as a technique for cost control as compared to cost ascertainment. Due to technological development in all fields, now cost reduction has also come within the ambit of cost accounting. Cost accounting is thus concerned with recording, classifying and summarizing costs for determination of cost of products or services, planning, controlling and reducing such costs and furnishing of information to management for decision making.

Meaning and Definitions of Cost Accounting

“Cost accounting is a quantitative method that accumulates, classifies, summarizes and interprets information for three major purposes: (i) Operational planning and control ;(ii) Special decision; and (iii) Product decision.” - **Charles T. Horngren**

“Cost accounting is the process of accounting for costs from the point at which the expenditure is incurred or committed to the establishment of its ultimate relationship with cost units. In its widest sense, it embraces the preparation of statistical data, the application of cost control methods and the ascertainment of the profitability of the activities carried out or planned is defined as the application of accounting and costing principles, methods and techniques in the ascertainment of costs and the analysis of saving and/or excess as compared with previous experience or with standards.” – **Institute of Cost and Management Accountants of London**

“Cost accounting is defined as the application of costing and cost accounting principles, methods and techniques to the science, art and practice of cost control and the ascertainment of profitability. It includes the presentation of information derived therefore for the purposes of managerial decision making. –**Wheldon**

Cost accounting thus provides information to the management for decision of all sorts. It serves multiple purposes on account of which it is generally indistinguishable from management accounting or so-called internal accounting. Wilmot has summarized the nature of cost accounting as “the analysing, recording, standardizing, forecasting, comparing, reporting and recommending” and the role of a cost account as that of “a historian, news agent and rophet”

Emergence of Cost Accounting

The Institute of Cost and Works Accountants of India (ICWAI) was established as a company limited by guarantee for the development of cost accounting in India. The main purpose of this to develop the cost 3 accounting as a profession. The maintenance of cost accounting records became mandatory since 1965, after the addition of Sec.209 (1) (d) in the companies act 1956.

The Institute of Cost and Works Accountants of India has recently issued cost accounting standard (CAS) 1 to 4 also to understand the subject in a better manner as follows :-

CAS 1 - Classification of cost

CAS 2 - Capacity determination

CAS 3 - Allocation and apportionment of overhead

CAS 4 - Cost of production for captive consumption

Nature

Cost accounting is a practice of cost control which is as follows:-

- a) Cost accounting is a branch of systematic knowledge that is a discipline by itself. It consist its own principles, concepts and conventions which may vary from industry to industry.
- b) Costaccounting isascienceandartsboth.Itissciencebecauseitisabodyofsystematic knowledge relating to a wide variety of subject and an art because without the efficiency and experience of cost auditor it is not possible to use costing techniques efficiently.

Advantages

A good system of costing is the technique of controlling the expenditure and helps bringing economy in production, so it serves the needs of a large section of people in the following ways.

- a) **Benefits to the Management:** The information revealed by cost accounting aims at mainly assisting the management in decision making and optimizing profits. Besides this there are certain advantages of cost accounting to the management i.e. it helps in price fixation, in revealing profitable and unprofitable activities, idle capacity, in controlling cost and also helps in inventory control.
- b) **Benefits to the Employees:** Cost accounting introduces wage scheme, bonus to the efficient & sincere employees which in turn increasing productivity, profitability and lowering cost.
- c) **Benefits to Creditors:** The better management of finance through cost accounting leads to timely debt servicing by company in the form of repayment of loan and payment of interest. To stay and grow in competition and for judging soundness of present and perspective borrower and cost reports give better picture of efficiency, profit, prospectus and capacity.
- d) **Benefits to the Government:** Cost accounting enables the Govt. to prepare plans for economic development of the country, to make policies regarding taxation, excise duty, export, price, ceiling, granting subsidy etc.
- e) **Benefits to Consumers/Public:** Cost accounting helps consumers in getting goods of better quality at reasonable price.

Importance

Cost accounting gives information and reports to the management in the following ways:-

- a) **Control of Material Cost :** Cost of material is a major portion of the total cost of a product. It can be controlled by regular supply of material and spares for production, maintaining optimum level of funds in stocks of materials and stores.
- b) **Control of Labour Cost:** If workers complete their work within the specified time cost of labour can be controlled.
- c) **Control of Overheads:** By keeping a strict check over various overheads such as factory, administrative and selling & distribution, this can be controlled.
- d) **Measuring Efficiency:** Cost accounting provides information regarding standards and actual performance of the concern activity for measuring efficiency.

- e) **Budgeting:** The preparation of the budget is the function of costing department and budgeting is done to ensure that the practicable course of action can be chalked out and the actual performance corresponds with the estimated or budgeted performance.
- f) **Price Determination:** On behalf of cost accounting information, management is enabled to fix remunerative selling price for various items of products and services in different circumstances.
- g) **Expansion:** The management may be able to formulate its approach to expansion on the basis of estimates of production of various levels.

Essential of a Good Cost Accounting System

A good cost accounting should possess the following essential features:

- I. It should be simple, practical and capable of meeting the business concern requirements.
- II. Accurate data should be used by cost accounting system; otherwise it may distort the output of the system.
- III. To develop a good system of cost accounting necessary co-operation and participation of executives from various departments of the business is needed.
- IV. The cost of installing and operating the system should be result oriented.
- V. It should not sacrifice the utility by introducing unnecessary details.
- VI. For the introduction of the system a carefully phased programme should be prepared by using network analysis.
- VII. Management should have faith on costing system and works as a helping hand for its development and success.

Cost Accounting vs. Financial Accounting

Basis	Cost Accounting	Financial Accounting
1) Purpose	Its main purpose to guide the management for proper planning, controlling and decision-making etc	It reveals the final results during the particular period for every concern.
2) Coverage	It deals with expenses related to or identified with products.	This deals with whole organization connected with manufacturing and also other activities or areas.
3) Basis	This deals with estimated and data both.	This deals only with the actual financial transactions and figures and not on estimation.
4) Scope	It is related to a particular product or service.	It includes all commercial transaction of organization for a particular period of

		time.
5) Parties	Involved This deals with internal translations between departments within the organisation.	This concern with external parties as well as external transactions.
7) Valuation of Stock	Stock is valued at cost	Market value or cost whichever is lower is considered as the value of stock
8) Nature	It does not consider only historical records but also predetermined cost.	It is related to the historical records.
9) Classification	It is clearly classifies the cost into fixed and variable cost.	In this cost is not classified into fixed and variable cost.
10) Legal Requirements	Generally these accounts are kept to meet management to requirements. Now become obligatory.	It is required by companies act, Income Tax Act, etc. it has keep these accounts.

Limitations of Cost Accounting

These are the following reasons for which cost accounting is criticized by the different sections of society:

- I. **Not Reliable:** Cost Accounting is based on estimates and so it is not reliable.
- II. **Failure of the System:** Cost Accounting system has failed to produce desired results in many concerns. Thus it could be said that this system is at fault.
- III. **Unnecessary:** it is not necessary in Business concern as it involves duplication of work.
- IV. **Inapplicability:** Modern methods of cost accounting are not applicable to every type of industries.
- V. **Expenses:** It is expensive because double set of account books has to be maintained and its introduction involves considerable amount of expenditure.

UNIT – 1

COST SHEET, TENDERS AND QUOTATIONS,

SPECIMEN OF COST SHEET

Cost sheet of for the month of January 2011

PARTICULAR	TOTAL COST		COST PER UNIT
	Rs:	Rs:	
Direct material	xxx		
Direct labour	xxx		
Direct expenses	xxx		
PRIME COST:		Xxx	Xxx
<i>ADD: works overhead:</i>	xxx		
Indirect material	xxx		
Indirect wages	xxx		
Factory rent and rates	xxx		
Factory lighting and heating	xxx		
Power and fuel	xxx		
Repairs and maintenance	xxx		
Drawing office expenses	xxx		
Depreciation of plant and machinery	xxx		
Factory and stationery	xxx		
Insurance of factory	xxx		
Factory / works manager salary	xxx		
Water consumption in factory	xxx		
Total works overhead	-----	Xxx	Xxx
WORKS COST/ FACTORY COST/ MANUFACTURING COST:	xxx		
<i>ADD: office or administration overheads:</i>			
Office rent and rates	Xxx		
Officelighting	Xxx		
Office furniture depreciation and repairs	Xxx		
Officesalaries	Xxx		
Legal charges	Xxx		
Bank commission	Xxx		
Telephone and postages	Xxx		
Office cleaning	Xxx		
Total Administration O.H.	-----	Xxx	Xxx
COST OF PRODUCTION	Xxx	Xxx	Xxx
<i>ADD: Selling and distribution overheads:</i>	Xxx		
Salesmen's salaries	Xxx		
Salesmen's commission	Xxx		

Showroom rent	Xxx		
Advertisement	Xxx		
Sales office rent	Xxx		
Travelling expenses	Xxx		
Warehouse rent and rates	Xxx		
Warehouse staff salaries	Xxx		
Repairs and depreciation of delivery vans	Xxx		
Carriage outward	Xxx		
Total selling & distribution O.H.		Xxx	xxx
COST OF SALES		<hr/>	<hr/>
Profit / loss		Xxx	Xxx
SALES		Xxx	xxx
		<hr/>	<hr/>
		Xxx	Xxx

PRIME COST:

This is also called direct cost. It is the aggregate of direct materials, direct labour and direct expenses, which are easily identifiable with the product.

WORK COST:

It consists of the total of all item expenses incurred in the manufacturing of a product, prime cost plus factory expenses. It is also known as factory cost or manufacturing coat.

COST OF PRODUCTION:

This includes works cost and administration expenses. Production is not deemed to be complete without the managerial and facilitating costs.

COST OF SALES:

It represents cost of production plus selling and distribution cost incurred. Thus, the cost of sales is the aggregate of all the direct and indirect costs connected to the goods sold.

When profit is added to the cost of sales, sales can be found. Usually, selling prices are fixed on the basis of the cost of sales. It ensures that all the costs are recovered and any desired profit is also obtained.

TREATMENT OF STOCKS OR INVENTORIES

STOCKS OF RAW MATERIALS

When opening stock of raw materials and closing stock of raw materials are given, raw material can be calculated as follows:

PARITCULAR	AMOUNT	AMOUNT
Opening stock of raw materials		XXX
ADD: Purchase of raw materials		XXX
ADD: Carriage inwards		XXX
ADD: Other direct materials used		XXX
ADD: Taxes and duties on the material purchased		XXX
		<hr/>
		XXX
LESS: Closing stock of raw materials	XXX	
LESS: Sales of unsuitable raw materials	XXX	
LESS: Sales of scrap of raw materials	XXX	
		<hr/>
		XXX
		<hr/>
Cost of raw materials consumed		XXX

STOCKS OF WORK-IN- PROGRESS

‘work-in-progress’ means units of production on which work has been done but are not yet completely finished. Work-in-progress is valued on prime cost or works cost basis but latter is preferred. The opening and closing work-in-progress are adjusted as given below:

PARTICULAR	AMOUNT
Prime cost	XXX
ADD: Factory overhead	XXX
	<hr/>
	XXX
ADD: Opening work-in-progress	XXX
	<hr/>
	XXX
LESS: Closing work-in-progress	XXX
	<hr/>
Work cost	XXX

STOCKS OF FINISHED GOODS:

If opening and closing socks of finished goods are given they are to be adjusted to find out cost of production of goods sold.

PARTICULAR	AMOUNT
Cost of production	XXX
ADD: Opening stock of finished goods	XXX
	<hr/>
	XXX
LESS: Closing stock of finished goods	XXX
	<hr/>
Closing of production of goods sold	XXX

SPECIMEN OF SHEET, WITH INVENTORIES

Statements of cost and profit (With Stocks)

PARTICULAR	AMOUNT	AMOUNT
Opening stock of direct materials	XXX	
ADD: Purchase of direct materials	XXX	
Expenses, taxes and duties on materials purchased	<u>XXX</u>	
LESS: Closing stock of direct materials	XXX	
Direct material scraps sold	<u>XXX</u>	
	XXX	
Cost of direct material consumed	_____	XXX
Direct wages		XXX
Direct or chargeable expenses		XXX
PRIME COST		XXX
ADD: Factory overhead		
ADD: Opening work-in-progress	XXX	
	XXX	
LESS: Closing work-in-progress	XXX	XXX
	<u>XXX</u>	_____
WORKS COST (OR) FACTORY COST		XXX
ADD: Administration overhead		XXX
COST OF PRODUCTION		_____
ADD: Opening stock of finished goods		XXX
		<u>XXX</u>
LESS: Closing stock of finished goods		_____
		XXX
Cost of production of goods sold		XXX
ADD: Selling and distribution overheads		
		XXX
COST OF GOODS SOLD (OR) COST OF SALES		XXX
ADD: Profit / Loss		_____
		XXX
SALES		XXX

		XXX

EXERCISES

(A). SIMPLE COST SHEET

1. From the following information prepare a cost sheet for the month of January.

Stock of raw materials on 1 st January	25,000
Stock of raw materials on 31 st January	26,200
Purchase of raw materials	21,900
Carriage on purchases	1,100
Sale of finished goods	72,300
Direct wages	17,200
Non- productive wages	800
Direct expenses	1,200
Factory overheads	8,300
Administrative overheads	3,200
Selling overheads	4,200

Solution:

PARTICULARS	AMOUNT	AMOUNT
Opening stock of raw materials	25,000	
Add: Purchase of raw materials	21,900	
Add: Carriage on purchases	1,100	
	<u>26,200</u>	
Less: Closing stock of raw materials	8,000	
	<u>18,200</u>	
Direct wages	17,200	
Direct expenses	1,200	
PRIME COST	<u>18,400</u>	40,200
Factory overhead	8,300	
Non – productive overhead	800	
WORK COST	<u>19,100</u>	49,300
Administrative overheads	3,200	
PRODUCTION COST	<u>22,300</u>	52,500
Selling overheads	4,200	
COST OF SALES	<u>26,500</u>	56,700
Profit (Balancing figure)	46,000	
SALE	<u>72,300</u>	<u>72,300</u>

2. A

2. Factory product 100 units of a company. The cost of production is:

Direct materials	10,000
Direct wages	5,000
Direct expenses	1,000
Factory overheads	6,500
Administrative overheads	3,480

If profit of 25% on sales is to be realised what would be the selling price of each unit of the Commodity?

Prepare the cost sheet.

Solution:

PARTICULARS	AMOUNT	AMOUNT
Direct materials	10,000	
Direct wages	5,000	
Direct expenses	<u>1,000</u>	
PRIME COST	16,000	16,000
Factory overheads	<u>6,500</u>	
WORKCOST	22,500	22,500
Administrative overheads	<u>3,480</u>	
PRODUCTION COST	25,980	25,980
Profit: [$25980 \times 25 / 75$]	<u>8,660</u>	
SALES	<u>34,640</u>	<u>34,640</u>

3. Prepare a cost sheet showing prime cost, work cost, cost of production and cost of sales from the following particulars:

Opening stock of raw materials	4,00,000
Closing stock of raw materials	2,00,000
Purchase of raw materials	2,00,000
Wages	1,00,000
Factory overhead	20,000
Administrative overhead	32,000
Selling overhead	26,000

You are also required to calculate (a) the percentage of factory overhead to wages; (b) the percentage of administrative overhead to works cost and (c) percentage of selling overhead to works cost.

Solution:

PARTICULARS	AMOUNT	AMOUNT
Opening stock of raw material	4,00,000	
Add: Purchase of raw material	<u>2,00,000</u>	
	6,00,000	
Less: Closing stock of raw material	<u>2,00,000</u>	
	4,00,000	
Wages	<u>1,00,000</u>	
PRIME COST	5,00,000	5,00,000
Factory overhead	<u>20,000</u>	
WORKCOST	5,20,000	5,20,000
Administrative overhead	<u>32,000</u>	
PRODUCTION COST	5,52,000	5,52,000
Selling overhead	<u>26,000</u>	
COST OF SALES	5,78,000	5,78,000

A. Factory overhead × 100

Wages

$$= \frac{20,000}{4,00,000} \times 100$$

$$= 5\%$$

$$= 5\%$$

B. Administrative overhead ×

Work cost

$$= \frac{32,000}{5,20,000} \times 100$$

$$= 6.15\%$$

$$= 6.15\%$$

C. Selling overhead ×

Work cost

$$= \frac{26,000}{5,20,000} \times 100$$

5,20,000

4. Prepare a statement of cost from the following particulars for the year 2006 showing the percentage that each individual item of cost bears to the total cost.

	Rs
Opening stock of raw material	30,000
Purchase of raw material	40,000
Closing stock of raw material	20,000
Direct wages	20,000
Factory overheads	10,000
Office and administrative overheads	8,000
Selling and distribution overheads	2,000
Sales value	1, 00,000

PARTICULARS	AMOUNT	AMOUNT
Opening stock of raw material	30,000	
Add: Purchase of raw material	<u>40,000</u>	
	70,000	
Less: Closing stock of raw material	<u>20,000</u>	
	50,000	
Direct wages	<u>20,000</u>	
PRIME COST	70,000	70,000
Factory overheads	<u>10,000</u>	
WORK COST	80,000	80,000
Office and administrative overheads	<u>8,000</u>	
PRODUCTION COST	88,000	88,000
Selling and distribution overhead	<u>2,000</u>	
COST OF SALES	90,000	90,000
Profit (Balancing figure)	<u>10,000</u>	
SALES VALUE	<u>1,00,000</u>	<u>1,00,000</u>

5. A factory produces 100 units of a commodity. The cost of production is:

	Rs
Materials	10,000
Wages	5,000
Direct expenses	1,000

Factory overhead 125% on wages: office overhead 20% on works cost. Expected profit 25% on sales.

Calculate the price to be fixed per unit.

Solution:

PARTICULARS	AMOUNT	AMOUNT
Materials	10,000	
Wages	5,000	
Direct expenses	<u>1,000</u>	
PRIME COST	16,000	16,000
Factory overhead @ 125%	6,250	
[5,000 × 125 / 100]		
WORK COST	<u>22,250</u>	22,250
Office overhead @ 20%	4,450	
[22,250 × 20 / 100]		
PRODUCTION COST	26,700	26,700
Selling cost	—	
COST OF SALES	26,700	26,700
Profit 25%	8,900	
[26,700 × 1 / 3]		
SALES VALUE	<u>35,600</u>	<u>35,600</u>

Price to be fixed per unit = sales value

$$\begin{aligned} & \text{Units} \\ & = \frac{35,600}{100} \\ & = 356 \end{aligned}$$

Price to be fixed per unit = 356

(B) COST SHEET – WITH DETAILS OF OVERHEADS

6. Calculate (1) Prime cost (2) Factory cost (3) Cost of production (4) Cost of sales and (5) Profit from the following particulars.

	Rs
Direct materials	1,00,000
Direct wages	25,000

Direct expenses	5,000
Wages of foremen	2,500
Electric power	500
Lighting:	
Factory	1,500
Office	500
Rent:	
Factory	5,000
Office	2,500
Salaries to salesmen	1,250
Advertising	1,250
Income tax	10,000
Sales	1, 89,500

Solution:

PARTICULARS	AMOUNT	AMOUNT
Direct materials	1,00,000	
Direct wage	25,000	
Direct expenses	<u>5,000</u>	
PRIME COST	1,30,000	1,30,000
Add : FACTORY OVERHEAD:		
Lighting of factory	1,500	
Rent for factory	5,000	
Wages of foremen	2,500	
Electric power	<u>500</u>	
WORK COST	1,39,500	1,39,500
Add : ADMINISTRATION OVERHEAD :		
Lighting of office	500	
Rent of office	<u>2,500</u>	
COST OF PRODUCTION	1,42,000	1,42,000
Add: SELLING OVERHEAD :		
Salaries to salesman	1,250	
Advertising	<u>1,250</u>	
COST OF SALES	1,45,000	1,45,000
Profit (Balancing figure)	<u>44,500</u>	
SALES VALUE	<u>1,89,500</u>	<u>1,89,500</u>

7. A manufacturing company submits to you the following details about the various expenses incurred by it during the year ended 31st December 1985:

	Rs.
Cost of raw materials consumed	25,000
Advertising	1,000
Depreciation on plant and machinery	1,500
Factory office salaries	6,000
Legal expenses	300
Supervisor salary	5,500
Factory rates and insurance	1,000
Carriage outwards	1,500
Direct labour	20,000
Bad debts	300
Office stationery	200
Rent of factory	2,500
Office salaries	10,000
Commission on sales	4,000
Audit fees	300
Income tax	1,500
Donation to charitable institutions	500
Purchase of new plants	10,000

Classify the above expenses under the various of cost, showing separately the total expenditure under each head. Also show separately those expenses which shall be included in calculating the cost.

Solution:

Statement of cost for the financial year ended 31st December 1985

Particulars	Rs.	Rs.
Cost of raw materials consumed	25,000	
Direct labour	20,000	
Prime cost		45,000

Add : factory overheads		
Depreciation on plant and machinery	1,500	
Factory office salaries	6,000	
Supervisor salary	5,500	
Factory rates and insurance	1,000	
Rent of factory	2,500	16,500
Work cost		61,500
Add : administration overheads		
Legal expenses	300	
Office stationery	200	
Office salaries	10,000	
Audit fees	300	10,800
Cost of production		72,300
Add : selling and distribution overheads		
Advertising	1,000	
Carriage outwards	1,500	
Bad debts	300	
Commission on sales	4,000	6,800
Cost of sales		79,100
Expenses shall not be include:		
Income tax	1,500	
Donation to charitable institutions	500	
Purchase of new plant	10,000	

8. A manufacturer presents the following details the various expenses incurred byhim.

	Rs.
Raw materials consumed	70,000
Carriage inwards	2,000
Factory rent	2,400
Bad debts	440
Printing and stationery	620
Legal expenses	350
Carriage outwards	1,540
Indirect materials	560
Power	4,600
Depreciation of furniture	160
Postage expenses	465
Repairs of plant and machinery	1,200
Salesmen's expenses	3,400

Advertising	500
Direct wages	85,000
General manager's salary	36,000
Factory manager's salary	18,000
Depreciation on plant and machinery	1,240
Audit fees	350

Classify the above expenses under the various elements of cost showing separately the total expenditure under each element.

Solution:

Statement of the cost sheet

Particulars	Rs.	Rs.
Raw materials consumed	70,000	
Carriage inwards	2,000	
Direct wages	85,000	
Prime cost		1,57,000
Add : factory overheads		
Factory rent	2,400	
Indirect materials	560	
Power	4,600	
Depreciation of plant and machinery	1,240	
Repairs of plant and machinery	1,200	
Factory manager's salary	18,000	28,000
Work cost		1,85,000
Add : administration overheads		
Printing and stationery	620	
Legal expenses	350	
Depreciation on furniture	160	
Postage expenses	465	
Audit fees	350	
General manager's salary	18,000	37,945
Cost of production		2,22,945
Add : selling and distribution overheads		
Bad debts	440	
Carriage outwards	1,540	
Salesmen's expenses	3,400	
Advertising	500	5,880
Cost of sales		2,28,825

9. Prepare a statement showing cost and profit from the following details, clearly showing (a) prime cost (b) works cost (c) cost of production (d) cost of sales and (e) profit.

Particulars	Rs	particulars	Rs
Direct wages	1,50,000	Direct materials	5,00,000
Power	2,500	Oil and water	2,500
Storekeeper's wages	5,000	Transfer to general reserve	5,000
Factory rent	25,000	Foreman's salary	12,500
Repairs: factory plant	17,500	Factory lighting	7,500
Repairs: building	2,500	Depreciation: Factory plant	2,500
		Office building	6,250
Goodwill written off	2,500	Manager's salary	25,000
Consumable stores	12,500	Office stationery	2,500
Director's fees	6250	postage	1,250
Telephone rent	625	Trevelling expenses	2,500
Salesmen's salaries	6,250	Warehouse rent	2,500
Ad	6,250	Dividend paid	10,000
Income tax	50,000		
Sales	9,47,500		

Hint: exclude goodwill written off, income tax, transfer to general reserve and dividend paid.

Assume travelling expenses for sales. Telephone and manager's salary are for office only.

Solution:

Particulars	Total cost	Cost per unit
	Rs	Rs
Direct wages	1,50,000	
Direct materials	5,00,000	
(a)prime cost		6,50,000
(+) factory over head:		
Power	2,500	
Factory rent	25,000	
Factory plant	17,500	
Oil & water	2,500	
Foremen's salary	12,500	
Factory lighting	7,500	
Depreciation on factory plant	2,500	
Storekeeper's wages		
Consumable stores	5,000	
Foreman salary	12,500	
(b)works cost		87,500
(+) office overhead:		
Office rent	12,500	
Office building	2,500	
Office lighting	2,500	
Depreciation of office building	6,250	
Office stationery	2,500	
Telephone rent	6250	
Manager's salary	25,000	
Postage	1,250	
Director's fees	6,250	
		<u>59,375</u>
(c)cost of production		7,96,875
(+) selling & distribution overhead:		
Salesman salary	6,250	
Advertisement	6,250	
Travelling expenses	2,500	
Warehouse rent	2,500	
		<u>17,500</u>
(d)cost of sale		
(e)profit (b/f)		8,14,375
Sales		9,47,500

9) Following data are extracted from the books of Pavan Kishore for the year 2007:

Particulars	Rs
Opening stock of raw materials	25,000
Closing stock of raw materials	40,000
Purchases of raw materials	85,000
Carriage inwards	5,000
Wages direct	75,000
Wages indirect	10,000
Other direct charges	15,000
Rent & rates – factory	5,000
Office	500
Indirect consumption of material	500
Depreciation, plant	1,500
Depreciation, office furniture	100
Salary, office	2,500
Salary, sales men	2,000
Other office expenses	900
Other factory expenses	5,700
Managing director's remuneration	12,000
Other selling expenses	1,000
Travelling expenses	1,100
Carriage outwards	1,000
Sales	2,50,000
Advance income tax paid	15,000
Advertisement	2,000

Managing director's remuneration is allocated as Rs 4,000 to the factory, Rs 2,000 to the office and Rs 6,000 to the selling department.

From the above information find out:

(a) prime cost (b) works cost (c) cost of production (d) cost of sales (e) net profit.

Hint: exclude advance income tax paid.

Solution:

Particular	Amount	Amount
Opening stock of raw material	25,000	
ADD: Purchase of raw material	85,000	
	1,10,000	
LESS: Closing of raw materials	40,000	
	70,000	
ADD: Direct wages	75,000	
Carriage inwards	5,000	
Other direct charges	15,000	
PRIME COST		1,65,000
ADD: Factory overhead		
Rent of factory	5,000	
Indirect wages	10,000	

Indirect consumed material	500	
Depreciation on plant	1,500	
Salary factory	500	
Manager's director remuneration	4,000	26,700
WORK COST		1,19,700
ADD: Administration overhead		
Rent on office	500	
Salary office	2,500	
Other on expenses	900	
Manager's director remuneration	2,000	6,000
COST OF PRODUCTION		1,97,700
ADD: Salary of salesman	2,000	
Manager's director remuneration	6,000	
Other selling exp	1,000	
Travelling exp	1,100	
Carriage outwards	1,000	
Advertising	2,000	13,100
COST OF SALES		2,10,800
Profit (B/F)		39,200
SALES		2,50,000

10)from the following particulars of AB Ltd., Prepare a Statement Showing :

- (a)the cost of materialsused
- (b) the works cost
- (c)the totalcost
- (d)the % of works expenses to productive wages.

Particulars	Rs
Stock of materials on 1 st jan.2003	20,000
Stock of finished goods on 1 st jan.2003	51,000
Purchase of raw material	5,80,000
Productive wages	3,90,000
Sales of finished goods	12,10,000
Stock of raw materials on 31 st dec.2003	25,000
Works overhead charge	86,000
Office and general expenses	70,000
Stock of finished goods on 31 st dec.2003	50,000

Solution:

Particulars	Rs	Rs
Opening stock of raw materials	20,000	
(+) purchase of raw materials	5,80,000	
(-) closing stock of raw materials	6,00,000	
(a) cost of material used	25,000	
(+) productive wages	5,75,000	
(+) works overhead charge	3,90,000	
(b) works cost	9,65,000	
(+) office & general expenses	86,000	
	10,51,000	
(+) opening stock of finished goods	70,000	
(-) closing stock of finished goods	11,21,000	
	51,000	
(c) total cost	11,72,000	
Works cost /productive wages*100	50,000	
(d) the %of works expenses to productivewages	11,22,000	
	22.05%	

(C) COST SHEET – WITH STOCKS OF WORKS-IN-PROGRESS AND FINISHED GOODS

11)The Following Information were obtained from the costing records of a manufacturing concern for the month of march2004:

Particulars	RS	1.3.2008 Rs	31.3.2008 Rs
Raw materials		1,00,000	1,23,500
Finished goods		71,500	42,000
Work in progress		31,000	34,500
Other expenses:			
Purchase of raw materials	88,000		
Direct wages	70,000		
Indirect factory wages	2,500		
Work expenses	37,000		
Administration expenses	13,000		
Sale of scrap	2,000		
Selling and distribution expenses	15,000		
Sales	2,84,000		

Prepare a cost sheet.

Solution:

Particulars	Total cost		Cost per unit
	Rs	Rs	
Opening of raw materials	1,00,000		
(+) purchase of raw materials	88,000		
	1,88,000		
(-) closing of raw materials	1,23,500		
(+) direct wages	64,500		
	70,000		
Prime cost		1,34,500	
(+) factory overhead:			
Indirect wages	2,500		
Work expenses	37,000		
		39,500	
Gross factory cost			
(+) Opening work- in- progress		1,74,000	
(-) closing work in progress		31,000	
(-) sale of scarp		2,05,000	
Works cost			
(-) selling overheads:			
Selling & distribution expenses		34,500	
Administration expenses		1,70,500	
		2,000	
Cost of production	15,000		
(+) opening of finished goods	13,000	1,68,500	
(-) closing of finished goods		28,000	
Cost of sales			
Profit(b/f)			
Sales		1,96,500	
		71,500	
		2,68,000	
		42,000	
		2,26,000	
		58,000	
		2,84,000	

12)(closing stock valuation)

Prepare a cost sheet.

	Rs
Labour	1,50,000
Prime cost	3,50,000
Factory expenses	98,000
Office expenses	85,000

10% of the output is in stock and the sales total up to Rs 5,10,000

Solution:

Particulars	Total cost		Cost per unit
	Rs	Rs	
prime cost	3,50,000		
(+) factory expenses	98,000		
	4,48,000		
(+) office expenses	85,000		
	5,33,000		
(-)10% output closing stock 5,33,000*10/100	53,300		
(-) sales total up to 5,10,000 profit	4,79,700		
	5,10,000		
	30,300		

13)(valuation of closing finished goods)

The following data relate to the manufacturing of a standard product during the month of 2006:

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

Prepare a cost sheet.

(a)prime cost (b) works cost (c) cost of production (d)cost of production of goods sold (e)cost of sale (f)profit.

Particulars	Per unit	Rs
raw material consumed	1	20,000
direct wages	0.6	12,000
(a) primecost		
(+) factory cost over head:	1.6	32,000
Machine hour*rate per hour (1000*2)		
(b) workcost	0.1	2,000
(+) office overhead:		
Work's cost on 20% (34,000*20%)	1.7	34,000
(c) cost ofproduction		
(-) closing stock of finished goods (unit produced-unit sold)*2.04	0.34	6,800
(d) cost of production of goodssold		
(+) selling overhead	2.04	40,800
(e)cost of sale		
(f)profit (b/f)	0.204	4,080
Sales	22.44	36,720
	0.36	7,200
	22.8	43,920
	20.1	10,080
	42.9	54,000

UNIT – II

MATERIALS

What are materials?

Materials constitutes major portion of the total cost of the product. Supplies are also used for the manufacture of product. Both materials and supplies are collectively called as stores. The finished goods are termed as stock. Commodities that are supplied to an undertaking to be utilized in the manufacturing process or to be transformed into products are called “Materials”.

The terms materials and stores are sometimes used interchangeably, but they are not identical. Stores is a wider term and covers items like sundry supplies, maintenance stores, tools, jigs, equipment besides material consumed in production. The raw materials and supplies are equivalent to cash. Hence, the management should exercise control over the materials and stores.

What is Materials Control?

Materials control refer to managerial activities relating to giving instructions or directions to ensure maintaining adequate quality and quantity of materials for uninterrupted production process with the objective of minimizing material cost per unit. Both materials control and inventory control are not one and the same.

Materials control is a wider term, which includes inventory control. Moreover, cost of production, planning of materials, purchase procedure, transportation and usage control are parts of materials control.

Objectives of Materials Control

The main objectives of materials control are presented below:

1. Ensures adequate supply of materials as and when required for smooth production process.

2. Prevents over stocking and under stocking of materials.
3. Quick identification and supply of materials to the production department.
4. Prompt issue of materials.
5. Safeguarding of materials from loss of stock by theft and fire.
6. Protection of materials from unnecessary wastage of materials.
7. Protection of stores against pilferage.
8. Minimization of storage cost.

Advantages of Material Control

The following benefits are available to the company if the company exercises proper control on the materials.

1. Materials control eliminates wastage in use of raw materials and supplies in course of purchase, storage, handling and use.
2. It ensures uninterrupted flow of right quality and quantity of materials to the production department.
3. It reduces the risk of fraud and theft.
4. It facilitates the preparation of various monthly financial statements.
5. The valuation of materials is very easy.
6. It requires minimum amount of capital to buy materials.
7. It fixes the responsibility on the part of the employers who are handling the materials at the maximum.

STEPS IN MATERIAL CONTROL

Steps in Material Control

The material control is guaranteed through laying down proper methods for Storing, Purchasing, Issuing and minimizing material losses through identifying slow moving, obsolete, dormant material and also through minimizing scrap, wastages, spoilages and defectives. These steps are discussed below.

A. Purchasing and Receiving: Purchase procedure different from business to business, but all of them follow a usual pattern or technique. There should be an appropriate Purchase Procedure to make sure that at right time right type of material is purchased, and that should be in right quantity, at right place and at right prices.

B. Storing of Materials: Through the purchase department, the material purchased is sent to stores before it is issued for production. So storing of material can be termed as an intermediate step in the material control. there is no requirement for storing the materials, If an organization practices Just in Time inventory system, if not there is a requirement that there is a well- organized stores department in the company which will take care of the storing material.

C. Issue Control: other significant aspect of material control is the issue control. Material is issued to production and greatest care is to be taken when issuing the material. The first thing is that material should not be issued to any department with no authorization. A Material Requisition Note is prepared through the department that is in requirement of the material and sent to the stores department. It is a written request created to the stores department for sending the material. The details of the material required like the quantity, quality, date through which it is needed etc, in the Material RequisitionNote.

D. Material Losses: One of the major reasons of increasing material costs is the loss of material within the production process. It is of paramount significance that there should be fixed control over the material losses failing that it will be very hard to keep the material costs incheck.

E. Inventory Turnover Ratio: There are various items in the store that are slow moving the meaning of that is they are issued to the production after a long time gap. A few items are like that they are never issued to the production because they have become obsolete or outdated and require to be disposed off. For make out these items, it is essential to calculate the inventory turnoverratio.

Inventory turnover ratio allows the management to prevent the capital being locked in such types of items. This ratio points out the inefficiency or efficiency by which inventories are maintained.

Procedure for Purchasing and Receiving of Materials | Cost Accounting

purchase procedure may differ from concern to concern, the important procedures in purchasing and receiving of materials are as follows; assuming that purchases are centralised:

1. Purchase Requisition
2. Selection of Suppliers
3. Purchase Order and Follow-Up
4. Receipt of Materials
5. Inspection and Testing of Materials
6. Return of Rejected Materials
7. Passing Invoices for Payment.

1. Purchase Requisition:

Purchases of materials are initiated through purchase requisitions. It is a formal request by the head of the department or other authorities to the purchase manager to purchase the specified materials.

Such requisitions are received from certain authorised persons as follows:

2. Selection of Suppliers:

When the purchasing department receives a duly authorised purchase requisition, a source of supply has to be selected. The

purchase department generally maintains a list of suppliers for each type of material and selects a particular supplier after inviting tenders.

The important rule is to buy the best quality materials at the lowest possible price after giving due consideration to delivery dates and other terms of purchases. Purchase should be made from dependable sources of supply and ethical standards in dealing with suppliers should be maintained.

In many industries long term contracts are entered into with suppliers. For example – a car manufacturer may contract ahead for the supply of tyres and tubes for a year's requirements at a time. Such an arrangement has the advantage of avoiding to keep large stocks if the continuity of supply can be relied upon.

Moreover, the supplier gets a regular customer and may offer favourable terms. Periodic withdrawals against the contract are made by raising a purchase order.

3. Purchase Order and Follow-Up:

When the supplier has been selected, the most common procedure is the preparation of a purchase order. The purchase order is the form used by purchasing department authorising the suppliers to supply the specified materials at a price and terms stated therein.

A purchase order should be carefully prepared as it forms a basis of legal contract between the parties concerned. For this reason, authority to sign purchase orders should also be restricted to selected responsible officials.

Large companies generally prepare five copies of the purchase order. The original is sent to the supplier. Second copy is retained by the purchase department for its own file and reference. Third copy is sent to the

receiving department as advance intimation to expect the materials.

Fourth copy is sent to the cost accounting department for entry in the ordered column of the stores ledger account. Last copy is sent to the department requisitioning the material as an intimation of the order and expected date of receipt of materials.

4. Receipt of Materials:

All incoming material should be received by the receiving department. This department performs the functions of unpacking the goods received and verify their quantities and conditions. The quantity is checked against the purchase order copy and the supplier's advice note which is normally received along with the goods.

Goods received note serves the following purposes:

1. It informs the store keeper or other requisitionist of the receipt of materials.
2. It notifies the accounting department that the materials have been received and that a voucher can be prepared.
3. When it includes columns of cost, it can serve as a source of entry in the stores ledger. Original copy of this goods received note is sent to the purchase department to be marked completed.

Second copy is sent to the store keeper. Third copy is sent to the accounting department for entry in the stores ledger and last copy is retained by the receiving department for its own file.

5. Inspection and Testing of Materials:

Goods received should be inspected for quantity to ensure that they comply with specifications stated on the purchase order. Where technical or laboratory inspection is

necessary, the goods are passed to laboratory which will provide a report on the quality of goods.

An inspection report is prepared to show the results of the inspection. This report is either prepared separately or incorporated in the goods received note. In either case, the report is forwarded to the purchasing department.

6. Return of Rejected Materials:

Where materials received are damaged or are not in accordance with the specifications, these are usually returned to the supplier along with a debit note, informing him that his account has been debited with the value of materials concerned. When such a claim is accepted by the supplier, he signifies his acceptance by the issue of a credit note. The rejected materials may be returned to the supplier immediately or they may be held pending his instructions.

The debit note may be prepared by the purchase department on the basis of the inspection report. Original copy is sent to the supplier one copy is sent to accounts department for adjustment entry and one copy is retained for purchase department file

7. Passing Invoices for Payment:

When the invoices are received by the purchasing department, the process of assembling the business paper concerned with each purchase and preparation of vouchers begins. Invoices are numbered serially and entered in the invoice register.

The following documents are assembled in support of the invoice:

- (a) Purchase Order.
- (b) Goods Received Note.
- (c) Inspection Report.
- (d) Debit/Credit Note.

After comparing these documents with the invoice, if it is found that the invoice is in order, the purchase manager will sign it and pass it to the accounts department for payment. All calculations are checked before a voucher authorising payment is prepared. All related documents like purchase order, goods received note, etc., are marked with the invoice number to preclude the passing of a possible duplicate invoice.

Economic Order Quantity: (EOQ)

The total costs of a material usually consist of Buying Cost + Total Ordering Cost + Total

Carrying Cost.

Economic Order Quantity is 'The size of the order for which both ordering and carrying cost are minimum'.

Ordering Cost: The costs which are associated with the ordering of material. It includes cost of staff posted for ordering of goods, expenses incurred on transportation, inspection expenses of incoming material.... etc

Carrying Cost: The costs for holding the inventories. It includes the cost of capital invested in inventories. Cost of storage, Insurance etc

The assumptions underlying the Economic Ordering Quantity (EOQ): The calculation of economic order of material to be purchased is subject to the following assumptions:-

- (a) Ordering cost per order and carrying cost per unit per annum are known and they are fixed.
- (b) Anticipated usage of material in units is known.
- (c) Cost per unit of the material is constant and is known as well.
- (d) The quantity of material ordered is received immediately i.e lead time is Zero.

Material Storage & Control:

Once the material is received, it is the responsibility of the stores-in-charge, to ensure that material movements in and out of stores are done only against the authorized documents. Stores-in-charge is responsible for proper utilization of storage space & exercise better control over the material in the stores to ensure that the material is well protected against all losses such as theft, pilferage, fire, misappropriation etc.

Duties of store keeper:

The duties of store-keeper are as follows :-

- (a) To exercise general control over all activities in stores department.
 - (b) To ensure safe storage of the materials.
 - (c) To maintain proper records.
 - (d) To initiate purchase requisitions for the replacement of stock of all regular materials, whenever the stock level of any item in the store reaches the Minimum Level.
 - (e) To initiate the action for stoppage of further purchasing when the stock level approaches the Maximum Level.
-
- (f) To issue materials only in required quantities against authorized requisition documents.
 - (g) To check and receive purchased materials forwarded by the receiving department and to arrange for storage in appropriate places.

Advantages of Classification & Codification of materials:

- (a) The procedure assists in the easy identification and location of the materials because of their classification.
- (b) It minimises the recording of the nature/ type of the materials with detailed description on every document relating to the transaction of materials.
- (c) Codification is a must in the case of mechanisation of the stores accounting.
- (d) The method is simple to operate and definitely saves time and money in respect of both physical location/ identification of materials as well as recording of the materials.

After the material classification and codification is done for all the materials, for each material code we have to fix the Minimum Level, Maximum Level, Re-order Level and Re-order Quantity. It is the storekeeper's responsibility to ensure inventory of any material is maintained between the Minimum Level and Maximum Level.

Maximum Level:

The Maximum Level indicates the maximum quantity of an item of material that can be held in stock at any time. The stock in hand is regulated in such a manner that normally it does not exceed this level. While fixing the level, the following factors are to be taken into consideration:

- (a) Maximum requirement of the store for production purpose, at any point of time.
- (b) Rate of consumption and leadtime.
- (c) Nature and properties of the Store: For instance, the maximum level is necessarily kept low for materials that are liable to quick deterioration or obsolescence during storage.
- (d) Storage facilities that can be conveniently spared for the item without determinant to the requirements of other items of stores.
- (e) Cost of storage and insurance.
- (f) Economy in prices: For seasonal supplies purchased in bulk during the season, the maximum level is generally high.
- (g) Financial considerations: Availability of funds and the price of the stores are to be kept in view. For costly items, the maximum level should be as low as possible. Another point to be considered is the future market trend. If prices are likely to rise, the concern may like to stock-piling for keeping large stock in reserve for long-term future uses and in such a case, the level is pushed up.
- (h) Rules framed by the government for import or procurement. If due to these and other causes materials are difficult to obtain and supplies are irregular the maximum level should be high.
- (i) The maximum level is also dependent on the economic ordering quantity.

Maximum Level = Re-Order Level + Re-Order Qty – (Minimum Rate of Consumption X Minimum Re- Order Period)

Minimum Level:

The Minimum Level indicates the lowest quantitative balance of an item of material which must be maintained at all times so that there is no stoppage of production due to the material being not available. In fixing the minimum level, the following factors are to be considered :-

- (a) Nature of the item: For special material purchased against customer's specific orders, no

minimum level is necessary. This applies to other levels also.

- (b) The minimum time (normal re-order period) required replenishing supply: This is known as the Lead Time and are defined as the anticipated time lag between the dates of issuing orders and the receipt of materials. Longer the lead time, lower is minimum level, the re-order point remaining constant.
- (c) Rate of consumption (normal, minimum or maximum) of the material.

Minimum Level = Re-Order level – (Normal Rate of Consumption X Normal Re-Order Period)

Re-Order Level:

When the stock in hand reach the ordering or re-ordering level, store keeper has to initiate the action for replenish the material. This level is fixed somewhere between the maximum and minimum levels in such a manner that the difference of quantity of the material between the Re-ordering Level and Minimum Level will be sufficient to meet the requirements of production up to the time the fresh supply of material is received.

The basic factors which are taken into consideration in fixing a Re-ordering Level for a store item include minimum quantity of item to be kept, rate of consumption and lead time which are applied for computing of this level.

Re-Ordering level = Minimum Level + Consumption during lead time
= Minimum Level + (Normal Rate of Consumption × Normal Re-order Period) Another formula for computing the Re-Order level

is as below

Re-Order level = Maximum Rate of Consumption X Maximum Re-Order period (lead time)

Danger Level:

It is the level at which normal issue of raw materials are stopped and only emergency issues are only made. This is a level fixed usually below the Minimum Level. When the stock reaches this level very urgent action for purchases is indicated. This presupposed that the minimum level contains a cushion to cover such contingencies. The normal lead time cannot be afforded at this stage. It is necessary to resort to unorthodox hasty purchase procedure resulting in higher purchase cost.

The practice in some firms is to fix danger level below the Re-Ordering Level but above the Minimum Level. In such case, if action for purchase of an item was taken when the stock reached the Re-Ordering Level, the Danger Level is of no significance except that a check with the purchases department may be made as soon as the Danger Level is reached to ensure that everything is all right and that delivery will be made on the scheduled date.

Danger Level = Normal Rate of Consumption × Maximum Reorder Period for emergency purchases

Stores Records

The bin cards and the stores ledger are the two important stores records that are generally kept for making a record of various items.

Bin Card:

Bin Card is a quantitative record of receipts, issues and closing balance of items of stores. Separate bin cards are maintained for each item and are placed in shelves or bins. This card is

debited with the quantity of stores received, credited with the quantity of stores issued and the balance of quantity of store is taken after every receipt or issue. The balance quantity of the item may be easily known at any time. To have an up to date balance of stores, the principle of '*before touching the item, bin card should be touched*'. For each item of stores, Material Code, Minimum Quantity, Maximum Quantity, Ordering Quantity, Balance Quantities are stated on the bin card. Bin card is also known as 'Bintag' or Stock card

Stores Ledger:

Stores Ledger is maintained by the costing department to make record of all receipts, issues of materials with quantities, values (Sometimes unit rates also). Ledger resembles with bin cards except that receipts, issues and balances are shown along with their money value. The ledger contains an account for every item of stores in which receipts, issues and balances are recorded both in quantity and value.

Difference between Bin Card and Stores Ledger:-

Bin Card	Stores Ledger
<p>It is maintained by the store keeper.</p> <p>It contains only quantitative details of materials received, issued and returned to stores.</p> <p>Entries are made when transactions take place.</p> <p>Each transaction is individually posted.</p>	<p>It is maintained in the Costing department.</p> <p>It contains information both in quantity and value.</p> <p>It is always posted after the transaction.</p> <p>Transactions may be summarized and then posted.</p>

Several methods of pricing of material issues have been evolved; these may be classified into the following:-

Cost Price Method

- (a) First in Firstout
- (b) Last-in-firstout
- (c) Base StockMethod

Specific price method

- (a) Average PriceMethod
- (b) Simple Average PriceMethod
- (c) Weighted Average PriceMethod
- (d) Moving Simple AverageMethod
- (e) Moving Weighted AverageMethod

Market Price Methods

- (a)ReplacementMethod
- (b) Realisable PriceMethod

Notional Price Methods:

- (a) Standard Price Method
- (b) Inflated Price Method

EXERCISES

EOQ-*ECONOMIC ORDERING QUANTITY*

1. calculate the economic order quantity. from the following information.

Consumption of material per annum 10,000k.g

Ordering cost per order...Rs.50.

Cost per k.g of raw material...Rs.2

Store cost ...8% On inventory

Solution:

EOQ=√2AB/CS

A=Annual usage

B=Buying cost per unit

C= Cost per unit

S=Storage and carrying cost %P.A

$$EOQ = \sqrt{2 \times 10,000 \times 50 \div 2 \times \frac{8}{100}}$$

$$EOQ = \sqrt{40,00,000 / 0.16}$$

$$EOQ = \sqrt{62,50,000}$$

$$EOQ = 2500 \text{ UNITS}$$

2. calculate economic order quantity:

Annual consumption 600units

Order cost Rs.12 per order

Cost price per unit Rs.20

Storage & carrying cost 20%

Solution:

EOQ= $\sqrt{2AB/CS}$

A=Annual usage

B=Buying cost per order

C=cost per unit

S=storage cost and carrying cost %P.A

EOQ= $\sqrt{2 \times 600 \times 12 \div 20 \times 20 / 100}$

EOQ= $\sqrt{14,400/4}$

EOQ = $\sqrt{3,600}$

EOQ=60 kgs

3. From the following information determine the EOQ. Annual consumption=90,000units

Cost per unit =Rs.50

Buying cost per order =10%of cost.

Solution:

EOQ= $\sqrt{2AB/CS}$

A=Annual usage

B=Buying cost per unit

C=cost per unit

S=Storage and carrying cost %P.A

EOQ= $\sqrt{2 \times 90000 \times 10 \div 50 \times 10 / 1}$

= $\sqrt{360000}$

EOQ=600units

(B) EOQ- WHERE MATERIALS USAGES IS GIVEN IN RUPEES

3. Findouttheeconomicorderingquantity(EOQ)fromthefollowingparticulars.

Annualusage:Rs.1,20,000

Cost of placing and receiving one order:Rs.60

Annual carrying cost:10% of inventory value

Solution:

EOQ= $\sqrt{2AB/CS}$

A=Annual usage

B=Buying cost per unit

C=Cost per unit

S=storage and carrying cost %P.A

$$\text{EOQ} = 2 \times 120000 \times 60 \div 10 / 1$$

$$= \sqrt{1,40,00,000}$$

$$\text{EOQ} = \text{Rs.}12000$$

4. You are required to compute the economic ordering quantity with the help of the details given below:

Material usage per month Rs.1,600

Buying cost per order Rs.4

Storage and carrying cost 15% of inventory value

Solution:

$$\text{EOQ} = \sqrt{2AB / CS}$$

A=Annual value

B=Buying cost per order

C=cost per unit

S= storage and carrying cost

Annual consumption=1,600× 12

$$=19200$$

$$\text{EOQ} = \sqrt{2 \times 19200 \times 40 \div 15 / 100}$$

$$= \sqrt{1536000 \div 0.15}$$

$$= \sqrt{10240000}$$

$$\text{EOQ} = 3200 \text{ units}$$

(C) EOQ AND ORDERING SCHEDULE

5. calculate economic order quantity. Also state the number of orders to be placed in a year.

Consumption of material per annum 10,000 kg.

Cost of materials per kilogram Rs.2.

Order placings costs per order Rs.50.

Storage costs 8% on average inventory.

Solution

$$\text{EOQ} = \frac{\sqrt{2AB}}{CS}$$

$$= \sqrt{2} \times 10,000 \times 50 / 0.16$$

$$= \frac{\sqrt{10,00,000}}{0.16}$$

$$= \sqrt{62,50,000}$$

$$\text{EOQ} = 25 \text{ units}$$

COMPUTATION OF STOCK LEVELS

(A) STOCKS LEVELS FOR ONE MATERIALS:

6. From the following information, calculate:

- (A) Maximum stock level
- (B) Minimum stock level
- (C) Reorder level
- (D) Average stock level

Minimum consumption - 240 units

per day Maximum consumption -

420 units per day Normal

consumption – 300 units per day

Reorder quantity – 3,600 units per

day

Reorder period – 10 to 15 days Normal reorder period – 12 days

Solution:

(A) maximum stock level

Maximum stock level = reorder level + reorder quantity - (minimum consumption × maximum reorder period)

$$=6,300+3,600 -(240\times 10)$$

$$=9,900 -2,400$$

$$=7,500 \text{ units}$$

(B) minimum stock level

Minimum stock level = reorder level – (normal consumption × normal reorder period)

$$=6,300-(300\times 12)$$

$$=6,300 - 3,600$$

$$=2,700 \text{ units}$$

(C) Reorder level

Reorder level = Maximum consumption × Maximum reorder period

$$=420\times 15$$

$$=6,300 \text{ units}$$

(D) Average stock level

Average stock level = maximum stock level + minimum stock level / 2

$$=7,500+2,700/2$$

$$= 10,200/2$$

$$= 5,100 \text{ units}$$

7. From the following information calculate maximum, minimum and average stock levels.

Normal consumption per day	500kgs
Minimum consumption per day	200kgs
Maximum consumption per day	800kgs
Lead time	10 to 16 days
Reorder quantity	3,000

Solution:

$$\text{Reorder level} = \text{maximum consumption} \times \text{maximum reorder period} \\ = 800 \times 16$$

$$= 12,800 \text{ units}$$

$$\text{Maximum stock level} = \text{reorder level} + \text{reorder quantity} - (\text{minimum consumption} \times \text{minimum reorder period})$$

$$= 12,800 + 3,000 - (200 \times 10)$$

$$= 15,800 - 2,000$$

$$= 13,800 \text{ units}$$

$$\text{Minimum stock level} = \text{reorder level} - (\text{normal consumption} \times \text{normal reorder period}) \\ \text{Normal consumption} = \frac{\text{minimum consumption} + \text{maximum consumption}}{2}$$

$$= \frac{200 + 800}{2}$$

$$= \frac{1,000}{2}$$

$$= 500 \text{ kgs}$$

$$\text{Normal reorder period} = \frac{\text{maximum reorder period} + \text{minimum reorder period}}{2}$$

$$= \frac{10 + 16}{2}$$

$$= \frac{26}{2}$$

$$= 13$$

$$\text{days Minimum stock level} =$$

$$12,800 - (500 \times 13)$$

$$= 12,800 - 6,500$$

$$= 6,300 \text{ kgs}$$

$$\text{Average stock level} = \frac{\text{maximum stock level} + \text{minimum stock level}}{2}$$

$$= \frac{13,800 + 6,300}{2}$$

$$= \frac{20,100}{2}$$

$$= 10,050 \text{ units}$$

(B) Stock levels for two or more materials:

8. Two components x and y are used

as follows: Normal usage - 600

units per week each Maximum

usage - 900 units per week each

Minimum usage - 300 units per

week each Reorder quantity:

X 4,800 units

X 4 to 6 weeks

Y 2 to 4

weeks Calculate for

each component:

Solution:

(A) Reorder level

Reorder level = maximum consumption × maximum reorder period

Component x = 900×6

= 5,400 units

Component y = 900×4

= 3,600 units

(B) Minimum stock level

Minimum stock level = reorder level – (normal consumption × normal reorder period)

Component x = $5,400 - (600 \times 4 + 6/2)$

= $5,400 - (600 \times 5)$

= $5,400 - 3,000$

= 2,400 units

Component y = $3,600 -$

$(600 \times 2 + 4/2)$

= $3,600 - (600 \times 3)$

= $3,600 - 1,800$

= 1,800 units

(C) Maximum stock level

Maximum stock level = reorder level + reorder quantity – (minimum consumption × minimum reorder period)

Component x = $5,400 + 4,800 - (300 \times 4)$

$$= 10,200 - 1,200$$

$$= 9,000 \text{ units}$$

Component y =

$$3,600 + 7,200 - (300 \times 2)$$

$$= 10,800 - 600$$

$$= 10,200 \text{ units}$$

(D) Average stock level

Average stock level = maximum stock level + minimum stock level / 2

$$\text{Component x} = 9,000 + 2,400$$

$$= 11,400 / 2$$

=

5,700 units

Component y =

$$10,200 + 1,800$$

$$= 12,000 / 2$$

$$= 6,000 \text{ units}$$

9. Two components A and B are used as follows:

Normal usage 3,000 units per

week each Minimum usage 1,500 units

per week each Maximum usage 4,500

units per week each Reorder quantity

A – 13,000 units B –

14,000 units Reorder period

A – 4 to 6 weeks B – 2 to

4 weeks Calculate for each component:

- (A) Reorder level
- (B) Minimum level
- (C) Maximum level
- (D) Average stock level

Solution:

(A) Reorderlevel

Reorder level = maximum consumption × maximum reorder period

$$\text{Component A} = 4,500 \times 6$$

$$= 27,000 \text{ units}$$

$$\text{Component B} = 4,500 \times 4$$

$$= 18,000 \text{ units}$$

(B) Minimumlevel

Minimum level = reorder level – (normal consumption × normal reorder period)

$$\text{Component A} = 27,000 - (3,000 \times 4 + 6/2)$$

$$= 27,000 - (3,000 \times 10/2)$$

$$= 27,000 - (3,000 \times 5)$$

$$= 27,000 - 15,000$$

$$= 12,000 \text{ units}$$

$$\text{Component B} = 18,000 -$$

$$(3,000 \times 2 + 4/2)$$

$$= 18,000 - (3,000 \times 6/2)$$

$$= 18,000 - (3,000 \times 3)$$

$$= 18,000 - 9,000$$

$$= 9,000 \text{ units}$$

(C) Maximumlevel

Maximum level = reorder level + reorder quantity – (minimum consumption × minimum reorder period)

$$\text{Component A} = 27,000 + 13,000 - (1,500 \times 4)$$

$$= 27,000 + 13,000 - (6,000)$$

$$= 40,000 - 6,000$$

$$= 34,000 \text{ units}$$

$$\text{Component B} = 18,000 + 14,000 - (1,500 \times 2)$$

$$= 32,000 - 3,000$$

$$= 29,000 \text{ units}$$

(D) Average stocklevel

Average stock level = maximum stock level + minimum stock level/2

$$\text{Component A} = 34,000 + 12,000/2$$

$$= 46,000/2$$

= 23,000

units Component B =

$29,000 + 9,000 / 2$

= $38,000 / 2$

= 19,000 units

PRICING OF MATERIAL ISSUES

(A) First In First Out method (FIFO) (without returns and losses)

10. X company has purchased and issued materials as under:

1998

June 1 stock of materials	200 units at Rs. 2.50 per unit
3 Purchased	300 units at Rs. 3 per unit
7 Purchased	500 units at Rs. 4 per unit
10 Issued	600 units
12 Purchased	400 units at Rs. 4 per unit
18 Issued	500 units
24 Purchased	400 units at Rs. 5 per unit
28 Issue	200 units

Prepare the stores ledger under FIFO method and LIFO method.

SOLUTION

Stores Ledger Account

(FIFO method)

Name:

Maximum level :

Folio No. :

Code No. :

Minimum level :

Bin no:

Descript :

Reorder level :

Location code :

Reorder quantity :

DATE	PARTICULAR OR PREFERENCE	RECEIPT			ISSUES			BALANCE		
		QTY.	RATE	AMT	QTY.	RATE	AMT	QTY.	RATE	AMT
		UNITS	Rs. P	Rs	UNITS	Rs. P	Rs	UNITS	Rs. P	Rs
1998 June 1	Balance B/d							200	2.5	500
3	G.R.N. NO.	300	300	900				200	2.5	500
								300	300	900

7	G.R.N. NO.	500	400	2000				200	2.5	500
								300	300	900
								500	400	2000
10	M.R. NO.				200	2.5	500			
					300	3	900			
					100	4	400	400	4	1600
12	G.R.N. NO.	400	4	1600	600			400	4	1600
18	M.R. NO.				400	4	1600	400	4	1600
					100	4	400			
24	G.R.N. NO.	400	5	2000	500			300	4	1200
								300	4	1200
								400	5	2000
28	M.R. NO.				200	4	800	100	4	400
								400	5	2000

Closing stock 500 units at Rs. 2400 ($100 \times 4 + 400 \times 5$)

(B) Last In First Out method (LIFO) (without returns and losses)

11. The following particulars is provided by Sunrise Industries for the fortnight of April 1998.

Material stock on 1-4-1998 100 units at Rs. 5 per unit

Purchases

5-4-98 300 units at Rs.6

8-4-98 500 units at Rs.7

12-4-98 600 units at Rs.8

Issues

6-4-98 250 units

10-4-98 400 units

14-4-98 500 units

Required

Calculate using LIFO method of pricing issues:

a) the value of material consumed during the period.

b) the value of stock of materials on 15-4-98.

SOLUTION :

Stores Ledger Account

(LIFO method)

Name:

Maximum level :

Folio No. :

Code No. :

Minimum level :

Bin no:

Descript :

Reorder level :

Location code :

Reorder quantity :

DATE		RECEIPT			ISSUES			BALANCE		
	PARTICULAR OR PREFERENCE	QTY. UNITS	RATE Rs. P	AMT Rs	QTY. UNITS	RATE Rs. P	AMT Rs	QTY. UNITS	RATE Rs. P	AMT Rs
1998 April 1	Balance b/d							100	5	500
5	G.R.N. NO.	300	6	1800				100	5	500
								300	6	1800
6	M.R. NO.				200	6	1500	100	5	500
								50	6	300
8	G.R.N. NO.	500	7	3500				100	5	500
								50	6	300
								500	7	3500
10	M.R. NO.				400	7	2800	100	5	500
								50	6	300
								100	7	700
12	G.R.N. NO.	600	8	4800				100	5	500
								50	6	300
								100	7	700
								600	8	4800
14	M.R. NO.				500	8	4000	100	5	500
								50	6	300
								100	7	700
								100	8	800

A) Value of material consumed under lifo = **Rs.8300**

B) Closing stock= 350 units valued at **Rs. 2300** (100×5 + 50×6 + 100×7 + 100×8)

(C) FIFO AND LIFO WITH RETURNS ANDLOSSES

12. From the following transactions, prepare separately the stores ledger account, using the following methods : (i) FIFO and (ii) LIFO.

Jan 1	Opening balance	100 units @ Rs. 5 each
5	Received	500 units @ Rs. 6 each
29	Issued	300 units
Feb 5	Issued	200 units
6	Received back from work order	
	Issued on 5 th February	
7	Received	600 units @ Rs. 5 each
20	Issued	300 units
25	Returned to supplier	50 units purchased on 7 th February
26	Issued	200 units

March 10 Received

500 units @ Rs. 7 each

15 Issued

300 units

Stock verification on 15th March received a shortage of 10 units.

SOLUTION :

(i) STORES LEDGER ACCOUNT (FIFO)

Name: Maximum level : Folio No. :
 Code No. : Minimum level : Bin no :
 Descript : Reorder level : Location code :
 Reorder quantity :

DATE	PARTICULAR OR PREFERENCE	RECEIPT			ISSUES			BALANCE		
		QTY.	RATE	AMT	QTY.	RATE	AMT	QTY.	RATE	AMT
		UNIT S	Rs. P	Rs	UNIT S	Rs. P	Rs	UNITS	Rs. P	Rs
Jan-01	Balance b/d							100	5	500
5	G.R.N. NO.	500	6	3000				100	5	500
								500	6	3000
20	M.R. NO.				100	5	500			
					200	6	1200			
					300			300	6	1800
Feb-05	M.R. NO.				200	6	120	100	6	600
6	Mat. Retd. Note No.	10	6	60				100	6	600
								10	6	60
7	G.R.N. NO.	600	5	3000				100	6	600
								10	6	60
								600	5	3000
20	M.R. NO.				100	6	600			
					10	6	60			
					190	5	950			
					200			410	5	2050
25	Debit Note				50	5	250	360	5	1800
26	M.R. NO.				200	5	1000	160	5	800
Mar-10	G.R.N. NO.	500	7	3500				160	5	800
								500	7	3500
15	M.R. NO.				160	5	800			
					140	7	980			
					200			360	7	2520
	Shortage				10	7	70	350	7	2450

Closing stock = 350 units value @ 7 = Rs. 2450.

ii) STORES LRDGERS A/C (LIFO method)

Name:

Maximum level :

Folio No. :

Code No. :

Minimum level :

Bin no:

Descript :

Reorder level :

Location code :

DATE	PARTICULAR OR PREFERENCE	RECEIPT			ISSUES			BALANCE		
		QTY.	RATE	AMT	QTY.	RATE	AMT	QTY.	RATE	AMT
		UNITS	Rs. P	Rs	UNITS	Rs. P	Rs	UNITS	Rs. P	Rs
Jan-01	Balance b/d							100	5	500
5	G.R.N. NO.	500	6	3000				100	5	500
								500	6	3000
20	M.R. NO.				300	6	1800	100	5	500
								200	6	1200
Feb-05	M.R. NO.				200	6	1200	100	5	500
6	Mat. Retd. Note No.	10	6	60				100	5	500
								10	6	60
7	G.R.N. NO.	600	5	3000				100	5	500
								10	6	60
								600	5	3000
20	M.R. NO.				300	5	1500	100	5	500
								10	6	60
								300	5	1500
25	Debit Note				50	5	250	100	5	500
								10	6	60
								250	5	1250
26	M.R. NO.				200	5	1000	100	5	500
								10	6	60
								50	5	250
Mar-10	G.R.N. NO.	500	7	3500				100	5	500
								10	6	60
								50	5	250
								500	7	3500
15	M.R. NO.				300	7	2100	100	5	500
								10	6	60
								50	5	250
								200	7	1400
	Shortage				10	7	70	100	5	500
								10	6	60
								50	5	250
								190	7	1330

Reorder quantity :

(D) SIMPLE AVERAGE METHOD

The following transactions took place in respect of an item of Material.

	Receipt	Rate	Issues
	Quantity	Rs.P	Quantity
	K.G.S.		K.G.S.
2-3-02	200	2.00	
10-3-02	300	2.40	
15-3-02			250
18-3-02	250	2.60	
20-3-02			200

Record the above transactions in stores Ledger, pricing issues at simple average rate.

SOLUTION :

STORES LEDGER ACCOUNT

(SIMPLE AVERAGE METHOD)

Name: _____ Maximum level : _____ Folio No. : _____
 Code No. : _____ Minimum level : _____ Bin no: _____
 Descript : _____ Reorder level : _____ Location code : _____
 Reorder quantity : _____

DATE	PARTICULAR OR PREFERENCE	RECEIPT			ISSUES			BALANCE		
		QTY.	RATE	AMT	QTY.	RATE	AMT	QTY.	RATE	AMT
		UNITS	Rs. P	Rs	UNITS	Rs. P	Rs	UNITS	Rs. P	Rs
2002 Mar2	G.R.N. NO.	200	2	400				200	2	400
10	G.R.N. NO.	300	2.4	720				500		1120
15	M.R. NO.				250	2.2	550	250		570
						(2+2.4 / 2)				
18	G.R.N. NO.	250	2.6	650				500		1220
20	M.R. NO.				200	2.5	500	300		720
						(2.4+2.4/2)				

Closing stock 300 units valued

at Rs. 720 (E) WEIGHTED

May 1	Balance in hand b/f	300	2.00
2	Purchased	200	2.20
4	Issued	150	
6	Purchased	200	2.30
11	Issued	150	
19	Issued	200	
22	Purchased	200	2.40
27	Issued	150	

SOLUTION :

(A) STORE LEDGER ACCOUNT (SIMPLE AVERAGE METHOD)

Name: _____ Maximumlevel : _____ Folio No.: _____
 CodeNo.: _____ Minimumlevel: _____ Binno: _____
 Descript: _____ Reorderlevel: _____
 _____ Locati _____
 on code : Reorder quantity: _____

DATE	PARTICULAR OR PREFERENCE	RECEIPT			ISSUES			BALANCE		
		QTY.	RATE	AMT	QTY.	RATE	AMT	QTY.	RATE	AMT
		UNITS	Rs. P	Rs	UNITS	Rs. P	Rs	UNITS	Rs. P	Rs
1993 May 1	Balance b/d							300	2	600
2	G.R.N.NO	200	2.2	440				500		1040
4	M.R. NO.				150	2.1 (2+2.2/2)	315	350		725
6	G.R.N.NO	200	2.3	460				550		1185
11	M.R. NO.				150	2.17 (2+2.2+2.3/3)	325	400		860
19	M.R. NO.				200	2.25 (2.2+2.3/2)	450	200		410
22	G.R.N.NO	200	2.4	480				400		890
27	M.R. NO.				150	2.35 (2.3+2.4/2)	352.5	250		537.5

Closing stock 250 units valued at Rs. 537.

UNIT -III

INTRODUCTION

- ❖ Labour represent human resources used in production.
- ❖ After material cost, labour cost is the second major element of cost.
- ❖ Role of labour is very significant as productivity of all other resources depends on the productivity of human resources.
- ❖ In other words, higher efficiency of labour helps in lowering the cost per unit of production
- ❖ Therefore, there is a special need for proper organisation for accounting and control of labour cost.

DIRECT AND INDIRECT LABOUR

DIRECT LABOUR

- ✓ Directly engaged in production work
- ✓ Can be conveniently identified or attributed wholly to a particular job, process or cost unit
- ✓ Examples- wages of a machine operator, wages paid to a tailor in a factory manufacturing readymade garments

INDIRECT LABOUR

- ✓ Wages paid to those workers who are not directly engaged in converting raw materials into finished products.
- ✓ Such costs cannot be conveniently identified with a particular job. Product or cost unit
- ✓ Examples- supervisors, inspectors, clerks, instructors, peons, watchmen and cleaners

ORGANISATION FOR ACCOUNTING AND CONTROL OF LABOUR COST

There are mainly five departments in an organisation which deal with labour-

Personnel Department

- Recruitment and selection of workers
- Training of workers and development of human resources
- Placement of workers according to their abilities
- To plan for efficient use and control of labour

Engineering Department

- Specification of jobs
- Makes job analysis
- Conducts time and motion studies
- Makes provision for safe working conditions, and
- Supervises production activities

Time-keeping Department

Recording of time put in by the workers for the purpose of attendance, wage calculation, cost analysis and apportionment of labour cost over various jobs.

Payroll Department

- Maintains a record of job classification and wage rate of each employee
- Preparation of payroll or wage sheet for the computation of wages payable to employees
- Responsible for disbursement of wages

Cost Accounting Department

- Accumulates and classifies all cost data
- Analyses the payroll and prepares routine and special labour cost reports for submission to management

LABOUR TURNOVER

- In all business organisations, it is a common feature that some workers leave the employment and new workers join in place of those leaving.
- This change in work force is known as labour turnover.
- Labour turnover varies greatly between different trades and industries.

- For example, where part time and seasonal labour is employed, the rate will be higher

MEASUREMENT OF LABOUR TURNOVER

1) Separation Method

This method takes into account only those workers who have left the organization during a particular period.

$$\text{LTR} = \frac{\text{No. of workers left during a period} \times 100}{\text{Average No. of workers during the period}}$$

$$\text{Average Number} = \frac{\text{No. of workers in the beginning} + \text{No. of workers at the end of the period}}{2}$$

2) Replacement Method

This method takes into account only those new workers who have joined in place of those who have left.

$$\text{LTR} = \frac{\text{No. of workers replaced during a period} \times 100}{\text{Average No. of workers during the period}}$$

3) Flux Method

This method shows the total change, in the composition of labour force due to separations and replacement of workers.

$$\text{LTR} = \frac{\text{No. of workers left} + \text{No. of workers replaced} \times 100}{\text{Average No. of workers}}$$

4) Additions method

Under this method of measurement of labour turnover, number of employees recruited during a particular period alone is taken into consideration, including those recruited for expansion programmes etc.

$$\text{LTR} = \frac{\text{No. of additions during a period} \times 100}{\text{Average No. of workers}}$$

CAUSES OF LABOUR TURNOVER

Avoidable Causes

- ❖ Redundancy due to seasonal fluctuations, contraction in the market or lack of proper planning
- ❖ Dissatisfaction with the job, remuneration or working conditions
- ❖ Strained relationship with supervisors or fellow workers

- ❖ Lack of proper amenities like medical and other facilities, recreational centres, etc.
- ❖ Other factors like lack of proper training facilities, inadequate security and retirement benefits.

Unavoidable Causes

- ❖ Change of service for personal betterment
- ❖ Retirement due to old age and ill health
- ❖ Death
- ❖ In case of women employees, domestic responsibilities, pregnancy or marriage
- ❖ Discharge on disciplinary grounds or continuous long absence

COST OF LABOUR TURNOVER

Preventive Costs

- Costs which are incurred by a firm to keep the labour force contented so that excessive labour turnover may be prevented. Examples-
- Cost of personnel management- for maintaining good relations between management and workers
- Cost of welfare activities and services-canteen meals, educational and transport facilities, housing schemes, etc.
- Cost of medical services
- Pension schemes
- Extra bonus and other perquisites

COST OF LABOUR TURNOVER

Replacement Costs

- Includes all such losses and wastages arising because of the inexperienced new labour force replacing the existing ones as well as the cost of recruitment and training of the new workers
- Loss of output due to some time taken in obtaining new labour

- Loss of output and quality due to inefficiency of new labour
- Cost of training of new employees
- Cost of tools and machine breakages
- Cost of excessive scrap and defective work
- Cost of accidents

CONTROL OF EXCESSIVE LABOUR TURNOVER

- An adequate and satisfactory wage system
- A sound personnel policy for recruitment, induction and training of labour
- A satisfactory level of amenities and welfare measures like canteen facilities, medical services, recreation, etc.
- A satisfactory security scheme like family pension, provident fund, accident compensation, etc.
- A satisfactory policy for transfers and promotions
- Effective grievance redressal procedure
- Labour participation in management and joint consultation scheme

TIME KEEPING

- Two functions of Time Keeping Department-
- Time-keeping i.e. recording time for attendance purpose and for calculation of wages
- Time-booking i.e. records time spent on different jobs or processes for determining labour cost of jobs/processes.

TIME KEEPING

3 Methods of recording attendance of workers-

1)Attendance Register:

In this method, attendance of each worker is recorded in the register maintained for this purpose.

This register provides sufficient number of columns for attendance of each worker.

Entries in the arrival and departure columns may be made by the worker himself.

This method can be used only when the number of workers is small.

2)Token or Disc Method:

Each worker is allotted an identification number and that number is suitably painted or engraved on a round metal token with a hole in it.

All such tokens are hung in a serial order on a board placed at the factory gate

As the worker arrives, he removes his token from the board and puts it in a box kept nearby or hangs it on another board which is specially kept for this purpose

After the fixed time, the box or the second board is removed

Those coming late have to hand over their tokens personally at the time office so that exact time of their arrival can be noted.

3)Time Recording Clocks

Mechanical method of recording attendance and proves quite useful when the number of workers is fairly large.

Each worker is allotted a Clock Card which bears his identification number, name, department, etc.

These cards are kept in a rack in a serial order.

There are usually two racks, an In rack and an Out rack.

On arrival, the worker will pick up his card from the 'Out' rack, put it in the slot of the clock, press a button and the exact time is printed on the card.

After this the card is put in the 'In' rack.

An inspection of the 'Out' racks will reveal absentees.

TIME KEEPING

Biometric Time Recording Clock

- New generation technique which is fast replacing the old type of time recording clocks.
- Biometric time recording clock is an electronic device to record attendance of workers.
- Under this, the worker simply places his finger or hand on the Fingerprint Reading Sensor and his attendance is recorded in the machine.

TIME BOOKING

- In addition to recording workers time of arrival and departure, it is necessary to record the particulars of work done by workers and the time spent on each job or process.
- Recording of workers' time spent on different jobs is known as time-booking.

Objectives-

- To ensure that the time for which a worker is paid is properly utilized;
- To ascertain the labour cost of work done
- To provide a basis for apportionment of overheads; and
- To ascertain the idle time so as to control it.

OVERTIME

- ❖ Overtime occurs when a worker works beyond normal working hours as laid down in the Factories Act.
- ❖ Accordingly, any worker working for more than 9 hours per day or more than 48 hours per week is entitled to overtime payment.
- ❖ The Factories Act also provides for payment of overtime wages at double the normal rates of wages.

OVERTIME

Treatment of overtime

Payment for overtime consists of two elements-

(a) Normal amount of wages, and

(b) Additional amount paid for overtime work, i.e., overtime premium

The normal amount is charged to the cost unit or production order on which the worker is working.

The difficulty lies in the treatment of overtime premium.

OVERTIME

- The overtime premium is charged differently under different circumstances as stated below-
- Charge to jobs as direct cost: When overtime is worked at the request of the customer due to urgency of work and the customer agrees to bear the entire charge of overtime, it should be charged direct to the job or work order concerned.
- Charge to overheads: when overtime is payable due to general pressure of work or seasonal nature of production, it should be charged as overhead.
- Charge to Costing Profit and Loss Account: overtime required due to abnormal factors like flood, fire, earthquake, etc. or due to factors like defective planning or faulty management, it should not be charged to cost but to Costing Profit and Loss Account.

IDLE TIME

- Represents the time for which workers are paid but no production is obtained.
- For example, time lost between factory gate and department, time when production is interrupted by machine maintenance, tea breaks etc.

Idle time may occur owing to:

a) Productive causes

b) Administrative causes

c) Economic causes

IDLE TIME

a) Productive causes

Machine breakdown

Power failure

Waiting for tools and/or raw materials

Waiting for instructions

b) Administrative causes

- Caused by administrative decisions like decision of not to utilize the surplus capacity during depression
- Such idle time arises out of abnormal situations and is generally not controllable

OVERTIME

- Overtime occurs when a worker works beyond normal working hours as laid down in the Factories Act.
- Accordingly, any worker working for more than 9 hours per day or more than 48 hours per week is entitled to overtime payment.
- The Factories Act also provides for payment of overtime wages at double the normal rates of wages.

LABOUR COST

Problem 1 :

The following information has been extracted from the records of the company for the month of October 1998.

No. of employees at the beginning of the month	950
No. of employees at the end of the month	1050
No. of employees resigned	10
No. of employees discharged	30
No. of employees replaced in the vacancies	20
No. of employees appointed due to expansion scheme	130

Calculate the monthly labour turnover rate and the equivalent average rates. Under these methods of labour turnover measurement.

Solution:

$$\begin{aligned} \left\{ \begin{array}{l} \text{Average no. of workers} \\ \text{during the month} \end{array} \right\} &= \frac{\left\{ \begin{array}{l} \text{No. of workers at the} \\ \text{beginning of the month} \end{array} \right\} + \left\{ \begin{array}{l} \text{No. of the workers at} \\ \text{the end of the month} \end{array} \right\}}{2} \\ &= \frac{950 + 1050}{2} \\ &= 1000 \end{aligned}$$

a) separation method:

$$\begin{aligned} \text{Labour turnover rate} &= \frac{\text{No. of workers separated}}{\text{Average No. of workers}} \times 100 \\ &= \frac{40}{1000} \times 100 \\ &= 4\% \end{aligned}$$

$$\begin{aligned} \text{Equipment annual turnover} &= \frac{4}{365} \times 30 \text{ days} \\ &= 0.329\% \end{aligned}$$

Replacement method:

$$\begin{aligned} \text{Labour turnover rate} &= \frac{\text{No of workers replaced}}{\text{Average No of workers}} \times 100 \\ &= \frac{20}{1000} \times 100 \\ &= 2\% \end{aligned}$$

Flux method:

$$\begin{aligned} \text{Labour turnover rate} &= \frac{\text{No of workers separated} + \text{No of workers replaced}}{\text{Average No of workers}} \times 100 \\ &= \frac{140+40}{1000} \times 100 \\ &= \frac{180}{1000} \times 100 \\ &= 18\% \end{aligned}$$

$$\begin{aligned} \text{Equivalent annual turnover} &= \frac{18}{365} \times 30 \text{ days} \\ &= 1.48\% \end{aligned}$$

Taylor's differential piece rate system

Problem 2 :

The following particulars, calculate the earning of different workers under Taylor's differential piece rate system.

Standard time per unit	: 6 minutes
Normal rate	: Rs. 5 per hour

Differential piece rates:

80% of piece rate below the standard

120% of piece rate at or above the standard

In a day of 8 hour the production by different workers is as under.

Amar:70units; Badekhan:80units; chaplin:90units; Dharm Singh: 100units;

Solution:

A) Level of performance of workers:

Standard production for 6 minutes = 1 unit

Standard production per hour = 60 minutes

6 minutes

= 10 units.

Standard production per day of 8 hours = 8 hours x 10 units = 80 units

Worker 'Amar' who produced 70 units is below standard.

Worker 'Badekhan' who produced 80 units is at standard.

Worker 'Chaplin' who produced 90 units is above standard.

Worker 'Dharm Singh' who produced 100 units is above standard.

B) Calculation of piece rates:

Standard rate per unit = Rs. 5

Straight piece rate = Rs.5

10 units

= Rs. 0.50

Low piece rate for below standard production = straight piece rate x lower differential

= 0.50 x 80% = Rs. 0.40

High piece rate at or above standard production = straight piece rate x higher differential

= 0.50 x 120% = Rs. 0.60

Earnings of workers under Taylor's differential piece rate system:

Earning = production of worker x Differential piece rate

Worker ' Amar' = 70 units x 0.40 = Rs. 28

Worker ' Badekhan' = 80 units x 0.60 = Rs. 48

Worker ' Chaplin' = 90 units x 0.60 = Rs. 54

Worker ' Dharm Singh ' = 100 units x 0.60 = Rs. 60

Merricks's Multiple or differential piece rate system:

Problem 3 :

Calculate earnings of 3 workers A, B and C under merrick's plan of piece rate system given the following:

Standard production = 120 units

Production A = 90 units

Production B = 100 units

Production C = 130 units

Ordinary piece rate = Re.0.10

Solution:

Standard output = 120 units

Piece rate = Rs. 0.10 per unit

A) Level of performance of workers

$$\text{Level of performance} = \frac{\text{Actual output}}{\text{Standard output}} \times 100$$

$$\text{Worker 'A'} = \frac{90}{120} \times 100 = 75\%$$

$$\text{Worker ' B' } = \frac{100}{120} \times 100 = 83.33 \%$$

$$\text{Worker ' C' } = \frac{130}{120} \times 100 = 108.33\%$$

Earnings of workers:

Earning of worker 'A'

Normal piece rate is applicable for performance below 83% A's perform is 75%

$$\begin{aligned}\text{Wages} &= \text{units produced} \times \text{Normal piecerate} \\ &= 75 \text{ units} \times 0.10 = \text{Rs. } 7.50\end{aligned}$$

Earnings of worker 'B'

110% of normal piece rate is applicable for performance between 83.33%. 100% B's performance is 83.33%.

$$\begin{aligned}\text{Wages} &= \text{units produced} \times \text{piece rate} \times 110 / 100 \\ 100 \times 0.10 \times 110 / 100 &= \text{Rs. } 11.\end{aligned}$$

Earnings of worker 'C'

120% of normal piece rate is applicable for performance above 100 % C's performance is 108.33%

$$\begin{aligned}\text{Wages} &= \text{units produced} \times \text{piece rate} \times 120 / 100 \\ 130 \times 0.10 \times 120 / 100 &= \text{Rs. } 15.60.\end{aligned}$$

Gantt's task and bonus plan

Problem 4 :

From the information given below calculate earnings of three workers x, y and z under Gantt's task bonus plan:

Time rate Rs.15 per hour

High task per day of 8 hours = 80 units

High piece rate Rs. 2 per unit

Day output = x : 70units; y : 80units ; z : 90units

Solution:

Computation of level of performance of workers

$$\begin{aligned}\text{Level of performance} &= \frac{\text{Actual output}}{\text{High task output}} \times 100\end{aligned}$$

$$X = 70/80 \times 100 = 87.5\%$$

$$Y = 80/80 \times 100 = 100\%$$

$$Z = 90/80 \times 100 = 112.5\%$$

II) computation of earnings of workers

X = Below standard performance – only time wages

$$= 8 \text{ hours} \times \text{Rs. } 15 = \text{Rs. } 120$$

Y = performance at standard – time wages + 20% bonus

$$(8 \text{ hours} \times \text{Rs. } 15) + 20\% (8 \times 15) = 120 + 12 = \text{Rs. } 132$$

Z = performance above standard – high piece rate on whole output

$$= 90 \text{ units} \times \text{Rs. } 2 = \text{Rs. } 180$$

Normal and over time wages

Problem 5 :

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

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total
Hours Worked	7	8	10	9	8	5	47

Normal working hours - 7 hours per day

Normal wage rate Rs. 10 per hour

Overtime wage rate upto 8 hours in a day at single rate and over 8 hours in a day at double rate

(or)

Upto 42 hours in a week at single rate over 42 hours at double rate

Whichever more beneficial to the workman.

Solution:

Statement showing over time hours

Days	Total hours worked	Normal work hours	Overtime at single rate	Hours at double rate

Monday	7	7	-	-
Tuesday	8	7	1	-
Wednesday	10	7	1	2
Thursday	9	7	1	-
Friday	8	7	1	-
Saturday	5	5	-	-
Total	47	40	4	3

A) computation of total wages of workman on day's workbasis

Wages for normal working hours (40 x 10) wages for overtime hours;

At single rate for 4 hours (4x 10)

At double rate for 3 hours (3x 20)

Total wages

B) computation of total wages of workman on weeks workbasis

Wages at normal hourly rate for 42 hours (42 x 10)

Overtime wags for 5 hours at double rate (5x20)

Total wages

Cash required for wage payment

Problem 6 :

Form the following details, ascertain the amount of cash required for payment of salary in a firm for the month of april:

- i) Normal time salaries Rs.75000
- ii) Dearness allowance 15% of (i)above
- iii) Leave salary 6 % of (i) and (ii)above
- iv) Employee's contribution to E.S.I 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 5750

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

viii) Employer also contributes an equal amount towards ESI and PF

solution:

Particulars	Rs.	Rs
Normal time salaries		75,000
Dearness allowance (75000x15)		11,250
Leave salary (86250x6%)		5,175
Gross from payable		91,425
Deduction:		
Employee contribution ESI (86250x3)	2,587.50	
Employee contribution to PF (86250 x 5%)	4,312.50	
Income tax deducted at source	4,500.00	
Insurance premium	5,750.00	
Festival advance (50x 125)	6,250.00	23,400
Amount required for cash payment of salary		68,025

Labour cost per month

Problem 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 worker) current cost of living index is 800 points

iii) Leave salary 5% of (i) and (ii)

iv) Employer's contribution to PF 8 % (i) and (ii)

v) Employer's contribution to state insurance 5 % of (i) , (ii) and (iii)

vi) Number of working day in a month 25 date of 8 hours each

solution:

Statement of labour cost per month of shows

Particulars	Rs.
i) Basic salary (Rs.5 x25days)	125.00
ii) Dearness allowance (700 pointsx0.20)	140.00
iii) Leave salary265x5%	13.25
iv) Employers contribution to PF265x8%	21.20
v) Employers contribution to ESI 278.25x5%	13.913
Total labour cost for 25 days	313.363

$$\begin{aligned} \text{Labour cost per man – day 8 hours} &= 313.363/25\text{days} \\ &= 12.534 \end{aligned}$$

Labour cost to the employer

Problem 8 :

From the following data prepare a statement showing the cost per man- day eight hours.

- a) Basic salary and dearness allowance Rs. 300 permonth
- b) Leave salary to the workman 6% of the basic andDA
- c) Employer's contribution to P.F 6% of (a) and(b)
- d) Employer's contribution to P.F 6% of (a) and(b)
- e) pro data expenditure on amenities to labour Rs. 25 per head permonth
- f) Number of working hours in a month200

solution:

statement showing labour cost (per man per day of 8 hours)

Particulars	Rs.
a) Basic salary and DA 300/25days	12.00
b) Leave salary 6% of basic and DA(12x6)	0.72
c) Emoloyers contribution to PF 6% of (a)+(b)=12+0.72=12.72x6%	0.7633
d) amenities to labour at Rs. 25month Rs. 25/25days	1.00
Labour cost per man day	14.4832

Time and piece wages

Problem 9 :

Mr. Ramesh works in a factory where the following particulars apply:

Normal rate per hour : Rs. 3.00

Normal piece rate : 20% more of time rate expected output is 40 units per hour. Ramesh produces 314 units in day calculate his wages for the day on (a) Time basis and (b) piece basis.

Solution:

Computation of wages on time basis

$$\begin{aligned}\text{Time wages} &= \text{No. of hours worked} \times \text{Rate per hour} \\ &= 8 \text{ hours} \times \text{RS. } 3 = \text{Rs. } 24\end{aligned}$$

Computation of wages on piece basis:

Normal rate per hour = RS.3

Increase in rate to be 20%

Adjusted rate $3 \times 120\% = \text{Rs. } 3.60$

Piece rate = $\text{Rs. } 3.60 / 40 \text{ units} = \text{Re. } 0.09$

$$\begin{aligned}\text{Piecewages} &= \text{No. of units produced} \times \text{rate per unit} \\ &= 314 \text{ units} \times 0.09 = \text{Rs. } 28.26\end{aligned}$$

Halsey and Halsey – weir plans

Problem 10 :

From the following data calculate the total wages Of a worker under:

a) Halsey premium plan:

hourlyrate Rs. 2

Standard time 16 hours

Timetaken 12hours

b) under Halsey – weir premiumplan:

Timeallowed 48 hours

Timetaken 40hours

Rateper hour Rs. 3

Solution:

a) Total wages under Halsey premium plan = Time taken x Rate per hour + 30%

(Time saved x Rate per hour)

$$= 12 \text{ hours} \times 3 + 50\% (16-12) \times 3$$

$$= 36 + 50\% (12)$$

$$= 36 + 6 = 42$$

b) Total wages under under Halsey – weir premium plan = Time taken x Rate per hour + 30%

(Time saved x Rate per hour)

$$= (40 \text{ hours} \times 3) + 30\% (48.40) \times 3$$

$$= 120 + 30\% (24)$$

$$= 120 + 7.2$$

$$= 127.20$$

Halsey plan**Problem 11 :**

A worker is paid at 25 paise per hour for completing a work within 8 hours. If he completes the work within 6 hours. Calculate his wages under Halsey plan when the rate of premium is 50% . Also ascertain the effective hourly rate of earning

Solution:

Total wages = (Time taken x Hourly Rate) + (50/100 x Time saved and Hourly rate

Wages or earnings under Halsey plan:

$$= 6 \times 0.25 + 50/100 (8- 6) 0.25$$

$$= 1.5 + 0.25$$

Total earnings = Rs. 1.75

Effects hourly rate of earnings:

= Total earnings/ Actual time

$$= 1.75/6$$

= Rs. 0.29 per hour

UNIT -IV

OVERHEADS

1.0 Introduction :

In the previous year we have discussed various concepts of costs. One of the classification of costs is on the basis of Nature in which costs are classified as Direct and Indirect. Direct cost are those which are properly identified with a cost centre while Indirect costs are not traceable to cost centre. If a firm manufactures only one product, all cost are direct but if more than one product offered by the firm, the indirect costs incurred are not traceable with a particular product. Direct costs are allocable to a job, process, service, cost unit or a cost centre, indirect costs cannot be allocated. These indirect costs are called as overhead costs.

1.1 Meaning and Definitions of overheads :

Meaning :

Overhead is the aggregate of indirect material cost, indirect labour cost and indirect expenses which cannot be identified with and directly allocated to a particular

cost centre. The word Direct and Indirect cost both are different to understand i.e.,

Direct Cost or Prime Cost = Direct material + Direct labour + Direct expenses, whereas Indirect cost or overhead = Indirect material + Indirect labour + Indirect expenses.

Definitions :

Following are some of the highly accurate definitions of the term overhead.

i) Certified Institute of Management Accountants, London

“Overhead is an aggregate of indirect materials, indirect wages and indirect expenses”

ii) Blocker and Weltmer

“Overheads are the operating costs of a business enterprise which cannot be traced directly to a particular unit of output”.

iii) Wheldon

“Overheads are the cost of indirect materials, indirect labour and such other expenses, including services as cannot conveniently be charged direct to specific cost units. Alternatively, overheads are all expenses other than direct expenses”

iv) Harper

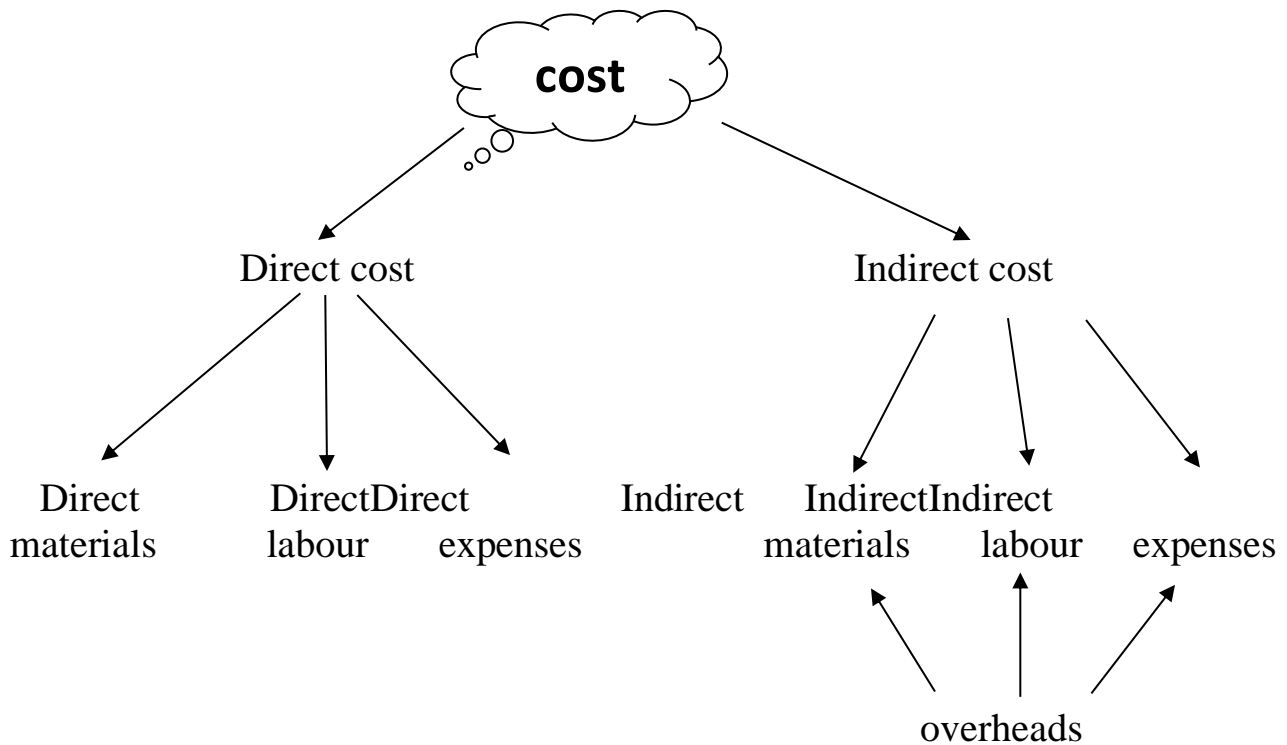
“Overheads are those costs which do not result from the existence of individual cost units”.

v) The National Association of Accountants (U.S.A.)

“Overheads are the costs that have to be incurred although they have no directly measurable, observable relationship to specific activity units, production or cost objectives”.

vi) W.W.Biggs

“All indirect costs are termed as overheads”.



1.3 Classification of overheads:

Classification of overheads is the process of grouping of indirect cost on the basis of common characteristics and clear objectives. In other words the arrangement of items in logical groups having regard to their nature (subjective classifications) or the purpose to be fulfilled. The need for overhead classification arises because of the requirement of different types of cost data for a number of purposes in the organizations or manufacturing company. Overhead cost may be classified as follows.

A) Functionalwise Classification:

Overheads can also be classified according to their functions. This classification is done as given below.

1) Manufacturing Overheads:

Indirect expenses incurred for manufacturing are called as manufacturing overheads. Factory overheads are also termed as production overheads or works overheads or manufacturing overheads etc. For example, factory power, works manager's salary, factory insurance, depreciation of factory machinery and other fixed assets, indirect materials used in production etc. It should be noted that such expenditure is incurred for manufacturing but cannot be identified with the product units.

2) Administrative Overheads:

Indirect expenses incurred for running the administration are known as administrative overheads. Administration overheads are also termed as office overheads or management overheads or establishment overheads etc. Examples of such overheads are, office salaries, printing and stationary, office telephone, office rent, electricity used in the office, managers salary, audit fees, legal charges etc.

3) Selling Overheads:

Overheads incurred for getting orders from consumers are called as selling overheads. It is the cost incurred for transferring the ownership of goods to the buyer. Examples of selling overheads are, sales promotion expenses, marketing expenses, salesmen's salaries and commission, advertisement expenses, showroom expenses, travelling expenses, bad debts etc.

4) Distribution Overheads:

Overheads incurred for execution of order are called as distribution overhead. Examples of distribution overheads are, warehouse charges, delivery van cost, carriage outward, packing charges etc.

B) Elementwise Classification:

According to this classification overheads are divided according to their elements. The classification is done as per the following details.

1) Indirect Materials:

Materials which cannot be identified with the given product unit of cost centre is called as indirect material. Indirect materials cost is the cost which cannot be allocated, but which can be apportioned to or absorbed by cost centres or cost units.

Examples of indirect materials are lubricants used in machine is an indirect material, small nuts and bolts, thread used to stitch clothes etc.

2) Indirect Labour:

Wages and salaries paid to indirect workers, i.e. workers who are not directly engaged on the production are examples of indirect labours.

3) Indirect Expenses:

Indirect expenses are all expenses of the factory such as rent and taxes, insurance of factory, repairs of factory machinery, electricity etc. It also includes indirect expenses incurred for office and selling and distribution.

C) Behaviourwise Classification:

According to this classification, overheads are classified as fixed, variable and semi variable. These concepts are discussed below.

1) Fixed Overheads:

Fixed overheads are commonly described as those that do not vary in total amount with increase or decrease in production volume for a given period of time. Salaries, depreciation of fixed assets, property taxes are some of the examples of fixed costs. Fixed overheads do not increase or decrease when the volume of the production or output changes. For example Rent and taxes, depreciation, salary etc.

2) Variable Overheads:

Variable overheads are those which go on increasing if production volume increases and go on decreasing if the volume decreases. Such increase or decrease may or may not be in the same proportion. Variable overheads are generally considered to be controllable as they are directly connected with the production. For example indirect material, salesmen's commission, power, fuel etc.

3) Semi Variable Overheads:

Semi variable overheads mean partly variable overheads and partly fixed overheads with the output in any organization. This cost are also known as mixed cost. For example monthly telephone charges, repairs, indirect labour, fuel and power, service charge + extra charge etc.

D) Controlwise Classification:

According to this classification, overheads are classified into controllable overheads and uncontrollable overheads.

1) Controllable overheads :

Controllable cost which is normally direct controlled by the management authority. For example training cost, bonus, subscriptions etc.

2) Uncontrollable overheads :

Uncontrollable cost which is not controlled by the management authority and its compulsory in short. For example Insurance, rent, salary, etc.

E) Normalitywise Classification :

According to this classification, overheads are classified into normal overheads and abnormal overheads.

1) Normal Overheads:

In this overhead, while production the normal percentage is expected by the management in output. They cannot be avoid it and this cost is included in production cost. For example Indirect material etc.

2) Abnormal overheads :

In this overhead the expenses which are not expected by the management while production. For example abnormal wastage, abnormal idle time. and Indirect. Direct cost are those which are properly identified with a cost centre

while Indirect costs are not traceable to cost centre. If a firm manufactures only oneproduct, all cost are direct but if more than one product offered by the firm, theindirect costs incurred are not traceable with a particular product. Direct costs areallocable to a job, process, service, cost unit or a cost centre, indirect costs cannot beso allocated. These indirect costs are called as overhead costs.

OVERHEAD

Basis of Apportionment of Overheads

There is no hard and fast rule regarding the basis of apportioning overheads to various departments and cost center. Nor is there any single basis for apportioning all the items. The basis to be used for apportionment shall be determined with reference to the nature of the particular item of overheads. Some of the common basis of apportionment of different types of overheads are illustrated in the following table:

S.No.	Basis of apportionment	Overheads
1.	Floor area occupied	Rent and rates, taxes, heating and lighting, repairs and maintenance of building, accident prevention cost.
2.	Number of workers employed	Canteen expenses, welfare expenses, recreation expenses, time keeping, supervision, etc.
3.	Direct wages	Contribution to provident fund, contribution to Employees State Insurance Schemes, Compensation to workers, etc.
4.	Value of assets	Depreciation, Insurance, repairs and maintenance of plant and machinery, fire insurance, etc.
5.	No. of light points	Lighting
6.	Horse power, machine hours, machine capacities, kilowatt hours	Power
7.	Material cost or number of requisitions	Stores overheads
8.	No. of labour hours	Salary of inspectors, salaries of supervisor and other administrative expenses
9.	Weight, volume, ton, km, etc.	Delivery expenses
10.	Technical estimates	Power/steam consumption, internal transport, lighting, managerial salaries.
11.	Sales or total cost	Audit fees

1. Bases of Apportionment

Problem 1

A departmental store has several departments. What bases would you recommend for apportioning the following items of expenses to its departments?

- | | |
|----------------------------------|-------------------------------------|
| (a) Fire insurance of buildings | (f) General administration expenses |
| (b) Rent | (g) Advertisement |
| (c) Delivery expenses | (h) Sales assistants' salaries |
| (d) Purchase department expenses | (i) Personnel department expenses |
| (e) Credit department expenses | (j) Sales commission |

Solution:

Bases for apportionment of overheads

Items of overhead	Basis of apportionment
(a) Fire Insurance of building	Value (or) Floor area
(b) Rent	Floor area
(c) Delivery expenses	Weight, volume, tonnes, km
(d) Purchase department expenses	No. of purchase orders, value of purchases
(e) Credit department expenses	Credit sales in value
(f) General administration expenses	Works cost
(g) Advertisement	Sales value
(h) Sales assistants' salaries	Sales value, time devoted
(i) Personnel department expenses	No. of employees
(j) Sales commission	Sales value or actual amount

II. Primary Distribution of Overheads

Problem 2

Ram Co. Ltd. has two production and two services departments namely P₁ and P₂ and S₁ and S₂ respectively. From the followings information, prepare a statement following primary distribution of Overheads:

Particulars	P ₁	P ₂	S ₁	S ₂
Area occupied (Sq. feet)	1,000	800	200	400
Assets Value (Rs. *000)	200	100	60	20
No. of workers	80	40	40	20
Light points	20	12	4	4
H.P. of machine	20	10	8	2
Direct wars (Rs. *000)	20	16	10	6
Direct materials (Rs. *000)	30	20	6	4

Total expenses and charges during the period ended are:

	Rs.
Rent, rates & taxes	18,000
Power	12,500
Insurance	9,500
Depreciation	38,000
Canteen expenses	5,400
Electricity	3,600
Indirect material	6,000
Indirect wages	10,400
Repairs & maintenance	19,000
Sundries	5,200

Solution

Primary overhead distribution summary

Items	Basis of apportionment	Total	Production depts.		Service depts..	
			P ₁	P ₂	S ₁	S ₂

Direct materials	Allocation	10,000	-	-	6,000	4,000
Direct wages	Allocation	16,000	-	-	10,000	6,000
Rent, rates & taxes	Floor space (5:4:1:2)	18,000	7,500	6,000	1,500	3,000
Power	H.P. of machine (10:5:4:1)	12,500	6,250	3,125	2,500	625
Insurance	Assets Value (10:5:3:1)	9,500	5,000	2,500	1,500	500
Depreciation	Assets Value (10:5:3:1)	38,000	20,000	10,000	6,000	2,000
Canteen expenses	No. of workers (4:2:2:1)	5,400	2,400	1,200	1,200	600
Electricity	Light points (5:3:1:1)	3,600	1,800	1,080	360	300

III. Secondary Distribution of Overheads

(A) Direct redistribution

Problem 4

Compute the overheads allocable to production departments X and Y from the following:

There are two service departments S_1 and S_2 . S_1 renders service to X and Y in ratio of 5:3 and S_2 renders service to X and Y in the ratio of 3:1. Overheads as per primary overhead distribution are:

X:Rs.58,800; Y:Rs.39,400; S_1 :Rs.32,800; S_2 :Rs.12,400

Solution:

Secondary overhead distribution summary

Particulars	Total Rs.	Production depts.		Service depts..	
		X Rs.	Y Rs.	S_1 Rs.	S_2 Rs.
Overheads as per	1,43,400	58,800	39,400	32,800	12,400

primary distribution					
Service dept. S ₁ OH5:3 to X andY	-	20,500	12,300	(-) 32,800	-
Service dept. S ₂ OH3:1 to X andY	-	9,300	3,100	-	(-) 12,400
Total overheads of production departments	1,43,400	88,600	54,800	-	-

(B) Step-ladder or Step distribution method

Problem 5

Deccan Manufacturing Ltd. has three departments which are regarded as production departments. Service departments costs are distributed to these production departments using the "Step-ladder method" of distribution. Estimates of factory overhead costs to be incurred by each department in the forthcoming year are as follows. Data required for distribution is also shown against each department.

Department	Factory overheads Rs.	Direct labour hours	No. Of employees	Area in sq. Meters
Production				
X	1,93,000	4,000	100	3,000
Y	64,000	3,000	125	1,500
Z	83,000	4,000	85	1,500
Service				
P	45,000	1,000	10	500
Q	75,000	5,000	50	1,500
R	1,05,000	6,000	40	1,000
S	30,000	3,000	50	1,000

The overhead costs of the four service departments are distributed in the same order, viz. P, Q, R and S respectively on the following basis:

Department	Basis
P	Number of employees
Q	Direct labour hours
R	Area in sq. metres

S

Direct labourhours

You are required to:

- Prepare a schedule showing the distribution of overhead costs of the four service departments to the three production departments; and
- Calculate the overhead recovery rate per direct labour hour for each of the three production departments.

Solution

(a) Statement showing secondary distribution of overheads

Departments		Overheads as per primary distribution				
Service	P	45,000	--45,000			
	Q	75,000	5000	--80,000		
	R	1,05,000	4000	24,000	--1,33,000	
	S	30,000	5000	12,000	19,000	--66,000
Production	X	1,93,000	10,000	57,000	24,000	3,00,000
	Y	64,000	12,500	28,500	18,000	1,35,000
	Z	83,000	8,500	28,500	24,000	1,60,000
Total overheads		5,95,000	-	-	-	5,95,000

Is Overhead recovery rate Per direct labour hour = $\frac{\text{Total overheads}}{\text{Direct labour hours}}$

$$\text{Dept. X} = \frac{3,00,000}{4,000} = \text{Rs. 75}$$

$$\text{Dept. Y} = \frac{1,35,000}{3,000} = \text{Rs. 45}$$

$$\text{Dept. Z} = \frac{1,60,000}{4,000} = \text{Rs. 40}$$

Trial and error method

Problem 8

A manufacturing concern has three production departments and two services department. In March 1991, the departmental expenses were:

	Production departments			Service departments	
	A	B	C	X	Y
Expenses(Rs.)	10,000	8,500	7,500	4,000	2,000

The service departments expenses are charged out on percentage basis as follows:

	A	B	C	X	Y
Dept. X 20%		25%	35%	-	20%
Dept. Y 25%		25%	40%	10%	-

You are required to prepare secondary distribution summary under trial and error method and arrive at the overheads finally charged to each production department.

Solution

Statement showing total overheads of service departments

Particular	Service department	
	X Rs. P	Y Rs. P
Overheads as per primary distribution	4000	2,000
Share of Y in X's overheads (4,000x20%)	(800)	800
Share of X in Y's overheads (2800x10%)	280	(280)
Share of Y in X's overheads (280x20%)	(56)	56
Share of X in Y's overheads (56x10%)	5.6	(5.6)
Share of Y in X's overheads (5.6x20%)	(1.12)	1.12
Share of X in Y's overheads (1.12x10%)	0.112	(0.112)
	4285.712	2857.12

Total overheads of service departments	(or)	(or)
	4286	2857

Secondary overhead distribution summary

Particulars	Total	Production depts.		
		A Rs.	B Rs.	C
Overheads as per primary distribution summary	26,000	10,000	8,500	7,500
Price dept. X's overheads x 80% in 20:25:35)	3,429	875	1,072	1,500
Price dept. Y's overhead x 90% in 25:25:40)	2,571	714	714	1,143
overheads	32,000	11,571	10,286	10,143

VII. absorption of Overheads

(A) Direct material percentage method

Problem 15

Complete the direct material percentage rate for overhead absorption from the following:

Factory overheads budgeted for 2000 Rs. 2,30,000

Cost of direct material estimated to be consumed during 2000 Rs. 4,60,000

Solution:

Direct material

$$\text{Percentage rate} = \frac{\text{Factory overheads (Budgeted or Actual)}}{\text{Direct material (Estimated or Actual)}} \times 100$$

Budgeted factory overheads for 2000 : Rs. 2,30,000

Estimated direct material for 2000 : Rs. 4,60,000

$$\text{Direct material percentage rate} = \frac{\text{Rs.2,30,000}}{\text{Rs.4,60,000}} \times 100 = 50\%$$

(B) Direct wage percentage method

Problem 16

A factory has several departments. The following details are relating to dept. 'Y' for the month of April 2000:

Direct wage for April 2000 : Rs.50,000

Factory Overheads allocated and apportioned
To the department : Rs.20,000

Calculate the overhead absorption rate based on direct wages for the month.

Solution:

$$\text{Direct wages percentage rate} = \frac{\text{Factory overheads (Budgeted or Actual)}}{\text{Direct material (Estimated or Actual)}} \times 100$$

$$= \frac{20,000}{50,000} \times 100 = 40\%$$

(C) Prime cost percentage method

Problem 17

From the following particulars you are required to calculate the prime cost percentage rate of works overheads :

Works overheads of department	:	Rs.7,50,000
Direct wages	:	Rs.7,50,000
Direct material cost	:	Rs.22,50,000

Solution

$$\text{Prime Cost percentage rate} = \frac{\text{works overheads (Budgeted or Actual)}}{\text{prime cost (Estimated or Actual)}} \times 100$$

Worksoverheads = Rs.7,50,000

Primecost = Direct materials + Direct wage

= Rs.7,50,000 + Rs.22,50,000

=Rs.30,00,000

$$\text{Prime costpercentagerate} = \frac{7,50,000}{30,00,000} \times 100 = 25\%$$

(D) Rate per unit of productionmethod

Problem 18

During 2000, Ram Ltd, spent Rs.2,50,000 on indirect expenses and produced 10,000 units of its only product. There were no stock. The company has decided to absorb the indirect expenses on the basis of its output. You required to determine the overhead absorption rate.

Solution

$$\begin{aligned} \text{Absorption rate per unit of output} &= \frac{\text{indirect expenses}}{\text{output (in units)}} \\ &= \frac{\text{Rs.2,50,000}}{1,00,000 \text{ units}} = \text{Rs.2.50 per unit} \end{aligned}$$

(E) Labour hour ratemethod

Problem 19

Calculate direct labour hour rate from the following:

Total no. Of workers	250
Working days in a year	300
No. Of hours per day worked	8
Short and idle time	5%
Factory overheads	Rs.45,6000

Gift to workers

Rs. 2,000

Solution

$$\text{Labour hour rate} = \frac{\text{Factory overheads}}{\text{No. of labour hours worked}}$$

$$\begin{aligned} \text{Factory overheads} &: \text{Rs. } 45,000 \\ \text{No. of labour hours worked} &= \text{No. of workers} \times \text{working days in a year} \times \\ &\quad \text{No. of hours per day worked} - \text{short and idle} \\ &\quad \text{Time} - \text{short and idle time.} \\ &= (250 \times 300 \times 8) - 5\% \\ &= 6,00,000 - 5\% = 5,70,000 \text{ hrs.} \end{aligned}$$

(F) Machine hour rate method

Problem 20

During July 2000, works overheads incurred in a factory were Rs. 1,60,000. The machine hours worked during the month were Rs. 40,000 hours. You are required to ascertain the machine hour rate to be charged to the output to recover the works overheads.

Solution

$$\text{Machine hour rate} = \frac{\text{works overhead (Budgeted or actual)}}{\text{Machine hours (estimated or actual)}}$$

$$= \frac{\text{Rs. } 1,60,000}{40,000} = \text{Rs. } 4 \text{ per hour}$$

IX. Computation of Machine Hour Rate

Problem 21

From the data given below, below, compute machine hour rate:

Cost of the machine	Rs. 90,000
Installation charges	Rs. 10,000
Estimated scrap value	Nil
Estimated repair charges per year	Rs. 1,000
Estimated working life of the machine	10,000 hours

Standing charges allocated to the Machine per year

Estimated working hours per year 2,000 hours

Power consumption of the machine is 20 units per hour and the rate of power per 100 units is Rs.10.

Solution

Statement of machine hour rate

Particulars		Per house Rs. P.
Standing charges	: $\frac{6,000}{2,000}$	
Machine expenses	:	
Depreciation	= $\frac{90,000+10,000}{10,000}$ = $\frac{1,00,000}{2,000}$	
Repairs	= $\frac{1,000}{2,000}$	
Power = Rs.10/100 units x 20 units		
Machine hour rate		

VIII. Under or Over-absorption of Overheads

Problem 23

The factory overhead costs of four production departments of a company engaged in executing job orders for an accounting year are as follows:

	Rs.
A	19,300
B	4,200
C	4,000
D	2,000

Overheads has been applied as under:

Dept.A Rs.1.50 per machine hour for 14,000 hours.

Dept.B Rs.1.30 per direct labour hour for 3,000 hours.

Dept.C 80% of direct labour cost of Rs.6,000.

Dept.D Rs.2 per piece, for 950 pieces.

Find out the amount of department wise under or over-absorbed overheads.

Solution

Computation of amount of factory overheads absorbed

Dept.A : 14,000 hours x Rs.1.50 = Rs.21,000

Dept.B : 3,000 hours x Rs.1.30 = Rs. 3,900

Dept.C : 80% of Rs.6,000 = Rs.4,800

Dept.D : 950 x Rs.2 = Rs. 1,900

Statement showing under / over-absorption of overheads

Dept.	Overheads		Under absorption	Over absorption
	Incurred	Absorbed		
A	19,300	21,000	-	1,700
B	4,200	3,900	300	-
C	4,000	4,800	-	800
D	2,000	1,900	100	-
			400	2,500

UNIT – V

PROCESS COSTING

INTRODUCTION:

Process costing is a form of operations costing which is used where standardized homogeneous goods are produced. This costing method is used in industries like chemicals, textiles, steel, rubber, sugar, shoes, petrol etc. Process costing is also used in the assembly type of industries also. It is assumed in process costing that the average cost presents the cost per unit. Cost of production during a particular period is divided by the number of units produced during that period to arrive at the cost per unit.

MEANING OF PROCESS COSTING

Process costing is a method of costing under which all costs are accumulated for each stage of production or process, and the cost per unit of product is ascertained at each stage of production by dividing the cost of each process by the normal output of that process.

1.2.1 Definition:

CIMA London defines process costing as “that form of operation costing which applies where standardized goods are produced”

1.2.2 Features of Process Costing:

- (a) The production is continuous
- (b) The product is homogeneous
- (c) The process is standardized
- (d) Output of one process become raw material of another process
- (e) The output of the last process is transferred to finished stock
- (f) Costs are collected process-wise
- (g) Both direct and indirect costs are accumulated in each process

(h) If there is a stock of semi-finished goods, it is expressed in terms of equivalent units

(i) The total cost of each process is divided by the normal output of that process to find out cost per unit of that process.

1.2.3 Advantages of process costing:

1. Costs are computed periodically at the end of a particular period
2. It is simple and involves less clerical work than job costing
3. It is easy to allocate the expenses to processes in order to have accurate costs.
4. Use of standard costing systems is very effective in process costing situations.
5. Process costing helps in preparation of tender, quotations
6. Since cost data is available for each process, operation and department, good managerial control is possible.

1.2.4 Limitations:

1. Cost obtained at each process is only historical cost and are not very useful for effective control.
2. Process costing is based on average cost method, which is not that suitable for performance analysis, evaluation and managerial control.
3. Work-in-progress is generally done on estimated basis which leads to inaccuracy in total cost calculations.
4. The computation of average cost is more difficult in those cases where more than one type of products is manufactured and a division of the cost element is necessary.
5. Where different products arise in the same process and common costs are prorated to various cost units. Such individual product costs may be taken as only approximation and hence not reliable.

DISTINCTION BETWEEN JOB COSTING AND PROCESS COSTING

Job order costing and process costing are two different systems. Both the systems are used for cost calculation and attachment of cost to each unit completed, but both the systems are suitable in different situations. The basic difference between job costing and process costing are

Basis of Distinction

	Basis of Distinction	Job order costing	Process costing
1.	Specific order	Performed against specific orders	Production is continuous
2.	Nature	Each job may be different.	Product is homogeneous and standardized.
3.	Cost determination	Cost is determined for each job separately.	Costs are compiled for each process for department on time basis i.e. for a given accounting period.
4.	Cost calculations	Cost is compiled when a job is completed.	Cost is calculated at the end of the cost period.
5.	Control	Proper control is comparatively difficult as each product unit is different and the production is not continuous.	Proper control is comparatively easier as the production is standardized and is more suitable.
6.	Transfer	There is usually not transfer from one job to another unless there is some surplus work.	The output of one process is transferred to another process as input.
7.	Work-in-Progress	There may or may not be work-in-progress.	There is always some work-in-progress because of continuous production.
8.	Suitability	Suitable to industries where production is intermittent and customer orders can be identified in the value of production.	Suitable, where goods are made for stock and production is continuous.

COSTING PROCEDURE

For each process an individual process account is prepared.

Each process of production is treated as a distinct cost centre.

Items on the Debit side of Process A/c.

Each process account is debited with –

- a) Cost of materials used in that process.
- b) Cost of labour incurred in that process.
- c) Direct expenses incurred in that process.
- d) Overheads charged to that process on some pre determined.
- e) Cost of ratification of normal defectives.
- f) Cost of abnormal gain (if any arises in that process)

Items on the Credit side:

Each process account is credited with

- a) Scrap value of Normal Loss (if any) occurs in that process.
- b) Cost of Abnormal Loss (if any occurs in that process)

Cost of Process:

The cost of the output of the process (Total Cost less Sales value of scrap) is transferred to the next process. The cost of each process is thus made up to cost brought forward from the previous process and net cost of material, labour and overhead added in that process after reducing the sales value of scrap. The net cost of the finished process is transferred to the finished goods account. The net cost is divided by the number of units produced to determine the average cost per unit in that process. Specimen of Process Account when there are normal loss and abnormal losses.

Process Losses:

In many process, some loss is inevitable. Certain production techniques are of such a nature that some loss is inherent to the production. Wastages of material, evaporation of material is un avoidable in some process. But sometimes the Losses are also occurring due to negligence of Labourer, poor quality raw material, poor technology etc. These are normally called as avoidable losses. Basically process losses are classified into two categories (a) Normal Loss (b) Abnormal Loss

1. Normal Loss:

Normal loss is an unavoidable loss which occurs due to the

inherent nature of the materials and production process under normal conditions. It is normally estimated on the basis of past experience of the industry. It may be in the form of normal wastage, normal scrap, normal spoilage, and normal defectiveness. It may occur at any time of the process.

No of units of normal loss: Input x Expected percentage of Normal Loss.

The cost of normal loss is a process. If the normal loss units can be sold as a scrap then the sale value is credited with process account. If some rectification is required before the sale of the normal loss, then debit that cost in the process account. After adjusting the normal loss the cost per unit is calculated with the help of the following formula:

Cost of good unit:
$$\frac{\text{Total cost increased} - \text{Sale Value of Scrap}}{\text{Input} - \text{Normal Loss units}}$$

2. Abnormal Loss:

Any loss caused by unexpected abnormal conditions such as plant breakdown, substandard material, carelessness, accident etc. such losses are in excess of pre-determined normal losses. This loss is basically avoidable. Thus abnormal losses arrive when actual losses are more than expected losses. The units of abnormal losses are calculated as under:

Abnormal Losses = Actual Loss – Normal Loss

The value of abnormal loss is done with the help of following formula:

Value of Abnormal Loss:

$$\frac{\text{Total Cost increase} - \text{Scrap Value of normal Loss} \times \text{Units of abnormal loss}}{\text{Input units} - \text{Normal Loss Units}}$$

Abnormal Process loss should not be allowed to affect the cost of production as it is caused by abnormal (or) unexpected conditions. Such loss representing the cost of materials, labour and overhead charges called abnormal loss account. The sales value of the abnormal loss is credited to Abnormal Loss Account and the balance is written off to costing P & L A/c.

3. Abnormal Gains:

The margin allowed for normal loss is an estimate (i.e. on the basis of expectation in process industries in normal conditions) and slight differences are bound to occur between the actual output of a process and that anticipates. This difference may be positive or negative. If it is negative it is called ad abnormal Loss and if it is positive it is Abnormal gain i.e. if the actual loss is less than the normal loss then it is called as abnormal gain. The value of the abnormal gain calculated in the similar manner of abnormal loss. The formula used for abnormal gain is:

Abnormal Gain =

$$\frac{\text{Total Cost incurred} - \text{Scrap Value of Normal Loss} \times \text{Abnormal Gain}}{\text{Unites}}$$

Input units – Normal Loss Units

The sales values of abnormal gain units are transferred to Normal Loss Account since it arrive out of the savings of Normal Loss. The difference is transferred to Costing P & L A/c. as a Real Gain.

Processing cost

(A) No losses ----- Nounits

Problem 1

Mr. Ram Kumar produces the product 'Tom' which goes through three direct processes. The following information is available from his accounts.

Items	Process I	Process II	Process III
	Rs.	Rs.	Rs.
Direct materials	10,000	6,000	4,000
Direct wages	4,000	2,000	2,000
Direct expenses	8,000	4,000	2,000

Indirect expenses incurred are Rs.8,000 which are recovered on the basis of 100% of direct wages. You are required to prepare process accounts.

Solution:

Process I A/c

Particulars	Rs.	Particulars	Rs.
To Direct materials	10,000	By Process II A/c (Output transferred)	26,000
To Direct wages	4,000		
To Direct expenses	8,000		
To Indirect expenses (DW x 100%)	4,000		
	26,000		26,000

Process IIA/c

Particulars	Rs.	Particulars	Rs.
To Process I A/c (transfer)	26,000	By Process III A/c (Output transferred)	40,000
To Direct materials	6,000		
To Direct wages	2,000		
To Direct expenses	4,000		
To Indirect expenses	2,000		
(DE x 100%)	40,000		40,000

Process IIIA/c

Particulars	Rs.	Particulars	Rs.
To Process II A/c (transfer)	40,000	By Finished Stock A/c (Output transferred)	50,000
To Direct materials	4,000		
To Direct wages	2,000		
To Direct expenses	2,000		
To Indirect expenses	2,000		
(DW x 100%)	50,000		50,000

(D) Normal loss with scrapvalue

The following expenses were incurred for the production of 1,500 with units of a following product:

	Rs.
Materials	3,50,000
Wages	1,20,000
Overheads	80,000

Normal wastage in the process is 2% of the input and the scrap value is Rs.300 per unit. You required to prepare process account, assuming there was no abnormal loss or gain.

Process A/c

Particulars	Units	Rs.	Particulars	Units	Rs.
To Materials	1,500	3,50,000	By Normal loss (1,500 x 2% at Rs.300 per unit)	30	9,000
To wages		1,20,000	By Finished stock A/c (Transfer at Rs.368.03 per unit)	1,470	5,41,000
To overheads		80,000			
	1,500	5,50,000		1,500	5,50,000

Working Note

$$\begin{aligned} \text{Cost per unit of output} &= \frac{\text{Total cost of process} - \text{Scrap value of normal loss}}{\text{Input} - \text{Normal loss (units)}} \\ &= \frac{5,50,000 - 9,000}{1,470} = \text{Rs. } 368.03 \end{aligned}$$

(E) Normal loss in weight and scrap

Problem 2

In a factory, the output of a product passes through two processes P and Q. In each process 5% of the total weight put in is lost and 10% scrap which realise from process P and Q Rs.40 and Rs. 100 per ton respectively.

	Processes	
	P	Q
Material's consumed (in tons)	1,600	112
	Rs.	Rs.
Cost of materials per ton	250	400
Wages	28,800	19,200
Manufacturing expenses	12,000	8,000

Prepare process accounts

Solution

Process P A/c

Particulars	Tons	Rs.	Particulars	Tones	Rs.
To Material consumed at Rs.250 per ton	1,600	4,00,000	By loss in weight (1,600 x 5%)	80	Nil
To wages		28,000	By Normal scrap (1,600 x 10% at Rs. 40 per ton)	160	6,400
To Manufacturing exp.		12,000	By process Q A/c (transfer at Rs.319.41 per unit)	1,360	4,34,4000
	1,600	4,40,800		1,600	4,40,800

Working Note

$$\text{Cost per ton of output} = \frac{\text{Total process cost} - \text{Scrap value}}{\text{Input unit} - \text{Weight lost} - \text{Normal scrap}}$$

$$= \frac{4,40,800 - 6,400}{1,600 - 80 - 160} = \frac{4,34,4000}{1,360} = \text{Rs.319.41}$$

Process Q A/c

Particulars	Tons	Rs.	Particulars	Tons	Rs.
To process 'P' A/c (Transfer)	1,360	4,34,4000	By Loss in weight (1,472x5%)	73.60	Nil
To Materials consumed (at Rs.400 per ton)	112	44,800	By Normal scrap (1,427x10% at Rs.100 per ton)	147.20	14,720
To Wages		19,200	By Finished stock A/c (Transfer at Rs.392.97 per ton)	1,251.20	4,91,680
To Manufacturing expenses		8,000			
	1,472	5,06,4000		1,472	5,06,000

Working Note

$$\text{Cost per ton of output} = \frac{5,06,400 - 14,720}{1,472 - 73.60 - 147.20} = \frac{4,91,680}{1,251.20} = \text{Rs.}392.97$$

II. Abnormal Loss and Gain

(A) Abnormal loss

Problem 3

600 kg. of a material was charged to process I at the rate of Rs.4/- kg. The direct labour accounted for Rs.200 and the other departmental expenses amounted Rs.760. The normal loss is 10% of input and the net production was 500 kg. Assume that the process scrap is saleable at Rs.2 per kg. Prepare process i account and abnormal loss account.

Process I A/c

Particulars	Kg.	Rs.	Particulars	Kg.	Rs.
To Material @ Rs.4	600	2,400	By Normal loss (600 x 10%) @ Rs.2 per kg	60	120
To Direct labour		200	By Abnormal loss	40	240
To Other expenses		760	By Process II A/c (Transferred at Rs.6 per kg)	500	3,000
	600	3,360		600	3,360

(i) Calculation of abnormal loss units

Abnormal loss (units) = Input – Normal loss (units) – Actual output

$$= 600 - 60 - 500 = 40 \text{ units}$$

(ii) Calculation of value of abnormal loss

Value of abnormal loss = Cost per unit of the process output x Units of abnormal loss

$$\begin{aligned} \text{Cost per unit of the process output} &= \frac{\text{total cost} - \text{Scrap value}}{\text{Expected output (Input} - \text{Normal loss)}} \\ &= \frac{3,360 - 120}{600 - 60} = \frac{3,240}{540} = \text{Rs.}6 \end{aligned}$$

/ Value of abnormal loss = 40 units x Rs.6 = Rs.240

Abnormal lossA/c

Particulars	Kg.	Rs.	Particulars	Kg.	Rs.
To Process 1 A/c	40	240	By Cash A/c (Scrap value at Rs.2 per kg)	40	80
			By Costing P&L A/c (Transfer)	-	160
	40	240		40	240

(B) Abnormalgain

Problem 4

The cost records show the following cost of producing 600 units of a product is process X:

	Rs.
Materials	12,000
Labour	4,500
Overheads	1,500

The normal wastage is 10% of the units and this wastage can be sold in the market at Rs.15 per unit. The actual production was 570 units. Prepare process 'X' account, abnormal effectiveness account and normal loss account.

Solution

Process 'X' A/c

Particulars	Units	Rs.	Particulars	Units	Rs.
To Mateials	600	12,000	By Normal loss A/c (10% of 600 units at Rs.15 per unit)	60	900
To Labour		4,500			
To Overheads		1,500	By Output (Rs.31.67 per unit)	570	18,050
To Abnomal effectiveness (Rs.31.67 per unit)	30	950			
	630	18,950		630	18,950

Working Notes

(i) Calculation of abnormal effectiveness in units

Abnormal effectiveness (gain) = Input - Normal loss – Actual

$$= 600 - 60 - 570$$

$$= (-) 30 \text{ units}$$

(ii) Calculation of value of abnormal effectiveness (gain)

Value of abnormal effective = Cost per unit of output x Units of abnormal effectiveness

$$\text{Cost per unit of output} = \frac{\text{Total cost} - \text{Scrap value}}{\text{Expected output}}$$

$$= \frac{18,000 - 900}{600 - 60} = \text{Rs. } 31.67$$

Value of abnormal gain = 30 units x 31.67 = Rs.950

Abnormal effectiveness (Gain) A/c

Particulars	Units	Rs.	Particulars	Units	Rs.
To Normal loss A/c (Loss of Scrap income at Rs. 15 per unit)	30	450	By Process A/c	30	950
To Costing P & L A/c (transfer)	-	500			
	30	950			

Normal loss A/c

particulars	Units	Rs.	Particulars	Units	Rs.
To Process A/c	60	900	By Abnormal effectiveness A/c	30	450
				By Cash A/c (@ Rs.15 unit)	30
	60	900		60	900

V. Joint Product and By-products

(A) Methods of apportionment of joint cost among jointproducts

(i) Average unit cost method

Problem 5

Apportion the joint cost of joint products X, Y and Z from the following does under average unit cost method.

Pre separation point cost is Rs.2,40,000 and the other datais:

Product	Unitsproduced
X	6,000
Y	4,000
Z	2,000

	12,000

Solution

Average cost per unit = $2,40,000/12,000$ units = Rs.20

Apportionment of joint cost

Products	Units	Rate per unit Rs.	Joint cost apportioned Rs.
X	6,000	20	1,20,000
Y	4,000	20	80,000
Z	2,000	20	40,000
	12,000		2,40,000