BAOU
Education for All

Dr. Babasaheb Ambedkar
Open University
(Established by Government of Gujarat)

NAAC ACCREDITED A++ GRADE 3.55/4

MBA
SEMESTER - 3
MBA03EF304
Advance cost Analysis

Message for the Students

Dr. Babasaheb Ambedkar Open (University is the only state Open University, established by the Government of Gujarat by the Act No. 14 of 1994 passed by the Gujarat State Legislature; in the memory of the creator of Indian Constitution and Bharat Ratna Dr. Babasaheb Ambedkar. We Stand at the seventh position in terms of establishment of the Open Universities in the country. The University provides as many as 54 courses including various Certificate, Diploma, UG, PG as well as Doctoral to strengthen Higher Education across the state.

On the occasion of the birth anniversary of Babasaheb Ambedkar, the Gujarat government secured a quiet place with the latest convenience for University, and created a building with all the modern amenities named 'Jyotirmay' Parisar. The Board of Management of the University has greatly contributed to the making of the University and will continue to this by all the means.

Education is the perceived capital investment. Education can contribute more to improving the quality of the people. Here I remember the educational philosophy laid down by Shri Swami Vivekananda:

> ***"We want the education by which the character is formed, strength of mind is Increased, the intellect is expand and by which one can stand on one's own feet".***

In order to provide students with qualitative, skill and life oriented education at their threshold. Dr. Babaasaheb Ambedkar Open University is dedicated to this very manifestation of education. The university is incessantly working to provide higher education to the wider mass across the state of Gujarat and prepare them to face day to day challenges and lead their lives with all the capacity for the upliftment of the society in general and the nation in particular.

The university following the core motto 'स्वाध्यायः परमम् तपः' does believe in offering enriched curriculum to the student. The university has come up with lucid material for the better understanding of the students in their concerned subject. With this, the university has widened scope for those students who
are not able to continue with their education in regular/conventional mode. In every subject a dedicated term for Self Learning Material comprising of Programme advisory committee members, content writers and content and language reviewers has been formed to cater the needs of the students.

Matching with the pace of the digital world, the university has its own digital platform Omkar-e to provide education through ICT. Very soon, the University going to offer new online Certificate and Diploma programme on various subjects like Yoga, Naturopathy, and Indian Classical Dance etc. would be available as elective also.

With all these efforts, Dr. Babasaheb Ambedkar Open University is in the process of being core centre of Knowledge and Education and we invite you to join hands to this pious *Yajna* and bring the dreams of Dr. Babasaheb Ambedkar of Harmonious Society come true.

Prof. Ami Upadhyay
Vice Chancellor,
Dr. Babasaheb Ambedkar Open University,
Ahmedabad.

Dr. Babasaheb Ambedkar Open University

(Established by Government of Gujarat)

ADVANCE COST ANALYSIS
MBA03EF304
SEMESTER-3

BLOCK-1

Unit-1 Overheads - Distribution	01
Unit-2 Process Costing	25
Unit-3 Marginal Costing & Absorption Costing	41
Unit-4 Budgetary Control	62
Unit-5 Standard Costing	78

BLOCK-2

Unit-6 Uniform Costing and Inter-Firm Comparison	90
Unit-7 Activity Based Costing & Management	97
Unit-8 Cost Control and Cost Reduction	109
Unit-9 Cost Audit	123
Unit-10 Recent Developments in Costing	132

PART - 1

MBA
SEMESTER-3 FINANCE
ADVANCE COST ANALYSIS
BLOCK: 1

Authors' Name: Prof. (Dr.) Manoj Shah, Professor& Director, Dr. BAOU, Ahmedabad
Dr. Jayashreeben Koshti, Assistant Professor, Dr. BAOU, Ahmedabad
Dr. Dipak Sanki , Assistant Professor, KBS College , Vapi
Mr. Ankit Joshi, Assistant Professor, Dr. BAOU, Ahmedabad

Review (Subject): Prof. (Dr.) Manoj Shah, Professor& Director, Dr. BAOU, Ahmedabad
Prof.(Dr.)Shankarsinh Sodha, Professor& Director, Gujarat University,Ahmedabad
Dr. Megha Shah, Associate Professor, GLS University, Ahmedabad

Review (Language): Dr. Sunil Sagar, Professor, Central University of Gujarat, Gandhinagar

Editor's Name: Prof. (Dr.) Manoj Shah
Professor and Director,
School of Commerce and Management,
Dr. Babasaheb Ambedkar Open University,
Ahmedabad.

Co-Editor's Name: Dr. Dhaval Pandya
Assistant Professor,
School of Commerce and Management,
Dr. Babasaheb Ambedkar Open University,
Ahmedabad.

Publisher's Name: Dr. Ajaysinh Jadeja
Registrar,
Dr. Babasaheb Ambedkar Open University
'JyotirmayParisar',Opp.ShriBalaji Temple,Chharodi,Ahmedabad,382481,
Gujarat,India.

Edition: 2024 (First Edition)

ISBN: 978-93-5598-789-1

978-93-5598-789-1

UNIT – 1 OVERHEADS - DISTRIBUTION

1.1 Introduction

1.2 Definitions

1.3 Classification of Overhead

1.4 Allocation of Overhead

1.5 Apportionment of overhead

1.6 Re-Apportionment of Service Centre Cost

1.7 Absorption of Overhead To Various Products/Job

❖ **Exercise**

1.1 Introduction

For manufacturing any product or providing services, certain amount of expenditures are required, which is generally known as Cost of product or service. The Cost of product or service includes various expenditure/cost like cost of material, labour and other indirect expenses. This kind of analysis of cost of product/service is a purpose of Cost accounting. Proper analysis of these elements of costs is required for the Management to take important decision for the company.

Cost means the actual or notional amount of expenditure incurred on attribute to given things. To attain a particular objective, the amount of resources has been sacrificed, which is represented by cost. This sacrifice may be in direct or indirect form.

Costing refers to the techniques and process of ascertaining the cost of products or services.

1.2 Definitions

1.2.1. Definition of Cost Accounting:

- The Costing terminology of **C.I.M.A.** London defines cost accounting as, "The establishment of budgets, standard costs and actual costs of operations, processes, activities or products, and the analysis of variances, profitability or the social use of funds".
- **I.C.M.A. (Institute of Cost and Management Accountants)** defined cost accounting as, "Cost accountancy is the application of accounting and costing principles, methods, and techniques to the science, art, and practice of cost control and the ascertainment of profitability."

1.2.2. Meaning of Direct Cost:

The cost of product includes Direct Cost and Indirect Cost.

Direct Cost: Direct cost is a kind of expenditure, which can be easily attributed to specific product, department or cost centre within the organization. Direct Costs is made up of Direct material, Direct Labour and Direct Expenses.

The following definition (Material Cost & Labour Cost) given by the Chartered Institute of Management Accountants of England should be noted.

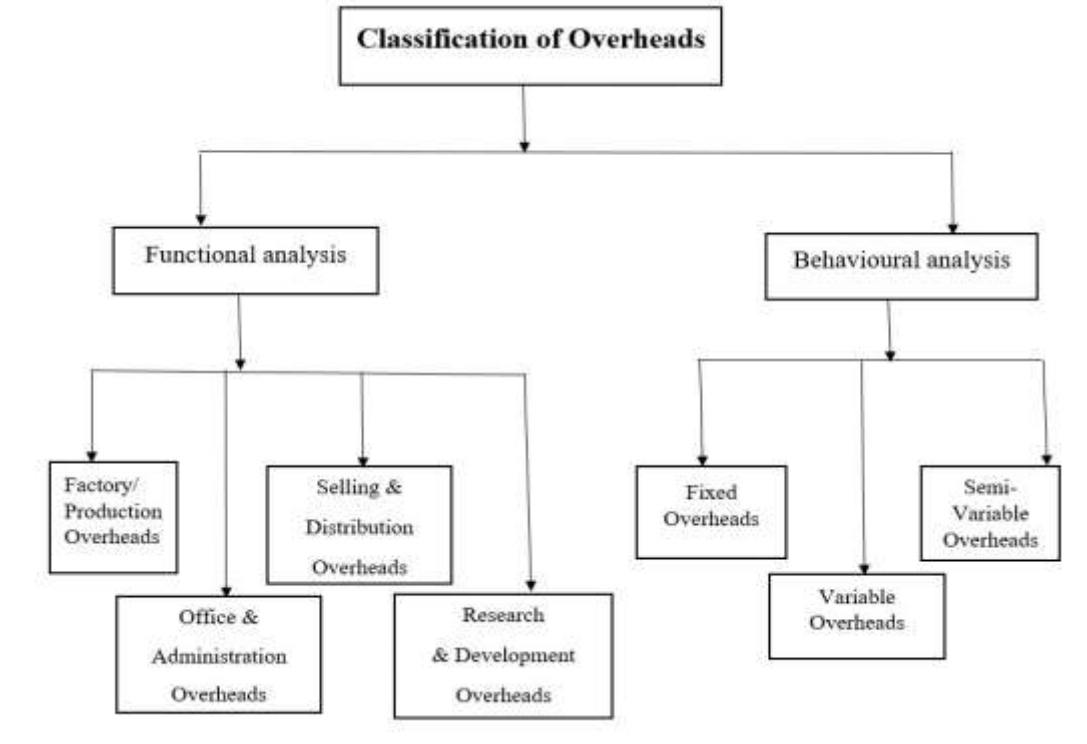
- **Material Cost:** "The cost of commodities supplied to an undertaking"
- **Labour Cost**: "The cost of remuneration (wages, salaries, commissions, bonus etc.) of the employee of an undertaking."
- **Other Direct Expense:** "The expenses (other than direct material and direct labour) which can be allocated conveniently to a unit of cost."

1.2.3. Meaning and Definition of Overhead (Indirect Cost):

- Overhead refers to indirect costs which cannot be traced directly to specific product, service or department. Here are some definitions of overhead by various authors:
- **According to CIMA,** Overhead means "The total cost of indirect materials, indirect labour and indirect expenses."
- **The Institute of Cost Accountants of India (ICAI):** "Overheads are indirect costs that cannot be traced directly to a specific product, project, or department. They include expenses related to rent, utilities, depreciation, and other common resources used in the production process."

1.3 Classification of Overheads

- ✓ The process of arranging the items based on degree of similarity is known as Classification.
- ✓ CIMA defines Classification as "the arrangement of items in logical groups having regard to their nature (subjective classification) or the purpose to be fulfilled (Objective Classification)."
- ✓ The classification of overheads mainly depends upon the type and size of a business as well as the nature of the product or service rendered by business.
- ✓ The Overheads are classified into (1) Functional analysis and (2) Behavioural analysis.



(1) Functional Analysis:

Based on Functional Analysis, the overhead are divided into four parts:

A. Factory/Production overheads
B. Office & Administration Overheads
C. Selling & Distribution Overheads
D. Research and Development overheads

A. Factory/production overheads:

It refers to payment of all the indirect cost for carrying out manufacturing/production activity/operation in the factory. It is also known as Works Overhead, Factory Cost and Work Cost.

- ✓ Rent, Taxes, Repairs and Maintenance of factory Building
- ✓ Insurance, Depreciation and Handling of factory Plant
- ✓ Power & Gas
- ✓ Normal wastage of Material
- ✓ Canteen expenses & Workers Welfare Expense
- ✓ Idle time Wages
- ✓ Salary, Wages and Incentives to indirect workers and staff like Storekeepers, factory clerical staff, timekeepers, maintenance staff, factory watch and ward, office boys
- ✓ Remuneration paid to directors and other higher authority related with factory management

B. Office & Administration Overheads:

Office and Administration Overhead means all the indirect expenses related to general management and administration of organization, which is indirectly related with production, marketing, research or development functions of the enterprise. Policy formulation cost, cost of directing the organization, controlling cost of operation are included in Office and Administration Overheads.

- ❖ Examples of office & administration overheads are as follows.

- ✓ Office rent, rates and taxes
- ✓ Employee Salary, Director Fee, Allowances
- ✓ Fees of General Manager, Secretary, Auditor
- ✓ Stationery expenses, printing, postage and telegrams, telephones etc.
- ✓ Audit and Legal Fees
- ✓ Post &Telephone Bill
- ✓ Depreciation, Insurance, Repairs and maintenance of office building, furniture, Equipment
- ✓ Bank charges

C. Selling and Distribution Overheads:

All expenditure incurred from warehouse to goods reach to the customers are included in selling and distribution cost.

- Examples of selling & distribution overheads are as follows.
- ✓ Salaries, Commissions and travelling expenses to Sales Staff
- ✓ Remuneration of Sales Director
- ✓ Sales office rent-taxes-insurance-handling expenses-depreciation

- ✓ Show-room expenses
- ✓ Salesmen's commission & allowances
- ✓ Advertising and publicity expenses
- ✓ Cost of Catalogue, Price Lists and Sample cost
- ✓ Price list, stationery, packing cost
- ✓ Bad debt and cost incurred for collection of bad debts
- ✓ Discount and Rebates
- ✓ Carriage and freight outwards
- ✓ Packing and delivery Charges
- ✓ Depreciation, Insurance, repair and maintenance exp. of delivery vehicle
- ✓ Wager of packers, drivers and delivery boys
- ✓ Running Expense of Delivery Vehicles
- ✓ Warehouse rent, repair of delivery van, handling expenses
- ✓ Cost of participation in industrial exhibitions

D. Research and Development Overheads

Research overhead refers to payment of all the cost associated with the new product, new manufacturing process for any product while the development overhead is incurred for putting research result on commercial basis.

(2) Behavioural Analysis:

Based on their behavior, the indirect costs are divided into following three parts:

A. Fixed Overheads
B. Variable Overheads
C. Semi-Variable Overheads

A. Fixed Overheads:

The amount of overhead which remains the fixed and independent with increases or decreases in volume of output for a particular period of time are called as Fixed Overhead. Generally, it is paid for a particular time period. Fixed Overheads are uncontrollable in nature as they are not related with managerial action. It should be kept in mind that these overheads are fixed within specified limit related with time or activity.

- Some of the examples of fixed costs are as under:

- ✓ Managerial remuneration,
- ✓ Rent of building,
- ✓ Insurance of building, plant etc.

B. Variable Overheads:

The indirect costs which vary with changes in the volume of output are known as Variable Overhead. For example, if the output increases by 10%, the variable expenses also increase by 10%. Correspondingly, on a decline of the output, this cost will also decline proportionately. Examples of Variable Overhead includes Indirect Material and Indirect Labour.

C. Semi-Variable Overheads:

As the word indicates, these overheads are partly fixed and partly variable in nature. They include element of both fixed and variable overhead. These overheads do not vary with changes in the production volume Up to a certain level, these overheads are fixed, but if

the level is exceeded beyond limit, they vary without any direct relationship with production volume.

- Examples of Semi-Variable Overheads include:

✓ Telephone charges
✓ Repair and maintenance of buildings
✓ Machines and equipment etc.

1.4 Allocation of Overheads

According to CIMA, Cost Allocation means "the charging of discrete, identifiable items of cost-to-cost centres or cost units." It is a process of charging overhead amount directly to a cost unit or cost centre. If any cost is specifically identified with a department, it is directly allocated to that department. For example, one person is working as a clerk in store department, the salary of that person can be allocated to stores department. The amount of coal used in boiler can be directly allocated to boiler division.

1.5 Apportionment of Overheads

CIMA defines Apportionment as, "the allotment of two or more cost centres of proportions of the common items of cost and the estimated basis of benefits received".

Non allocable costs should be apportioned between the related cost Center. based on some logic. For example, factory rent, rate and taxes are not directly allocated to different cost centres but it should be apportioned to more than one cost centre based on some equitable basis for benefits received. Floor area occupied by various cost centres is the generally used for apportionment of factory overhead. Apportionments refers to the division of the cost to various costs centres in the proportions of the estimated benefits received by various cost centres.

Some of the bases that may be adopted for the apportionment of expense are given below:

Overhead	**Basis of Apportionment**
Rent Expenses, Rate Expenses	Floor area
Canteen Expenses, Labour welfare expenses, Time keeping, Salary of Supervisor	No. of workers
Compensation to Workers, PF contribution, Employees' State Insurance Contribution	Direct Wages
General Overhead	Direct Labour hour or direct Wages or Machine hours
Depreciation of plant and machinery, Repairs & Maintenance of plant and machinery	Value of Capital
Power	Meter Reading or Horse Power of Machine or Kilowatt Hours
Lighting Expenses (light)	No. of light points or Area
Work Manager's Salary	Direct Labour hours or Time Devoted by him

Illustration: 1 Shweta Ltd. is divided into four departments: A, B, and C are production department and D is a service department. The details of indirect expenses are as under:

Particulars	**Rs**.
Rent	5,000
Repairs to Plant	3,000
Depreciation of Plant	2,250
Electricity	400
Supervision Exp.	7,500
Insurance on Stock	2,500
Employee Welfare Expense	750
Power	3,750

The following information are available with respect to above four departments:

Particulars	**Production Department**			**Service Department**
	A	**B**	**C**	**D**
Space occupied (Sq. Ft.)	150	110	90	50
Number of workers	24	16	12	8
	Rs.	Rs.	Rs.	Rs.
Direct wages	20,000	15,000	10,000	5,000
Value of Plant	60,000	45,000	30,000	15,000
Price of stock	37,500	22,500	15,000	--
Actual Power	1,500	1,125	750	375

Apportion the cost of the various departments by the most suitable method.

Solution:

The statement showing the apportionment of overhead

Particulars	**Basis of Apportionment**	**Total Amount**	**Proportion**	**Production Department**			**Service Department**
				A (Rs.)	**B (Rs.)**	**C (Rs.)**	**D (Rs.)**
Rent	Space occupied	5,000	15:11:9:5	1,875	1,375	1,125	625
Repairs to Plant	Value of Plant	3,000	4:3:2:1	1,200	900	600	300
Depreciation of Plant	Value of Plant	2,250	4:3:2:1	900	675	450	225
Electricity	Space occupied	400	15:11:9:5	150	110	90	50
Supervision Exp.	Number of workers	7,500	6:4:3:2	3,000	2,000	1,500	1,000
Insurance on Stock	Price of stock	2,500	5:3:2	1,250	750	500	--
Employee Welfare	Number of workers	750	6:4:3:2	300	200	150	100

Expense							
Power	Actual Amt.	3,750	--	1,500	1,125	750	375
Total Overhead		25,150	--	10,175	7,135	5,165	2,675

1.6 Re-Apportionment of Service Centre Costs

Service departments are providing various kinds of services to other departments also. Personnel, maintenance, boiler house, power generation etc. are service departments, which provide services to the production and other service centres. In some cases, department consumes own services also. It is very common that there will be payment of overhead amount by both production and service department. Hence, first, there should be allocation/apportion of overhead to production department and service department based on some equitable basis. This process is known as "Primary Distribution" of overhead. Various services are also rendered by service departments to production departments. Thus, in determination of cost of production departments, service department's expense is to be reapportioned amongst production departments. This process of redistribution of expenditure of service departments to production department is known as "Secondary Distribution" of overhead.

The suggestive bases that may be adopted for re-apportionment are given following.

Service Departments	**Basis**
Repair & Maintenance Department	In proportion to the No. of hours devoted to each department
Purchase Department	In proportion to the number of purchase orders of each department/ In proportion to the quantity purchased for each department
Canteen Department	According to the No. of direct workers
Hospital and Dispensary	According to the No. of employees etc.
Personal Department	According to the No. of person in each department
Time-Keeping Department	According to the No. of card punched/ According to the No. of employees
Computer Department	In Proportion to the No. of house for which the services of computer were obtained
Power House	Consumption in proportion to the meters installed or area in cubic feet
Stores Department	In proportion to the No. of requisites or in proportion to the Value of Materials issued.

For the allocation of service departments cost, the following methods are used.

(1) Direct Method
(2) Step-Down Method/Step Ladder Method/Non-Reciprocal Method
(3) Reciprocal Method

(1) Direct Method:

It is assumed that service departments are providing services to production departments only. Any services provided by one service department to other service departments are ignored in this method. Thus, under this method, total costs of service departments are

directly allocated to production departments. This is the easiest method for application. This method is applicable in the company or organization where the number of inter-service exchange are very few.

Illustration 2: ABC Ltd. has three production departments and five service departments. The expenses for these departments as per primary distribution summary are as follows:

Production Departments	**Rs.**	**Rs.**
X	25,00,000	
Y	24,00,000	
Z	22,00,000	**71,00,000**
Service Departments		
Stores	5,00,000	
Time-keeping	4,00,000	
Canteen	2,00,000	
Power	1,60,000	
Maintenance	1,60,000	**14,20,000**

The following method is also available in respect of the production departments:

	Dept. X	**Dept. Y**	**Dept. Z**
Horse Power of Machine	300	300	200
No. of workers	15	15	10
Value of Stores requisites in (Rs.)	2,50,000	1,50,000	1,00,000
Maintenance Hours	8,000	5,000	3,000

Prepare a statement apportioning the costs of service departments over the production departments.

Solution:

Secondary Overhead Distribution Statement

Costs	**Basis of Apportionment**	**Total (Rs.)**	**Production Department**		
			X (Rs.)	**Y (Rs.)**	**Z (Rs.)**
Cost as per Primary Distribution Summary		71,00,000	25,00,000	24,00,000	22,00,000
Stores	Value of Stores Requisites (5:3:2)	5,00,000	2,50,000	1,50,000	1,00,000
Time-Keeping	No. of Workers (3:3:2)	4,00,000	1,50,000	1,50,000	1,00,000
Canteen	No. of Workers (3:3:2)	2,00,000	75,000	75,000	50,000
Power	H. P. Machines (3:3:2)	1,60,000	60,000	60,000	40,000
Maintenance	Maintenance Hours (8:5:3)	1,60,000	80,000	50,000	30,000
		85,20,000	31,15,000	28,85,000	25,20,000

(2) Step-Down Method/Step-Ladder Method/Non-Reciprocal Method:

Under this method, the cost-of-service department, which have provided the maximum service/benefit to other service department and receives the least services from other service departments are apportioned first in the proportion of benefits driven by them. This process continues in this sequence till the apportionment of cost of last service department, which have rendered the least number of services to other departments and receives the greater number of services from the other service departments.

This method is better than Direct Method but still it is also not 100% accurate because backward flow of service is not considered in this method and further the difficulties arise in unique sequence of ranking of the departments.

Illustration: 3 X Ltd. has gensets and produces its own power. Data for power costs are as follows:

Horse power hours	Production departments		Service departments	
	A	B	X	Y
Needed capacity production	15,000	30,000	16,000	10,000
Used during the month of July	10,000	15,000	8,000	6,000

During the month of July, costs for generating power amounted to Rs.18,800 of this Rs.7,100 was considered to be fixed cost. Service Department X' renders service to A, B and Y in the ratio 20:8:4, while Service Department 'Y' renders service to A and B in the ratio 61:5. Given that the direct labour hours in departments A and B are 3,350 hours and 4,375 hours respectively. Find the power cost per labour hour in each of these two departments using Step-down method.

Solution:

Calculation of Power Cost Per Labour Hour

Particulars	**Basis of Apportionment**	**Total**	**Production Deptt.**		**Service Deptt.**	
			A (Rs.)	B (Rs.)	X (Rs.)	Y (Rs.)
Fixed Cost	H. P. hours at needed production 15:30:16:10	7,100	1,500	3,000	1,600	1,000
Variable Cost	H. P. hours at actual production 10:15:8:6	11,700	3,000	4,500	2,400	1,800
Total		18,800	4,500	7,500	4,000	2,800
Department 'X' Overheads distributed to departments A, B, and Y in the ratio of 20:8:4			2,500	1,000	(4,000)	500
Department 'Y' Overheads distributed to departments A, B, and Y in the ratio of 61:5			3,050	250	-	(3,300)
Total Power Cost		(i)	10,050	8,750		
Labour Hours		(ii)	3,350	4,375		
Power Cost per Labour Hour (Rs.)		(i)/(ii)	3.00	2.00		

(3) Reciprocal Method

In the organization, if there are two or more than two service departments, it is possible that there may be existence of interdepartmental services means the departments are providing the services to each other. Thus, this kind of services are to be given due weight at the time of redistributing the cost-of-service departments. This fact is recognized in this method.

The following two methods are considered for dealing with reciprocal services:

(A) Repeated Distribution Method
(B) Simultaneous Equations Method
(C) Trial and Error Method

(A) Repeated Distribution:

Under this method, first, primary distribution of overhead is made to production and service department considering regular basis. After this, the cost-of-service departments are repeatedly allocated into specified percentages. Until all service costs have been fully transferred to the production departments, this process keeps going. Although a computer can be used for the computations, this is a cumbersome process. "Continuous Allotment" is another name for this technique.

Illustration:4 Anjali Manufacturing limited have three production departments X1, X2 and X3 and two service departments Y1 and Y2. The details pertaining to which are as under:

Particulars	**X1**	**X2**	**X3**	**Y1**	**Y2**
Direct Wages (Rs.)	6,000	4,000	6,000	3,000	390
Working Hours	6,140	8,950	4,838	-	-
Value of Machines	1,20,000	1,60,000	2,00,000	10,000	10,000
H.P. of Machines	120	60	100	20	-
Light Points	20	30	40	20	10
Floor Space (sq.Ft.)	4,000	5,000	6,000	4,000	1,000

The Following figures extracted from the accounting records are relevant:

Rent and rates	Rs.10,000
General lighting	Rs.1,200
Indirect Wages	Rs.3,878
Power	Rs.3,000
Depreciation on Machines	Rs.20,000
Sundry Exp.	Rs.19,390

The expense of the service departments are allocated as under:

	X1	X2	X3	Y1	Y2
Y1 (%)	20	30	40	-	10
Y2 (%)	40	20	30	10	-

Find the total cost of product Z which is processed for manufacturing in departments X1, X2 and X3 for 8, 10 and 6 hours respectively, given that its direct material cost is Rs. 100 and direct labour cost is Rs. 60. Use Repeated Distribution method for re-apportionment of overheads.

Calculation of Overhead rate per hour

Particulars	**Basis of Apportionment**	**Total**	**Production Deptts.**			**Service Deptts.**	
			X1 (Rs.)	**X2(Rs.)**	**X3(Rs.)**	**Y1(Rs.)**	**Y2(Rs.)**
Rent and rates	Area	10,000	2,000	2,500	3,000	2,000	500
General lighting	Light points	1,200	200	300	400	200	100
Indirect Wages	Direct Wages	3,878	1,200	800	1,200	600	78
Power	H.P.	3,000	1,200	600	1,000	200	-
Depreciation on Machines	Machine Value	20,000	4,800	6,400	8,000	400	400
Sundry Exp.	Direct Wages	19,390	6,000	4,000	6,000	3,000	390
Total		57,468	15,400	14,600	19,600	6,400	1,468
Redistribution of Service Dept.							
Overheads to Production Depts.			1,280	1,920	2,560	(6,400)	640
			844	422	632	210	(2,108)
			42	64	84	(210)	20
			8	4	8	-	(20)
Total Overhead (i)			17,574	17,010	22,884		
Working Hours (ii)			6,140	8,950	4,838		
Overhead Per working Hours (Rs.) (i)/(ii)			2.862215	1.900559	4.730054		

Computation of Cost of Product X

			Rs.
Direct material			100
Direct Labour			60
Overhead Cost:			
X1	(8 hours. × Rs. 2.86)	22.88	
X2	(10 hours. ×Rs. 1.90)	19	
X3	(6 hours. × Rs. 4.73)	28.38	70.26
Total Cost of product X			230.26

(B) Simultaneous Equations Method:

This method is also known as "Algebraic" method. In this method, mathematical equations are formulated and solved. This is the most powerful method as all the exchanges of services are considered by this method. This method accounts for the reciprocal exchange of services between service departments by adjusting the costs of each department. The production departments then receive the adjusted service costs. The computations require the use of matrix multiplication and inversion as well as the solution of a set of simultaneous linear equations. By usage of computer facility extensive computations can be avoided. This method not only provides correct allocation of services but also provides effective real costs of the services which will be helpful in decision of make or buy.

Illustration: 5 Nidhu Ltd. has two production departments and two service departments. Expense incurred for these departments and other information available is given below**.**

Departments	**Overhead before allocating service departments costs (Rs.)**	**Service consumed**	
		Maintenance (%)	**Power (%)**
Production Departments			
A	3,00,000	40	70
B	5,00,000	40	25
Service Departments			
Maintenance (M)	25,000	-	5
Power (P)	40,000	20	-
	8,65,000	100	100

Solution:

Let total maintenance department costs be 'M' and total power departments costs 'P'

Then,

M = 25,000 + 0.05 P…….. (1)

P =40,000 + 0.20M…….. (2)

Substituting equation (2) into equation (1)

M = 25,000 +0.05 (40,000 + 0.20M)

M = 25,000 + 2,000 +0.01M

M = 27,000 + 0.01M

M-0.01M = 27,000

0.99M = 27,000

$M = \frac{27,000}{0.99}$

M = 27,272.73

Now put the value of M in equation 2,

P =40,000 + 0.20M

P =40,000 + 0.20 (27,273.73)

P=40,000 + 5,455

P =45,455

Particulars	**Production Departments**		**Service Departments**		**Total Overhead Cost (Rs.)**
	A (Rs.)	**B (Rs.)**	**Maintenance (Rs.)**	**Power (Rs.)**	
Departmental Overheads	3,00,000	5,00,000	25,000	40,000	8,65,000
Allocation:					
Maintenance (M)	10,909	10,909	(27,273)	5,455	
Power (P)	31,818	11,364	2,273	(45,455)	
Total					**8,65,000**

(C) Trial and Error Method:

Under this method, as per the given basis or ratio, the overheads of service department is allocated to other service departments only. After this process, they are distributed to production departments.

Illustration: 6 There are three production departments A, B and C and two service departments X and Y in the factory. The benefit of service departments is availed by various departments in the production of percentages given below:

	Production Departments			Service Departments	
	A	B	C	X	Y
X	20%	40%	30%	-	10%
Y	40%	20%	20%	20%	-

The overheads of five departments are Rs. 5,000; Rs. 4,000; Rs. 3,500; Rs. 1,200 and Rs. 1,300 respectively. Apportion the service department expenses over production departments by trial and error method.

Solution:

	Service Departments	
	X (Rs.)	**Y (Rs.)**
Expense	1,200	1,300
10% of 1,200	(-)1,200	120
Y Expenses 20% of 1,420	280	(-)1,420
X Expenses 10% of 280	(-)280	28
Y expenses 20% of 28	6	(-)28
X expenses 10% of Rs.	(-) 6	(1)
Total	1,486	1,449

Apportionment of Expenses to Production Departments

Particulars	Production Departments			
	A(Rs.)	**B(Rs.)**	**C(Rs.)**	**Total**
(1) X Expenses Rs. 1,486 (% 20,40,30)	297	594	446	1,337
(2) Y Expenses Rs. 1,449 (% 40,20,20)	580	289	289	1,158
(3) Expense Given	5,000	4,000	3,500	12,500
Total	**5,877**	**4,883**	**4,235**	**14,995**

1.7 ABSORPTION OF OVERHEAD TO VARIOUS PRODUCTS/JOBS:

The absorption refers to allotment of overhead amounts to various cost units.

The method selected for charging of overheads should ensure the following matters:

(A) that there is no material difference between the total amount charged (or recovered) and the actual expenses incurred over the time. and

(B) that the charged amount to individual jobs or products are equitable (fair). Regarding factory overhead, this means:
   (a) that the amount of time required to complete every job should be taken into account;
   (b) that the job of skilled and unskilled workers should be distinguished from one another; and
   (c) that there should be distinction between the job done by manual labour and machine labour.

Furthermore, the methods should be easily applied and, to the greatest extent possible, the methods should yield the uniform results from period to period. If there will be any change in apparent, it should reflect the change in underlying situation, such as the replacement of human labour with automated systems.

A number of techniques are used, separately or in combination, to calculate overhead absorption rate. The most prevalent ones are:

(1) Percentage of Direct Materials
(2) Percentage of Prime Cost Method
(3) Percentage of Direct Labour Cost
(4) Labour Hour Rate
(5) Machine Hour Rate
(6) Rate Per Unit of Output Method

(1) Percentage of Direct Materials:

In this method, the cost of direct material is considered as a base for calculating the absorbed overhead.
The following formula is used for calculating the overhead absorption rate:

$$\text{Overhead absorption Rate} = \frac{Total\ Production\ overheads\ of\ a\ department}{Budgeted\ Direct\ Material\ Cost\ of\ all\ products} \times 100$$

(2) Percentage of Prime Cost Method:

In this method, the cost of direct material and labour is considered as base for absorption of factory overhead.
The following formula is used for calculating the overhead absorption rate:

$$\text{Overhead absorption Rate} = \frac{Total\ Production\ overheads\ of\ a\ department}{Prime\ Cost} \times 100$$

(3) Percentage of Direct Labour Cost:

In this method, the cost of direct labour is considered as a base for calculating the absorbed overhead.

The following formula is used for calculating the overhead absorption rate:

$$\text{Overhead absorption Rate} = \frac{Total\ Production\ overheads\ of\ a\ department}{Direct\ Labour\ Cost} \times 100$$

(4) Labour Hour Rate:

In this method, the importance of time is considered in incurrence and absorption of manufacturing overhead expense. The following formula is used.

$$\text{Direct Labour Hour Rate} = \frac{Total\ Production\ overheads\ of\ a\ department}{Direct\ Labour\ Hour} \times 100$$

(5) Machine Hour Rate:

CIMA defines Machine Hour Rate as an "actual or predetermined rate of cost apportionment or overhead absorption, which is calculated by dividing the cost to be apportioned or absorbed by a number of hours for which a machine or machines are operated or expected to be operated."

This method of overhead absorption is applicable where automatic and semi-automatic capital-intensive machinery is used in manufacturing environment. This method is the most scientific method of absorption of factory overhead. The following formula is used to calculate the Machine Hour Rate.

$$\text{Machine Hour Rate} = \frac{Budgeted\ or\ Actual\ Overhead}{Budgeted\ or\ Actual\ Machine\ Hours\ during\ the\ period}$$

Illustration: 7 In a factory, all the work is done by four identical machines. The annual cost of this factory is as follows:

		Rs.
(1)	Whole Factory rent	8,000
(2)	Depreciation of each Machine	900
(3)	Repairs & Maintenance of Machine (Annually)	1,200
(4)	Power p.a. (Ten paisa per unit)	4,800
(5)	Electricity of Factory (annually)	1,200

(6) Wages to Workers:
(Two assistant for Four Machine- monthly salary of Rs. 120 is paid to each assistant)

(7) Supervisor's Expenses – (One supervisor for four machine with a monthly salary of Rs. 1,200)

(8) Factory Misc. goods (annually) 1,200

(9) Hire Purchase Installments
(Rs. 1200 including interest) 4,800

(10) Machines Consume 10 units of power per hour.

(11) Estimated Working hours - 1,200 for each Machine.
From the above details, find Machine Hour rate.

Calculation of Machine Hour Rate: (For 1 Machine)

Particulars	**Annual (Rs.)**	**Per Hour (Rs.)**
Standing Charges :		
Factory Rent (8,000 × ¼)	2,000	
Electricity (1,200 × ¼)	300	
Worker's Wages (120 × 2 × 12 months = 2,880 × ¼)	720	
Supervision Expense (1,200 ×12× ¼)	3,600	
Sundry Material (1,200 × ¼)	300	
Interest (1,200 p.a. × ¼)	300	
Hourly rate for Standing Charges 7,220 ÷ 1200	**7,220**	**6.02**
Machine Expenses:		
Depreciation (900 ÷ 1,200)	900	0.75
Repairs and Maintenance (1,200 × ¼ = 300 ÷ 1,200)	300	0.25
Power (1 hour rate = 1 hour ×10 unit ×10 paisa = Rs.1) (Rs.1 × 1,200 hours)	1,200	1.00
Machine Hour Rate	9,620	8.02

(6) Rate Per Unit of Output Method:

This is the simplest method of all the method. The following formula is used for calculating overhead rate as per this method.

$$\text{Overhead Rate} = \frac{Amount\ of\ Overheads}{Number\ of\ Units} \times 100$$

EXERCISE:

❖ **Long Question:**

(1) Explain Classification of Overhead.
(2) Explain various methods of Re-Apportionment of service centre costs.

❖ **One line Question:**

(1) What is Cost Accounting?
(2) What is Direct Cost?
(3) Explain the concept of indirect cost.
(4) List the methods for absorption of overhead to various products/job.

❖ **Practical Examples:**

(1) Mansi Ltd. has three production departments and four service departments. The expenses for these departments as per primary distribution summary are as follows:

	Rs.	**Rs.**
Production Departments		
X	30,00,000	
Y	25,00,000	
Z	20,00,000	**75,00,000**
Service Departments		
Stores	2,40,000	
Personnel	1,50,000	
Power	2,40,000	
Maintenance	1,35,000	**7,65,000**

The following method is also available in respect of the production departments:

	Dept. X	**Dept. Y**	**Dept. Z**
KWH consumed	300	200	100
No. of workers	25	15	10
Value of Stores requisites in (Rs.)	3,00,000	2,00,000	1,00,000
Maintenance Hours	2,000	1,500	1,000

Prepare a statement apportioning the costs of service departments over the production departments using Direct Method.

Solution:

Production Department

X (Rs.)	**Y (Rs.)**	**Z (Rs.)**
82,65,000	**33,75,000**	**27,50,000**

(2) Excellent Manufacturing Works have two Production Departments –Mixing and curing and three service departments – Time office, Stores and Maintenance.

The following details are available from the departmental distribution summary for the month of July, 2011:

			Rs.
Production Departments	Mixing	1,44,000	
	Curing	96,000	2,40,000
Service departments	Time office	48,000	
	Stores	60,000	
	Maintenance	36,000	1,44,000

The following relevant data are also available;

Particulars	**Production Departments**		**Service Departments**		
	Mixing	**Curing**	**Time office**	**Stores**	**Maintenance**
No. of Employee	20	15	10	8	5
No. of Stores requisition Processed	120	100	-	-	30
Machine Hours	3,600	2,400	-	-	-

The company consistently follows the methods of "secondary distribution" on non-reciprocal basis. Show the apportionment of the cost-of-service departments to production departments stating the basis of computation in the form of a note at the end of the exercise.

(I.C.W.A Inter Dec. 2001)

Solution:

Production Departments

Mixing (Rs.) Curing (Rs.)

2,26,136 1,57,864

Service Departments

Time office (Rs.) Stores (Rs.) Maintenance (Rs.) - - -

(3) Calculate the overhead allocable to production departments X and Y. There are also two service Departments A and B. A renders service worth Rs. 20,000 to B and the balance to X and Y as 2:2. B renders service to X and Y as 3:2.

	X	**Y**	**A**	**B**
Floor Space (sq. ft.)	9,000	6,000	3,000	3,000
Assets (Rs. in lakh)	15	12	9	6

H.P of Machines	2,000	1,000	800	400
Number of Workers	100	50	50	25
Light and Fan Points	60	40	20	20

Expense and Charges are:

	Rs.
Depreciation	4,20,000
Rent, rates and Taxes	84,000
Insurance	42,000
Power	12,600
Canteen Expense	9,600
Electricity	1,120
Light	31,500

Solution:

Production Depts.

X(Rs.) Y(Rs.)

57,528 38,352

90,774 10,084

Service Depts.

A(Rs.) B**(Rs.)**

(-)1,15,880 20,000

- (-)1,00,860

(4) A manufacturing company has two production departments and three service departments. Overhead allocated for a period to these departments are as follows:

	Rs.
Production departments	
A	8,000
B	10,000
Service Dept.	
X	2,000
Y	8,000
Z	4,000
Total	32,000

A technical assessment for the apportionment of the cost of the service departments shows:

Departments	1	2	X	Y	Z
X	40%	40%	-	10%	10%
Y	30%	40%	20%	-	10%
Z	30%	30%	30%	10%	-

You are required to show the total overheads chargeable to the two production departments by using Repeated Distribution Method

Solution:

(a) (i) Statement ascertaining the expense of the service departments on Reciprocal Service basis:

X	(-)25	2	3
Y	1	(-)5	-
Total	5,454	9,089	5,454

(ii) Statement showing redistribution of service department expense to production departments:

	Production Departments		**Service Departments**		
	A (Rs.)	**B(Rs.)**	**X(Rs.)**	**Y(Rs.)**	**Z(Rs.)**
According to original allocation	8,000	10,000	2,000	8,000	4,000
Service Dept. X	2,182	2,181	(-)5,454	545	546
Y	2,727	3,635	1,818	(-)9,089	908
Z	1,636	1,636	1,636	545	(-)5,454
Total	14,545	17,452	Nil	Nil	Nil

(5) The information regarding machine No. 360 of the company is given as follows:

(1) Machine hour rate Rs. 72
(2) Total fixed cost includes rent, electricity, supervision, manager's salary and insurance premium.
(3) Total variable cost includes depreciation, repairing and power.
(4) The ratio of total fixed cost and total variable cost (excluding power) is 5:2 respectively.
(5) Rent and electricity are in the ratio of 4:1 respectively.
(6) Electricity costs is 125% of supervision and manager's salary is 200% of electricity cost, while insurance premium at 10% of manager's salary is Rs.2,000
(7) Repair costs is 60% of Depreciation.
(8) Power consumption per hour Rs. is 16.

Find the working hours of the machine from the above details.

Answer: Total Machine Working Hours - 4,000 hours

Total Fixed Cost - 80,000

Total Variable Cost - 64,000

Fixed cost per hour - Rs. 40

Variable Cost per hour - Rs. 16

(6) A company has three production cost centres X, Y, and Z and two service cost centres A and B. Costs allocated to service centres are required to be apportioned to the production centres to find out cost of production of different products.

It is found that benefit of service cost centres is also received by each other along with the production cost centres.

Overhead costs as allocated to the five cost centres and estimates of benefit of service cost centres received by each of them are as under:

Cost Centres	**Overheads Costs as Allocated (Rs.)**	**Estimates of benefits received from Service Centres**	
		X	**Y**
X	60,000	20	20
Y	40,000	30	25
Z	10,000	40	50
A	10,000	_	5
B	5,000	10	-

Find out final overhead costs of each of the production departments using simultaneous equation method.

Solution:

a = 10,302

b = 6,030.2

Statement of Final Overhead Cost of Production Departments

Particulars	**Basis of Apportionment**	**Production Dept.**			**Service Dept.**	
		X (Rs.)	**Y (Rs.)**	**Z (Rs.)**	**A (Rs.)**	**B (Rs.)**
Overhead Cost	As allocated	60,000	40,000	10,000	10,000	5,000
Overhead of A	% given	2,060.4	3,090.6	4,120.8	(-)10,302	1,030.2
Overhead of B	% given	1,206.04	1,507.55	3,015.1	301.51	(-) 6,030.2
		63,266.44	44,598.15	17,135.9	-	-

(7) An engineering factory has three cost centres, having distinct sets of machines. The following are the details available to you for the year 2010:

	Total Cost for the Factory (Rs.)	Centre A (Rs.)	Centre B (Rs.)	Centre C (Rs.)
Value of Assets	……..	4,00,000	5,00,000	6,00,000
Direct Wages	……..	50,000	40,000	50,000
Repairs & Maintenance	60,000			
Indirect Wages	28,000			

Insurance of assets	15,000			
Supervision	70,000			
Power	15,000			
Labour Welfare	42,000			
Other Expense	1,40,000			
Estimated Working hours		16,000	13,000	15,000

Work out comprehensive Machine Hour Rate in detail for three cost centres after providing 6.25% depreciation. The ratio of H.P. hours is 3:2:2:5.

(Sau. Uni., T.Y., April, 1996)

Solution:

Computation of Machine Hour Rate

Particulars	**Total Rs.**	**Cost Centres**		
		A **Rs.**	B **Rs.**	C **Rs.**
(1) Total Expense	6,03,750	2,01,000	1,80,250	2,22,500
(2) Working hours		16,000	13,000	15,000
(3) Machine hour rate (1)/(2)		12.56	13.87	14.83

❖ **MCQ:**

(1) Which of the following is main objective of Cost Accounting?

(a) Maximization of profit
(b) Helpful in valuation of inventory
(c) Providing information to management for decision making
(d) Helpful in selling price determination

(2) The cost of product includes

(a) Direct Expense
(b) Indirect Expense
(c) None of above
(d) Both (a) & (b)

(3) From the following, which is an example of manufacturing overhead?

(a) Raw materials
(b) Direct labor
(c) Factory rent
(d) Finished goods

(4) _____ is the main purpose of allocating overhead costs?

(a) To eliminate all overhead costs
(b) To increase direct labor costs
(c) To allocate costs to specific products or services
(d) To reduce the overall budget

(5) From the following, which is the difference between fixed and variable overhead costs?

(a) Fixed overhead costs change with production levels, while variable overhead costs remain constant.
(b) Fixed overhead costs remain constant, while variable overhead costs change with production levels.
(c) Both fixed and variable overhead costs change with production levels.
(d) Both fixed and variable overhead costs remain constant.

(6) Which of the following is an example of administrative overhead?

(a) Factory expenses
(b) Office supplies
(c) Direct labour
(d) Sales Manager Salary

(7) What is the formula for the calculation of predetermined overhead rate?

(a) Estimated overhead costs / Actual activity level
(b) Actual overhead costs / Estimated activity level
(c) Estimated activity level / Actual overhead costs
(d) Actual activity level / Estimated overhead costs

(8) _____ is the purpose of overhead absorption?

(a) To reduce overhead costs
(b) To increase overhead costs
(c) To allocate overhead costs to products
(d) To ignore overhead costs

(9) From the following, which is correct statement regarding variable overhead costs?

(a) They remain constant regardless of production levels.
(b) They change in direct proportion to production levels.
(c) They are not considered part of overhead.
(d) They are only incurred in service industries.

(10) Overhead means _____

(a) Direct labor costs
(b) Indirect costs not directly tied to a specific product or service
(c) Fixed Costs
(d) None of the above

(11) From the following, which is the most scientific method for the absorption of factory overhead rate?

(a) Direct Labour rate method
(b) Percentage of prime Cost Method
(c) Machine Hour Rate Method
(d) None of the above

(12) Which of the following method is a Reciprocal Method for the allocation of service departments cost?

(a) Repeated Distribution Method
(b) Simultaneous Equations Method

(c) Both (a) & (b)
(d)None of the above

Answers:

(1) – (d) Helpful in selling price determination

(2) – (d) Both (a) & (b)

(3) – (c) Factory rent

(4) – (c) To allocate costs to specific products or services

(5) – (b) Fixed overhead costs remain constant, while variable overhead costs change with production levels.

(6) – (b) Office supplies

(7) – (b) Actual overhead costs / Estimated activity level

(8) – (c) To allocate overhead costs to products

(9) – (b) They change in direct proportion to production levels.

(10) – (b) Indirect costs not directly tied to a specific product or service

(11) – (c) Machine Hour Rate Method

(12) – (c) Both (a) & (b)

UNIT – 2 PROCESS COSTING

2.1 Introduction & Meaning

2.2 Definition

2.3 Concept

2.4 Characteristics

2.5 Cost Determination: (Procedure for Ascertaining Process Cost)

2.6 Features of Process Costing

2.7 Elements of Process Costing

❖ **Exercise**

2.1 Introduction & Meaning

The system of costing in which costs are accumulated by processes or departments for a selected period of time is known as process costing. It is found to be most suitable for industries engaged in continuous manufacturing of products in bulk in which the units of product are uniform and cannot be differentiated e.g. foundries, blast furnaces, chemical works, oil refineries, breweries, sugar mills etc.

It may be adopted in organization producing a single commodity in bulk or a group of allied products or a group of products of different types.

The distinctive feature of process costing is that the unit costs of products are determined for the respective processes through which the unit passes. All costs relating to a process are charged to a separate account and then distributed equally between the units of product. Thus, process costing involves averaging the total cost to determine the cost per unit. The final cost of one department becomes the initial cost of that product in the next department. To this cost are added the cost of raw transferred until production is completed and finished goods turned out.

2.2 Definition

Process costing is, "the costing method applicable where goods or services result from a sequence of continuous or repetitive operations or processes. Costs are averaged over the units produced during the period." The aim of process costing is to determine the total cost of each operation and to apply this cost to the product at each stage of process. It will then be possible to ascertain the cost per unit for each operations or process and in total.

2.3 Concept

1) Common Waste/Normal Loss

In industries, while using the process costing method, the weight of the goods changes slightly during the process due to chemical changes at each stage of the process, due to evaporation, due to changes in the amount of moisture in the air, etc. This is known

as loss of goods. The loss of goods which are unavoidable due to internal qualities or natural reasons is called Common waste/Normal loss.

2) Abnormal Waste/Abnormal Loss

When the wastage is greater than the normal waste standards, the excess wastage is called abnormal Loss. Abnormal waste is caused due to defects in plants and machines, negligence of workers, inefficiency of workers, use of raw materials of low quality, etc. or any other human error. Abnormal Loss is deposited at the waste process which is evaluated on a per unit basis.

3) Abnormal Increase/Abnormal Gain

In the production process the difference is actually called an abnormal increase if the product is more than the normal product. The abnormal increase is reflected on the borrowing side of the process account and its fallout is indicated at the bottom of the normal turnover.

Per unit Cost:

$$= \frac{Total\ Cost - Revenue\ from\ Normal\ Loss}{Total\ Production\ Units - Units\ of\ Normal\ Loss}$$

4) By Products, Joint Production (Theory)

When another thing (Product) is found with the main product from some process, it is called a by-product. The cost of by products is lower than that of the main produce. When two or more things are produced simultaneously from one process and both things are of equal importance, it is called joint production.

For example, when petroleum is disposed of in the division, combined products such as petrol, diesel, naphtha, asphalt, etc. are produced. The cost incurred during the production of a joint product is called the combined cost. The combined cost is allocated through different methods to find out how much profit or expenditure is incurred in each product which are as follows:

1. Relative sales value method
2. Method of quantity of production
3. Average cost per unit method
4. Survey/Assessment Method
5. Reverse cost method

5) Inter Process Profit:

Currently, manufacturing companies send profits from one process to another by sending goods/finished units, which is called transfer price. The price equivalent to the market price can be carried away by inter process profits. The quality and efficiency of goods going through different processes can be estimated.

More than one account is prepared in inter process profits. Therefore, if the output of one process is carried out to another process at a higher cost than the cost, then the question of calculating the element of profit in the value of closing the stock arises.

The closing stock of processes in which the goods have been transferred to the profit will have the element of profit to be taken by the transfer process. This will be considered an unrealistic profit as the goods have not yet been sold to outsiders.

There are three boxes in the interoperable profit. Total, Cost and Profit:

Process Account 1

Details	**Total (Rs.)**	**Cost (Rs.)**	**Profit (Rs.)**	**Details**	**Total (Rs.)**	**Cost (Rs.)**	**Profit (Rs.)**

The points for preparation of the first process account:

1. The opening stock is written on the debit side of the process account. The opening stock is written in the first total column and the bottom box while the profit amount is not included in opening stock.

2. All expenses are written in the total column and cost column (expenses of goods, labour and indirect expenses) but the amount of profit is not added in the cost, so no amount in the profit box is written during the registration of expenses.

3. After recording the above details, the closing stock is deducted from the total amount which is called primary cost.

4. Indirect expenses of the factory are recorded after the primary cost and the total cost is received after being recorded in the total cost.

5. The percentage of profit on the total cost is added which is shown as the amount of profit in the total and profit account and is to be transferred for next process.

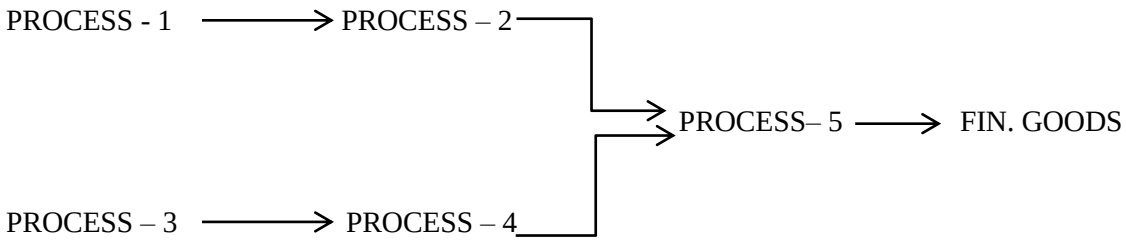
6. The sales amount is written on the credit side and the amount of profit in the final process is indicated by the difference.

7. In the second and final process, the whole stock is evaluated on a primary cost.

$$\text{Profit in last stock} = \frac{\text{Profit}}{\text{Total}} \text{ x Closing stock}$$

2.4 Characteristics of Process Costing:

- There is a continuous flow of production.
- The finished product of one process will become the raw material for the subsequent process. After the completion of all the processes, it will become the finished product salable in the market.
- Products are not distinguishable in the process stage.
- Number of processes may be conveniently divided depending on the process of manufacture. In addition to the raw materials, additional materials or chemicals may be added in each process.
- In many industries, production is continuous and the output of process – 1 may become the input of process – 2 in cases of processes in sequence.
  In some industries, the process may be parallel.



2.5 Cost Determination: (Procedure for ascertaining process cost)

The following steps are involved for ascertaining the cost for unit of the output of each process and finally the finished goods:

- The total production is divided into separate processes or operation under which the cost can be conveniently collected.
- A separate account is maintained for each process. Cost of raw materials and materials added in each process is accumulated at the end of the period.
- Similarly, direct wages and direct expenses relating to each process are recorded at the end of the period.
- The production overheads are apportioned to each process.
- The following quantitative data relating to each process are ascertained from the production records:

  1. Input quantity such as units – tones, kg., liters etc…
  2. Normal loss: it may be divided into three parts as follows:
     - Normal Quantity lost (in process by shrinkage and evaporation etc…)
     - Normal waste
     - Normal scrape
  3. Abnormal loss
  4. Abnormal gain
  5. Output transferred from one process to the next process
- The following formula is applied for ascertaining the cost per unit (CPU):

$$\text{CPU} = \frac{\text{Total Cost – Value of Normal Loss}}{\text{Total Input – Normal Loss Unit}}$$

The cost of unit completed is transferred to the process subsequently. Thus the cost is accumulated from process to process both as to the total cost and cost per unit. Finally, it is transferred from the cost process to the finished stock account.

Finished Goods A/c. Dr.
To Last Process A/c.

This is entered in terms of quantity, rate and value.

- When there is work-in-progress at the commencement of the period or at the end of period, it is also to be valued by computing the equivalent production units in regard to the materials, labour, production overheads accounted for the process account.
- The value of abnormal loss is debited to costing P&L A/c whereas the value of abnormal gain is credited to costing P&L A/c.

2.6 Features of Process Costing

Some of the features of process costing may be stated as follows:

- **Transfer of production to another process:** the finished product of one process becomes the raw materials of another process.
- **Wastage or Loss:** ordinarily there is some wastage or loss in weight during various stage of production. Thus, the finished goods obtained from the process is generally less than the quantity of raw materials introduced.
- **By-product:** By-products are frequently obtained during the production of main product. It may be defined as "any salable or useable value incidentally produced in addition to the product."
- **Allocation of Joint Costs:** Joint products represent two or more products separated in the course of some processing operations. Usually requiring further processing each product being in such proportion that no single product can be designated as a major product.
- **Inter – process Profit:** there is a practice in some firms to charge certain percentage of profit while transferring finished goods of one process to the next process. At the end of the year there will be some stock of finished goods in each process, the value of which will contain the profit charged by various processes. This profit is unrealized profit. A reverse has to be created for such unrealized profit.

2.7 Elements of Process Costing

The total cost of each process consists of three elements of cost:

1. **Material:** Materials and supplies as in the case of job costing are issued to each process only against authorized requisitions. At the end of the each process or of each costing period, the requisitions are sorted according to processes and their values listed on material summary sheet. The total cost of raw materials used by each process is calculated and charged to various processes.
2. **Labour:** This cost can be easily computed separately for each process. Wage sheets for workers employed in each process may be separately kept or separate columns are kept for each process in the wage sheets. The total wage cost is found out on the basis of these sheets and is debited to respective process accounts.
3. **Overheads:** It is practicable to identify all materials and labour charges with specific processes. The overheads expenses chargeable to a process ordinarily would not contain cost of indirect materials or labour. But there would still be several items of expenses that do not relate to any particular process. It would be necessary to apportion them to various processes on suitable basis.

❖ Illustrations

(1) In a processing factory, X Product passes through three different processes before it is ready for sale. In March 2022, the cost of production was given as below:

4,000 Units of materials were introduced in process A at Rs.5 each.

Particulars	Process A	Process B	Process C
Direct Material	30,000	15,000	40,000
Direct Labour	20,000	28,000	40,000
Direct Expenses	15,000	19,700	32,200
Actual Production (In Units)	3,800	3,400	3,200
Normal Wastage (of the units Introduced)	5%	5%	10%
Selling Price of Wastage (Rs.)	7	10	10

Prepare the necessary Process Accounts and 'Abnormal Loss' Account and 'Abnormal Gain' Account.

Solution:

Process 'A' A/C

Particulars	Units	Rs.	Particulars	Units	Rs.
To units introduced	4,000	20,000	By Normal Wastage	200	1,400
To Direct Material		30,000	By Transfer Process B (Rs. 22)	3,800	83,600
To Direct Labour		20,000			
To Direct Expenses		15,000			
	4,000	**85,000**		**4,000**	**85,000**

Process 'B' A/C

Particulars	Units	Rs.	Particulars	Units	Rs.
To transfer from process A	3,800	83,600	By Normal Wastage	190	1,900
To Direct Material		15,000	By Abnormal Wastage	210	8,400
To Direct Labour		28,000	By Transfer Process C (Rs.40)	3,400	1,36,000
To Direct Expenses		19,700			
	3,800	**1,46,300**		**3,800**	**1,46,300**

Abnormal Loss of Process 'B' A/c

Particulars	Units	Rs.	Particulars	Units	Rs.
To Process 'B' A/c	210	8,400	By Sale of Abnormal Loss at Rs.10	210	2,100
			By Loss-transferred to Costing P & L A/c	-	6,300
	210	**8,400**		**210**	**8,400**

Process 'C' A/C

Particulars	Units	Rs.	Particulars	Units	Rs.
To transfer from process No. B	3,400	1,36,000	By Normal Wastage	340	3,400
To Direct Material		40,000	By Transfer Process C (Rs.80)	3,200	2,56,000
To Direct Labour		40,000			
To Direct Expenses		32,200			
To Abnormal gain	140	11,200			
	3,540	**2,59,400**		**3,540**	**2,59,400**

Abnormal Gain of Process 'C' A/C

Particulars	Units	Rs.	Particulars	Units	Rs.
To Shortfall in sale of normal wastage	140	1,400	By Transfer From Process 'C' A/c	140	11,200
To profit-transferred to Costing P & L A/c		9,800			
	140	**11,200**		**140**	**11,200**

- **Working Notes:**

(A) Process A A/C

(1) Normal Production = Units Introduced – Units of Normal Wastage
= 4,000 – 200 (4,000 × 5 %)
= 3,800

(2) Normal Cost of Normal Output = $\frac{Total\ Expenses - Scrap\ Value\ of\ Noraml\ Wastage}{Normal\ Output}$

$= \frac{85,000-1,400}{4,000-200}$

$= \frac{83,600}{3,800}$

$= Rs.22$

(B) Process B A/C

(3) Normal Production = Units introduced – Units of normal wastage
= 3,800 – 190
= 3,610
Actual Output = 3,400
Abnormal Wastage = 210 Units

(4) Normal Cost of Normal Output = $\frac{Total\ Expenses - Scrap\ Value\ of\ Noraml\ Wastage}{Normal\ Output}$

$= \frac{1,46,300-1,900}{3,800-190}$

$= \frac{1,44,400}{3,610}$

= Rs.40

(5) Cost of Abnormal Wastage = Units of Abnormal Wastage × NC Per Unit
= 210 × 40
= 8,400

(C) Process 'C' A/C

(1) Normal Production = Units introduced – Units of normal wastage
= 3,400 – 340
= 3,060
Actual Output = 3,200
Abnormal Gain = 140 Units

(2) Normal Cost of Normal Output = $\frac{2,48,200-3,400}{3060}$
= Rs.80

(3) Cost of Abnormal Gain = Units of Abnormal Gain × NC (Per Unit)
= 140 × 80
= Rs.11,200

(2) Ajay Limited Company manufactures a product, which goes through two processes before it is taken to the finished goods. The following information is available as of March 2024.

Particulars	**Process-1 (Rs.)**	**Process-2 (Rs.)**	**Finished Goods (Rs.)**
Opening Stock	3,750	4,500	11,250
Direct materials	7,500	7,875	-
Direct Labour	5,600	5,625	-
Factory Indirect Costs	5,250	2,250	-
Closing Stock	1,850	2,250	5,625
Inter-profit (Opening Stock)	-	750	4,125

Finished goods of Process-1 are transferred to Process-2 at a profit of 25% of the transfer price. While finished goods of process-2 is transferred at 20% transfer price.

The stock is valued on the basis of prime cost while the valuation of closing stock of finished goods is valued at the cost obtained from process-2. A sale during the period is 70,000.

Prepare a process account and a finished goods stock account.

Answer: **Process-1**

Particulars	**Total**	**Cost**	**Profit**	**Particulars**	**Total**	**Cost**	**Profit**
Opening Stock + Direct material + Direct Labour	3,750 7,500 5,600	3,750 7,500 5,600	- - -	Transferred to process - 2	27,000	20,250	6,750
- Closing Stock	**16,850** (1,850)	**16,850** (1,850)	- -				
Prime Cost +Factory Direct Expenses	15,000 5,250	15,000 5,250	-				
Total Cost + Profit	20,250 6,750	20,250 -	- 6,750				
	27,000	**20,250**	**6,750**		**27,000**	**20,250**	**6,750**

Need Calculation:

Assume replacement cost	100
- Profit	(25)
Cost	75

Cost	Profit	
75	25	= 20,250 X 25/75
20,250	(?)	= **6,750 Rs.**

Process-2

Particulars	Total	Cost	Profit	Particulars	Total	Cost	Profit
Opening Stock	4,500	3,750	750				
+ Bal. b/f or transferred from process-1	27,000	20,250	6,750	Finishes goods	56,250	37,875	18,375
+ Direct Goods	7,875	7,875	-				
+ Direct Labour	5,625	5,625	-				
	45,000	**37,500**	**7,500**				
- Closing Stock	(2,250)	(1,875)	(375)				
Primary Cost	**42,750**	**35,625**	**7,125**				
+ Factory Direct Expenses	2,250	2,250	-				
Total Cost	**45,000**	**37,875**	**7,125**				
+ Profit	11,250	-	11,250				
	56,250	**37,875**	**18,375**		**56,250**	**37,875**	**18,375**

Notes:-

Valuation of Closing Stock:

= 2,250 X 37,500 / 22,500 = 3,750

Profit = 2,250 – 1,875 = 375

Profit in Process 2

Assume that the replacement cost	100
Profit	(20)
Cost	80

Cost	Profit	
80	20	= 45,000 X 20/80
45,000	(?)	= 11,250 Rs.

Finished Goods Stock Account

Particulars	Total	Cost	Profit	Particulars	Total	Cost	Profit
Opening Stock	11,250	7,125	4,125	Sales	70,000	41,250	28,750
+ Bal. b/f or transferred from process-2	56,250	37,875	18,375				
	67,500	**45,000**	**22,500**				
- Closing Stock	(5,625)	(3,750)	(1,875)				
	61,875	41,250	20,625				
+ Profit	8,125	-	8,125				
	70,000	**41,250**	**28,750**		**70,000**	**41,250**	**28,750**

Note: The difference between sales of finished goods cost of finished good is called profit. (70,000 – 61,875 = 8,125)

Actual Profit Calculation Sheet:

Particulars	Apparent	Profit in Opening Stock	Profit in Closing Stock	Difference	Really Profit
Process-1	6,750	-	-	-	6,750
Process-2	11,250	750	(375)	+375	11,625
Finished Goods	8,125	4,125	(1,875)	+2,250	10,375
				Total Profit	**28,750**

If the actual gross profit amount is Rs.28,750 and the gross profit amount in the finished goods stock account is the same, then the inter process profit calculation is correct.

(3) A factory is engaged in the production of A and in the course of its manufacture a byproduct B is produced which after a separate process has a commercial value. For the month of February, 2023 following are the summarized costing data:

Particulars	Joint Expenses Rs.	Separate Expenses Rs.	
		A	B
Material	25,000	15,000	4,000
Labour	15,000	10,000	2,500
Overheads	10,000	5,000	1,000

The output for the month was 300 tonnes of A and 100 tonnes of B and the selling price of B averaged Rs. 800 per tonne.

Assuming that the profit on B is estimated at 50% of the selling price. Prepare the cost statement of A.

Solution:

Production of B is 100 tonnes and the selling price of B is Rs.800 per tonne. Profit on 'B' is estimated at 50% of the selling price.

Apportionment of Joint Cost on Sales Value Basis

Particulars	Rs.
Total sales value (100 tonnes x Rs.800 per tonne)	80,000
Less: Estimated Profit (50% on selling price = 80,000 x 50/100)	40,000
∴Total cost of B	40,000
Less: Separate expenses of B :	
Materials	
4,000	
Labour	7,500
2,500	32,500
Overheads	
1,000	
Allocation of Joint Expenses to `B'	

Total joint expenses of A and B = Material Rs. 25,000 + Labour Rs. 15,000 + Overheads Rs. 10,000 = Rs. 50,000

Total joint expenses of B as per above statement is Rs. 32,500.
Total share of A in joint expenses = 50,000 - 32,500
= 17,500

Now find out total cost of A:		**Rs.**
Separate expenses of A (15,000 + 10,000 + 5,000)	=	30,000
+ Share of A in joint expenses	=	50,000
Total cost of A (Separate expenses + Joint expenses)	=	80,000

$\therefore$ Cost per tonne of A = $\frac{Total\ Cost}{Total\ Production\ tonne}$

$= \frac{80,000}{300}$
= Rs.267

❖ **Exercise**

Long questions

1.Explain the characteristics of Process Costing.

2.Explain the procedure for ascertaining Process Cost.

3.Which are the features of Process Costing?

4.Discuss the elements of Process Costing.

Explain the following terms

1. Process Costing
2. Normal Loss
3. Abnormal loss
4. Abnormal Gain
5. By Product
6. Joint Product
7. Inter Process Profit

Practical Problems

1. A product passes through three distinct processes to completion. These processes are numbered respectively 1, 2 and 3. During the first week of March 2007, 500 units are produced. The following information is obtained:

Particulars	Process - 1	Process - 2	Process – 3
Materials	30,000	15,000	10,000
Labour	25,000	20,000	25,000
Direct Expenses	5,000	1,000	5,000

The indirect expenses for the period where Rs. 14,000 apportioned to the process on the basis of wages. No work-in-progress or process stocks existed at the close of the

work. You are required to prepare process accounts showing total cost per unit in each process.

2. The material in a factory passes through three processes A, B and C for production of finished product. During the week ending 25th May 2007, 1200 units were produced. The following information is from cost accounts:

Particulars	A	B	C
Materials	8,000	4,000	3,000
Labour	6,000	5,000	5,000
Direct Expenses	1,200	400	1,000
Cost of bottles	-	4,060	-
Cost of cocks	-	-	650

The indirect expenses for the period were Rs.3,200 which are to be apportioned in proportion to wages. The By-Product of process- B was sold for Rs.480 and residue of process - C sold for Rs.250. Prepare the accounts of each process and calculate in detail the cost per unit in each.

3. The following information is extracted from the costing records of a factory producing commodity in the manufacturing of which three process are involved. The output of each process is transferred to the next process at cost on completion. The stocks which consist of raw- materials are valued at cost per unit of the preceding process.

Particulars	A	B	C
Wages	12,800	24,000	58,500
Machine Expenses	7,200	6,000	7,200
Factory Expenses	4,000	4,500	4,800
Raw Materials Consumed	48,000	-	-
	Units	Units	Units
Production (Gross)	74,000	-	-
Wastage	2,000	3,000	1,000
Opening Stock (R.M.)	-	8,000	33,000
Closing Stock (R. M.)	-	2,000	11,000

Prepare process cost accounts showing the cost of output and the cost per unit at each stage of manufacture.

4. Manish Automobiles Ltd. manufactures one article for the use of a motor car, which passes through three processes. The normal wastage for process - I is 20% of the units introduced. The wastage is sold at Rs.50 per unit. 2,000 units were introduced in this process at Rs.100 per unit. The additional expenditure incurred was Rs.60,000.

Prepare Accounts showing the cost of production per unit under the following conditions:

1. If the production is 1,500 units
2. If the production is 1,600 units
3. If the production is 1,800 units

Show your calculations relating to the cost of production capacity.

5. A product passes through three different processes to completion. In March, the cost of production was as given below:

Particulars	I	II	III
Other Direct Material	2,000	3,020	3,462
Direct Wages	3,500	4,226	5,000
Production Overheads	1,500	2,000	2,500
1000 units of materials were introduced in process I at Rs.5 each.			
Normal wastage (of the units Introduced)	10%	5%	10%
Sale price of wastage (per unit)	Rs.3	Rs.5	Rs.6
Actual production (in Units)	920	870	800

There is no unfinished work-in-process.

Prepare the necessary process accounts and 'Abnormal Loss' account and "Abnormal Gain" account.

6. The following details are extracted from the costing records of an oil mill for the year ending 31st March, 2007.
Purchase: 5,000 tonnes of copra at Rs. 2,00,000.

Particulars	Crushing	Refining	Finishing
Cost of labour	2,500	1,000	1,500
Electric power	600	360	240
Sundry materials	100	2,000	-
Repairs to machinery	280	330	140
Steam	600	450	450
Factory expenses	1,320	660	220
Cost of casks	-	-	7,500

3,000 tonnes of crude oil were produced; 2,500 tonnes of oil were produced by the Refining Process; 2,480 tonnes of refined oil were finished for delivery.

Copra sacks sold for Rs.400; 1,750 tonnes of copra residue sold for Rs.11,000; Loss in weight in crushing 250 tonnes; 450 tonnes of by-products obtained from Refining Process valued at Rs.6,750.

You are required to show the accounts in respect of each of the following stages of manufacture for the purpose of arriving at the cost per tonne of each process, and the total cost per tonne of finished oil:

(i) Copra Crushing Process (ii) Refining Process (iii) Finishing Process including casking.

7. A product passes through three processes 'A', 'B' and 'C'. 10,000 units were introduced to process 'A' at Rs. 10 per unit. The other direct expenses were as follows:

Particulars	A	B	C
Expenses:			
Sundry materials	10,000	15,000	5,000
Labour	50,000	80,000	65,000
Direct expenses	10,500	11,875	20,090

Other information:			
Actual output (in units)	9,500	9,100	8,100
Normal wastage	3%	5%	(?)
Selling prices of normal wastage per unit	2.50	5.00	10.00

The final product was sold at Rs.51 per unit fetching a profit of 16.2/3% on sales. Prepare Process Accounts and find out the percentage of normal wastage in Process 'C'.

8. HUL Ltd. produced a detergent "WIN", which passes through three processes before completion and transfer to the finished goods warehouse. From the data relating to this product, you are required to prepare process accounts and other relevant accounts:

Particulars	A	B	C
Raw Materials input (5,000 units)	3,000	-	-
Raw materials added in process	4,250	4,750	2,750
Direct wages	2,000	3,000	6,000
Direct expenses	600	465	670
Output (in Units)	4,600	4,350	3,950
Normal loss in process of input	10%	5%	10%
All loss has scrap value (per unit)	20 paisa	50 paisa	1 Rs.

Production overheads were Rs. 8,250, which is absorbed as per proportion of direct wages.

9. Shilp Manufacturing Ltd. product passes through two distinct processes which are known as Process - I and Process - II. Process - I and Process- II yield by-products. These by-products are sold out directly from the factory.
From the following information, prepare the Process Account and their by- product Accounts and show the cost per ton at the end of each process and the selling price of the by-products per ton.

Particulars	A	B
Materials consumed	1,500 tons, at Rs. Per ton	-
Direct wages	Rs.37,500	Rs.30,000
Factory Overheads	80% of direct wages	50% of direct wages
Wastage	100 tons	150 tons
Sale of wastage	At Rs.9 per ton	At Rs.8 per ton
By – products	300 tons	200 tons
Sale of by-products	Costs plus 20%	Sold at price so as to realize 50% profit on sale.

10. In Ashaina Manufacturing Co., the by-products named B and C are obtained during the manufacture of product A. Joint expenses of production are as under:

Raw Material	10,000
Wages	11,500
Other expenses	7,700
	29,200

Separate expenses are as under:

Particulars	A	B	C
Materials	2,500	1,200	1,400
Wages	1,900	1,600	2,000
Other expenses	1,500	900	1,050
Selling price	30,000	20,000	15,000
Estimated rates of profit on sale	40%	30%	25%

Show how joint expenses of production can be allocated.

11. A factory is engaged in the production of A and in the course of its manufacture a by-product B is produced which after a separate process has a commercial value. For the month of March 2001, following are the summarized costing data.

Particulars	Joint Expenses	Separate expenses	
		A	B
Materials	38,400	14,720	1,560
Labour	23,400	15,360	5,284
Overheads	6,900	3,000	1,088

The output for the month was 284 tonnes of A and 98 tonnes of B and the selling price of B averaged Rs.280 per tonne.
Assuming that the profit on is estimated at 50% of the selling price, prepare the Cost Statement of A.

12. A product passes through three processes. Prepare process A/c's from the following details:

Particulars	A	B	C
Material	5,200	3,960	5,924
Direct Labour	4,000	6,000	8,000
Production Overheads	4,000	6,000	8,000
	Actual Production in Units	Normal Wastage	Scrap value of waste per unit
Process – A	950	5%	Rs.4
Process – B	840		Rs.8
Process – C	750	15%	Rs.10

In Process – A, 1000 Units at Rs.6 per unit were introduced.

13. Manohar Ltd. produced a detergent "Clean". This passes through three processes before completion and transfer to the finished goods warehouse. From the data relating to this product, you are required to prepare process accounts and other relevant accounts.

Particulars	A	B	C
Raw Material input (5000 units)	3,000	-	-
Raw Material added in process	4,250	4,750	2,750
Direct wages	2,000	3,000	6,000
Direct expenses	600	465	670

Output (in units)	4,600	4,350	3,950
Normal Loss in process of input	10%	5%	10%
All loss has scrap value per unit of	20 paisa	50 paisa	Rs.1

Production overhead cost was Rs. 8,250, which is absorbed as per percentage of direct wages.

UNIT – 3 MARGINAL COSTING AND ABSORPTION COSTING

3.1 Introduction

3.2 Marginal Cost & Absorption costing

3.3 Advantages and Disadvantages of Marginal Costing

3.4 The principal of Marginal Costing

3.5 The calculation of profit under Marginal Costing & Absorption Costing

3.6 Reconciliation on profits

3.7 Keywords

❖ **Exercise**

3.1 Introduction

Cost is the monetary / money value of all the expenditures made for supplies (raw material), services, labour, equipment and other items purchased by a business/ company / firms for making a valuable product for end-users. There are multiple methods / techniques used by a corporate / manufacturer for finding cost per unit and cost of product i.e., Product Costing, Job Costing, Process Costing, Standard Costing, Multiple Costing, ABC Costing, Unit Costing, Direct Costing, Batch Costing, Operation Costing and Absorption and Marginal costing.

Absorption and Marginal costing are known as techniques of cost and management accounting and useful for decision making by manager. In simple words, both are used for finding cost per unit or product cost. Absorption and Marginal costing are useful for decision making in various situations like to buy or make, shut-down or operate and more. The major difference between both the techniques is that marginal costing focuses or uses, variable cost and on the other hand absorption costing focuses on both the costs equally.

3.2 Marginal Costing & Absorption Costing

3.2.1 Meaning of Marginal Costing:

Marginal Costing is a cost and management accounting technique used for decision-making for determining the total cost of a product. In marginal costing, variable cost is considered as a product cost and on the other hand fixed cost is considered as a period cost. This technique accounts for the variable costs associated with the extra units produced. In this technique, fixed expenses are not considered because they do not vary due to ongoing changes.

3.2.2 Definition of Marginal Costing: According to ICWA, "the ascertainment by differentiating between fixed costs, and variable costs, of marginal costs and of the effect on profit of changes in volume or type of output". In simple words, marginal cost is defined as the additional cost incurred to produce one more unit of a product or service.

3.2.3 Meaning of Absorption Costing:

Absorption costing is also known as full costing. It is a cost accounting method for capturing all costs associated with manufacturing a product. It includes both the cost, direct costs and indirect costs such as direct materials, direct labour and direct expenses and factory rent, administration costs and insurance. The management/ corporate uses this method to absorb the costs incurred on a product that is produced.

3.2.4 Definition of Absorption Costing:

According to CIMA, "practice of charging all costs both variable and fixed to operations, processes or products." In simple words, it is a costing method which is considered all the costs (direct costs and indirect costs) for finding the total cost or cost per unit.

3.3 Advantages and Disadvantages of Marginal Costing

Some of the advantages and disadvantages of marginal costing are given below:

Advantages of Marginal Costing:

- Easy to understand the concept of marginal costing.
- It establishes cost -volume -profit analysis relationship.
- Useful in finding the marginal cost of product.
- Useful in decision-making or taking long term decision
- Showing the maximum utilization of fixed cost.
- Helpful in price determination.
- Helpful in decision-making in the case of limiting factor.

Disadvantages of Marginal Costing:

- This technique is quite tricky so everyone can't understand easily.
- Many times, decisions taken based on marginal costing may be wrong.
- Not more useful for long term decision making.
- Classification of cost is different in long term and short-term.
- Avoiding time factor or limiting factor.
- Not useful for every business or company.

3.4 The Principles of Marginal Costing

1. Variable cost of a product is marginal cost. The marginal production cost of product includes
1. direct materials cost, direct labour cost, variables/marginal direct expenses /manufacturing overhead cost.
2. Volume of production and sales increases/ decreases then total marginal cost/ variable costs increases/ decreases proportionately but marginal cost/ variable costs per units is fixed at every level of production and sales.
3. Fixed costs are considered as period cost and variable costs are considered as product cost. Variable costs are charged to cost units and fixed costs are charged against the aggregate contribution.
4. Fixed costs are constant regardless of the volume of production and sale.

5. Contribution can be calculated through the following formula. Contribution (C) = Sales price (S.P) - Variable Costs (V.C)
6. At varying levels of output and sales, contribution per unit (P. U) is constant and profit per unit varies.

3.5 The Calculation of Profit under Marginal Costing & Absorption Costing

3.5.1 Difference between Absorption Costing and Marginal Costing

SR	Base	Absorption Costing	Marginal Costing
1	Consideration of fixed factory expenses / overhead	Factory fixed overheads / expenses / are considered as a part of total production cost.	Factory fixed overheads / expenses / are not considered as a part of total production cost.
2	Treatment of selling and administrative costs / overhead	Selling and administrative costs / overhead treated as period costs and recovered from profit.	Selling and administrative costs / overhead treated as period costs and recovered from contribution.
3	Valuation of stock	Valuation of opening & closing stock generally higher/more as they included proportionate fixed factory overheads.	Valuation of opening & closing stock generally lower/less as it does not include fixed factory overheads.
4	Equation of profits	The difference between the sales and total cost is the profit. S-TC= profit	The difference between the sales and marginal cost is the contribution (s-vc= c) and after deducting all the fixed costs (fc) from contribution (c), the resultant figure is the profit or loss (p&l).
5	Effect of change in sales volume.	Profit is not majorly affected by change in sales volume.	Profit is majorly affected by change in sales volume.
6	Absorption of fixed factory overheads	As fixed factory overheads are absorbed in the production cost through absorption rate, resulting under or over-absorption will come.	There is no over- recovery or under-recovery of fixed factory overheads, because it is not a part of production cost.
7	Inflation in profit	The amount of profit is inflated, because value of closing stock is higher, as it considers portion of fixed factory overheads.	The amount of profit is lower as the value of closing stock is lower, as it does not consider portion of fixed factory overhead.
8	Useful For decision-making	This method is not useful for decision-making and sometimes it may mislead in decisions making.	This method is very useful in managerial decision- making as it takes into account variables cost, ignoring fixed cost.
9	Illogical Practice	This method uses illogical	In this method, all fixed

		practice, in which a portion of current year's fixed overheads are carried forward to next year, as part of value of closing stock. But overheads must be charged to profit in current years.	expenses are treated as period costs and are charged in the current year.
10	Classification of Cost	In this method costs are classified according to their functions as factory, administrative, selling etc.	In this method cost is classified according to behaviour as fixed and Marginal overheads.
11	Relationship	It does not show any relationship between cost, volume and profit.	It shows any relationship between cost, volume and profit.

3.5.2 Imaginary's statement of profit

1. **As per Marginal Costing**
2. **As per Absorption Costing**

Income Statement or statement of profit (on the basis of Marginal Costing)

Particulars	Amount	Amount
Sales (Selling Units x Selling Price Per Unit)		xxx
Less: Marginal Production Cost Direct materials Direct labour Marginal factory overheads	 (x) (x) (x)	
Total Marginal Production Cost Add: Opening stock (valued at Marginal Production Cost) Less: Closing stock (M. P. C.= D. M + D. L+ M.F.O)	(XXX) xx (xx)	
Cost of goods sold (Production)	XXX	
Production Contribution Less: Non-production Marginal overheads/cost: Marginal Admi. Overheads / Exp. Marginal Selling & Distribution Overheads / Exp.	 (x) (X)	XX
Net Contribution Less: Fixed overheads/ cost: Fixed Factory overheads / exp Fixed Administrative overheads / exp Fixed Selling & distribution overheads/ exp.	 (x) (x) (x)	XXX
Net Profit		XXX

Income Statement or statement of profit (on the basis of Absorption Costing)

Particulars	Amount	Amount
Sales (Selling Units x Selling Price per unit) Less: Production Cost		XXX

Direct Materials Direct Labour Marginal Factory Overheads/exp. Fixed Factory Overheads / exp. (Units produced x recovery/ absorption rate)	(x) (x) (x) (x)	
Production Cost Add: Opening stock (valued at Production Cost) Less: Closing stock (valued at Production Cost) (P. C.= D. M + D. L+ M.F. O+ F.F.O)	XXXX x (x)	
Cost of goods sold	XXX	XXX
Gross Profit Less: Marginal Admin. overheads Fixed Admin. overheads Marginal Selling & dist. overheads Fixed Selling & dist. Overheads	 (x) (x) (x) (x)	XXX
Profit	XX	XX
Less: Under-absorption of Factory O/H Add: Over-absorption of Factory overheads	(x) x	
Net Profit		XXX

3.5.3 Valuation of Stock:

Valuation of opening and closing stock in Marginal Costing values stock at the total variable production cost (V. P. C) of a unit of product whereas in Absorption Costing values stock at the full production cost (T. P. C) of a unit of product. Therefore, opening and closing stock values will be different under marginal and absorption costing. If opening and closing stock values are different, this will have an effect on profits.

3.6 Reconciliation of Profits

Reconciliation of profits under the Absorption Costing & Marginal costing due to following points/ reasons.

1. When stock levels increase or decrease, profits differ under absorption and marginal costing.
2. If stock levels increase, absorption costing gives the higher profit. This is because fixed factory overheads portion in the valuation of closing stock.
3. If stock levels decrease, marginal costing gives the higher profit. This is because fixed overhead brought forward in opening stock is released, thus increasing the cost of sales and reducing profits.
4. If stock levels are constant, both methods give the same profit.

Illustration-1

X company had budgeted production of 20,000 units, actual production was 22,000 units and sales were 18,000 units. The selling price per unit was Rs. 120. The budgeted cost of product was as under:

Particulars	Cost (P. U.) Rs.
Direct materials	30
Direct wages	20
Marginal factory overheads	5
Fixed Factory overheads	1,90,000 Rs.
Fixed Administrative overheads	60,000 Rs.
Fixed Selling overheads	30,000 Rs.

Rate of Sales commission is 10 per cent on actual sales proceeds.
opening stock is zero. Costs as per budget and actual were equal.
Prepare statements showing profit as per marginal cost and absorption cost method.

Answer: Std rate of recovery/absorption of fixed factory O/H /cost: = Budgeted Overheads /Budgeted Production = Rs. 1,90,000 / 20,000 Units = Rs. 9.50

Calculation of Under-recovery or Over-recovery of fixed factory O/H:
Recovered O/H = (22,000 × 9.50) = 2,09,000
Actual Overheads = (1,90,000)
Over-recovery of fixed factory O/H = 19,000

Income Statement or Statement of Profit (on the basis of Absorption Costing)

Particulars	Amount	Amount
Sales (units x S. P. P. U.) (A)	(18,000 units x Rs. 120)	21,60,000
Less: Production Cost		
Direct Materials (Rs. 30)		6,60,000
Direct Labour (Rs.20)		4,40,000
Marginal Factory Overheads (Rs. 5)		1,10,000
Fixed Factory Overheads (Units produced x recovery rate) (22,000 x 9.50)		2,09,000
Production Cost (Rs. 64.50)		14,19,000
Add: Opening stock (Rs. 64.50)		0
Less: Closing stock (22000-18000) (4,000 units x Rs. 64.50)		(2,58,000)
Cost of goods sold (B)		11,61,000
Gross Profit (A-B)	(21,60,000-11,61,000)	9,99,000
Less: commission on Sales (10% on Rs. 21,60,000)	(2,16,000)	
Fixed Administrative OH/S.	(60,000)	
Fixed Selling OHS.	(30,000)	(3,06,000)
Profit		6,93,000
Add: Over-absorption of Factory overheads		+ 19,000
Net Profit		7,12,000

Income Statement or statement of profit (on the basis of marginal Costing)

Particulars	Amount	Amount
Sales (Units x S. P. P. U.) Less: Production Cost Direct Materials (Rs. 30) Direct Labour (Rs.20) Marginal Factory Overheads (Rs. 5)	(18,000 units x Rs. 120)	21,60,000 6,60,000 4,40,000 1,10,000
Production Cost (30+20+5) Add: Opening stock (55) Less: Closing stock (55) (4,000 units x Rs. 55)	Rs. 55	12,10,000 0 (2,20,000)
Cost of Production		9,90,000
Production contribution (21,60,000-9,90,000) Less: commission on Sales (10% on Rs. 21,60,000)		11,70,000 (2,16,000)
Contribution		9,54,000
Less: Fixed Factory overheads Fixed Administrative overheads Fixed Selling overheads	 (1,90,000) (60,000) (30,000)	 (2,80,000)
Net Profit		6,74,000

Reconciliation statement of profit (Difference in Profit = 38000)

Particular	Amounts
Profit according to Absorption Costing	7,12,000
(+/-) Difference in value of stock of both the methods due to valuation of stock (Value of closing stock as per Absorption Costing 2,58,000 & as per Marginal Costing 2,20,000)	(38,000)
Profit according to Marginal Costing	6,74,000

Illustration -2

The budget production of XYZ company for March, 2022 was 16,000 units, Marginal costs per unit was Rs. 15, and fixed cost was Rs. 80,000. The sales were 10,000 units. During the year 2023, production was 15,000 units and sales were of 20,000 units. The selling price per unit was Rs. 25. Calculate the profit for 2022 &2023 as per absorption costing method and Marginal costing method.

Answer:

Standard absorption/ recovery rate is Rs. = 80,000 /16,000 units= Rs. 5 P.U
In the year 2023,
Recovered Fixed cost is Rs. 75,000 (15,000 units x Rs. 5)

and actual fixed cost is Rs. (80,000)
So, under-recovery is Rs. (5,000)

Statement of closing stock (units) for 2022 and 2023

Particulars	for 2022	for 2023
Units produced Less: Units sold Add: Opening stock	16,000 (10,000) -----	15,000 (20,000) + 6,000
closing stock	6,000	1,000

Statement of Profit (Absorption Costing) for 2022 and 2023

Particulars	2022 (Amount)	2023 (Amount)
Sales (S.P. P.U. @25)	**(10,000 x 25) = 2,50,000**	**(20,000 x 25) = 5,00,000**
Less: Marginal Costs (Rs. 15)	(16,000 x 15) = 2,40,000	(15,000 x 15) = 2,25,000
Fixed Costs (Rs. 5)	(16,000 x 5) = 80,000	(15,000 x 5) = 75,000
Add: opening stock	0	(6000 x 20) =1,20,000
Less: closing stock	(6000 x 20) = (1,20,000)	(1000 x 20) = (20,000)
Total production cost	**(2,00,000)**	**(4,00,000)**
Under-recovery of fixed costs	--	**(5000)**
Profit	(2,50,000-2,00,000) = 50000	(5,00,000-4,05,000) = 95000

Statement of Profit (Marginal Costing) for 2022 and 2023

Particulars	2022 (Amount)	2023 (Amount)
Sales (S.P. P.U. @25)	(10,000 x 25) = **2,50,000**	(20,000 x 25) = **5,00,000**
Less: Marginal Costs (Rs. 15)	(16,000 x 15) = 2,40,000	(15,000 x 15) = 2,25,000
Add: opening stock	0	(6000 x 15) = 90,000
Less: closing stock	(6000 x 15) = (90,000)	(1000 x 15) = (15,000)
Total production cost	**(1,50,000)**	**(3,00,000)**
Contribution	(2.5L-1.5L) = 1,00,000	(5L-3L) = 2,00,000
Less: Fixed Costs	(80,000)	(80,000)
Profit	**20,000**	**1,20,000**

Illustration-3

There are three departments of a company. Their performance during the year 2023 was as follows:

	Department A Rs.	Department B Rs.	Department C Rs.
Sales	1,20,000	1,60,000	80,000
Marginal Costs	80,000	1,20,000	68,000
Fixed costs (Allocated)	12,000	20,000	16,000

Department C is making losses and should therefore be closed. Advise the management in taking the decision.

Answer:

Statement of Profit as per Absorption Costing

	A (Rs.)	B (Rs.)	C (Rs.)
Sales	1,20,000	1,60,000	80,000
Less:			
Total Cost (V+F)	92,000	1,40,000	84,000
Profit/Loss	28 ,000	20,000	(4,000)

Total profit = 28 ,000 + 20,000 + (4,000) = Rs. 44,000.

The absorption costing shows that Department C is running into losses (4000) and management can decide for closing it down.

Statement of Profit as per Marginal Costing

	A (Rs.)	B (Rs.)	C (Rs.)
Sales	1,20,000	1,60,000	80,000
Less:			
Marginal Cost	(80,000)	(1,20,000)	(68,000)
Contribution	40,000	40,000	12,000
Total Contribution	92,000		
Less: Fixed Expenses	(48,000)		
Profit	**44,000**		

The marginal costing shows company's overall profit is good. So, management can continue the production of all three products because contribution of all three is positive.

Illustration- 4

Data for first three years of A company are given below:

	1st Year	2nd Year	3rd Year
Production (In units)	1,00,000	1,20,000	1,30,000
Sales (In units)	90,000	1,10,000	1,40,000
Opening Stock (units)	-	10,000	20,000
Closing Stock (units)	10,000	20,000	10,000

The selling price per unit of the product is Rs. 10. Direct material per unit cost is Rs. 3, Direct labour per unit is Rs. 2 and Marginal factory overhead per unit is Rs. 1. The fixed selling and administration O/H /expenses was Rs. 50,000 per annum and the Marginal

selling and administration O/H was Rs. 30,000, Rs. 39,000 and Rs. 50,000 respectively. The budgeted production was 1,25,000 units and budgeted fixed factory overheads was Rs. 2,50,000.

Prepare income statements according to both the methods from the data given above.

Answer:

In absorption costing, factory overhead absorption rates are determined for fixed factory overheads.

Recovery/ absorption rate for fixed overhead = Budgeted Overheads/ Budgeted Production

= Rs 2,50,000 /1,25,000 units = Rs. 2

In the books of A Company Ltd.

Statement of Income/Profit as per Absorption Costing

Particular	Amount (1st Year)	Amount (2nd Year)	Amount (3rd Year)
Sales (at Rs. 10)	**9,00,000**	**11,00,000**	**14,00,000**
Less:			
Direct Material (3)	3,00,000	3,60,000	3,90,000
Direct Labour (2)	2,00,000	2,40,000	2,60,000
Marginal Factory OH (1)	1,00,000	1,20,000	1,30,000
Fixed Factory Overhead (2)	2,00,000	2,40,000	2,60,000
Production Cost	8,00,000	9,60,000	10,40,000
Add: Opening Stock (8)	0	(10,000 x 8) = 80,000	(20,000 x 8) = 1,60,000
Less: Closing Stock (8)	(10,000 x 8) = (80,000)	(20,000 x 8) = (1,60,000)	(10,000 x 8) = (80,000)
Cost of goods sold	(7,20,000)	(8,80,000)	(11,20,000)
Under /over recovery of Fixed Factory O/H	+50,000	+ 10,000	-10,000
Revised Cost of goods sold	**7,70,000**	**8,90,000**	**11,10,000**
Gross Profit	1,30,000	2,10,000	2,90,000
Less:			
fixed selling and administration O/H	(50,000)	(50,000)	(50,000)
Variables Selling & Administration O/H	(30,000)	(39,000)	(50,000)
Net Profit	**50,000**	**1,21,000**	**1,90,000**

Total Profit (50,000 +1,21,000+ 1,90,000) Rs. 3,61,000

Calculation of Under / Over recovery of Fixed Factory O/H

	1st Year (Rs.)	2nd Year (Rs.)	3rd Year (Rs.)
Actual production	1,00,000 x 2	1,20,000 x 2	1,30,000 x 2
	= 2,00,000	= 2,40,000	= 2,60,000
Actual fixed O/H	(2,50,000)	(2,50,000)	(2,50,000)
Under/over recovery	(50,000)	(10,000)	+10000

Statement of Income/profits as per marginal Costing

Particular	1st Year	2nd Year	3rd Year Rs.
Sales (10)	**9,00,000**	**11,00,000**	**14,00,000**
Less: Direct Material (3) Direct Labour (2) Marginal Factory O/H (1)	 3,00,000 2,00,000 1,00,000	 3,60,000 2,40,000 1,20,000	 3,90,000 2,60,000 1,30,000
Marginal Production Cost Add: Opening Stock (6) Less: Closing Stock (6)	6,00,000 0 (60,000)	7,20,000 60,000 (1,20,000)	7,80,000 1,20,000 (60,000)
Cost of goods sold	**5,40,000**	**6,60,000**	**8,40,000**
Production contribution Less: Variables Selling & Administration O/H & expenses	3,60,000 (30,000)	4,40,000 (39,000)	5,60,000 (50,000)
Contribution Less: Fixed Factory Overhead & exp. Less: Fixed Selling & Administration expenses & O/H	3,30,000 (2,50,000) (50,000)	4,01,000 (2,50,000) (50,000)	5,10,000 (2,50,000) (50,000)
Net Profit	30,000	1,01,000	2,10,000

Total profit 30,000+1,01,000+2,10,000=3,41,000

Reconciliation Statement of Profit

Particulars	1st Year (Amount)	2nd Year (Amount)	3rd Year (Amount)
Profit as per Marginal costing	**30,000**	**1,01,000**	**2,10,000**
(-) Diff. in the value of opening stock (The opening stock value as per absorption costing Rs 80,000 & 1,60,000 & marginal costing is 60,000 &1,20,000)	0	(20,000)	(40,000)

(+) Diff. in the value of closing stock (The closing stock value as per absorption costing Rs. 80,000, 1,60,000 & 80,000 & marginal costing is 60,000,1,20,000 & 60,000)	+20,000	+40,000	+20,000
Profit as per absorption costing	**50,000**	**1,21,000**	**1,90,000**

Illustration- 5

A company prepares budget for the year 2023 to produce and sell 18,000 units at Rs. 10 per unit. Marginal production cost per unit is Rs. 5 and fixed costs are Rs. 54,000. sales for the first 6 months of the year will be 6,000 units and 12,000 units during the other six months. The company had prepared the budget on an average of 1,500 units per month. Calculate the profit under the Absorption Costing and Marginal Costing methods.

Answer:

overhead absorption rate = Rs. 54,000 / 18,000 units = Rs. 3 per unit

The production is even throughout the year, therefore there will be no under or over recovery of fixed factory overheads.

Statement of Profit Using Absorption Costing:

Particulars	First 6 months (Rs.)	last 6 months (Rs.)
Production Units	9,000	9,000
Sales Units	6,000	12,000
Sales (at Rs. 10)	**60,000**	**1,20,000**
Less: Cost of goods sold: Marginal Production cost (Rs. 5)	45,000	45,000
Fixed overhead exp. (Rs. 3)	27,000	27,000
Total production cost (Rs. 8)	72,000	72,000
+ Opening stock (at Rs. 8)	-------	24,000
- Closing stock (at Rs. 8)	(24,000)	----
Cost of goods sold	**48,000**	**96,000**
Gross Profit/Net Profit	(60,000-48,000) = 12,000	(1,20,000-96,000) = 24,000
Profit per month	2,000	4,000

Total Profit = 12,000 + 24,000 = Rs. 36,000

Statement of Profit Using Marginal Costing

Particulars	First 6 months (Rs.)	last 6 months (Rs.)
Production Units	9,000	9,000
Sales Units	6,000	12,000
Sales (at Rs. 10)	**60,000**	**1,20,000**
Less: Cost of goods sold: Marginal Production Cost (Rs. 5)	45,000	45,000
+ Opening Stock (Rs. 5) - Closing stock (Rs. 5)	------- (15,000)	15,000 --------
Cost of goods sold	**30,000**	**60,000**
Contribution	(60,000-30,000) = 30,000	(1,20,000-60,000) = 60,000
Less: Fixed Cost (Rs. 54,000 × 6/12)	(27,000)	(27,000)
Net Profit/Loss	3,000	33,000
per month Profit/Loss	500	2,750

Total Profit = (3000) +21000= 18000

Calculation for closing stock:

Particulars	First 6 months	last 6 months
Opening stock	--	3000
Add: Production (1,500 units x 6)	9000	9000
Total	9000	12000
-Sale	(1,000 units x 6m) (6,000)	(2,000 units x 6m) (12000)
Closing stock	3000	-------

Illustration-6

A Company has a production capacity of 2,00,000 units per year. Normal capacity utilization is reckoned as 90%. Standard Marginal production costs per unit are Rs. 11. The Fixed Costs are Rs. 3,60,000. Marginal Selling Costs per unit are Rs. 3 and fixed selling costs are Rs. 2,70,000. The selling price per unit is Rs. 20. The production was 1,60,000 units and sales were 1,50,000 units. The closing inventory was 20,000 units. The actual Marginal production costs for the year were Rs. 35,000 higher.

(i) Calculate the profit using the absorption costing method and marginal costing method.

(ii) Explain the difference in the profits.

Answer:

Normal Production Capacity (Utilization) = 2,00,000 × 90% = 1,80,000 units

Standard Marginal Production Cost (P. U) = Rs. 11

Standard rate of absorption = Annual Fixed Expenses/ standard production units

= 3,60,000 / 1,80,000 = Rs. 2 Per unit

Total Production Cost 11 + 2 = 13 P U

Marginal Selling Cost Rs. 3 P U

Fixed Selling Cost = 2,70,000

Opening stock + production – sales = closing stock

X + 1,60,000 - 1,50,000 = 20,000

X = - 1,60,000 + 1,50,000 + 20,000

X = 10,000

Statement of profits as per absorption costing

Particular	Amount (Rs.)
Sales (1,50,000 X Rs. 20)	**30,00,000**
Actual Production Marginal Cost (1,60,000 X 11)	17,60,000
+ Increase in Marginal cost	35,000
Fixed Costs (1,60,000 X 2)	3,20,000
Total Production Cost	21,15,000
Add: Opening stock (10,000 units X 13)	1,30,000
Less: Closing Stock (20,000 X 21,15,000 /1,60,000)	(2,64,375)
+ Under recovery of fixed production O/H (3.6L-3.2L)	40,000
Add: Marginal Selling-distribution Costs (1,50,000 x 3)	4,50,000
Fixed Selling-distribution Costs	2,70,000
Cost of sales	**27,40,625**
Profit (30,00,000-27,40,625)	**2,59,375**

Statement of Profit as per Marginal Costing

Particular	Amount (Rs.)
Sales	**30,00,000**
Marginal Production Cost (1,60,000 X 11)	17,60,000
+ Increase in Marginal cost	35,000
Add: Opening Stock (10,000 X 11)	1,10,000
Less: Closing Stock 20,000 X 17,95,000 / 1,60,000	(2,24,375)
cost of goods sold (Production)	16,80,625

Add: Marginal selling cost	
(1,50,000 × 3)	4,50,000
Total Marginal Cost	**21,30,625**
Contribution	8,69,375
Less: Fixed Expenses / cost	(3,60,000)
fixed selling costs	(2,70,000)
Profit	**2,39,375**

Reconciliation of Profit /Difference in Profit:

Particulars	Amount
Profit as per Marginal costing	2,39,375
(-) Diff. in the value of opening stock (The opening stock is 10,000 units, value as per absorption costing Rs. 1,30,000 & marginal costing is 1,10,000)	(20,000)
(+) Diff. in the value of closing stock (Value of closing stock as per absorption costing Rs. 2,64,375 & marginal costing is 2,24,375)	40,000
Profit as per Absorption costing	2,59,375

Illustration-7

The following information of the Standard Cost of first two years of a manufacturing company is given below.

Direct material	Rs. 4 P.U	
Direct labour	Rs. 5 P.U	
Marginal Factory overhead	Rs. 3 P.U	
Fixed Factory Overhead cost	Rs. 3 P. U	
Standard capacity of production 2,50,000 units		
Selling price per unit	Rs. 30	
Marginal Selling and Distribution expenses	Rs. 2 per unit	
Fixed Selling and Distribution expenses	Rs. 3,60,000	
Production and Sale data:	Year-1	Year-2
Produced (Units)	2,60,000	2,00,000
sold (Units)	2,10,000	2,20,000

You are required to prepare income statements for the first two years of operation, using both absorption costing and marginal costing. Also prepare a statement of reconciliation of profit.

Answer:

Statement of Income/profit as per Absorption Costing

Particular	1st Year	2nd Year
Sales (at Rs. 30)	**2,10,000x30 = 63,00,000**	**2,20,000x30 = 66,00,000**
Less: Direct Material (4) Direct Labour (5) Marginal Factory OH (3) Fixed Factory Overhead (3)	 2,60,000x4 =10,40,000 2,60,000x5 =13,00,000 2,60,000x3 =7,80,000 2,60,000x3 =7,80,000	 2,00,000x4 =8,00,000 2,00,000x5 =10,00,000 2,00,000x3 =6,00,000 2,00,000x3 =6,00,000
Production Cost Add: Opening Stock (15) Less: Closing Stock (15)	39,00,000 0 (50,000X15) = (7,50,000)	30,00,000 (50,000X15) = 7,50,000 (30,000X15) = (4,50,000)
Cost of goods sold Under /over recovery of Fixed Factory O/H	(31,50,000) -30,000	(33,00,000) +1,50,000
Revised Cost of goods sold	**31,20,000**	**34,50,000**
Gross Profit Less: fixed selling and administration O/H Variables Selling & Administration O/H	31,80,000 (3,60,000) (2,10,000 x 2) = 4,20,000	31,50,000 (3,60,000) (2,20,000 x 2) = 4,40,000
Net Profit	**24,00,000**	**23,50,000**

Calculation of Under /over recovery of Fixed Factory O/H

	1st Year	2nd Year
Actual production	2,60,000 x 3 = 7,80,000	2,00,000 x 3 = 6,00,000
Actual fixed O/H	(7,50,000)	(7,50,000)
Under/over recovery	30,000	(1,50,000)

Statement of Income/profits as per marginal Costing

Particular	Amount (1st Year)	Amount (2nd Year)
Production Units	2,60,000	2,00,000
Sales Units	2,10,000	2,20,000
Sales (at Rs. 30)	**2,10,000 x 30 = 63,00,000**	**2,20,000 x 30 = 66,00,000**
Less: Direct Material (4) Direct Labour (5)	 2,60,000x4=10,40,000 2,60,000x5=13,00,000	 2,00,000x4=8,00,000 2,00,000x5=10,00,000

Marginal Factory OH (3)	2,60,000x3=7,80,000	2,00,000x3=6,00,000
Marginal Production Cost Add: Opening Stock (12) Less: Closing Stock (12)	31,20,000 0 (50,000x12) = (6,00,000)	24,00,000 (50,000 x12) = 6,00,000 (30,000 x12) = (3,60,000)
Cost of goods sold	**25,20,000**	**26,40,000**
Production contribution Less: Variables Selling & Administration O/H & expenses	37,80,000 (2,10,000x2) = 4,20,000	39,60,000 (2,20,000x2) = 4,40,000
Contribution Less: Fixed Factory Overhead & exp. Less: Fixed Selling & Administration expenses & O/H	33,60,000 (7,50,000) (3,60,000)	35,20,000 (7,50,000) (3,60,000)
Net Profit	22,50,000	24,10,000

3.7 Keywords

- Marginal cost: Marginal cost means variables cost which changes with the level of production changes.
- Fixed cost: Fixed cost means which is fixed irrelevant of the level of production changes.

❖ Exercise

MCQ (Multiple Choice Questions)

1. The costing method where fixed factory overheads/ expenses are added to stock is called _____.
   (a) Marginal costing
   (b) Activity-based costing
   (c) Absorption costing
   (d) None of the above

   Answer: C

2. In marginal costing, profit =_____.
   (a) Fixed cost + contribution
   (b) Total sales revenue - marginal cost
   (c) Total sales revenue+ total marginal
   (d) None of the above
   Answer: A

3. Which of the following techniques of costing differentiates between fixed costs and variable costs?
   (a) Marginal costing
   (b) Absorption costing

(c) Standard costing
(d) None of the above
Answer: A

4. Fixed cost is known as _____in the marginal costing technique.
(a) Product cost
(b) Total cost
(c) Period cost
(d) None of the above
Answer: C

5. Variable cost is known as _____ in the marginal costing technique.
(a) Period cost
(b) Total cost
(c) Product cost
(d) None of the above
Answer: C

Short & Long questions

1. Give the definition of Marginal Costing.
2. Give the definition of Absorption Costing.
3. Explain the difference between Absorption costing and Marginal Costing in detail.
4. Explain the Advantages and Disadvantages of Marginal Costing in detail.
5. Explain the Imaginary's statement of profit as per Marginal Costing.
6. Explain the Imaginary's statement of profit as per Absorption Costing.
7. Explain the Reconciliation Statement of Profit.
8. Explain the Valuation of Closing Stock.

❖ **Practical questions**

Questions: 1

The Following data relating to a manufacturing company are presented before the directors of the company.

Particulars	2022 (Rs.)	2023 (Rs.)
Sales (lacs)	30	45
Production (units)	30,000	20,000
Sales (units)	20,000	30,000
Sales price (P U)	150	150
Marginal cost (P U)	50	50
Fixed Factory overhead	18,00,000	18,00,000
Factory overhead (P U) (Standard)	60	60
Fixed Selling and Administrative Overhead/exp.	2,50,000	2,50,000

Calculate the profit under the Absorption Costing and Marginal Costing methods.

Answer: for 2022 (Absorption Costing) **Sales = 30,00,000 – (**Marginal Production Cost 33,00,000 – Closing stock (10,000X110)) Cost of goods sold=22,00,000, G P= 8,00,000 - Fixed Selling and Administrative Overhead/exp (2,50,000) = profit 5,50,000

for 2023 (Absorption Costing) **Sales = 45,00,000 – (**Marginal Production Cost 22,00,000 + opening stock 10,000X110) Cost of goods sold=33,00,000, G P= 12,00,000- Under absorption (6,00,000) - Fixed Selling and Administrative Overhead/exp (2,50,000) = profit 3,50,000

for 2022 (Marginal Costing) **Sales = 30,00,000 – (**Marginal Production Cost 15,00,000 – Closing stock (10,000X50)) Cost of goods sold=10,00,000, Contribution = 20,00,000 - Fixed Factory overhead (18,00,000) - Fixed Selling and Administrative Overhead/exp (2,50,000) = loss (50,000)

for 2023 (Marginal Costing) **Sales = 45,00,000 – (**Marginal Production Cost 10,00,000 + opening stock 10,000X50) Cost of goods sold=15,00,000, Contribution= 30,00,000- Fixed Factory overhead (18,00,000) - Fixed Selling and Administrative Overhead/exp (2,50,000) = profit 9,50,000

Questions: 2

W Ltd. manufactures a single product Z. The following figures relates to Z for a one-year period is given below:

Activity level	50%	100%
Sales and production (Units)	400	800
Sales	8,00,000	16,00,000
Marginal Production costs:	3,20,000	6,40,000
Fixed Production costs:	1,60,000	1,60,000
Marginal Selling and administrative costs:	1,60,000	3,20,000
Fixed Selling and administrative costs:	2,40,000	2,40,000

The normal output is 800 units. Fixed overhead costs are even throughout the year and actual fixed costs and budgeted both are the same. There was no opening stock.

In the first Quarter, 220 units were produced and 160 units were sold.

1. 1.What would be the fixed production costs absorbed by Z if absorption costing is used?
2. 2.What would be the under/over-recovery of overheads?
3. 3.What would be the profit using absorption costing and marginal costing?
4. 4.Why is there a difference between profits of Absorption costing and marginal costing?

Answer:

Rate of recovery of production fixed cost
= Annual cost Rs. 1,60,000 ÷ production units 800= Rs. 200
Recovery of fixed costs (on 220 units) 220 units x Rs. 200 = Rs. 44,000.

Three months' budgeted fixed cost Rs. 1,60,000 × 3/12 = Rs. 40,000 and Actual recovery Rs. 44,000; Over recovery Rs. 4,000.
Profit as per absorption costing Rs. 40,000
Profit as per marginal costing Rs. 28,000

Questions: 3

X company has budgeted production of 18,000 units, actual production was 20,000 units and sales were 16,000 units. The selling price per unit was Rs. 130. The budgeted cost of product was as under:

Particulars	Cost (P. U.) Rs.
Direct materials & Direct wages	60
Marginal factory overheads	5
Fixed Factory overheads Rs.	1,80,000
Fixed Administrative overheads Rs.	60,000
Fixed Selling overheads Rs.	40,000

Rate of Sales commission is 1 per cent on actual sales proceeds.

opening stock is zero. Costs as per budget and actual were equal.

Prepare statements showing profit as per marginal cost and absorption cost method.

Answer: for (Absorption Costing) **Sales = 20,80,000 – (**Marginal Production Cost 15,00,000 – Closing stock (4,000X75) Cost of goods sold=12,00,000, G.P= 8,80,000+ over absorption (20,000) - Fixed Administrative overheads 60,000 - Fixed Selling overheads 40,000 - Sales commission (20,800) = profit 7,79,200

for (Marginal Costing) **Sales = 20,80,000 – (**Marginal Production Cost 13,00,000 – Closing stock (4,000X65)) Cost of goods sold=10,40,000, G. Contribution = 10,40,000 - Sales commission (20,800) = N. Contribution 10,19,200 - Fixed Factory overheads Rs.1,80,000 - Fixed Administrative overheads 60,000 - Fixed Selling overheads 40,000 = profit 7,39,200

Questions: 4

The following information of the Standard Cost of first two years of a manufacturing company is given below.

Direct material	Rs. 2 P. U
Direct labour	Rs. 2.5 P.U
Marginal Factory overhead	Rs. 1.5 P.U
Fixed Factory Overhead cost	Rs. 1.5 P. U

Standard capacity of production 2,50,000 units

Selling price per unit Rs. 15

Marginal Selling and Distribution expenses Rs. 1 per unit

Fixed Selling and Distribution expenses	Rs. 80,000	
Production and Sale data:	Year-1	Year-2
Produced (Units)	2,60,000	2,00,000
sold (Units)	2,10,000	2,20,000

You are required to prepare income statements for the first two years of operation, using both absorption costing and marginal costing. Also prepare a statement of reconciliation of profit.

Answer:

Profit as per Absorption Costing

for 1st Year: **Sales 31,50,000-** (Production Cost (19,50,000)- closing stock 3,75,000= Cost of goods sold 15,75,000 -/+ Under /over re. of F. F. O/H (15,000), G. P = 15,90,000 - fixed selling and administration O/H 1,80,000 - Variables Selling & Administration O/H 2,10,000, **Net Profit 12,00,000**

for 1st Year: **Sales 33,00,000-** (Production Cost (15,00,000) + opening stock 3,75,000 - closing stock 2,25,000= Cost of goods sold 16,50,000 -/+ Under /over re. of F. F. O/H (75,000), G. P = 15,75,000 - fixed selling and administration O/H 1,80,000 - Variables Selling & Administration O/H 2,20,000, **Net Profit 11,75,000**

Profits as per Marginal Costing

for 2 Year: **Sales 31,50,000-** (Production Cost (15,60,000)- closing stock 3,00,000= Cost of goods sold 12,60,000, contribution = 18,90,000 Fixed Factory Overhead & exp. 3,75,000 - fixed selling and administration O/H 1,80,000 - Variables Selling & Administration O/H 2,10,000 **Net Profit 11,25,000**

for 2 Year: **Sales 33,00,000-** (Production Cost (12,0,000) + opening stock 3,00,000 - closing stock 1,80,000= Cost of goods sold 13,20,000, contribution = 19,80,000 Fixed Factory Overhead & exp. 3,75,000 - fixed selling and administration O/H 1,80,000 - Variables Selling & Administration O/H 2,20,000, **Net Profit 12,05,000**

UNIT – 4 BUDGETARY CONTROL

4.1 Introduction

4.2 Meaning, Definition and Importance

4.3 Budgeting and Budgetary Control

4.4 Limitations of Budgetary Control

4.5 Types of Budgets

❖ **Exercise**

4.1 Introduction

The capacity to efficiently manage financial resources is essential for organisational success in the changing world of modern business. "Budgetary Control" is one of the main instruments for obtaining this competence. This chapter discusses the significance of budgetary control, highlighting its importance, guiding principles, and practical applications within the larger context of financial management.

Planning, observing, and exercising systematic control over an organization's financial resources is known as budgetary control. It involves making detailed budgets that act like comprehensive financial maps. These budgets guide how resources are allocated among different departments and activities. These budgets serve as benchmarks, enabling businesses to compare actual performance to predetermined goals and enable wise decision-making and tactical changes. Budgetary control's primary purpose is to connect an organization's financial actions with its strategic goals. It helps firms to foresee possible obstacles, capitalise on opportunities, and sustain. "Budgetary Control" is one of the major instruments for attaining this competency.

4.2 Meaning and Definition of Budget

The word "budget" is believed to have originated from the French word "baguette," which translates to "small bag" or "container of papers and accounts." An accounting plan is a budget. It is a written action plan that is monetary in nature. It might be seen as a declaration of predicted revenue and costs under certain anticipated operating circumstances. It is a quantitative strategy for upcoming actions—a blueprint for action in numbers.

As per Chartered Institute of Management Accountants (CIMA), London, Budget is, "a financial or quantitative statement, prepared and approved prior to a defined period of time of the policy to be pursued during that period for the purpose of attaining a given objective. It may include Income, Expenditure and Employment of Capital.".

4.2.1 The following are some important definitions.

- In a view of Keller & Ferrara, "a budget is a plan of action to achieve stated objectives based on predetermined series of related assumptions."
- G. A. Welsh states, "A budget is a written plan covering projected activities of a firm for a definite time period."
- As per George R. Terry, "Budget is an estimate of future needs arranged according to an orderly basis, covering some or all of the activities of an enterprise for definite period of time."

- “A budget is a comprehensive and co-ordinated plan, Expressed in financial terms, for the operations and resources of an enterprise for some specific period in the future.” By James.

4.2.2 Essential of a Budget

- It is planned for the future and prepared beforehand.
- It is future-focused, meaning it is created with future needs in mind. It is quantified and expressed in monetary terms.
- It's important to convey goals and duties to people at all levels of management.
- It is used to implement policies and is based on cash flow.
- Budget should be frequently checked.

4.3 Budgeting and Budgetary control

4.3.1 Budgeting:

The entire process of creating, enacting, and managing a budget is known as budgeting.

4.3.1.1 Objectives of Budgeting:

Following are the main objectives of budgeting.

- To ensure more efficient use of capital
- To avoid spending unnecessary money.
- To enable various departments to function effectively and affordably.
- To organise and manage the business's revenue and expenses.
- To establish effective business practices via preparation
- To assign duties to several department or head administrators.
- To coordinate the efforts of many departments
- To guarantee the availability of working capital
- To eliminate seasonal fluctuations, by creating new goods to guarantee the alignment of production and sales
- To guarantee the alignment of production and sales.

4.3.2 Budgetary Control

CIMA, London, defines Budgetary Control as: “The establishment of budgets relating the responsibilities of executives to the requirements of policy and the continuous comparison of actual with budgeted results either to secure by individual action, the objective of that policy or to provide a basis for its revision.”

4.3.2.1 The main features of budgetary control are:

1. Establishment of budgets for each purpose of the business.
2. Revision of budget in view of changes in conditions.
3. Comparison of actual performances with the budget on a continuous basis.
4. Taking suitable remedial action, wherever necessary.
5. Analysis of variations of actual performance from that of the budgeted performance to know the reasons thereof.

4.3.2.2 Objectives/Uses of Budgetary Control

Budgetary control serves several objectives and plays a pivotal role in the financial management of an organization. The primary objectives and uses of budgetary control include:

- **Goal Setting and Planning:**
  - Establishing clear financial goals and objectives for the organization.
  - Providing a structured framework for planning financial activities in alignment with strategic objectives.
- **Resource Allocation:**
  - Allocating financial resources efficiently and effectively across various departments and activities.
  - Prioritizing expenditures to ensure that funds are directed towards activities that contribute most to organizational objectives.
- **Performance Evaluation:**
  - Comparing actual financial performance against budgeted figures to assess the efficiency and effectiveness of operations.
  - Identifying variances between planned and actual outcomes to understand the reasons behind deviations.
- **Coordination and Communication:**
  - Facilitating communication and coordination between different departments by providing a common financial plan.
  - Ensuring that all departments are aware of and aligned with the organization's overall financial goals.
- **Motivation and Control:**
  - Creating a sense of responsibility and accountability among managers and employees by assigning specific budget targets.
  - Providing a basis for performance evaluation and reward systems, thereby motivating individuals and teams to meet or exceed budgeted targets.
- **Decision Support:**
  - Assisting management in making informed decisions by providing a comprehensive financial framework.
  - Offering insights into the financial implications of various decisions and scenarios through the analysis of budget data.
- **Cash Flow Management:**
  - Facilitating the management of cash flows by ensuring that cash is available when needed.
  - Identifying potential cash shortages and surpluses in advance, allowing for proactive cash management.

- **Cost Control:**
  - Controlling and minimizing costs by setting budgeted cost standards.
  - Monitoring and analysing variances in costs to identify areas where corrective actions are needed.
- **Strategic Planning:**
  - Supporting long-term strategic planning by providing a basis for financial forecasting.
  - Enabling organizations to adapt to changes in the business environment by adjusting budgets in response to emerging opportunities or threats.
- **Performance Improvement:**
  - Facilitating continuous improvement by learning from past budgeting experiences and adjusting future budgets accordingly.

- Encouraging a culture of efficiency and effectiveness in the use of resources.

Budgetary control is a multifaceted tool that goes beyond mere financial planning. Its objectives encompass strategic alignment, performance evaluation, motivation, and decision support, making it an integral component of effective financial management in organizations of all sizes and industries.

4.4 Limitations of Budgetary Control

- **Static Nature**: Budgets are often based on assumptions and predictions, assuming a relatively stable business environment. However, in dynamic industries, changes can occur rapidly, rendering static budgets less effective in adapting to unforeseen circumstances.
- **Time-Consuming:** The process of creating detailed budgets can be time-consuming, especially in larger organizations. In a rapidly changing business environment, the time invested in creating detailed budgets may be better spent on more flexible and responsive management approaches.
- **Rigidity:** Budgets may create a rigid framework, limiting the organization's ability to respond promptly to emerging opportunities or challenges. This can hinder innovation and agility, particularly in industries characterized by rapid technological advancements.
- **Overemphasis on Short-Term Goals**: Budgets often focus on short-term objectives, emphasizing immediate financial gains. This can result in a neglect of long-term strategic goals and may lead to missed opportunities for sustainable growth and development.
- **Dependency on Assumptions**: Budgets rely on assumptions about future conditions, such as market trends, economic factors, and consumer behaviour. If these assumptions prove inaccurate, the budget may become obsolete, leading to misalignments between planned and actual performance.
- **Resistance from Employees**: Employees may perceive budgetary control as a top-down imposition that restricts their autonomy. This resistance can undermine the effectiveness of the budgetary process as employees may be less motivated to achieve budget targets.
- **Inflexibility in Resource Allocation:** Budgets allocate resources based on pre-defined plans. However, unexpected changes in market conditions or internal factors may necessitate a reallocation of resources. Budgetary control can be inflexible in adapting to these shifts, leading to inefficiencies.
- **Focus on Quantifiable Aspects:** Budgets often emphasize quantifiable metrics, which may not capture the full spectrum of organizational performance. Qualitative aspects, such as customer satisfaction, employee morale, and innovation, may be overlooked in the pursuit of meeting financial targets.
- **Risk of Gaming**: In some cases, employees may manipulate the budgeting process to meet targets without achieving the underlying objectives. This can lead to a culture of "gaming the system," where the focus is on meeting budgetary goals rather than adding genuine value to the organization.
- **External Factors:** External factors, such as changes in legislation, geopolitical events, or natural disasters, are often beyond the control of the organization but can significantly impact financial performance. Budgets may struggle to account for these external variables, leading to deviations from planned outcomes.

4.5 Types of Budgets

There are various types of budgets, which are as follows:

A. Classification according to time:

1. Long Term Budgets: Long-term budgets, also known as strategic budgets, typically cover periods of more than one year, often extending up to five or ten years. Long-term budgets are instrumental in aligning financial planning with the overall strategic goals and vision of the organization. They focus on major capital expenditures, investments, and long-range financial objectives.

2. Short Term Budgets: This budget includes projections and plans for its operations for the next one to five years. They are often created in monetary units and are more detailed than long term budgets.

3. Current Budgets: These budgets are for a relatively limited time period, such as a month, a quarter, or no more than a year. The creation of these budgets necessitates short term budget modifications to current situations.

B. Classification according to Flexibility

1. Fixed Budget: For a single output level and a single set of conditions, a fixed budget is created. Targets in this budget are very strictly specified. It is referred to as a static budget.

For a single output level and a single set of conditions, a fixed budget is created. Targets in this budget are very strictly specified. It is referred to as a static budget.
A fixed budget has been defined by ICMA, England as "a budget which is designed to remain unchanged irrespective of the level of activity actually attained"

The following reasons make this budget less useful:

1. The conditions are always changing and cannot be expected to remain stable.
2. Due to the planned level of activity, management will not be able to evaluate the success of various heads on the basis of their established budgets.
3. It is barely useful as a technique of budgetary management since it does not distinguish between fixed, semi-variable, and variable expenses.

4. It does not allow for any adjustments to the budgeted figures owing to changes in costs brought on by changes in the intensity of the activity.

2. Flexible Budget:

The Chartered Institute of Management Accountants, London defines Flexible Budget, "as a budget which by recognizing different cost behaviour patterns, is designed to change as volume of output changes."

It is a budget that was created with the projected expenditures for whatever level of activity included. It makes a distinction between fixed, semi-fixed, and variable costs and is designed to change according to the work done. It is designed to offer anticipated expenses at any degree of accomplished activity.

Flexible budgets are characterised by their ability to display the expenditures that correspond to different output levels. If the volume varies, the spending that is suitable for it may be determined from the flexible budget for control purposes by comparing it to actual expenditure. It offers a rational comparison between budgeted expenses and their actual

costs. When a flexible budget is created, the budgeted and actual costs of an activity are compared, or two items are compared on the same basis.

The following circumstances may make a flexible budget more beneficial: Where the degree of activity changes over time.

- When a company is fresh, making it challenging to predict demand.
- In cases where an organisation is experiencing a scarcity of a production element.
- For instance, labour, materials, etc. since the amount of activity depends on the presence of such a thing.
- When a company's nature makes it so that sales are always fluctuating.
- The areas where production and sales are impacted by changes in trend or fashion.
- In cases where a company often offers new items or modifies the patterns and designs of its existing ones.
- When a significant portion of the produce is destined for export.

C. Classifications according to Function:

1. **Sales Budget:**

- The sales budget is a critical component of the master budget, projecting the expected sales revenue for a specific period.
- It serves as the starting point for many other budgets, guiding decisions related to production, inventory, and resource allocation.
- Sales budgets are typically based on historical sales data, market trends, and sales forecasts provided by marketing and sales teams.
- Accurate sales budgeting is essential for maintaining inventory levels, meeting customer demand, and achieving overall financial objectives.
- Variance analysis between actual sales and the sales budget helps organizations adjust strategies and improve future forecasting.

2. **Production Budget:**

- The production budget details the quantity of goods that a company plans to produce during a given period, derived from the sales budget.
- It considers factors such as desired ending inventory levels, beginning inventory levels, and the required sales quantity.
- The production budget is crucial for coordinating manufacturing activities, managing resources efficiently, and avoiding both overproduction and stockouts.
- It plays a vital role in the synchronization of production schedules with sales forecasts, optimizing the use of labour, machinery, and materials.
- Deviations between actual production and the production budget prompt organizations to reassess their production strategies.

3. **Raw Materials Budget:**

- The raw materials budget outlines the quantity and cost of raw materials required for production, derived from the production budget.
- It ensures that the necessary materials are procured in a timely manner, preventing disruptions to the production process.
- Accurate raw materials budgeting aids in inventory management, cost control, and negotiating favourable terms with suppliers.

- This budget considers factors like lead times, stock levels, and any anticipated changes in material costs.
- Variance analysis against the raw materials budget helps organizations identify inefficiencies and implement corrective measures.

4. Purchase Budget:

- The purchase budget outlines the quantity and cost of goods or services that an organization plans to purchase during a specific period.
- It is closely linked to the production budget, providing guidance on external procurement to meet production requirements.
- Effective purchase budgeting helps in negotiating favorable terms with suppliers, optimizing inventory levels, and managing cash flow.
- Organizations often consider factors such as bulk discounts, delivery schedules, and supplier reliability in the creation of the purchase budget.
- Regular reviews of actual purchases against the purchase budget assist in refining procurement strategies.

5. Labour Budget:

- The labour budget forecasts the cost and quantity of labour required for production, aligning with the production budget.
- It includes considerations for direct labour (involved in production) and indirect labour (support functions such as administration).
- Labor budgets are essential for workforce planning, ensuring that the right number of skilled workers is available at the right time.
- Accurate labour budgeting aids in managing labour costs, optimizing productivity, and maintaining a motivated workforce.
- Variance analysis against the labour budget facilitates performance evaluation and adjustments to workforce planning strategies.

6. Production Overhead Budget:

- The production overhead budget outlines the estimated indirect costs associated with production, such as utilities, maintenance, and factory supervision.
- It complements the production budget, ensuring that all overhead costs are considered to determine the total cost of production accurately.
- Accurate budgeting for production overhead helps in cost control, efficiency improvements, and determining the appropriate pricing strategy.
- Regular monitoring and analysis of production overhead variances enable organizations to identify cost-saving opportunities and operational improvements.
- The production overhead budget is crucial for maintaining profitability and competitiveness in the market.

7. Selling & Distribution Budget:

- The selling and distribution budget outlines the expected expenses related to marketing, sales, and distribution efforts.
- It includes costs such as advertising, sales promotions, transportation, and sales team salaries.
- This budget is essential for aligning sales and marketing strategies with the overall financial goals of the organization.

- Creating effective budgets in this domain is crucial because it allows for the optimization of Return on Investment (ROI) in marketing, simplification of distribution channels, and improvement of customer satisfaction.
- Regular reviews of actual expenses against the selling and distribution budget support strategic adjustments and cost-effective decision-making.

8. Administration Cost Budget:

- The administration cost budget outlines the anticipated costs associated with the general administrative functions of an organization.
- It includes expenses related to management salaries, office supplies, rent, utilities, and other administrative overhead.
- Accurate administration cost budgeting is crucial for maintaining financial stability and supporting the efficient functioning of the organization.
- Comparing the actual results with the budget through variance analysis is beneficial. It helps pinpoint areas where costs can be controlled and processes can be enhanced in administrative functions.
- A well-managed administration cost budget contributes to overall cost-effectiveness and organizational efficiency.

9. Capital Expenditure Budget:

- The capital expenditure budget details the planned investments in long-term assets, such as property, equipment, and technology.
- It is a crucial component of long-term financial planning, aligning capital investments with the strategic goals of the organization.
- This budget helps prioritize and allocate funds for projects that contribute to organizational growth and competitiveness.
- Keeping a close eye on real capital expenditures compared to the budget is important. This regular monitoring helps make sure that financial plans are followed and that the expected return on investment is achieved.
- The capital expenditure budget plays a key role in maintaining the organization's infrastructure, technology, and competitive edge.

10. Cash Budget:

- The cash budget forecasts the organization's cash inflows and outflows over a specific period, ensuring optimal cash management.
- It takes into account various sources of cash, including sales receipts, loans, and investments, as well as cash expenditures like operating expenses and capital expenditures.
- Cash budgeting is essential for avoiding cash shortages, optimizing investment opportunities, and maintaining liquidity.
- Regular monitoring of the cash budget helps organizations identify potential cash flow issues and implement strategies to address them.
- The cash budget is a vital tool for financial stability, supporting day-to-day operations, and strategic decision-making.

Illustrations:

1. **Prepare a Flexible budget for overheads on the basis of the following data. As certain the overhead rates at 50% and 60% capacity.**

Variable overheads:	At 60% capacity(Rs)
Indirect Material	6,000
Labour	18,000
Semi-variable overheads:	
Electricity: (40% Fixed & 60%variable)	30,000
Repairs: (80% fixed & 20% Variable)	3,000
Fixed overheads:	
Depreciation	16,500
Insurance	4,500
Salaries	15,000
Total overheads	93,000
Estimated direct labour hours	1,86,000

(B.Com Madurai)

Solution:

Items	**50%**	**60%**
Variable overheads	Rs	Rs
Indirect material	5,000	6,000
Indirect labour	15,000	18,000
Semi-variable overheads		
Electricity	27,000	30,000
Repairs and maintenance	2,900	3,000
Fixed overheads		
Depreciation	16,500	
Insurance	4,500	
Salaries	15,000	
Total overheads	**85,900**	**93,000**
Estimated direct labour hours	1,55,000	1,86,000
Overhead rate	**Rs 0.55**	**Rs 0.50**

Electricity

At 50% capacity = $\frac{18,000 * 50}{60}$

= Rs. 15,000

Rs. 12,000 + Rs. 15,000 = Rs. 27,000
60% capacity = Rs 18,000 + Rs. 12,000 = Rs. 30,000

Repairs
For 60% capacity = Rs.600
=Rs. 2400 + Rs.600 =Rs.3,000
At 50% capacity: = 600/60 * 50
= Rs. 500
=Rs.2400 + 500
=Rs.2,900

2. **Prepare a flexible budget for overheads on the basis of the following data.**

Ascertain the overhead rates at 60% and 70% capacity.

Variable overheads:	At 60% capacity (Rs)
Material	6,000
Labour	18,000
Semi-variable overheads:	
Electricity:	30,000
40% Fixed	
60% variable	
Repairs:	3,000
80% fixed	
20% Variable	
Fixed overheads:	
Depreciation	16,500
Insurance	4,500
Salaries	15,000
Total overheads	93,000
Estimated direct labour hours	1,86,000

(B.Com Madurai)

Solution:

Repairs:

For 60% capacity Fixed 80/100 * 3,000 = Rs.2,400

Variable = 20/100 * 3,000 = Rs. 600

= Rs. 2400 + Rs.600 =Rs.3,000

Electricity Exp.:

At 60% capacity Fixed = 40/100 *30,000 = 12,000

Variable = 60/100 * 30,000 = 18,000

At 70% capacity: Fixed = 40/100 * 30,000

= Rs. 12,000

Variable = 18,000/60 *70 = Rs. 21,000

Total = Rs.12,000 + Rs.21,000 Rs.33000

Flexible Budget

Items	**Capacity**	
	60%	**70%**
Variable overheads:	**Rs.**	**Rs.**
Material	6,000	7,000
Labour	18,000	21,000
Semi-variable		
Electricity	30,000	33,000
Repairs	3,000	3,100
Fixed overheads:		
Deprecation	16,500	16,500
Insurance	4,500	4,500
Salaries	15,000	15,000
Total Overheads	93,000	1,00,100
Estimated direct labour hours	1,86,000	2,17,000
Overhead Rate	0.50	0.46

3. **The expenses budgeted for production of 1,000 units in a factory are furnished below:**

Particulars	**Per Unit**
	Rs.
Material Cost	700
Labour Cost	250

Variable overheads	200
Selling expenses (20% fixed)	130
Administrative expenses (Rs. 2,00,000)	200
Total Cost	1,480

Prepare a budget for production of 600 units and 800 units assuming administrativeexpenses are Fixed for all level of production.

Solution: **Flexible Budget**

Particulars	**For 600 units**		**For 800 units**	
	Per unit Rs.	**Total Rs.**	**Per unit Rs.**	**Total Rs.**
Variable Cost:				
Materials	700	4,20,000	700	5,60,000
Labour	250	1,50,000	250	2,00,000
Variable overheads	200	1,20,000	200	1,60,000
(A)	**1,150**	**6,90,000**	**1,150**	**9,20,000**
Semi variable cost:				
Variable selling expenses	104	62,400	104	83,200
Fixed selling expenses	43.33	26,000	32.50	26,000
(B)	**147.33**	**88,400**	**136.50**	**1,09,200**
Fixed cost:				
Administrative expenses	333.33	2,00,000	250.00	2,00,000
Total Cost(A+B+C)	**1,630.66**	**9,78,400**	**1,536.50**	**12,29,200**

4. The budgeted output of an industry specializing in the production of a one product at the optimum capacity of 6,400 units per annum amounts to Rs. 1,76,048 as detailed below:

Particulars	**Rs.**	**Rs.**
Fixed costs		20,688
Variable costs:		
Power	1,440	

Repairs etc.	1,700	
Miscellaneous	540	
Direct material	49,280	
Direct Labour	1,02,400	1,55,360
Total cost		1,76,048

- The company decides to have a flexible budget with a production target of 3,200 and 4,800 units (the actual quantity proposed to be produced being left to a later date beforecommencement of the budget period)
- Prepare a flexible budget for production levels of 50% and 75%. Assuming, selling priceper unit is maintained at Rs. 40 as at present, indicate the effect on net profit.
- Administrative, selling and distribution expenses continue at Rs.3,600.

Solution:

The production at 100% capacity is 6400 units, so it will be 3,200 units at 50% and 4,800 units at 75% capacity. The variable expenses will change in that proportion.

Flexible Budget

Particulars	**100%**	**75%**	**50%**
(i)Sales (perunitRs.40) Cost of Sales:	2,56,000	1,92,000	1,28,000
Particulars	100%	75%	50%
(a) variable costs:			
Direct material	49,280	36,960	24,640
Direct Labour	1,02,400	76,800	51,200
Power	1,440	1,080	720
Repairs	1,700	1,275	850
Miscellaneous	540	405	270
Total variable costs	**1,55,360**	**1,16,520**	**77,680**
(b) Fixed Costs:	20,688	20,688	20,688
(ii) Total Costs	**1,76,048**	**1,37,208**	**98,368**
Gross Profit (i)- (ii)	**79,952**	**54,792**	**29,632**
Less: Adm., selling and Dist. Costs	3,600	3,600	3,600
Net Profit	**76,352**	**51,192**	**26,032**

❖ **Exercise:**

1. Answer the following questions:

1) Write definitions of Budgeting and Budgetary control
2) Write meaning and importance Budgeting and Budgetary control
3) Write objectives on Budgeting and Budgetary control
4) Write limitations of Budgetary Control
5) Write short note on types of Budgets
6) Write short note on classifications according to Function.

2. The budgeted output of a factory specialising in the production of single product as the optimum capacity of 6,500 units per annum amount to Rs 1,77,048 as detailed below:

	Rs	**Rs**
Fixed Cost		20,688
Variable cost	1,440	
Power	1,700	
Repair	540	
Miscellaneous	49,280	
Direct materials	10,20,500	1,56,360
Direct labour		1,77,048

Having regard to possible impact on sales turnover by market trends, the company decide to have a flexible budget with a production of 3,200 and 4,800 units (the actual quantity proposed to be produced being left to a later date before commencement of budget period). Prepare a flexible budget for production levels at 50% and 75%. Assuming the sales per units in maintained at Rs 40 as at present, indicate the effect on net profit.

3. Prepare a Flexible budget for overheads on the basis of the following data. As certain the overhead rates at 40% and 50% capacity.

Variable overheads:	At 60% capacity(Rs)
Indirect Material	5,000
Labour	20,000
Semi-variable overheads:	
Electricity: (40% Fixed & 60%variable)	40,000
Repairs: (80% fixed & 20% Variable)	4,000
Fixed overheads:	
Depreciation	17,500
Insurance	5,500
Salaries	16,000
Total overheads	108,000
Estimated direct labour hours	1,96,000

(B.Com Madurai)

4. A Company working at 60% capacity manufactures 10000 units of product. At 60% capacity the product cost is Rs 160 and Sales is Rs 400. The break-up of the cost is as below.

	Cost per unit
Material	Re 120
Wages	30
Factory	30 (40% fixed)
Administration overheads	20 (60 % fixed)

At 60% working raw material cost goes up 2 % and sales price falls by 2%. At 80 % working the raw material cost increases by 5 % and sales price decrease by same percentage.ie. 5%. Prepare a statement to show profitability at 60% and 80% capacity.

5. Multiple Choice Questions (M.C.Q.)

(1) Which of the following is related with budgetary control?

a) It is a financial statement

b) It is a systematic process of planning, coordinating, and controlling financial activities

c) It is a tax regulation

d) It is a marketing strategy

Answer: b) It is a systematic process of planning, coordinating, and controlling financial activities

(2) The primary purpose of budgetary control is _____

a) To minimize employee involvement

b) To maximize profits

c) To ensure that actual performance aligns with planned performance

d) To eliminate the need for financial planning

Answer: c) To ensure that actual performance aligns with planned performance

(3) _____ is a key element of the budgetary control process.

a) Ad hoc decision-making

b) Ignoring variances

c) Continuous monitoring and feedback

d) Reactive planning

Answer: c) Continuous monitoring and feedback

(4) What is a budget variance?

a) Budget variance is a difference between actual and planned figures

b) Budget variance is a marketing strategy

c) Budget variance is a financial statement

d) Budget variance is a tax regulation

Answer: a) Budget variance is a difference between actual and planned figures

(5) The following is not a type of budget according to Function.

a) Sales Budget

b) labour Budget

c) Capital Expenditure Budget

d) Long term Budget
Answer: d) Long term Budget

(6) The following is not a use of Budgetary Control.
a) Motivation and Control
b) Cost Control
c) Coordination and Communication
d) Focus on Quantifiable Aspects
Answer: d) Focus on Quantifiable Aspects

(7) _____ is prepared to forecast cash flows, capital expenditures, and other long-term financial activities.
a) Operating budget
b) Cash budget
c) Purchase budget
d) Flexible budget
Answer: b) Cash budget

(8) The purpose of a flexible budget is _____.
a) To remain rigid in response to changes
b) To compare actual performance with a fixed budget
c) To adjust budgeted figures based on varying levels of activity
d) To eliminate the need for budget revisions
Answer: c) To adjust budgeted figures based on varying levels of activity

(9) What is the role of a budget committee?
a) To create a budget in isolation
b) To approve budgets without review
c) To coordinate the budgeting process and resolve conflicts
d) To ignore budget variances
Answer: c) to coordinate the budgeting process and resolve conflicts

(10) _____ focuses on the day-to-day operations of an organization
a) Cash budget
b) Operating budget
c) Master budget
d) Capital budget
Answer: b) Operating budget

UNIT – 5 STANDARD COSTING

5.1. Introduction

5.2. Definition of Standard Costing

5.3. Difference between Standard costs and Estimated Costs

5.4. Difference between Standard costs and Budgeting

5.5. Difference between Standard Costs and Historical Cost

5.6. Benefits of Standard Costing

5.7. Limitations of Standard Costing

5.8. Objective of Standard Costing

5.9. Determination of Standard Costing

❖ **Exercise**

5.1. Introduction

The term standard simply refers to a rule, definition, or goal. It serves as a point of reference, benchmark, model, or yardstick for comparison. Standard costs are a type of cost accounting system in which standard expenses are immediately and formally included into manufacturing accounts. It is separated into two sections: (1) Historical Costs and (2) Predetermined Costs. Cost in the past indicates the current or previous cost, and historical costing is a system in which the real expenditures incurred in the past are calculated.

Historical costs have certain restrictions, including the following:

(1) They are collected too late and cannot be utilized for price quotations.
(2) Historical expenses do not suit the purpose of cost control since the cost has changed. Before cost records are accessible for management, expenses must have already been incurred control.
(3) Historical expenses do not offer a standard against which efficiency may be measured.

Standard costing is a system for identifying and managing cost variances to improve profitability. In this context, standards are performance expectations. Standard costing strives to eliminate waste and increase operational efficiency by establishing standards for manufacturing costs and performance. In summary, standard costing is a control mechanism, not a different way of product pricing.

Standard costing employs performance benchmarks to assess cost efficiency and drive continuous improvement. By defining benchmarks for production costs and output, standard costing seeks to reduce waste and boost operational efficiency.

5.2. Definition of Standard Costing

Meaning of Standard:

- **According** to **Prof. Eric L. Kohler,** 'Standard is a desired attainable objective, a performance, a goal, a model" Standard, may be used to predetermined rate or a predetermined amount or a predetermined cost.

Meaning of Standard Cost:

- The standard cost is a predetermined cost which is calculated from management standard of efficient operation and relevant necessary expenditure. **- C.I.M.A London**
- The standard cost is a predetermined cost which determines what each product or service should cost under given circumstances. **- Brown and Howard**

Standard Costing:

- A standard costing system is a form of cost accounting in which standard costs are used to record specific transactions and the amount and causes of deviations from the standard are determined by comparing the actual costs with the standard costs.

  - W. B. Lawrence
- Standard costing entails creating costs based on previously established standards and continuously comparing actual costs to those standards for direction and control.

  - Joseph D.

5.3. Difference between Standard costs and Estimated Costs

The following are the important differences between standard cost and estimated cost:

Standard Cost	Estimated Cost
Standard cost emphasizes as what the cost '*should be*' in a given set of situations.	Estimated cost emphasizes on what the cost '*will be*'.
Standard costs are planned costs which are determined by technical experts after considering levels of efficiency and production	Estimated costs are determined by taking into consideration the historical data as the basis and adjusting it to future trends.
It is used as a device for measuring efficiency	It cannot be used as a device to determine efficiency. It only determines expected costs.
Standard costs serve the purpose of cost control	Estimated costs do not serve the purpose of cost control.
Standard costing is part of cost accounting process	Estimated costs are statistical in nature and may not become a part of accounting.
It is a technique developed and recognised by management and academicians	It is just an estimate and not a technique
It can be used where standard costing is in operation	It may be used in any concern operating on a historical cost system.

5.4. Difference between Standard Costs and Budgeting:

The following are the important differences between Standard Costs and Budgeting:

Standard Costing	Budgeting
Standard costing is based on technical information and is fixed	It is based on standard cost, historical costs

scientifically.	and estimates.
Standard costs are used mainly for the manufacturing function and also for marketing and administration functions. Therefore, it does not require functional coordination.	Budgets are prepared for different functional departments such as sales, purchase, production, finance, personnel department. Therefore, it requires functional coordination.
Standard costs emphasise the cost levels which should be reduced	Budgets emphasises cost levels which should not be exceeded.
In standard costing, variances are usually revealed through accounts.	In budgeting, variances are not revealed through accounts and control in exercised by putting budgeted figures and actuals side by side.
In standard costing, a detailed analysis is needed in case of variances.	No further analysis is required if costs are within the budget.
Standard costing sets realistic yardsticks and therefore, it is more useful for controlling and reducing costs.	Budgets generally set maximum limits of expenditure without considering the effectiveness of expenditure.
Standard cost is revised only when there is a change in the basic assumptions and basis.	Budgeting is done before the beginning of each accounting period.
Standard costs are based on the basis of standards set by management.	Budgets are set on the basis of present level of efficiency.
Standard costing cannot be used partially. Standards will have to be set for all elements of cost.	Budgeting can be done either wholly or partially.
Standard cost is a projection of cost accounts.	Budgeting is a projection of financial accounts.

5.5. Difference between Standard Costs and Historical Cost

The following are the important differences between Standard Costs and Historical Cost:

Standard Costing	**Historical Cost**
It is predetermined cost.	It is an after- production recorded cost.
It is an ideal cost.	It is actually incurred cost.
It is a future cost. It can be used for cost control.	As it related to the past, it is not useful for cost control.
It is used for the measuring of operational efficiency of the enterprises.	It is used to ascertain the profit or the loss incurred during the period.

5.6. Benefits of Standard Costing

1. It assists management in developing price and production policies.
2. It is a performance metric. Standard costs are compared to real costs, the differences are examined, and effective cost control measures are implemented. Thus, cost reduction is attainable through lowering earnings.

3. It avoids unnecessary waste and loss.
4. It helps to decrease administrative and accounting costs as well as managerial time.
5. Because the variance analysis assigns blame for either good or bad results, it makes employees aware of costs.
6. Executives become more accountable since it clearly identifies who is in charge of the cost centres.
7. It helps with fiscal control and decision-making.
8. The standard price is used to appraise opening and closing stock. This aids in the creation of profit and loss statements for a short period of time, such as a week or a month.
9. It allows for quick cost reports to management and encourages a forward-thinking mindset at all levels of management. It serves as the foundation for the development of an employee incentive scheme.

5.7. Limitations of Standard Costing

1. It is expensive because defining standards necessitates a high level of technical ability.
2. Maintaining current standards is a challenge. Standard revision is an expensive process.
3. Inefficient personnel are unable to use this system.
4. It is difficult to determine right variance because it is difficult to create correct standards.
5. Industries that are prone to rapid changes in technical processes, material quality, or labour character require regular standard modification. However, standard revision is more costly.
6. Standard pricing is prohibitively expensive for small businesses.
7. This approach is difficult to adopt when manufacturing requires more than one accounting period. Standard costing may not be successful in sectors that deal with non-standardised items or activities based on the needs of the client.

5.8. Objective of Standard Costing

1. To implement a control mechanism for all cost factors that have an impact on production and sales
2. To evaluate various operational efficiencies and wastes
3. To enhance the transfer of power and foster a sense of accountability among the staff
4. To increase employees' awareness of costs
5. Assuming manufacturing expenses, sales, and profits
6. To take use of "Management by exception."
7. To encourage a clear, forward-thinking vision and wise decision-making at every management tier.

5.9. Determination of Standard Costing

There are a number of preliminary considerations when setting up a system of standard costing.

1. Establishment of Cost Centres
2. Accounts Classification
3. Standards Types

4. Setting Standard Costs

1. **Establishment of cost centres**: Prior to implementing the standard costing system, cost centres must be established with well-defined scopes of work. There should be no doubt throughout the process as to each cost centre's accountability so that it can be determined. A cost centre is a place where the cost of people or equipment may be determined and utilised in order to control costs.
2. **Accounts Classification**: To help in data collection and analysis, accounts are categorised. To properly use the standard costing method, all accounts must be categorised according to their functions, the type of their revenue-generating items, assets, and liabilities, among other factors. With this goal in mind, codes may be employed; they are provided for each item, each account, along with cost aspects. Any individual piece of information is symbolically represented by a code.
3. **Standards Types:** The different types of standards are as follows

1. **Basic Standard**: The basic standard, sometimes referred to as the fundamental standard, is a standard that remains unchanged over a long period of time. It serves as a foundation for developing other standards and is often used as a reference point for stability in planning and control.
2. **Current Standard:** Current standards are based on current operating conditions, taking into account the present state of technology, processes, and economic factors. These standards are adjusted more frequently to reflect changes in the business environment.
3. **Normal Standard:** The normal standard is based on average or normal conditions, considering the typical level of efficiency and performance that can be expected under regular operating circumstances. It is a practical standard that is achievable under normal working conditions.
4. **Ideal Standard:** The ideal standard represents the best possible performance or efficiency that can be achieved under perfect conditions. It assumes no wastage, no machine breakdowns, and the highest level of efficiency. While it provides a theoretical benchmark, it may not be practically achievable in real-world situations.
5. **Expected Standard**: The expected standard is a standard that takes into account anticipated changes in the future. This could include changes in technology, processes, or market conditions. It is forward-looking and aims to prepare for potential shifts in the business environment.

Each type of standard serves a specific purpose in the context of standard costing. Organizations may choose the type of standard that aligns best with their objectives and the level of precision they want to achieve in their cost planning and control processes. The selection of the appropriate standard is influenced by factors such as the industry, the nature of the business, and the degree of stability or volatility in the operating environment.

4. Setting Standard Costs: Setting standards is a useful undertaking in and of itself. The dependability, precision, and acceptability of the standards are essential to the success of the standard costing system. Standards offer a reliable foundation for figuring out cost for a variety of reasons if they have been created and maintained appropriately. The following factors should be taken into account while establishing standards: duration of usage, fair quality of performance, and degree of activity.

Standard sets are available for the following elements for the provided units: (i) direct material cost; (ii) direct wage cost; (iii) direct expenditure; (iv) factory variable overhead cost; (v) selling and distribution variable cost; and (vi) selling price and sales margin.

Standard cost is determined for each element of the following cost

1. **Direct cost:** The setting of standard costs for direct material involves
   a) **Standard material Quantity:** Standard amounts of direct materials are produced by the production department, which consists of production engineers, designers, chemists, and work study practitioners. A mechanical analysis or calculation is performed for each product, component, or process. While establishing a standard for material amount, the quality and size of the material should be decided. The manufacturing department's technical specialists determine the standard amount of material necessary to manufacture a product. When establishing material quantity standards, sufficient consideration should be made for typical material loss. After thorough consideration of numerous aspects, normal loss will be calculated.
   b) **Standard material Price:** The material's standard price must be set. Setting a standard price for materials is challenging since prices are more influenced by external forces than by corporate management. Before establishing the standard, examine variables such as the price of goods in stock, the price provided by suppliers, the projection of price trends, the price of materials previously contracted, provision for discounts, packaging and shipping costs, and so on.
2. **Setting Standard for direct labour:** Direct labour is the labour engaged in the production of a product. The wage paid to such workers is referred to as direct wages. The time necessary to manufacture a product should be determined, and workers should be adequately rated. Setting a standard cost of direct labour entails determining a standard time and a standard rate. Time or motion studies, prior data, or estimates are used to determine standard time. When determining standard time, typical ideal time should be allocated for regular delays, idle time, and other circumstances, among other things. The pay rate applicable to different types of workers is referred to as the labour rate standard. The standard rate will be determined by a number of factors, including labour demand, organisational policy, union influence, and method of calculation.
3. **Setting standard for overhead:** Overheads are the term for indirect costs. These are costs that cannot be allocated to a specific cost unit and are incurred for the entire firm. Overheads are characterised as constant, variable, and semi-variable. The standard overhead rate for these is set based on historical data and pricing trends in the future. It will be assessed on a per-unit or per-hour basis. Setting an overhead cost standard entails the following two steps:
   a) Calculation of normal overhead expenses, and
   b) Determination of production estimates

Calculation for a unit or for an hour

$$\text{Standard Variable Overhead Rate} = \frac{Standard\ variable\ overhead\ for\ the\ budget\ period}{Budgeted\ production\ units\ or\ budgeted\ hours\ for\ the\ period\ (or\ some\ other\ base)}$$

Standard fixed Overhead Rate = $\frac{Standard\ overheads\ for\ the\ budget\ period}{Budgeted\ production\ units\ or\ budgeted\ hours\ for\ the\ period\ (or\ some\ other\ base)}$

4. **Standard Hour:** Typically, production is articulated in physical units such as tonnes, pounds, gallons, numbers, kilogrammes, litres, and so on. It is nearly hard to boost output when a firm manufactures multiple sorts of items that cannot be stated in the same unit. A standard hour is a hypothetical hour that depicts the amount of labour that should be completed in one hour under normal circumstances.

5. **Revision of standard:** The standard cost is determined by a variety of variables. These elements, which may be internal or external, may change from time to time depending on the scenario. Standard costs may become unreasonable if they are not altered in response to changing conditions. Then the question of when standards should be established arises. When the standard is set for a shorter length of time, it is more expensive, and frequent revisions reduce the value and purpose of the standard. If the standard is set for a longer length of time, it may be ineffective, especially during times of high inflation and fast technological change. As a result, standards are often defined for a fixed term of one year and changed annually. If there are modest modifications, the reasons for the differences between real and standards can be stated without revising the standards. Certain circumstances need a change of conventional pricing. These are the circumstances:

i) Changes in price levels of materials, labour and overheads
ii) Technological changes
iii) Changes in production methods or product mixes
iv) Changes in plant capacity utilization
v) Errors discovered in setting standards
vi) Changes in designs or specification
vii) Changes in the policy of organisation
viii) Changes in government policy affecting the product or organisation, etc

Example: 1 ABC Ltd. is a manufacturing company that produces widgets. The company follows a standard costing system to analyze and control costs. The standard cost for producing one widget is as follows:
Direct Materials: Rs.50 per unit Direct Labor: Rs.30 per unit Variable Overhead: Rs.20 per unit Fixed Overhead: Rs.10 per unit. During the month of January, ABC Ltd. produced 5,000 widgets. The actual costs incurred were as follows: Direct Materials: Rs.2,55,000 Direct Labor: Rs.1,55,000 Variable Overhead: Rs.1,05,000 Fixed Overhead: Rs.50,000

Calculate the following for the month of January:

1) Direct materials cost variance
2) Direct labour cost variance
3) Variable overhead cost variance
4) Fixed overhead cost variance
5) Overall cost variance

Provide explanations for each variance and identify whether it is favourable or unfavourable.

Answers:

1. **Direct Materials Cost Variance:**
   Direct Materials Cost Variance = (Actual Quantity × Standard Price) − (Actual Quantity × Actual Price)
   Direct Materials Cost Variance= (5,000×Rs.50) − (5,000 × Rs.2,55,000/5,000)
   Direct Materials Cost Variance=Rs.2,50,000 − Rs.2,55,000
   Direct Materials Cost Variance= −Rs.5,000 (Unfavourable)

2. **Direct Labor Cost Variance:**
   Direct Labor Cost Variance= (Actual Hours × Standard Rate) − (Actual Hours × Actual Rate)
   Direct Labor Cost Variance= (5,000×Rs.30) − (5,000×Rs.155,000/5,000)
   Direct Labor Cost Variance=Rs.1,50,000−Rs.1,55,000
   Direct Labor Cost Variance=−Rs.5,000 (Unfavourable)

3. **Variable Overhead Cost Variance:**
   Variable Overhead Cost Variance=(Actual Hours×Standard Variable Overhead Rate)−(Actual Hours×Actual Variable Overhead Rate)
   Variable Overhead Cost Variance= (5,000×Rs.20)−(5,000×Rs.105,000/5,000)
   Variable Overhead Cost Variance= 1,00,000 − 105,000
   Variable Overhead Cost Variance=−Rs.5,000 (Unfavourable)

4. **Fixed Overhead Cost Variance:**
   Fixed Overhead Cost Variance=Actual Fixed Overhead−Budgeted Fixed Over head
   Fixed Overhead Cost Variance=Rs.50,000−(5,000×Rs.10)
   Fixed Overhead Cost Variance=Rs.50,000−Rs.50,000
   Fixed Overhead Cost Variance=Rs.0(Favourable)

5. **Overall Cost Variance:**
   Overall Cost Variance=Direct Materials Cost Variance+Direct Labor Cost Vari ance+ Variable Overhead Cost Variance + Fixed Overhead Cost Variance
   Overall Cost Variance=−Rs.5,000−Rs.5,000−Rs.5,000+Rs.0
   Overall Cost Variance=−Rs.15,000(Unfavourable)

Explanation:

- Negative variances are considered unfavourable, indicating that actual costs exceeded standard costs.
- The Direct Materials, Direct Labor, and Variable Overhead variances are all unfavourable, contributing to the overall unfavourable cost variance.
- The Fixed Overhead variance is favourable, meaning that the actual fixed overhead costs were less than the budgeted amount.

Example 2 Standard cost of a product in a factory is predetermined as follows:

Material (10 units @ Rs 3 each) = 30 Rs
Labour (30 hours @ Rs 1.50 per hour) = 45 Rs
Overhead Expenses = ? 20 Rs
Total = ? 95 Rs

During a period, 8000 units were produced whose actual cost was as follow:

Material (40,000 units @ Rs 6 each) = Rs.2,40,000
Labour (1,00,000 hours @ Rs 1.50 each) = Rs.1,50,000
Overhead expenses = ? Rs 80,000
Total = Rs.4,70,000

Prepare a statement showing Standard cost and Actual cost.

Solution:

Standard Cost Calculation for 8000 units:

Material: Standard cost = 8000 units * (10 units @ Rs 3 each) = 8,000 * (10 * 3) = 2,40,000
Labour: Standard cost = 8000 units * (30 hours @ Rs 1.50 per hour) = 8,000 * (30 * 1.50) = 3,60,000
Overhead Expenses: Standard cost = 8,000 units * Rs 20 per unit = 8,000 * 20 = 1,60,000
Total Standard Cost = Material + Labour + Overhead Expenses

= 2,40,000 + 3,60,000 + 1,60,000
= 7,60,000

Now, let's compare this with the actual cost incurred during the period:
Actual Cost: Material = 2,40,000 Rs Labour = 1,50,000 Rs Overhead Expenses = 80,000 Rs
Total Actual Cost = Material + Labour + Overhead Expenses

= 2,40,000 + 1,50,000 + 80,000
= 4,70,000 Rs

Statement showing Standard Cost and Actual Cost

Item	Standard Cost (Rs)	Actual Cost (Rs)
Material	2,40,000	2,40,000
Labour	3,60,000	1,50,000
Overhead Expenses	1,60,000	80,000
Total	7,60,000	4,70,000

This statement provides a comparison between the standard cost and the actual cost for the production of 8000 units during the period.

Example 3 Standard cost of a product in a factory is predetermined as follows:

- Material (8 units @ Rs 3 each) = Rs 24
- Labour (25 hours @ Rs 2 per hour) = Rs 50
- Overhead Expenses = Rs 15
- Total = Rs 89

During a period, 6000 units were produced whose actual cost was as follows:

- Material (36,000 units @ Rs 4 each) = Rs 1,44,000
- Labour (75,000 hours @ Rs 1.75 each) = Rs 1,31,250
- Overhead expenses = Rs 60,000
- Total = Rs 3,35,250

Prepare a statement showing the standard cost:

Solutions:

Standard Cost Calculation for 6000 units:

1. Material: Standard cost = 6000 units * (8 units @ Rs 3 each) = 6000 * (8 * 3) = Rs 1,44,000
2. Labour: Standard cost = 6000 units * (25 hours @ Rs 2 per hour) = 6000 * (25 * 2) = Rs 3,00,000
3. Overhead Expenses: Standard cost = 6000 units * Rs 15 per unit = 6000 * 15 = Rs 90,000

Total Standard Cost = Material + Labour + Overhead Expenses = Rs 1,44,000 + Rs 3,00,000 + Rs 90,000 = Rs 5,34,000

Now, let's compare this with the actual cost incurred during the period:

Actual Cost:

- Material = Rs 1,44,000
- Labour = Rs 1,31,250
- Overhead Expenses = Rs 60,000

Total Actual Cost = Material + Labour + Overhead Expenses = Rs 1,44,000 + Rs 1,31,250 + Rs 60,000 = Rs 3,35,250.

Statement showing Standard Cost and Actual Cost

Item	Standard Cost (Rs)	Actual Cost (Rs)
Material	1,44,000	1,44,000
Labour	3,00,000	1,31,250
Overhead Expenses	90,000	60,000
Total	5,34,000	3,35,250

This statement provides a comparison between the standard cost and the actual cost for the production of 6000 units during the period.

❖ Exercises

Answer the following questions:

1. What is the primary purpose of introducing standard costing in business operations?
2. How does standard costing contribute to cost management within an organization?
3. Define standard costing and explain its significance in accounting and financial management.
4. How does standard costing serve as a benchmark for evaluating performance?
5. Distinguish between standard costs and estimated costs, highlighting their respective roles in financial planning.
6. Explain how the use of estimated costs differs from standard costs in practical applications.
7. Identify the distinctions between standard costs and budgeting, emphasizing their unique purposes in financial management.
8. How does the focus of standard costing differ from that of budgeting within an organization?
9. Compare standard costs with historical costs, illustrating how each approach reflects financial data.

10. Why is the analysis of historical costs different from the examination of standard costs?
11. Enumerate the advantages of implementing standard costing in a business setting.
12. How can standard costing contribute to improved decision-making within an organization?
13. Identify and explain some of the limitations associated with the use of standard costing.
14. In what situations might standard costing be less effective or encounter challenges?
15. Define the main objective of standard costing and its role in achieving organizational goals.
16. How does standard costing align with the broader objectives of cost management?
17. Outline the process involved in determining standard costing for a specific product or service.
18. What factors are typically considered when establishing standard costs for different components within an organization?

- **Fill in the blanks**

1. Standard costing is a _____ technique used in cost accounting to establish predetermined costs for products or services.
2. Standard costing is a _____ that involves setting predetermined costs based on efficient levels of input and output.
3. While estimated costs are _____, standard costs are predetermined costs representing the expected level of efficiency.
4. Standard costs focus on _____, whereas budgeting involves overall financial planning for an organization.
5. Standard costs are future-oriented, while historical costs refer to _____.
6. Implementing standard costing helps in achieving cost control, performance evaluation, and improving _____.
7. One limitation of standard costing is that it may not be suitable for industries with _____ production processes.
8. The main objective of standard costing is to provide a basis for _____ and control.
9. Standard costs are determined by analyzing _____, historical data, and industry benchmarks.

Answers:

1. Cost accounting
2. Cost accounting method
3. Approximations based on judgment
4. Specific products or operations
5. Past expenses
6. Decision-making
7. Complex or customized
8. Performance evaluation
9. Production processes

❖ **Practical sums**

1. XYZ Ltd. produces a product with the following standard costs per unit:

Direct Materials: Rs.40 per unit Direct Labor: Rs.25 per unit Variable Overhead: Rs.15 per unit Fixed Overhead: Rs.10 per unit. During the month of February, the company produced 8,000 units. The actual costs incurred were: Direct Materials: Rs.320,000 Direct Labor: Rs.200,000 Variable Overhead: Rs.120,000 Fixed Overhead: Rs.90,000

Calculate the following for the month of February:

- Direct materials cost variance
- Direct labor cost variance
- Variable overhead cost variance
- Fixed overhead cost variance
- Overall cost variance

Provide explanations for each variance and identify whether it is favourable or unfavourable.

Answer:

- Direct Materials Cost Variance = Rs.3,20,000 - Rs.3,20,000 = Rs.0 (Neutral)
- Direct Labor Cost Variance = Rs.2,00,000 - Rs.2,00,000 = Rs.0 (Neutral)
- Variable Overhead Cost Variance = Rs.1,20,000 - Rs.1,20,000 = Rs.0 (Neutral)
- Fixed Overhead Cost Variance = Rs.90,000 - (Rs.10 per unit * 8,000 units) = Rs.90,000 - Rs.80,000 = Rs.10,000 (Unfavourable)
- Overall Cost Variance = Rs.7,30,000 - Rs.7,20,000 = Rs.10,000 (Unfavourable)

2. Standard cost of a product in a factory is predetermined as follows:

- Material (12 units @ Rs 2.50 each) = Rs 30
- Labour (40 hours @ Rs 2 per hour) = Rs 80
- Overhead Expenses = Rs 25
- Total = Rs 135

During a period, 5000 units were produced whose actual cost was as follows:

- Material (25,000 units @ Rs 3 each) = Rs 75,000
- Labour (50,000 hours @ Rs 1.80 each) = Rs 90,000
- Overhead expenses = Rs 40,000
- Total = Rs 205,000

Now, let's prepare a statement showing the standard cost and Actual cost:

Answer:

Item	Standard Cost (Rs)	Actual Cost (Rs)
Material	1,50,000	75,000
Labour	4,00,000	90,000
Overhead Expenses	1,25,000	40,000
Total	6,75,000	2,05,000

PART - 2

MBA
SEMESTER-3 FINANCE
ADVANCE COST ANALYSIS
BLOCK: 2

Authors' Name: Prof. (Dr.) Manoj Shah, Professor& Director, Dr. BAOU, Ahmedabad
Dr. Beena Brahman, Assistant Professor, Kadi University, Gandhinagar
Dr. Shailaja Parmar, Assistant Professor, Sheth H.P. Arts &T.S.M College ,Talod
Dr.Mukesh Bavaliya, Assistant Professor, GACC, Patadi ,Surendra nagar

Review (Subject): Prof. (Dr.) Manoj Shah, Professor& Director, Dr. BAOU, Ahmedabad
Prof.(Dr.) Shankarsinh Sodha, Professor& Director,Gujarat University,Ahmedabad
Dr. Megha Shah, Associate Professor ,GLS University, Ahmedabad

Review (Language): Dr. Sunil Sagar, Professor ,Central University of Gujarat, Gandhinagar

Editor's Name: Prof. (Dr.) Manoj Shah
Professor and Director,
School of Commerce and Management,
Dr. Babasaheb Ambedkar Open University,
Ahmedabad.

Co-Editor's Name: Dr. Dhaval Pandya
Assistant Professor,
School of Commerce and Management,
Dr. Babasaheb Ambedkar Open University,
Ahmedabad.

Publisher's Name: Dr. Ajaysinh Jadeja
Registrar,
Dr. Babasaheb Ambedkar Open University
'JyotirmayParisar',Opp.ShriBalaji Temple,Chharodi,Ahmedabad,382481,
Gujarat,India.

Edition: 2024 (First Edition)

ISBN: 978-93-5598-576-7

978-93-5598-576-7

UNIT – 6

UNIFORM COSTING AND INTER FIRM COMPARISON

6.1 Introduction

6.2 Definition and Meaning of Uniform Costing

6.3 Objectives of Uniform Costing

6.4 Advantages of Uniform Costing

6.5 Limitations of Uniform Costing

6.6 Ideal Uniform Costing Uniform System

6.7 Meaning of Inter-firm Comparison

6.8 Objectives of Inter-firm Comparison

6.9 Needs of Inter-firm Comparison

6.10 Advantages of Inter-firm Comparison

6.11 Limitations of Inter-firm Comparison

6.12 Conclusion

❖ **Exercises**

6.1 Introduction

Cost Accounting is an inevitable part of the firm which helps any firm to control its cost for selling goods or services into the market at reasonable and affordable price without sacrificing the quality of goods or services. The prime objective of any business is to maximize its profit. Sales and cost are two parameters by which profit can be measured by the following formula.

Profit = Sales – Cost

Thus, with the help of above formula, profit can be derived it is nothing but the positive difference between Sales and Cost. All firms try to maximize the difference by two ways:

i) By increasing the sales,
ii) By reducing the cost.

Sales can be increased by applying various marketing strategies, but the drawback of it here is that it totally depends on the decisions of customers or consumers. We cannot control their mentalities and perceptions. That is the reason why the wise businessman always tries to control his/ her cost well in advance without sacrificing the quality of the product which he/she produces and sell his/her product successfully into the competitive market.

There are various cost accounting strategies like unit costing, job and batch costing, process costing, standard costing and many more. One can use the suitable cost

accounting strategies for his/ her firm. One of the new concepts of cost accounting is uniform costing. Basically it is not a particular method, but a system which has common objectives, principles, and practices among the industry or among the different units of the same business organization so that the performance of them can be measured by comparison.

6.2 Definition and Meaning of Uniform Costing

Definition:

According to CIMA, London Terminology,

"Uniform Costing is a common system using agreed concepts, principles and standard accounting practices adopted by different entities in the same industry to ensure that they all deal with accounting information in a like manner, the objective being to facilitate inter-firm comparison."

Meaning:

The most important characteristic of uniform costing is that whatever may be the method of ascertaining cost, it is adopted uniformly in a number of undertakings in the same industry or even in different industries. This enables the member undertakings to compile the cost and accounting data on a comparable basis which ultimately may be useful and helpful to the management for taking crucial decisions.

For example: A number of sugar mills owned or managed by one group may adopt a uniform costing system or different companies engaged in sugar industry may through a common representative association agree to follow a uniform costing pattern.

6.3 Objectives of Uniform Costing

To increase the productivity as well as the efficiency of the firms of industry or among the segment of the same organization, the concept of uniform costing has emerged with the following objectives:

- **Provides Relevant Data:** To provide relevant cost information/data to the Government for fixing and regulating prices of the products.
- **Eliminates Unhealthy Competition:** To eliminate unhealthy competition among the different units of an industry.
- **Reduces Cost:** To reduce production, administration, selling and distribution costs, and to exercise control on fixed costs.
- **Improves Efficiency:** To improve production capacity level and labour efficiency by comparing the production costs of different units with each other.
- **Ensures Standardization:** To bring standardization and uniformity in the operation of participating units.
- **Facilitates Comparison:** To facilitate the comparison of costs and performances of different units in the same industry; it provides objective basis.
- **Reliable prices:** The confidence is reposed in the public where the prices fixed are based on sound and uniform costing principles. This will result in better and cordial relations between members adopting this system and their customers.

6.4 Advantages of Uniform Costing

Following are the Advantages of uniform costing with the help of which any firm will get the advantages, which can be described as follows:

- Unhealthy competition is avoided among the firms in the same industry in framing pricing policies and submitting tenders.
- Prices fixed on the basis of uniform costing are representative of the whole industry and thus are reliable.
- Uniform costing provide a basis for the comparative assessment of the performance of two firms in the same industry but in different sectors.
- It helps the Government in regulating the prices of essential commodities such as bread, sugar, cement, steel etc.
- The management of each firm will be saved from the exercise of developing and introducing a costing system of its own.
- A costing system devised by mutual consultation and after considering the difficulties and circumstances prevailing in different firms is readily adopted and successfully implemented.
- It facilitates comparison of cost figures of various firms to enable the firms to identify their weak and strong points besides controlling costs.
- Optimum achievement of efficiency is attempted by all the firms by utilizing the experience of other concerns in the industry.
- Standing in the industry of each firm will be known by making a comparison of its cost data with others.
- Services of cost consultants or experts may be available jointly to each firm in the industry by sharing their experiences and expenses.
- Research and development benefits of bigger firms may be made available to smaller firms.
- It helps in the reduction of labour turnover, as a uniform wage system is the pre-condition of a uniform costing system.
- It helps Trade Associations in negotiating with the Government for any assistance or concession in the matters of taxation, exports, subsidies, duties and prices determination etc.

6.5 Limitations or drawbacks of Uniform Costing

Some technical issue should be kept into the mind while applying the uniform costing so that the negative aspect or drawback of it can be avoided.

- **Non-disclosure of technical or cost information:** The member concerns usually do not provide total information regarding cost and technical procedures. Thus, the system may not prove to be a success.
- **Distortion of cost:** Cost computed under uniform costing may not be representative of all the concerns. Thus, the cost may be distorted and may not give a correct picture in specified areas.
- **Monopoly:** Member- units may fix up monopoly prices and thus exploit the consumers. Thus, in a bid to avoid cut-throat competition, prices from the point of view of consumers may be changed.

- **Common principles and procedures:** Uniform costing requires laying down of uniform principles and procedures. Since the individual circumstances of each concern varies to a great extent, bringing uniformity in procedures, practices, etc., poses serious problems.
- **Rigidity:** Flexibility of approach is difficult to be maintained. The common prices fixed may not meet the requirements of all.
- **Lack of trust and confidence:** The member-units, particularly when independently managed, may not have the feeling of mutual trust and confidence. Thus, the system may not operate successfully.
- **High cost:** A comparatively small concern may find the system expensive since the system expensive since the system to be adopted by all member units has to be uniform irrespective of the size.

6.6 Ideal Uniform Costing System

- Free exchange of ideas and method should be adopted.
- Uniformity of interest and participating members should realize the significance.
- Bigger units should be guiding the smaller units with the help of their experience in this system to improve their know-how and performance.
- Understanding, mutual trust and cooperation among the participating units is needed.
- Participating members should be free from jealousy, partiality, bias and rivalry.

6.7 Meaning of Inter-Firm Comparison

Inter-firm Comparison, the name itself explain that there is a comparison between or among the firms of the industry in which they can measure the performance, efficiency, cost and profit. The scheme of inter-firm comparison involves voluntary pooling of information by participating firms through representative body. The objective of such pooling of information may be to make a study of comparative achievements for taking corrective actions, wherever necessary.

In simple terms, an inter-firm comparison indicates the efficiency of production and selling, adequacy of profits, weak spots in the organization, etc. and thus demands from the firm's management an immediate suitable action. Inter-firm comparison may enable the management to challenge the standards which it has set for itself and to improve upon them in the light of the current information gathered from more efficient units. Such comparison may be carried out in electrical industry, printing firms, cotton spinning firms, pharmaceuticals, cotton spinning firms, cycle manufacturing, etc.

6.8 Objectives of Inter-Firm Comparison

The main objective of Inter-firm comparison is to improve the performance of all participating firms in the terms of productivity and efficiency. With this object we can describe the objectives of inter-firm comparison as follows:

- **Maximizing profits:** The adequacy of profit may be measured and action can be taken to improve profitability position.
- **Improvement in efficiency:** Each member unit can and tries to improve its efficiency when on comparison with other member firms it comes to know about its weak points.

- **Effective economy:** Economy may be affected by locating and eliminating weaknesses and wastages.

6.9 Needs of Inter-Firm Comparison

To follow the system of Inter-firm comparison, following requisites should be satisfied those are explained in detail as under:

1. Centre for Inter-Comparison: For collection and analyzing data received from member units, for doing a comparative study and for dissemination of the results of study a Central body is necessary. The functions of such a body may be:

a) Collection of data and information from its members;
b) Dissemination of results to its members;
c) Undertaking research and development for common and individual benefit of its members;
d) Organizing training programmes and publishing magazines.

2. Membership: Another requirement for the success of inter-firm comparison is that the firms of different sizes should become members of the Centre entrusted with the task of carrying out inter-firm comparison.

3. Nature of information to be collected: Although there is no limit to information, yet the following information useful to the management is in general collected by the Centre for inter-firm comparison.

a) Information regarding costs and cost structures.
b) Raw material consumption.
c) Stock of raw material, wastage of materials, etc.
d) Labor efficiency and labor utilization.
e) Machine utilization and machine efficiency.
f) Capital employed and Return on capital.
g) Liquidity of the organization.
h) Reserve and appropriation of profit.
i) Creditors and debtors.
j) Methods of production and technical aspects.

4. Method of Collection and presentation of information: The Centre collects information at fixed intervals in a prescribed form from its members. Sometimes a questionnaire is sent to each member; the replies of the questionnaire received by the Centre constitute the information/data. The information supplied by firms is generally in the form of ratios and not in absolute figures. The information collected as above is stored and presented to its members in the form of a report. Such reports are not made available to non-members.

6.10 Advantages of Inter-Firm Comparison

Inter-firm comparison follows a system of uniform costing and so the advantages of uniform costing would equally accrue in inter-firm comparison as well. In addition, the following advantages are obtained the main advantages of the inter-firm comparison which can be described as follows:

- **Reveals strength and weakness:** Inter-firm comparison spotlights weaknesses or strengths of a business in relation to others in the industry.

- **Creates cost consciousness:** A sense of cost consciousness develops in the member units which results in a tendency to control and reduce costs by the optimum utilization of resources.
- **Services of specialized agencies:** Specialized knowledge and experience of the central organization are available. Research may be conducted for the industry as a whole, the results of which are made available to the participating firms.
- **Benefits industry as a whole:** Benefits like elimination of destructive and unfair competition, increased productivity, standardization of methods, better bargaining power in dealing with the government, etc., are available to the industry as a whole.
- **Maintains secrecy:** As indicated earlier, the participating firms are known by code numbers and the data is presented in the form of ratios. This helps in maintaining secrecy for all the firms. Each firm knows only its own code number but is unaware of the identity of other firms whose figures it receives for comparison purposes.

6.11 Limitations of Inter-Firm Comparison

A scheme of inter-firm comparison may suffer from the following disadvantages and practical difficulties in its implementation:

- **Misleading conclusions:** If the data are not properly collected, the results arrived at would be misleading. Decisions cannot be based on such conclusions.
- **Unreliable information:** Information supplied by members may not be reliable. They may feel hesitant in disclosing the correct information about cost.
- **Unscientific system:** In case the cost accounting system adopted by a concern is not suitable and adequate, the costing data supplied shall not be reliable.
- **Improper handling:** The association which manages the comparison scheme should have qualities of effective leadership without which the scheme cannot be a success.
- **Timely co-operation and co-ordination:** The co-operation of all the participants for submission of cost data in time and their co-ordination is a must; otherwise the inter-firm comparison scheme cannot be implemented with effective results.
- **Nature and size of the firm:** It may happen that different type of nature and size of the member firms makes its operation difficult.
- **Disclose confidential data:** Sometimes, if the top management may not put the trust of presented report, at that time, it becomes necessary to disclose data of a confidential nature. Efficient firms may not like to disclose it.
- **Standard base for comparison:** Suitable basis for comparison may not be available in this system.

The above limitations can be overcome to a great extent by the following measures:

- Adequate education and propaganda through articles in journal, lectures, seminar and personal discussions.
- Installation of a system which ensures perfect secrecy.
- Introduction of a meaningful and scientific cost system.

6.12 Conclusion

From this chapter, it is understood that uniform costing and inter-firm comparison is a new system developed for the betterment of the firms of an industry or among industries. This system provides some essentials like, facilitates comparison, eliminates unhealthy competition, improves efficiency, provides relevant data, ensures standardization, focused on cost reduction and many more. Besides, with the help of inter-firm comparison technique, evaluation of the performance, efficiency, cost and profit of firms in an industry is possible. Inter-firm comparison indicates the efficiency of production and selling, adequacy of proof, its weak spots in the organization so that the management can take the suitable actions for the same.

Exercises

Answer the following:

1. What is uniform costing? Explain its objectives in detail.
2. What are the requisites for the installation of a Uniform Costing System?
3. Explain the merits and demerits of Uniform Costing.
4. What do you mean by inter-firm comparison? Give its advantages and disadvantages.
5. Why an inter-firm comparison is necessary?

UNIT – 7 ACTIVITY BASED COSTING & MANAGEMENT

7.1 Introduction

7.2 Definition of ABC system

7.3 Types of cost drivers

7.4 Stages or Steps of ABC System

7.5 Reasons for adopting Activity Based Costing System

7.6 Advantages or Benefits of ABC System

7.7 Drawbacks of ABC system

7.8 Difference between Traditional Cost System and ABC System

7.9 Introduction - Activity Based Management

7.10 Objectives of Activity Based Management

7.11 Outputs of the Activity based management system

7.12 Advantages of Activity Based Management

7.13 Disadvantages of Activity Based Management

7.14 Illustration of Traditional and ABC method

❖ **Exercise**

7.1 Introduction

Estimation of cost of a product or service is an essential element of any production process as it will be a guiding force to the management to manage the scarce resources well and optimally. It leads to efficient production management and economies of scale as well. Previously the total cost taken place during the production process used to apportion the overheads according to the labour or material used into that process. Later in the year 1980, Cooper and Kaplan developed an innovative approach called activity-based costing wherein the overheads are assigned to products or services.

The activity-based costing (ABC) system is a method of accounting you can use to find the total cost of activities necessary to make a product. The ABC system assigns costs to each activity that goes into production. It is a costing method that identifies activities in an organization and assigns the cost of each activity to all products and services according to the actual consumption by each.

Activity-based costing as an accounting method which identifies the activities which a firm performs and then assigns indirect costs to cost objects. It helps in improving analysis of accurate cost. The focus of ABC will always be towards the activities performed to produce the product.

7.2 Definition of ABC System

The UK's Chartered Institute of Management Accountants (CIMA) defines Activity Based Costing as, "Cost attribution to cost units on the basis of benefit received from indirect activities e.g. ordering setting up, assuring quality."

In ABC system, activity means a unit of work and cost driver is a factor, such as the level of activity or volume that affects costs. Cost drivers denote the factors or forces or events that are responsible to the cost of activities. It helps in creating accuracy and reliability in defining the cost of the product.

Formula of Activity Based Costing:

ABC cost driver rate = Total cost pool overheads / Total cost drivers

Definition of Cost Pool and Cost Driver

Cost pool/ Cost Centre: It is an aggregate of all the costs associated with performing a particular business activity.

Cost driver: It is an activity that is the root cause of why a cost occurs. It must be applicable and relevant to the event that is incurring a cost. A cost driver assists with allocation expenses in a systematic manner that results in more accurate calculations of the true costs of producing specific products.

7.3 Types of Cost Drivers

1. **Transaction drivers**: are those which involve counting how many times an activity occurs. For e.g., purchase order, customer orders processed and inspections performed.
2. **Duration drivers:** are those which measure how long an activity takes to complete. For e.g., set hours, inspection hours, labour hours and production hours.
3. **Intensity drivers:** are used to directly charge for the resources used each time an activity is performed. For e.g. each overseas purchase order should be weighted 1.5 times of local order.

7.4 Stages or Steps of ABC System

1. **Identifying activities:** The first stage is all about identifying the functional areas or identifying the major activities in the production process. The activities in the organization can be of four different categories.
   a) Unit level activities
   b) Batch level activities
   c) Product level activities
   d) Facility level activities

(a) Unit Level Activities or Primary Activities:

The primary activities here mean the cost based on volume like use of indirect material.

(b) Batch Level Activities:

Batch level activities are driven by number of batches of units produced. The examples of batch level activities are material ordering, inspection of product, machine set up cost etc. These are manufacturing support activities.

(c) Product Level Activities:

Activities like designing of the product, keeping technical drawings of product, activities up to date, advertising of a specific product are called product level. The cost of these activities is driven by the creation of a new product line and its maintenance.

(d) Facility Level Activities:

Certain activities cannot be related to a particular product, those may be related to certain facilities like maintaining the building, security of plant, salaries of production manager, advertisement to promote organization.

2. **Assigning costs to activity cost centres:** This is the second stage wherein the cost centres needed to be created for each activity in the organization. assigning costs to cost pools or cost centres for each activity.
3. **Selecting appropriate cost drivers:** It means identifying the factors that influence the costs of particular activities. The third stage of designing ABC system is to identify the factors that influence the cost of a particular activity. A cost driver is any factor that influences costs.
4. **Assigning the cost of activities to products** i.e. assigning such cost according to each products demand for activities. The final stage is to trace the cost of the activities to products according to each product's demand for these activities using cost drivers as a measure of demand.

7.5 Reasons for adopting Activity Based Costing System

ABC analysis is basically useful to understand usage of overheads in the production process. The ABC analysis is used to have the better understanding of the following issues.

1. **To track activity costs:** ABC helps in tracking the cost of activities, so as to find out whether the cost of activity is in line with industry standards or not. It helps the management to get expert advice in case of necessity.
2. **Customer profitability:** In the production process, high overhead component even forms the major portion such as high customer service level, product return handling, cooperative marketing agreement. An ABC system can help determine the profitable customers to the business.
3. **Distribution cost:** The typical company uses a variety of distribution channels to sell its products, such as retail, Internet, distributors, and mail order catalogues. Most of the structural cost of maintaining a distribution channel is overhead, so if you can make a reasonable determination of which distribution channels are using

overhead, you can make decisions to alter how distribution channels are used, or even to drop unprofitable channels.

4. **Make or buy decision:** ABC provides a complete information of every cost associated with the in-house manufacture of a product, so that the costs which will be eliminated if an item is outsourced, versus which costs will remain, such decisions can be assisted with ABC analysis.
5. **Profit margins:** With proper overhead allocation from an ABC system, you can determine the margins of various products, product lines, and entire subsidiaries. This can be quite useful for determining where to position company resources to earn the largest margins.
6. **Production facility cost:** ABC system provides the easy segregation of overhead costs at the plant-wide level, so you can compare the costs of production between different facilities.

7.6 Advantages or Benefits of ABC System

1. **Reduce cost:** ABC system provides useful information which leads to reduce cost or control cost.
2. **Accurate and reliable information generation:** ABC system provides accurate and reliable information helpful in informed decisions.
3. **Enables effective pricing policy:** with accurate and reliable information, ABC system helps in determining the correct and effective price fixing of product.
4. **Identification of necessary activities:** The ABC system shows how overhead is used, which helps determine whether certain activities are necessary for production.
5. **Focus on Value adding activities:** Activity Based Costing helps the management on focusing the forces on value adding activities and eliminate non-value adding activities.
6. **Ensuring profit margin:** The specific allocation of costs also helps to set prices that produce a healthy small business profit margin.
7. **Product pricing:** With an ABC system, the business can assign costs to each activity in the production process, allowing it to more accurately set a price that accounts for how much it costs to create a product.
8. **Measures to improve productivity:** The accurate cost information helps the management to adopt productivity improvement approaches like Total Quality Management (TQM), Business Process Re-engineering (BPR) etc.
9. **Help in deciding Make or Buy:** The management can take make or buy decisions by considering the cost of manufacture of a product or subcontract the same with an outside agency through Activity Based Costing analysis.

7.7 Drawbacks of ABC System

1. **Base of historical cost:** ABC cost is based on historical cost base but the fact is that the decisions should be future oriented.

2. **No identification of variable cost:** The component of variable cost will be an important factor while taking some of important production related decisions, but ABC analysis does not partition the variable cost and fixed cost in the overhead cost.
3. **Costly system:** ABC system tends to be costlier than traditional costing method.

7.8 Difference between Traditional Cost System and ABC System

Point	Traditional	ABC System
Meaning/ Definition	Traditional costing is the allocation of factory overhead to products based on the volume of production resources consumed.	Activity-Based Costing (ABC) is a costing system, which focuses on activities performed to produce products. ABC is the costing in which costs are first traced to activities and then to products.
Cost Pool	Traditional costing system accumulates costs into facility-wise or departmental cost pools. The costs in each cost pool are heterogeneous- they are costs of many major processes and generally are not caused by a single factor.	ABC system accumulates costs into activity cost pools. These are designed to correspond to major activities or business processes. By design, the costs in each cost pool are largely caused by single factor the cost driver.
Base of Allocation	Traditional systems allocate costs to products using volume-based allocation bases units, direct labor input, machine hours, revenue etc.	ABC system allocates costs to products, services and other cost objects from the activity cost pools using allocation bases corresponding to the cost drivers of activity costs.
Objective	Traditional Costing focuses on estimating the cost of a single cost object i.e., unit of product or service.	ABC focuses on estimating the costs of many cost objects of interest units, batches, product lines, business processes, customers and suppliers.
Cost System	Traditional costing system is relatively less expensive to implement and maintain.	ABC system is expensive to implement and maintain.
Suitability	Traditional costing is suitable for labor intensive and low overhead companies.	Activity based costing system is suitable for capital-intensive, product-diverse, widely diverse set of operating activities, variation in numbers of production runs, high-overhead companies.

7.9 Introduction - Activity Based Management

Activity based management uses the information provided by ABC System for cost management. According to **The UK's Chartered Institute of Management Accountants** (CIMA), "Activity based management is a system of management which uses activity based cost information for a variety of purposes including cost reduction, cost modelling, and customer profitability analysis."

The prime objective of Activity based Management is to find out the areas wherein the business may not perform well and could have the possibilities of losses so as to improve the profitability of such weaker activities or to eliminate them from the portfolio of the business. The costs of employees, equipment, facilities, distribution etc. are the factors which are considered by activity based management to determine and allocate the activity cost.

Activity based management (ABM) is a system for determining the profitability of every aspect of a business so that its strengths can be enhanced and its weaknesses can either be improved or eliminated altogether.

Activity based management can be adopted by any types of companies, like manufacturers, service providers, non-profits organizations, schools, and government agencies. Activity Based Management is a tool to provide cost information about any area of operations in a business.

Activity based management will be helpful to the businesses to go for half of their SWOT analysis as it helps in determining the strengths and weaknesses of the businesses. It is a means of analyzing the profitability of the company through each aspect of the company deriving at informed decisions.

ABM simply uses the information derived from ABC analysis for cost management. Activity based management makes the classification of activities into two categories, namely value added activity and non-value-added activity.

The objective of Activity based Management should be to avoid or to eliminate non-value-added activities and waste into the organization. The aim should be to eliminate non-value-added activities. ABM focuses on the activities within a process, decision making and planning relative to those activities, and the need for continuous improvement of all organizational activities. Everyone in the management should cooperate in identifying cost pools, cost drivers and key performance indicators. They must be trained and empowered to act, all must be treated fairly, and success must be recognized.

7.10 Objectives of Activity Based Management

There are three main objectives fulfilled by Activity Based Management.

1. To identify and to improve the value adding activities
2. To identify the activities not contributing any value and to reduce it or to eliminate it.

3. To replan the process or steps of businesses with an objective to boost the efficiency and profitability of businesses by increasing the volume of profit-making activities and by eliminating waste activities of the businesses.

7.11 Outputs of the Activity Based Management System

1. Cost of activities and business processes
2. Cost of non-value-added activities
3. Activity based performance measure
4. Accurate product or service cost
5. Cost drivers

1. Cost of activities and business processes:

Activities form the core of what a business does. The basic output of an ABM system must be relevant cost information about what a business does.

2. Cost of non-value-added activities:

Identification of the non-productive or wasteful activities is invaluable as it provides a crucial focal point for the management.

3. Activity-based performance measures

Determining the total cost of an activity is not the only measure of performance of activity. Activity measures of quality, cycle time, productivity and customer service may also be required to judge performance. Measuring the performance of activities provides a scorecard reporting how well improvement efforts are working and is an integral part of continuous improvement

4. Accurate product or service costs:

It is really essential to determine the cost of product and services. Products and services are provided to the market and customers through various distribution channels or contractual relationships. Since products and services consume resources at different rates and need different support levels, costs must be accurately determined.

5. Cost drivers:

The final output from Activity based Management is cost driver information. The information related to appropriate cost drivers will make possible to understand and manage activity levels.

7.12 Advantages of Activity Based Management

1. Activity Based Management assists in forecasting the data and in preparation of budget.
2. Activity Based Management fosters the efficiency of value adding activities.
3. Activity Based Management helps improve customer experience.

7.13 Disadvantages of Activity Based Management

1. Ignorance of intrinsic value of activities
2. Possibility of interference with strategic decisions
3. Successful implementation of Activity Based Costing is the pre-requisite of the success of Activity Based Management.

7.14 Illustration of Traditional and ABC method

1. A company produces 3 products A, B, and C. The company follows Activity Based Costing System. The information related to various cost of these products for the last year. Calculate total cost and cost per unit as per traditional and ABC method.

Particulars	A	B	C
Production and sales (Units)	15,000	12,000	18,000
Selling Price per unit in rupees	7.5	12	13
Raw Material usage in kg per unit	2	3	4
Direct labour in hours per unit	0.1	0.15	0.2
Machine hours per unit	0.5	0.7	0.9
No. of production runs per annum	16	12	8
No. of purchase orders per annum	24	28	42
No. of deliveries to retailers per annum	48	30	62

The price of raw material remained constant throughout the year at Rs.1.2 per kg and the labour cost was Rs.14.8 per hour. The annual overhead cost are as follows:

Overheads	In rupees
Machine set up cost	26550
Machine running cost	66400
Procurement cost	48000
Delivery cost	54320

Solution:

Traditional method:

A) Calculation of Total Overheads:

Overheads	Rupees
Machine set up cost	26,550
Machine running cost	66,400
Procurement cost	48,000
Delivery cost	54,320
Total cost	**1,95,270**

B) Calculation of overheads: Absorption rate:

Particulars	A	B	C
Production volume	15,000	12,000	18,000
Labour hours per unit	0.1	0.15	0.2
Total labour hours	1500	1800	3600

Total labour hours = 1500 + 1800 + 3600 = **6900**

C) Calculation of Cost per unit:

Particulars	A	B	C
Raw material cost (Usage * 1.2)	2.4	3.6	4.8
Direct labour cost (labour hours * 14.80)	1.48	2.22	2.96
Overheads (labour hours * 28.30)	2.83	4.25	5.66
Cost per unit	**6.71**	**10.07**	**13.42**

ABC Method:

A) Calculation of overheads absorption rate:

Cost Pool	Amount	Cost Drivers		Rate of o/h per activity
Machine set up cost	26550	No. of production runs p.a.	(16+12+8) = 36 runs	26550/36 = 737.50 per run
Machine running cost	66400	No. of machine hours p.a.	(7500+8400+16200) = 32100 hours	66400/32100= 2.0685 per hour
Procurement cost	48000	No. of purchase orders p.a.	(24+28+42) = 94 orders	48000/94 = 510.63 per order
Delivery cost	54320	No. of delivery to retailers p.a.	(48+30+62) = 140 deliveries	54320/140= 388 per delivery

Note: Total Machine hours p.a. = Machine hours * Total Units produced

A = 0.5 * 15000 = 7500
B = 0.7 * 12000 = 8400
C = 0.9 * 18000 = 16200

B) Calculation of cost per unit:

Particulars	A	B	C
Material cost	2.4	3.6	4.8
Labour cost	1.48	2.22	1.96
Overheads:			
Machine set up cost	(737.50*16)/15000= 0.7867	737.50*12/12000= 0.7375	737.5*8/18000=0.3278
Machine running cost	2.0685*7500/15000= 1.034	2.0685*8400/12000=1.4479	2.0685*16200/18000=1.8616
Procurement cost	510.6383*24/15000= 0.817	510.6383*28/12000=1.1915	51.6383*42/18000=1.1915
Delivery cost	388*48/15000= 1.2416	388*30/12000=0.97	388*62/18000=1.3364
Total cost per unit	**7.7593**	**10.1669**	**11.4773**

Overheads per unit for products A, B, C = Overheads absorption rate x No. of cost drivers used by the individual product p.a. / No. of units produced

2. ABC limited has the following data for its two activities namely A&B. It calculates cost rates based on cost drivers' capacity.

Activity	Cost Drivers	Capacity	Cost
Power	Kilowatt hours	60,000 k. wht	3,00,000
Inspection	No. of inspections	25,000 inspections	5,00,000

The company makes three products A, B and C for the year ended 31.03.2022. the following consumption of cost drivers was reported.

Products	Kilowatt hours	Qty inspections
A	10000	10000
B	25000	8000
C	20000	5000

Compute the cost allocated to each product from each activity.

Solution:

Statement of cost allocation to each product from each activity:

	A	B	C	Total
Power	50000 (10000*5)	125000 (25000*5)	100000 (20000*5)	275000
Qty inspection	200000 (10000*20)	160000 (8000*20)	100000 (5000*20)	460000

Working note:

Rate per unit of cost driver:

Power = 300000/60000 = 500000 kwh

Qty Inspection = 500000/25000 = 20 per inspection

❖ **Exercise:**

Practical sums:

1. XYD company produces 3 products X, Y, and Z. The company follows Activity Based Costing System. The information related to various cost of these products for the last year. Calculate total cost and cost per unit as per traditional and ABC method.

Particulars	X	Y	Z
Production and sales (Units)	30000	24000	36000
Selling Price per unit in rupees	15	24	26
Raw Material usage in kg per unit	4	6	8
Direct labour in hours per unit	0.2	0.30	0.4
Machine hours per unit	1	1.4	1.8

No. of production runs per annum	32	24	16
No. of purchase orders per annum	48	56	84
No. of deliveries to retailers per annum	96	60	124

The price of raw material remained constant throughout the year at Rs.2.4 per kg and the labour cost was Rs.29.6 per hour. The annual overhead cost are as follows:

Overheads	In rupees
Machine set up cost	53100
Machine running cost	132800
Procurement cost	96000
Delivery cost	108640

2. ABC limited has the following data for its two activities namely A&B. It calculates cost rates based on cost drivers' capacity.

Activity	**Cost Drivers**	**Capacity**	**Cost**
Power	Kilowatt hours	30000 k.wht	1,50,000
Inspection	No. of inspections	12500 inspections	2,50,000

The company makes three products A, B and C for the year ended 31.03.2022. the following consumption of cost drivers was reported.

Products	**Kilowatt hours**	**Qty inspections**
A	5000	5000
B	12500	4000
C	10000	2500

Compute the cost allocated to each product from each activity.

Fill in the blanks.

1. _____system is a method of accounting you can use to find the total cost of activities necessary to make a product. (**Activity-based costing**)
2. _____as an accounting method which identifies the activities which a firm performs and then assigns indirect costs to cost objects. (**Activity-based costing)**
3. _____ is an aggregate of all the costs associated with performing a particular business activity. (**Cost pool/ Cost Centre)**
4. _____ is an activity that is the root cause of why a cost occurs. (**Cost driver)**
5. _____are those which involves counting how many times an activity occurs. (**Transaction drivers**)
6. _____ are those which measure how long an activity takes to complete. (**Duration drivers)**

7. _____ are used to directly charge for the resources used each time an activity is performed. (**Intensity drivers)**
8. _____ are driven by number of batches of units produced. (**Batch level activities**)

Answer the following questions.

1. What is ABC System? Explain its advantages and disadvantages.
2. Define ABC System. Explain the reasons for adopting ABC System
3. Write down the difference between Traditional system and ABC System.
4. Explain the Activity based Management in detail.
5. Explain the stages of ABC System.
6. Explain the outputs of Activity Based Management.
7. Define cost pool and cost drivers. Explain the classification of cost drivers.
8. Explain the advantages and disadvantages of Activity Based Management.

UNIT – 8 COST CONTROL AND COST REDUCTION

8.1. **Introduction**:

8.2. Meaning and Definitions of Cost Control

8.3. Characteristics of Cost Control

8.4. Importance (Merit) and limitations (Demerit) of Cost Control

8.5. Steps of Implementing Cost Control

8.6. Techniques of Cost Control

8.7. Essentials of Cost Control

8.8. Cost Reduction: Meaning and Definition

8.9. Characteristics of Cost Reduction

8.10. Importance (Merit) and limitations (Demerit) of Cost Reduction

8.11. Cost Reduction Programme

8.12. Steps of Cost Reduction Processes (Methods of Cost Reductions)

8.13. Cost Reduction Areas

8.14. Techniques of Cost Reduction

8.15. Essentials for Success of Cost Reduction

8.16. Benefits of Cost Reduction

8.17. Disadvantages of Cost Reduction

8.18. Difference between Cost Control and Cost Reduction

- **Exercise**

8.1. Introduction

Business Enterprises exist to make a profit. Hence, minimizing costs is key to maximizing profits. Businesses use cost control and cost reduction to compare the value of output and estimate the expenses of various operations in a particular project. As a result of calculating cost control and cost reduction correctly, organizations maximize profit while minimizing production costs. However, both procedures are different from each other. For example, cost control provides the necessary information for aligning actual and budgeted costs; cost reduction reduces production costs without compromising product quality.

Cost control is the practice of identifying and reducing business expenses to increase profits, and it starts with the budgeting process. A business owner compares the company's actual financial results with the budgeted expectations, and if actual costs are higher than planned, management has the information it needs to take action. Corporate payroll, for example, is often outsourced, because payroll tax laws change constantly, and employee turnover requires frequent changes to payroll records. A payroll company can

calculate the net pay and tax withholdings for each worker, which saves the employer time and expense.

The object of any industrial enterprise is to remain competent by reducing the per unit cost of its product to the minimum level possible. This can be achieved only by increasing its productivity and efficiency. 'Cost Reduction' is a process for finding and removing unwarranted expenses from a business to increase profits without harming product quality. Many organisations will engage, in periodic cost reduction drives, to make their company's operation more efficient and to boost profits. Under the cost reduction method, targets are set in advance and efforts are being made to see that the actual cost is as per the targets and does not cross these limits under the cost control method efforts are made to keep the cost within the limits pre-determined by using various techniques.

8.2 Meaning and Definitions of Cost Controls

The Institute of Cost and Management Accountants, U.K. has given the following definition of Cost Control: The regulation by executive action of the costs of operating an undertaking where such action is guided by cost accounting. The words 'control' and 'executive action' given in this definition indicate there is a pre-determined limit for the cost and accordingly the cost is to be controlled. If we put it in other words, we can say that standard costing should have been used either partially or fully. Of course, in the absence of standard costing, the past data can also be taken as the base for comparison with the present cost. But to make "cost control' really effective it is better to have scientifically determined norms for each element of cost so the use of a systematic standard costing technique is necessary. As such, one of the important objects of the 'standard costing technique' and the 'technique of control through budgeting' is to control the cost.

The basic and ultimate objective of both these methods is to increase profitability through Cost control.

1) Cost control is “a process or activity to reduce waste by eliminating (eliminating) inefficiencies and waste within established conditions (certified standards) of a business unit.”
2) According to the Institute of Cost and Management Accountants, England... "Cost control is the control by administrative measures of the operating costs of a unit."
3) Cost control is “the process of comparing actual achievements with standards, standards, targets or objectives determined based on past experience, detecting deviations, and suggesting corrective measures.”
4) Cost control is “the activity of making economical and optimum profitable use of available resources.”

8.3 Characteristics of Cost Control

1) The establishment of standardized norms, standards, and criteria initiates the 'layer control' process.
2) Must have pre-defined attributes.
3) Control is through administrative measures.
4) Comparative study of pre-determined proportions and actual availability.
5) Deviations indicate remote measures.
6) Management by exception is used.

7) Adequate control is possible only where enforcement of predetermined norms is possible.
8) Its main objective is to bring standards lower than standard.
9) It is a conservative method, not dynamic.
10) It has inhibitory activity and Interest is determined before spending.

8.4 Importance (Merit) and limitations (Demerit) of Cost Control

i) Cost control helps to achieve expected return on the capital invested in a company, by resolving deviations between actual and expected standards.
ii) Cost control leads to improved standards of production with the limited resources of the company.
iii) Cost control reduces the prices or tries to maintain them by reducing the cost.
iv) Cost control leads to the economic use of resources.
v) It increases the profitability and competitive position of a company.
vi) It enhances credit worthiness of the company.
vii) It prospers and increases the economic stability of the industry.
viii) It increases the sales of the company and maintains the level of employment.

Disadvantages of Cost Control:

i) It reduces the flexibility and process improvement in a company.
ii) It restricts innovation by emphasizing reaching the preset standards.
iii) It requires skilled personnel to set standards.
iv) It lacks creativity as it is concerned with following the current standards.
v) It does not lead to improvement in standards.

8.5 Steps of Implementing Cost Control

The steps followed while implementing cost control are:

1. Setting Predetermined Standards:

Before beginning any operation, the company must make a performance goal or standard cost for each cost center. Then, further works are done with the help of these prearranged costs.

2. Assessing Actual Performance:

Companies determine the actual cost of each product. Later, they measure the performance as per targets. For example, if the target is operation-wise, you can calculate and collect actual costs on an operation-by-operation basis to provide a standard benchmark for comparison.

3. Comparing Output with Initial Standards:

After calculating the actual cost, we can compare it to the desired outcome. Any discrepancy between the two is identified and communicated to the person in charge.

4. Analysing Action Variations:

We review and identify discrepancies and their causes in the previous steps. Following that, we take the necessary actions, and if necessary, we can incorporate standards into developments to control the price.

8.6 Techniques of Cost Control

Commonly used techniques for cost control are given below.

(1) **Material Control:** Procurement of goods, receipt of goods, inspection, storage and control of goods supply are important in the material control process. The use of the ABC method for stock control includes maximum, minimum, uniform quantity, continuous stock count, etc., determining the EOQ, implementing the perpetual stock-taking method, fixing up standards of wastage, and submissions of periodical reports of actual wastage.

(2) **Labor Control:** Recruitment, training, and promotion of workers are important steps in controlling labour costs. Also includes time recording, speed monitoring, and time monitoring, labour turnover rate control.

(3) **Overhead Control**: Allocation of indirect costs between production departments, service departments, cost of production departments based on labour hour, machine hour rate, and allocation of items produced based on over/under collection accounting, includes steps to determine quantities.

(4) **Standard Costing**: Standard costing involves comparing actual achievement (output) with standard deviation, detecting deviations, and taking corrective action the success of the cost control process depends on setting up of realistic standards.

(5) **Budgetary Control:** An important feature of this method is to prepare a budget and set targets for the important activities of the unit. Deficiency control involves comparing actual performance with budget targets, detecting deviations, and taking corrective action.

(6) **Responsibility accounting method** (Responsibility Accounting): Each account head is responsible for the work and expenditure (controlled) of his account. By comparing actual costs with controlled cost targets, detecting deviations, and taking corrective action, costs can be controlled.

(7) **Control of Capital Expenditure**: When capital investment is to be made in a new scheme, the capital expenditure budget is prepared based on the estimation of the profitability of the possible alternatives of that scheme. Capital expenditure is controlled accordingly. Control on capital expenditure is exercised based on targets set in this budget.

(8) **Productivity Control:** Productivity is a concept associated with profitability. Productivity increases if production equipment produces more, thereby reducing waste and resulting in increased profitability. Thus productivity control is necessary for cost control.

(9) **Inter-Firm Comparison**: By comparing one's own performance with the performance of firms engaged in the same type of business or with the same performance, one gets an idea of one's performance. If the fallow is high, it can be controlled.

8.7 Essentials of Cost Control

(1) **Establishing Norms or Standards:** A prerequisite for the success of cost control is the establishment of norms or standards. Causal control is not a unique or independent mechanism. However, there is a process of performing outstanding control based on established standards.

(2) **Responsibility Centres**: Efficient management prerequisite for accountability, high profitability, and low cost is the proper delegation of authority and responsibility, the head of which is responsible for his unit and controllable costs. So that any cost increases then barley deficiency can be determined and its corrective measures can control fallow.

(3) **Timely proper presentation of information:** Timely and regularly these reports must be presented before the concerned persons. Outgoing information timely, regularly receiving different information related to their activities to each responsible centre. So that their efficiency, inefficiency can be realized and timely corrective measures can be taken.

(4) Good as well as bad aspects of performance should be clearly mentioned in the report. It can be checked and the cost or loss can be prevented. Here it is important to bring out the true facts.

(5) **Appreciation of work:** In recognition of the work of an employee, if the good work of an employee has made it possible to control the cost reduction, encouraging prizes, giving, honouring, and giving promotion, giving additional compensation. So the work passion will increase among the employees.

(6) **More than one report**: Generally top managers use all account reports in decision-making. A decision should be made using more than one report rather than the opinion of an account head or a single individual. So that the decision does not become defective.

8.8 Cost Reduction: Meaning and Definition

- The Institute of Cost and Works Accountants of U.K. has defined 'Cost Reduction' as: "Cost reduction is understood as the achievement of real and permanent reduction in the unit costs of goods manufactured or services rendered, without impairing their suitability for the use intended."
- According to the definition given by the Institute of Cost and Works Accountants of England (ICWAE) "Cost reduction means achieving a real and permanent reduction in the unit waste of goods or services produced, and in the manner for which they are used.
- Reduction in cost of goods or services must be real. It means that it must have been proved by an increase in productivity. Reduction in cost on account of the decrease in tax burden or government policy or any reason related to price may not be considered cost reduction in a real sense. Cost reduction achieved by reducing the cost of production, administrative expenses, or selling and distribution expenses is considered real.
- Cost reduction is the process that concentrates on reducing the unit price of a factory-made service or product. It is done without compromising quality through new and better technologies.
- This is possible by actively adapting to the latest product designs and implementation improvements. In addition, several methods are used to reduce production costs. The most common way is to use a unit's cost, ensuring per-unit price savings and profit maximization. This can be represented in formulaic language as follows. Productivity + Efficiency Increase = Cost / Cost Reduction = Profitability Increase = Waste Leadership.
- It is a positive approach to cost reduction through continuous evaluation and analysis of all elements of co-used in the production process.

- It is continuous, in-depth, and qualitative research into available production processes, tools, and methods. An innovative design, new layouts, inspiring schemes, and setting new standards to reach or achieve higher goals is a process of improving the existing environment or circumstances and taking new directions.
- Redundancy is the combination of a set of measures or plans to achieve the dual objective or objectives of maintaining the "efficiency" of the business and "reducing redundancies" as a whole."

8.9 Characteristics of Cost Reduction

(1) The cost reduction should be permanent. A short-term temporary reduction in wages is not considered a permanent reduction.
(2) The reduction in Cost is not at the expense of the utility or quality of the product.
(3) Cost reduction aims to reduce cost by removing unnecessary elements of waste.
(4) Cost reduction is a continuous and dynamic process of examining and evaluating waste methods, processes, and all aspects of waste and suggesting corrective measures.
(5) A cost reduction plan works on the assumption that "cost can be reduced".
(6) Decommissioning is not a unique method or process but a single activity in addition to a command report, suggesting corrective measures in the current situation of the unit.
(7) It is the result of fallback control.

8.10 Importance (Merit) and Limitations (Demerit) of Cost Reduction

Merits of Cost Reduction:

i) Cost reduction increases the profitability of an organization.
ii) Cost reduction enhances the cash flow of the company.
iii) Cost reduction program helps in achieving the goals of the company.
iv) It is permanent in nature which affects the organizational performance in the long run.
v) Cost reduction does not impair the quality of the production while reducing the cost.

Demerits of Cost Reduction:

These are problems with cost reduction that are generally faced are as follows:
1. Workers and employees of an organization generally do not like to implement cost reduction programs and they try to resist it. These are considered as difficult to implement.
2. Cost reduction programs are continuous in nature. It is a continuous attempt to lower the cost But in most organizations, they are implemented on an ad-hoc basis.
3. The cost reduction technique cannot be applied in all cases.
4. Cost reduction technique requires a lot of research which adds to the cost of the company
5. The cost reduction technique needs to be implemented in a planned manner.

There can be two ways to achieve the goal of the cost reduction

- By reducing the cost of that particular product and
- By increasing the efficiency so that we can increase the productivity of the production unit which lowers per unit cost.

8.11 Cost Reduction Programme

Since the cost reduction program is an activity that touches every aspect of the business, a program or system should be created to benefit from the advice and guidance of experts from all accounts or departments.

(1) **Formation of cost Reduction Committee**: Different departments of the unit like purchase, production, planning, sales, and finance. It should include heads or representatives of personnel and research departments.
(2) **Functioning of Cost Reduction Committee**: The Cost Reduction Committee has to formulate, evaluate, and work on the cost reduction program.
(3) **Delegation of authority and responsibility**: All authority and responsibility for the work assigned to the administrative officers should be proportionately allocated or delegated so that no work of the cost reduction program is out of authority and no work responsibility is prescribed.
(4) **Determining Centres of Responsibility:** The activities to be undertaken regarding the cost reduction program should bring out the strengths or weaknesses of the current performance and fix the responsibility so that there is no scope for such deficiencies to occur again. Here is the aim of defect prevention and no punitive measures.
(5) **Prioritizing the Plan**: Prioritizing the options for reduction of cost suggested by the Cost Reduction Committee and reporting the progress of its implementation to the higher management from time to time.
(6) **Spirit of Co-operation**: The formulation and implementation of this plan can be successful only if all the employees of the department have co-operation.
(7) **Training of employees**: The employees working in the current system of the unit should be trained from time to time for their performance as well as for improvements in the new technology process so that the plan can be implemented smoothly and successfully.
(8) **Incentive Schemes**: The workers or employees are the wings or arms of the business. Employees are central to the success of any plan. So appreciate the work of the employees and implementing incentive schemes for good performance Like giving Additional profit, Promotion, reward, and honor to the public. so that work passion is maintained or increased.
(9) **Positive attitude of top managers**: No plan succeeds if all aspects of the unit are favorable but managers have a negative attitude. So a positive attitude of managers is a prerequisite for success.

8.12 Steps of Cost Reduction Processes (Methods of Cost Reductions)

Product cost can be reduced by eliminating production processes, equipment, product design, sales, distribution of goods, administrative and financial time, waste of money, wastage of goods, etc.

Reducing costs is an idea that constantly plays on the minds of top managers. It is managed by a senior manager with a team of talented and skilled officers who can analyze and research all the activities of the business and suggest various methods to reduce and increase productivity resulting in the reduction of cost. The chronology of its inclusive phase (steps) is as follows:

(1) Analysis: Obtaining information about all the running activities of all the departments of the unit like the Production (Factory) Department, Office-Administration, Sales-Distribution, Finance, Accounting Department, Godown, etc. So that the picture for the development of all activities is clear.

(2) Examination: All the activities have been tested within the organizations.

(3) Critical (important) activity: A critical activity contributes directly to the achievement of the unit's stated goal. More attention is focused on it. So that productivity can be increased and waste can be reduced.

(4) Activity of medium importance: An activity of medium importance does not contribute directly to the achievement of the unit's goal.

(5) Non-essential activity: Such activities do not contribute directly or indirectly to the achievement of the unit's objective. Therefore, waste can be reduced by eliminating such unproductive activities.

(6) Feasibility of solution: After analysis and testing of activities, the feasibility of alternative ways or methods of cost reduction is determined. The method which agrees with the following is considered the best solution:

(1) Be useful for the achievement of the purpose.
(2) Be practical.
(3) Supporting equipment engaged in production.
(4) Acceptable for customer class, employee class, and administrators.
(5) Able to reduce cost reduction.

(7) Selection of the best solution: The selection of the best option among the various methods of solving the problem usually taking into account the company's policy, standards, personal approach, economic standards, company goal, current structure, etc., considering the advantages and disadvantages of each solution.

(8) Obtaining Consent: Among alternative solution paths, the solution acceptable to the employee, manager, customer, organization, etc. is considered to be obtained by the analyst. This becomes enforceable.

8.13 Cost Reduction Areas

Areas of fallow reduction are so vast that they cannot be bounded by any boundaries or perimeters. However, the following areas can be covered maximally considering the type of business, and the present condition of the unit.

1. Product Design:

The greatest scope for cost reduction lies in the area of product design. The design of the product is decided before the production of the product. Therefore the design of the item should be such that —

(1) Material cost, labour cost, indirect cost, packing cost, and handling cost can be reduced.
(2) In deciding the design, the equipment, machinery, space, capacity, and skill of the workers used for production should be considered. So that new expenses are not incurred and equipment is used sparingly.
(3) Designs should be designed that are attractive to the consumer segment and are inexpensive, taking into account the designs of the competitors.

2. Factory Management, Methods and Controls:

(Factory Organisation, Production Methods and Control):

(A) **Management System**: The management system of the factory should be arranged in such a way as to reduce production costs. Proportionate authority and responsibility should be assigned. A responsible center should be determined. Officers, employees, and workers should have a clear understanding of the mission of the unit. Employee involvement in decision-making can contribute a lion's share in increasing productivity. As a result, costs are reduced.

(B) **Physical Management:** Proper arrangement of factory layout and equipment reduces wastage of time, effort, and goods. Alternative power supply arrangement reduces idle time. Machines should be repaired at the right time. Using equipment equipped with new technology can increase productivity. Proper sequencing of the manufacturing process can also reduce cost, Proper lighting, air-lighting, maintenance of proper temperature Water, air, noise pollution free space, and adequate space of space increases productivity, and reduces wastage.

(C) **Methods:** Timely change in production methods, mechanization with scientific technology instead of human labour. To increase productivity, a well-organized communication system prevents misunderstandings in information exchange therefore, Time is saved and the storage of goods should be done in a scientific manner and with equipment so that the cost of goods, time, and money is stopped so that the cost is reduced.

(D) **Personnel (Worker) Management:** Workers or employees are the extremities of the business unit. It cannot be done without accepting it. Hence employee's passion is maintained by recruitment, training, promotion, pay, non-monetary service, benefits, or incentives as per job requirements. Can survive can grow Using worker time recording, and time tracking, reducing labor turnover rate, reducing unproductive time, and saving or eliminating overtime, can result in reduced absenteeism.

(E) **Inspection:** Finally all works should be inspected. Checking by properly qualified officials at all levels from raw material purchase to delivery of goods to the customer can prevent unnecessary wastage of time, money, and goods, and reduce the backlog.

(3) **Product Planning and Control:** A well-organized production planning and control is an important factor for cost reduction. There are huge opportunities in it. E.g. Inventory control, labor cost control, production layout, production methods, time and motion control, labor turnover rate, product design, maintenance of production equipment, utilization, and optimum utilization. The adoption of modern technology includes incentive schemes.

(4) **Market Area:** Ways of distribution of goods in the market area, plan of product, sales growth, market research planning, regional responsibilities, incentive wage schemes or methods, methods of advertising, estimation of advertising costs, after-sales services, goods packing materials, conveyance arrangements, plans, and cost estimates, etc. are included. If it is carefully controlled, the cost can be reduced.

(5) **Area of Administration:** It includes personnel, purchasing, and general administrative management. Efficient administration, an effective purchasing department, and proper personnel management can reduce costs.

(6) **Service Department:** This sector includes power-fuel, water, steam, and electric utility. Maintenance of all those departments should be done on time and in case of outsourced service, alternative arrangements should be kept to save unproductive time due to loss of such service.
(7) Financial Management: The following areas in the section are noteworthy.
(1) Methods and sources of acquisition of capital funds.
(2) Working capital arrangement and its reversal.
(3) Amount and type of capital investment.
(4) Reasonable return on capital investment.
(5) Maximum and optimal utilization of capital investment instruments.
(6) Capital equipment re-establishment policy.

8.14 Techniques of Cost Reduction

Methods are used to increase business efficiency, increase productivity, and control costs. Those methods are used to reduce the cost. Cost reduction results from reduction of wastage, improvement in efficiency, identifying alternatives, and continuous reduction of the cost. There can be different methods for cost reduction which can be as follows:

1. Control by Budget.
2. Control by proportion
3. Work Study and Methodology
4. Job evaluation
5. Production planning and control
6. Structured system building
7. Quality control
8. Economic uniform quantity
9. Use of advanced technology
10. Use of self-propelled mechanical equipment.
11. Simplification and reduction of diversity
12. Value Analysis
13. Value growth analysis
14. Authentication
15. Application of ABC method
16. Cost quantity analysis
17. Design of Item
18. Market Research
19. Inventory Control
20. Action research
21. Principle of management by exception
22. Scientific method of recruitment, training, and promotion of employees
23. Control of Goods' Expenditure
24. Control of labor costs
25. Control on recovery of indirect expenses

8.15 Essentials for Success of Cost Reduction

(1) Structure of the system: To set up a system suited to the business of the unit to implement the cost reduction program. In which to form a committee of cost accountants and experts from various fields and assign them reasonable authority and responsibility.
(2) Comparison of benefits and costs: A scheme is said to be successful only if the benefits of the abatement scheme are greater than the costs of the abatement scheme.
(3) Abatement must be real and permanent.
(4) A redundancy reduction plan should be accepted by managers and employees
(5) There should be cooperation of all accounts, departments, employees, officers, and managers involved in the cost reduction plan.
(6) Incentive schemes should be used to reduce backlog.
(7) All departments, activities, and functions should be continuously evaluated.
(8) Reduction of arrears should be socially and legally beneficial.
(9) Fall reduction should not be at the expense of quality and utility.
(10) Workers and employees should not be exploited (low wages).
(11) There should be no room for fraud or evasion in fallow reduction.
(12) Arrears should be reduced to certified standards only based on accurate, substantiated information.
(13) Abatement should not be subjective, or arbitrary.
(14) Fall should result in reduced profitability.

8.16 Benefits of Cost Reduction

We will look at the benefits of cost reduction from the following different points of view.

(1) **Benefits to Business Unit (Company):**

1. An increase in profitability due to cost reduction leads to higher profits for the company.
2. Reputation increases by being able to provide higher returns on capital (higher dividends to shareholders) through higher profits.
3. Surviving the competition by reducing cost reduction.
4. By reducing cost, keeping the selling price of the product low can attract the market (customer) and capture a large share of the market.
5. A monopoly can be established.
6. Higher profits lead to higher wages for employees, implementation of incentive schemes, the benefit of welfare schemes to employees, and reduction in labor turnover rate. Being able to develop a sense of belonging among employees benefits the unit itself.

(2) Benefits to Industry:

1. All information is available to industries that have adopted a cost reduction plan. A comparative study can therefore be made between generations. Corrective measures can be taken.

2. Other companies as well as new companies are inspired by the plan to reduce costs and open the way to improve their administrative, and production structure. This increases the efficiency, productivity, and profitability of the unit.
3. Benefit from different types of research.

(3) Benefits to employees:

1. Increasing the profit of the unit leads to higher wages, incentive wages, bonuses, welfare schemes, educational facilities, and thus economic viability.
2. Job security is maintained.
3. There is less scope for job change issues.

(4) Benefits to society:

1. Society gets good quality goods at low prices.
2. Exploitation of consumers stops.
3. Perfect competition benefits the consumer by lowering the price of the product.
4. By making more profits to the companies, those companies solve their responsibility towards the society.

(5) Benefits to Government:

1. Higher profit for the company leads to higher tax revenue for the government. As the revenue increases, the government can implement social welfare schemes. E.g. Irrigation Scheme.
2. Depreciation can increase growth and earn foreign exchange.
3. Government's efforts to address corporate social responsibilities.

8.17 Disadvantages of Cost Reduction

1. There is a possibility of loss of quality due to cost reduction.
2. A fallback is often not realistic due to temporary price reductions. Artificial price reductions reduce prices for a short period.
3. Business instability occurs if cost reduction is not permanent.
4. Possibilities of cost reduction also due to exploitation of workers or employees.
5. There are chances of the unit being thrown out of the market if quality is compromised.
6. Redundancy can create friction between managers and workers.
7. A cost reduction plan fails if all departments of the unit do not cooperate.
8. Cost reduction creates unnecessary competition and weak units are dropped.

8.18 Difference between Cost Control and Cost Reduction

1. Meaning: under “cost control ”, first the standard is set and then the comparison is done with the actual performance to determine variance and to take remedial measures, whereas the cost reduction method, though the standards may be taken as a base it is not accepted that these standards are ideal of the operation of a unit “Achieving a real and permanent reduction in cost per unit of product or service is called cost reduction.” where controlling expenditure through administrative measures is called passive control.
2. Objective: cost control is applicable only if it is possible to set standards where it applies to any aspect of business for which efforts are made to reduce cost. The

objective is to bring the standard lower than the standard which is his best effort. The aim is to increase productivity and efficiency and reduce costs.

3. Cost control refers to keeping costs within prearranged limits. Cost reduction is about lowering the cost per unit by implementing new production methods that do not compromise product quality.
4. Cost control is a temporary measure, whereas cost reduction is permanent.
5. The cost control process is completed when a particular target is met. In contrast, the cost reduction process has no visible end because it is implemented from time to time to eliminate wasteful expenses.
6. Cost management does not engage in standard quality maintenance, whereas cost reduction does.
7. Cost control is an inhibitory function that determines the cost before it occurs i.e. a preventive action and a cost-cutting measure is a corrective action.
8. Cost control focuses on lowering the total cost of a product, whereas cost reduction focuses on lowering the product's unit price.
9. Cost control is a temporary measure, whereas cost reduction is permanent.
10. In cost reduction there are no pre-determined base pillars but work on the assumption that "the layer can be reduced or brought up". In the present circumstances of the unit, all elements of cost are continuously evaluated and corrective measures are taken to reduce the cost.
11. Cost control may be called the conservative method because a comparison is made with the pre-determined cost, where cost reduction is considered dynamics as a constant search is continued to find new areas for cost reduction.
12. Under cost control work is to be carried out as per the order given and no thinking process is involved whereas there are no targets ordered for work, constant thinking goes on.
13. Success is considered if the standards are brought below the predetermined standards. Poor accounting methodology no certificate of standards are required. It starts with unit activity and Pre-determined proportions are not considered optimal. However, it is a dynamic activity constantly evaluating current circumstances.
14. Regardless of any aspect of business, efforts can be made to reduce cost reduction. All are common useful methods. It is an activity with a positive attitude towards improvement. Also used where fallback control is in effects success is only considered if the cost reduction is real and permanent.

❖ **Exercise**

- **Answer the following questions.**

1. How does cost control differ from cost reduction?
2. Which are the areas covered by cost reduction? Discuss any two of such areas.
3. Discuss tools and methods of cost reduction.
4. What is cost reduction? Explain the methods of cost reductions.
5. What are the stages of cost control?
6. Write down the process of cost reduction?
7. Explain the advantages of cost reduction and cost control.
8. How cost can be reduced by making changes in design?
9. What is cost control? What are methods of cost control?

10. What are the essentials of cost reduction?

- **Answer the following questions.**

1. Which one of the following is not an area to be required for cost reduction?
   A) Product design C) factory organization
   B) Marketing **D) government 's taxation policy**

2. In which concept monopoly is not a goal?

   A) cost reduction C) cost control
   B) learning curve D) inventory control

3. Which one of the following does not have enough scope for cost reduction to selling and distribution activities?

   A) power facility to run machinery C) advertisement
   B) transport cost for delivery D) market research of goods

4. Which one of the following tools and methods of cost reduction?

   A) budgetary control method C) work-study and standard costing
   B) value analysis D) all of the above.

5. What are the essentials of cost control?

   A) responsibility center B) management by exception
   C) proper timely presentation of data and timely presentation of report
   D) all of the above.

6. Which area is covered by Cost reduction?

   A) product design C) saving in administration cost
   B) Marketing and finance **D) all of the above.**

7. Which method is not used in cost control?

   A) material control C) labour control
   B) budgetary control D) marginal costing

UNIT – 9 COST AUDIT

9.1 Introduction

9.2 Definition, Meaning and Importance

9.3 Objectives

9.4 Scope of Cost Audit

9.5 Advantage of Cost Audit

9.6 Limitation of Cost Audit

9.7 Right and Responsibility of Cost Auditor

9.8 Difference between Financial Audit and Cost Audit

❖ **Exercise**

9.1 Introduction

Verification of cost accounts and assurance of compliance with the cost accounting plan are represented by a cost audit. To make sure that the cost accounting records are accurate and in line with the cost accounting principles, plans, methods, and objectives, cost audits check that the data is accurate.
Cost auditing is an impartial review of an entity's cost records and other associated information, including non-profit entities, with the intent of providing an opinion.
The following items are included in a cost audit:

(a) Verification of cost accounting records to assure the correctness of cost accounts, cost reports, cost statements, and cost data; and
(b) Examination of these records to verify compliance with cost accounting principles, plans, methods, and goals.

9.2 Definition and Meaning

Cost audit is defined as "the verification of cost records and accounts and a check on the adherence to the prescribed cost accounting procedures and the continuing relevance of such procedures"

The systematic inspection and verification of a company's cost accounting records, methods, and statements to assure correctness, conformity with accounting standards, and effectiveness in cost control and management is referred to as cost audit. The basic goals and meanings of cost auditing are as follows:

- **Verification of Cost Accounting Records:** Cost audit involves a thorough examination of cost accounting records to verify their accuracy and reliability. This helps in ensuring that the financial information related to costs is correctly recorded and reported.
- **Compliance with Accounting Standards:** Cost audit ensures that the company's cost accounting practices comply with relevant accounting standards and regulations. This is crucial for maintaining transparency, consistency, and conformity with established accounting principles.

- **Cost Control and Efficiency:** The audit focuses on evaluating the effectiveness of cost control measures and the efficiency of cost management within the organization. This helps identify areas where cost-saving measures can be implemented and operational efficiency can be improved.
- **Identification of Wastage and Leakages**: Cost audit aims to identify any wastages, leakages, or inefficiencies in the use of resources. By pinpointing areas of resource mismanagement, companies can take corrective actions to reduce unnecessary costs and enhance overall efficiency.
- **Assessment of Costing Methods:** The audit examines the costing methods employed by the company to allocate costs to products or services. It ensures that the chosen methods are appropriate and consistently applied to provide accurate information for decision-making.
- **Facilitation of Management Decision-Making**: By providing accurate and reliable cost information, cost audit assists management in making informed decisions related to pricing, product mix, resource allocation, and overall business strategy.
- **Prevention of Fraud and Mismanagement:** Cost audit plays a role in detecting and preventing fraud or mismanagement of resources. It involves scrutinizing financial transactions to identify irregularities and ensure that the company's resources are used in a lawful and ethical manner.
- **Statutory Requirement:** In many jurisdictions, cost audit is a statutory requirement for certain types of companies. Regulatory authorities may mandate companies to conduct regular cost audits to ensure financial transparency and compliance with legal requirements.
- **Enhancement of Stakeholder Confidence**: The process of cost audit, when conducted diligently, enhances the confidence of stakeholders, including investors, creditors, and regulatory bodies, in the financial health and management of the company.
- **Continuous Improvement:** Cost audit is not only about identifying problems but also about suggesting improvements. Recommendations from the audit can lead to the implementation of better cost management practices, contributing to the company's overall efficiency and competitiveness.

Cost audit is a comprehensive examination of an organization's cost-related processes, aiming to ensure accuracy, compliance, efficiency, and effective cost management. It serves both internal and external stakeholders by providing insights into the financial health and management of the company.

9.2.1: Importance of Cost Audit

- **Financial Accuracy:** Cost audit ensures the accuracy of financial records related to costs, preventing errors or discrepancies in the reporting of expenses and revenues.
- **Compliance with Regulations:** It helps companies adhere to legal and regulatory requirements, as cost audits are often mandated by regulatory authorities for certain types of businesses.

- **Cost Control and Reduction:** Identifies areas of cost inefficiencies and wastages, enabling companies to implement effective cost control measures and reduce unnecessary expenditures.
- **Operational Efficiency:** Enhances operational efficiency by evaluating and optimizing the use of resources, thereby improving overall productivity and performance.
- **Strategic Decision-Making:** Provides accurate cost information for strategic decision-making, helping management in formulating effective business strategies, pricing decisions, and product/service offerings.
- **Resource Allocation:** Assists in the efficient allocation of resources by providing insights into the actual costs associated with different products, services, or projects.
- **Prevention of Fraud and Mismanagement:** Acts as a deterrent to fraud and mismanagement by systematically examining financial transactions and identifying irregularities.
- **Stakeholder Confidence:** Enhances confidence among stakeholders, including investors, creditors, and customers, by ensuring transparency and reliability in financial reporting.
- **Legal Compliance:** Helps companies stay in compliance with accounting standards and legal requirements, reducing the risk of legal issues or penalties.
- **Improved Costing Methods:** Assesses the appropriateness and consistency of costing methods, leading to improvements in methodologies for allocating costs to products or services.
- **Benchmarking**: Provides a basis for benchmarking against industry standards, enabling companies to gauge their cost performance relative to competitors.
- **Cost-Efficient Operations:** Encourages the adoption of best practices and efficient operational processes, contributing to the overall cost-effectiveness of the organization.
- **Risk Management:** Identifies and mitigates financial risks associated with cost-related processes, helping companies proactively manage potential financial challenges.
- **Continuous Improvement**: Serves as a tool for continuous improvement by offering recommendations for refining cost management practices and operational processes.
- **Facilitation of Audits:** Simplifies the overall auditing process, making financial audits smoother and more accurate, as cost audit findings contribute to the reliability of financial statements.

9.3 Objectives of Cost Audit

1. To act as a reliable tool for control.
2. To protect the interests of the company's shareholders, its customers, and the government.
3. To confirm the accuracy of costing data.

4. To ensure that the cost accounting principles have been properly adapted and applied.
5. To aid in the process of decision-making based on cost considerations.
6. To make recommendations for a more effective set up of the costing operations.
7. To confirm that an appropriate pricing system has been maintained in line with the requirements and features of the sector, and that the supporting processes assist in the organization's goal-achievement.
8. To assist in determining quotes for upcoming contracts based on accurate cost projections.
9. To examine if cost practises may be used as a useful tool for pricing choices.
10. To serve as a morale booster for the cost account workers.
11. Cost audit is a useful technique for confirming cost data and controlling it.

9.4 Scope of Cost Audit

The scope of cost audit is broad and encompasses various aspects of a company's cost-related processes. The primary objective is to ensure accuracy, compliance, and efficiency in cost management. The scope of cost audit includes:

- Verification of the company's cost accounting records to ensure they accurately reflect the costs associated with production, distribution, and other relevant activities.
- Examination of the company's cost accounting practices to ensure compliance with relevant accounting standards and regulatory requirements.
- Evaluation of the effectiveness of the company's cost control systems to identify areas of improvement and ensure that cost control measures are in place.
- Assessment of the methods used for costing products or services to ensure they are appropriate, consistent, and in line with industry best practices.
- Examination of how resources, both financial and non-financial, are allocated across different products, services, or projects.
- Analysis of operational processes to identify opportunities for improving efficiency and reducing costs without compromising quality.
- Identification of areas where there is wastage or leakage of resources, leading to recommendations for minimizing such losses.
- Evaluation of the basis for pricing decisions to ensure that pricing strategies align with the actual costs incurred by the company.
- Examination of the profitability of individual products or services, helping management make informed decisions about the product mix.
- Preparation and presentation of comprehensive cost audit reports that highlight findings, recommendations, and potential areas for improvement.
- Ensuring compliance with legal requirements regarding cost accounting practices, which may vary by industry and jurisdiction.
- Identification and assessment of financial and operational risks associated with cost-related processes, helping in risk management.
- Comparisons with industry benchmarks to gauge the company's cost performance and identify areas where it may lag or excel in comparison to competitors.
- Examination of the MIS related to cost data to ensure that management has access to accurate and timely information for decision-making.

- Providing recommendations for continuous improvement in cost management practices, operational processes, and overall efficiency.
- Conducting special investigations into specific cost-related issues or concerns raised by management, regulatory bodies, or stakeholders.
- Verification of the accuracy of cost statements and reports submitted to regulatory authorities, ensuring compliance with reporting requirements.
- In some cases, the scope may extend to include an examination of environmental and social costs to ensure responsible and sustainable business practices.
- The scope of cost audit may vary depending on the industry, the size of the company, and regulatory requirements. It is designed to provide a comprehensive examination of cost-related aspects to support effective management decision-making and ensure financial transparency.

9.5 Advantage of Cost Audit

Let us now discuss the advantages and importance of cost audit from the viewpoints of –

1. **The Management**
2. **The Shareholders**
3. **The Society**
4. **The Government.**

1. Cost Audit and Management Cost audit:

1. Helps management decision-making by providing relevant cost data
2. It aids in the management of production levels
3. Identifies and avoids mistakes and fraud
4. Reduces waste and saves money
5. Fixes accountability for poor performance
6. Helps in improving procedures and their efficiency
7. Investigates the sources of variation and compares actual cost to projected cost
8. Assesses the relative profitability of several units
9. Increases the staff's moral effect
10. Assures effective implementation of costing concepts.

2. Cost Audit and Shareholders Cost audit ensures:

1. A method for tracking costs
2. A technique for using resources in the right way
3. An efficient process of production
4. An adequate return to investors

3. Cost Audit and Society Cost audit aids:

1. Ascertainment of true cost and fair selling price
2. The measurement of industrial efficiency and its impact on economic growth
3. Adoption of a proper standard of living due to fixed price-level.

4. Cost Audit and Government:

1. Tariffs on various industrial units
2. Industrial operations-related choices about subsidies
3. Controlled profits and pricing

4. Controlled industrial sickness
5. Enforcement of ethical business conduct
6. Finding out future project costs
7. Providing direction for a planned tax and duty charge
8. Improved efficiency of industrial operations
9. Faster resolution of workplace problems.

9.6 Limitations of Cost Audit

While cost audit offers various benefits, it also has certain limitations and challenges. Some of the key limitations include:

- **Subjectivity in Costing Methods:** Cost audit may not completely eliminate subjectivity in choosing and applying costing methods. Different methods can lead to variations in cost calculations, making it challenging to establish a universally accepted standard.
- **Dependence on Historical Data:** Cost audit relies on historical data, and the examination may not fully capture changes in market conditions, technology, or other factors that could impact future costs.
- **Scope Limitations:** The scope of cost audit might be limited to cost-related aspects and may not cover broader strategic, marketing, or non-financial aspects that influence a company's overall performance.
- **Assumption of Rational Behaviour:** Cost audit assumes rational behaviour in cost allocation and management decisions, which may not always be the case in complex organizational dynamics.
- **Resistance to Change:** Organizations may resist implementing recommended changes, even if they are identified as necessary by the cost audit. Resistance can come from factors such as organizational culture, lack of resources, or managerial preferences.
- **Dynamic Business Environment:** Rapid changes in the business environment, such as technological advancements or shifts in market conditions, may render historical cost data less relevant for future decision-making.
- **Inherent Limitations of Cost Accounting Systems:** Cost audits depend on the accuracy of the cost accounting system in place. If the system has inherent limitations or weaknesses, the audit results may not provide a complete and accurate picture.
- **Complexity in Overhead Allocation:** Allocating overhead costs to products or services can be complex, and different methods may lead to different results. Cost audit faces challenges in ensuring a fair and accurate allocation of overheads.
- **Variability in Industry Practices:** Different industries may have varying practices for cost accounting and reporting. This makes it challenging to create a standardized approach that applies universally.
- **Time and Cost Constraints:** Conducting a thorough cost audit can be time-consuming and may involve significant costs, particularly for smaller businesses with limited resources.

- **Limited Scope for Non-Manufacturing Sectors:** Traditional cost accounting methods are often more applicable to manufacturing industries. The scope of cost audit may be limited when applied to non-manufacturing sectors where costs are more challenging to quantify.
- **Focus on Historical Costs:** Cost audit typically emphasizes historical costs rather than future costs, which may be more relevant for strategic decision-making.
- **Human Factor:** Human error or bias in recording and reporting cost data can introduce inaccuracies, even with the most robust cost audit procedures.
- **Assumption of Stable Economic Conditions:** Cost audit assumes a stable economic environment, and fluctuations in economic conditions can impact the relevance and accuracy of cost data.
- **Limited Scope for Non-Monetary Factors:** Cost audit primarily deals with monetary aspects, and there may be limitations in capturing and evaluating non-monetary factors that contribute to overall business performance.

Despite these limitations, cost audit remains a valuable tool for organizations to enhance cost management, improve efficiency, and ensure compliance with accounting standards. Recognizing these limitations helps in using cost audit results judiciously and supplementing them with other forms of analysis for comprehensive decision-making.

9.7 Right and Responsibility of Cost Auditor

As per the Companies (Cost Records and Audit) Rules, 2014, cost audit will be performed by a Cost auditor who shall be a Cost Accountant in practice. "Cost Accountant in Practice" means a cost accountant as defined in section 2(1)(b) of the Cost and Works Accountants Act, 1959, who holds a valid certificate of practice under section 6(1) of that Act and who is deemed to be in practice under section 2(2) thereof, and includes a firm or limited liability partnership of cost accountants. The companies covered under the Cost audit category shall within 180 days of the commencement of every financial year, appoint a cost auditor at remuneration to be determined in accordance with provisions of section 148(3) of the Companies Act, 2013 and rules made thereunder. Provided that before such appointment is made, written consent of the cost auditor to such appointment, and a certificate that the appointment, if made, shall be in accordance with the provisions of section 139, section 141 and section 148 of the Companies Act, 2013 and the rules made thereunder, as applicable shall be obtained from the cost auditor. For the purpose of sub-section (3) of section 148 of the Companies Act, 2013

(a) In the case of companies which are required to constitute an audit committee*
The Board shall appoint an individual, who is a cost accountant in practice, or a firm of cost accountants in practice, as cost auditor on the recommendations of the Audit committee, which shall also recommend remuneration for such cost auditor;
The remuneration recommended by the Audit Committee under (i) shall be considered and approved by the Board of Directors and ratified subsequently by the shareholders;

(b) In the case of other companies which are not required to constitute an audit committee, the Board shall appoint an individual who is a cost accountant in

practice or a firm of cost accountants in practice as cost auditor and the remuneration of such cost auditor shall be ratified by shareholders subsequently.

9.8 Difference between Financial Audit and Cost Audit

Financial Audit	Cost Audit
Every company incorporated under the Companies Act is required to have one Financial Auditor.	Only applicable to specific types of businesses.
The auditor's report includes financial statements such as the profit and loss account and the balance sheet.	The scope of reporting is still limited to cost accounting records.
The basic auditing approach is vouching.	The primary goal of the investigation is to determine if the costs actually contribute to production.
Takes into consideration actual receipt and payment transactions	Cost data that are based on estimations must be validated.
Includes asset and liability valuation.	Only the adequacy of stock is judged
Protect the shareholder's interests.	Protects the interests of the management and the consumer
Concentrate on accounting books.	Examines the use of labour, materials, and other cost components.

❖ **Exercise**

- **Answer the following questions:**

1. Briefly explain the purpose and significance of introducing cost audit in business operations.
2. Define cost audit and explain its meaning in the context of financial management.
3. Discuss the importance of cost audit in enhancing the efficiency of business processes.
4. List and explain at least three primary objectives of conducting cost audit in an organization.
5. Define the scope of cost audit and provide three examples of areas covered under the scope.
6. Enumerate two rights and two responsibilities of a cost auditor in the performance of their duties.
7. Differentiate between financial audit and cost audit in terms of focus, objectives, and key areas of examination.

- **Fill in the blanks:**

1. The primary objective of _____ is to ensure that the cost accounting records accurately reflect the actual costs incurred by a company in its production and operations.
2. Cost auditors are appointed to independently examine and report on the company's compliance with the applicable _____ and the effectiveness of its cost accounting system.
3. The scope of cost audit covers various aspects, including the verification of the accuracy and reliability of the company's _____, cost ledgers, and other cost records.

4. The cost auditor's report provides insights into the company's cost accounting practices, identifying any deficiencies or areas requiring _____ to enhance the accuracy and reliability of cost information.
5. Cost audit is mandatory for certain categories of companies as per the regulations set by the _____, and non-compliance may lead to legal consequences for the company and its management.

- **Answers:**

1. cost audit
2. cost accounting standards
3. cost statements
4. improvements
5. regulatory authority

UNIT – 10 RECENT DEVELOPMENTS IN COSTING

10.1 Introduction

10.2 What is Balanced Scorecard (BSC)

10.3 Characteristic of Balanced Scorecard

10.4 Philosophy behind Balanced Scorecard

10.5 Disadvantage of the Balanced Scorecard

10.6 Aspects of the Balanced Scorecard

10.7 How to Build and Implement the Balanced Scorecard

10.8 Balanced Scorecard in Corporate India

10.9 Problems in Implementing the Balanced Scorecard

10.10 Prerequisites are Necessary for the Successful Implementation

10.11 Meaning of Economic Value Added (EVA)

10.12 Objective and Uses of Economic Value Added (EVA)

10.13 Advantages of Economic Value Added (EVA)

10.14 Limitations of Economic Value Added (EVA)

10.15 Formula and Calculation of Economic Value Added (EVA)

10.16 Indian Corporates and EVA Reporting

10.17 Market Value Added (MVA)

10.19 Shareholder Value Added (SVA)

❖ **Exercise**

10.1 Introduction

Financial measures have traditionally been used to evaluate corporate performance especially of industrial age corporations. However, it has been realised that non-financial measures also affect the corporate governance particularly of knowledge age corporations. In view of this, it has been realised that an approach striking balance on-financial measures and short-term and long-term goals would be more appropriate to evaluate corporate governance. Such an approach has been dubbed as the Balanced Scorecard (BSC) which measures for four perspectives: financial, customer, internal business processes, and learning and growth. The adoption of the **Balanced Score Card** has been on increase in the corporate world including India with relatively recent adoption of the **Balanced Score Card** and that too with mixed experiences. Nonetheless, the **Balanced Score Card** adoption rate in 2012 in India (45.28%) compare quite favourably with that in the US (43.90%). So far not much research work has been done in corporate India and as such our knowledge and understanding about **Balanced Score Card** in the Indian context against this backdrop, this unit makes a modest attempt to

investigate the **Balanced Score Card in** corporate to practice. Also covered the problems faced and the prerequisites for the successful **Balanced Score Card** in India.

It has been a common and traditional practice of companies' world over including India during the industrial age environment to measure their performance by financial measure, i.e., profit. Profitability measurement in terms of return on investment, return on sale, return on capital employed, earnings per share, etc. are considers, the "bottom-line" results used to measure the performance of companies. But, the financial performance of a company is characterised by the features like 'historic in nature,' 'after-the-events,' or 'lagging' which depend on numerous events that would have occurred months or years before and over which company did not have any control at present. Performance improvement being a critical component of the strategic planning process, financial performance measure lacking in futuristic look prove inadequate for strategic planning.

However, the relevance of financial measures has been questioned in the information age environment when companies are building internal assets and capabilities. The major problem with financial measures is that they do not directly focus on non-financial variables otherwise very critical in affecting company's financial performance. For example, a financial decision of cost cutting on research and development (R&D), the cost of long-term customer satisfaction. Thus, it means that non-financial indicators ultimately affect the financial indicators. In view of this, a good performance appraisal measurement system should provide the measurement of lagging, current and leading indicators of companies. This realisation has necessitated growing concern among companies worldwide to measure performance based on both financial and non-financial measures, which is dubbed as the 'balanced scorecard'. The concept of Balanced Score Card initially originated in the USA during 19th century and is of a relatively recent origin in India. In this chapter, we shall investigate the philosophy and practice of balanced scorecard in corporate India.

10.2 What is Balanced Scorecard (BSC)

In simple words, 'Balanced Scorecard (BSC)' refers to inclusion of both financial and non-financial performance measures together in a sheet to measure corporate performance.

Dr. Robert S. Kaplan and David P. Norton who developed the concept of balanced scorecard have defined it as follows:

According to Kaplan and Norton (1996) that the balanced scorecard retains traditional financial measures. But financial measures tell the story of past events, an adequate story for industrial-age companies for which investments in long-term capabilities and customer relationships are not critical for success. These financial measures are inadequate, however, for guiding and evaluating the journey those information-age companies must make to create future value through investment in customers, suppliers, employees, processes, technology, and innovation.

According to Dinesh and Palmer (1998) some scholar considers BALANCED SCORE CARD as an improvement over Management by Objectives (MBO). Call it by any name, 'Balanced Scorecard (BALANCED SCORE CARD)' is a performance evaluation measure of combining financial and non-financial measures of performance of a company in one

single scorecard. It measures the performance of a company in four perspectives: learning and growth (Innovation), customer, internal business processes, and financial. More perspectives such as social responsibility, environmental concerns, and employee concern may be possible candidates to be considered for collecting data to develop an appropriate Balanced Score Card.

10.3 Characteristics of Balanced Score Card

(1) Balanced score card is not only a Measurement System but a Management System is that is why it specifies:
   (a) It is strategy
   (b) It shows the strategy in the form of action (activities), and
   (c) It provides an opportunity to provide useful feedback,

(2) Balanced Scorecard provides feedback regarding internal processes and external factors (outcomes) due to which strategic performance can be continuously improved.

(3) Balanced Scorecard is with TQM (Total Quality Management) which the following things are emphasized.
   (a) Considering the customer's point of view in product quality.
   (b) Empowerment of employees.
   (c) Continuous improvement.
   (d) Measurement based Management and Feedback.

(4) Balance Scorecard & TQM focuses on internal feedback. It also takes into account the feedback of the results of the strategy. Thus, Balanced Score Card has double-loop feedback. Double-loop-feedback strengthens the connection between two important aspects of strategy implementation does:
   (a) Performance quality and
   (b) Financial results.

   Although these two aspects are independent, they are interwoven for strategy implementation. Shareholders are always interested in the return they get on the capital invested. The Balanced Score Card system represents the linkage between shareholder interests, performance management and operational activities and processes.

(5) The **Balanced Score Card** establishes a sustainable balance through linkages between the following three factors.
   (A) Goal or Interest of shareholders (Goal)
   (B) Goal or Interest of customers (Goal)
   (C) Goal of performance of performer (Operational performance goal).

   Broadly speaking return to shareholders is presented in relation to sales, sales backlog and capacity utilization and all these are linked to day-to-day operations.

(6) **Balanced Score Card** develops its matrix by observing the system from four perspectives and collects data to analyze the relationship between the four components of the system seen from all four perspectives.

(7) According to the **Balanced Score Card** approach, the four perspectives of visualizing the management system are:

(**A) Monitoring from a financial point of view**:

What is our management doing in the interests of shareholders? This is done through measures such as return on equity, growth in revenue and sales, and cash flow as presented in the **Balanced Score Card** for testing.

(B) Monitoring from customers' point of view:

How satisfied are customers with our system? Using direct feedback from customers on the customer-oriented activities of the management system (e.g. Grievance redressal department), the **Balanced Score Card** is tested by the following criteria:

(1) Defective products,
(2) Grievance redressal
(3) Timely delivery,
(4) Product quality-variation,
(5) Product development etc.

(C) Monitoring business performance:

What are the areas of excellence and core competencies in our management system? This is tested in the Balanced Score Card through the following criteria:

(1) Product quality,
(2) Activity cycle time,
(3) Performance delays,
(4) Productivity
(5) Product backlog
(6) Monitoring the effectiveness of business operations based on factors such as idle time.

(D) Observation from the point of view of growth and learning properties:

How fast does our system learn? And does it continuously create value and improvement? For monitoring in this regard, Balanced Score Card examines technology, improvements in product development operations, etc.

Balanced Score Card management strategy is linked to shareholder value enhancement through the integration of goals emerging from the above four types of perspectives. (Shareholder value is created when their return exceeds the required rate on equity.

NAM & R Company has successfully used Balanced Score Card. After linking its strategy with financial objectives, the company presented those objectives in the form of objectives for management departments and various processes. Due to which an integrated system was created. In this system measurable results were presented in the Balanced Score Card. Based on these results, each department, team or activity could be monitored, improvements could be made and incentives could be given based on their performance.

10.4 Philosophy behind Balanced Scorecard

According to Venkatraman and Ramanujam (1986): The rationale behind the philosophy lies in the fact that you cannot drive a car solely relying on a rear-view mirror. The performance of a company of should not be measured and evaluated based on significant perspectives. Research studies also report that the effects of other perspectives ultimately boil down to the financial performance of an organisation.

It is against such backdrop that the balanced of scorecard was developed to provide a framework for selecting key performance indicators that supplement traditional financial measures with non-financial operating measures such as learning and growth activities, customer satisfaction, and internal business processes. It links short-term operational controls to the long-term vision and strategy of the organisation. Research findings report that the use of both financial and non-financial measures help firms perform better.

One argument that the proponents of the Balanced Score Card make in its support is that it aligns with strategy leading to better communication and motivation at all levels of an organisation, which in turn leads to more and better performance. The Balanced Score Card as an effective and inclusive measure of organisational performance has been gaining increasing popularity in the corporate world, including in India.

1. The Balanced Score Card is a comprehensive and holistic method to evaluate organisational performance to better understand the customer requirements and performance gaps.
2. The Balanced Score Card aligns business strategy with business vision and helps better realise the vision through continuous improvement in all aspects of organisational performance.
3. The Balanced Score Card is a complement and even improvement over the Management by Objectives (MBO) and Total Quality Management (TQM).

That the financial measures do not seem genuine performance measures are supported by the fact that the top 10 performance measures in Japan do not include any financial measures.

10.5 Disadvantage of the Balanced Score Card

However, the Balanced Score Card is criticised on various grounds but not confined to the following only:

1. The critics argue that it is not easy to achieve balance between the financial and non-financial measures because at a time one measure might be more effective than the other.
   For example: Increase in profit depends on revenue growth and cost reduction. The fact is that revenue growth results mainly from non-financial variables like the quality of products, after-sale-service, aggressive marketing, etc. As regards cost reduction, it also depends on mainly non-financial variables like material acquisition and handling, power usage, labour productivity, cycle time, maintenance, etc. Thus, achieving balance between the financial and non-financial measures is not justifiable.

2. The Balanced Score Card as a comprehensive performance measure also does not cover all aspects of an organisation such as employees, suppliers and community's contribution and employees' commitment and motivation in organisational performance.
3. Since the Balanced Score Card is largely based on 'empiricism,' it, therefore, suffers from mismatch between the theory.
4. The opponents of the Balanced Score Card also argue that the implementation of Balanced Score Card is subjected to doubt as most of the employees in organisations are not well aware of its philosophy itself.

10.6 History of the Balanced score card

The history of Balanced score card in India is short and there have so far been limited studies on Balanced Score Card in India with mixed experiences (Batra 2006).

Among the most renowned companies in India that have adopted the Balanced Scorecard are: Godrej-GE Appliances Limited, Nerolac Paints Limited, Philips Electronics, Infosys Technologies, Tata Consultancy Services, Castrol India, Taj Group or India Hotels.

The common model of the Balanced Score Card, as developed by Kaplan and Norton (1996), evaluates organisational performance on four perspectives; customer, learning and growth, internal business processes, and financial. Each perspective includes specific objectives, measures also called metrics, target values of those measures, and specific initiatives to be taken to achieve the set targets.

A brief mention about each of these perspectives seems pertinent.

1. **Customer Perspective:** Organisational existence and success or otherwise largely depend on customer satisfaction resulting in more demand for products, more revenue, and finally more profits, i.e., financial performance. This necessitates the organisations to know:

   How should we appear to our patrons- customers?
   How do they actually find us?
   Accordingly, the most critical and crucial indicators under customer perspective are customer satisfaction, customer retention, customer profitability, and market share of the organisation.

5. **Learning and Growth Perspective:** In the continuously changing business environment, human resources need to learn new knowledge to adapt to changes and sustain it. This underlines the need for employees' training and development of internal capabilities of human resources to remain capable and competitive in the corporate world. For this, organisations need to ask and answer some vital questions like:
   - Are our human resources capable and innovative enough to sustain and manage continuous changes and improvements in business environment?
   - Are we creative and innovative enough to continuously create and add value for our esteemed customers?

Accordingly, the key indicators of this process for determining metrics include employee satisfaction, employee commitment and involvement, employee retention, and finally employee performance.

6. **Internal Process Perspective:** This primarily refers to issues relating to production process ensuring the quality of goods and services offered to meet the customers' requirements, creating value for them, and giving customer delight. Accordingly, this perspective addresses various crucial issues like:

   - Are our business processes up to the mark as per the requirement of the time?
   - What are still weak areas, if any, that need improvement?

   This requires organisation to determine metrics for the internal processes including cycle time, quality performance, productivity, after-sales services, attending customer complaints, etc.

7. **Financial Perspective:** The financial performance is affected by non-financial measures such as customer satisfaction, employee training and development, and quality improvement in production process. Therefore, one major question an organisation needs to clearly answer is:

- How does and should the organisation appear to its shareholders?

To answer to this question, organisation needs to determine certain metrics such as profit margin, return on capital employed, return on investment, and value of per share. Each perspective includes four elements: objectives, measures, targets, and initiatives. A brief mention about each of the four elements follows:

- **Objectives**: The organisation sets specific objectives to be achieved under each perspective. Setting a specific objective of creating customer delight may be specific objective set under the customer perspective.
- **Measures**: Measures also termed as 'metrics' are the indicators used for measuring progress in achieving the objective. For example, the profitable growth under the financial perspective might be measured by increase in profit or increase in share price.
- **Targets**: Targets are values in quantitative terms to be used for measuring the achievement of the objective. Determining that during the next five-year period profits should increase at 5% per annum, might be an example of targets.
- **Initiative**: Initiatives are thoughtful and deliberate actions and efforts needed to be taken to achieve the targets. For example, imparting training to sales personnel on customer relationship to achieve a 5% growth in sales in the next two years may be the examples of initiative.

10.7 How Balanced Score Card work? Or How to Build and Implement the Balanced Score Card?

For example, Infosys Technologies Ltd., one of the world's top IT companies, also implemented the Balanced Score Card. The underlying philosophy behind using Balanced Score Card in measuring performance was to follow a holistic approach towards implementing strategy since in an organisation every function is important and no one

role is less significant than the other. Major benefits were derived by Infosys Technologies Ltd. by implementing a balanced score card framework.
The building and implementation of Balanced Score Card as an effective measure to transform organisational mission and vision in to reality involve a nine-step process as discussed below:

- **Assessment:** The development of the Balanced Score Card begins with an assessment of the organisational mission and vision, challenges, driving forces, culture, and values and communication of the same across the organisation.
- **Strategy:** In step 2, the business strategy is designed to align business activities with organisation's mission and vision.
- **Objective:** At this step, the specific objectives to be achieved are set for each perspective of the organisation. In order to transform objectives into reality, these are set up in SMART approach based on the logic: "You cannot improve on what you cannot measure." Finally, the objectives of all perspectives are merged together to develop one wholesome set of strategic objectives for the organisation as a whole.
- **Strategy Map:** In step 4, a map depicting organisation's strategies called 'strategy map' is developed to ensure the smooth implementation of strategy. The strategy map shows the specific ways by which an organisation actually creates value for its customers and stakeholders.
- **Performance Measures:** At this step, performance measures are developed for each of the enterprise-wide strategic objectives based on both lagging and leading measures.
- **Initiatives:** In step 6, perspective-wise suitable initiatives are developed to translate the business strategy into reality.
- **Automation:** As the nomenclature of step itself denotes, the implementation process starts in an automatic manner. Performance measurement software is applied to get the right performance information to the right people at the right time.
- **Cascade:** In this step, the organisation-level scorecard (First Tier) is 'cascaded' down into business scorecards (Second Tier) and then to team and individual scorecards (Third Tier). The rationale behind cascading scorecard lies in the fact that it translates high-level strategy into lower- level objectives, measures and operational details.
- **Evaluation:** In this last step, the scorecard is now evaluated considering the issues like:
  Whether organisational strategies have been effectively working or not?
  Whether we have been measuring the right things in right manner or not?

10.8 Balanced Scorecard in Corporate India

- Though the phrase balanced scorecard was coined in the early 1990s, the roots of this type of approach are quite deep. These include the pioneering work of General Electric on performance management reporting in the 1950s and the

work of French process engineers (who created the Tableau de Bord-literally, a dashboard of performance measures) in the early part of 20th Century.

- ❖ Hepworth (1998) has studied the application of the Balanced Score Card in the UK to achieve 'competitive advantage.
- ❖ Joshi (2001) has also reported that corporate India was under compulsion to adopt contemporary management techniques including the Balanced Score Card in order to ensure the survival and maintain the competitive advantage in today's highly competitive business environment.
- ❖ Gupta, Sarkar and samanta (2004): Recognising the strategic relevance and significance of the Balanced Score Card, increasing number of organisations has been using the Balanced Score Card as a measurement and management technique world over including India.
- ❖ That the nitty-gritty of the Balanced Score Card can be better understood by having the knowledge of experiences gained by corporations using the Balanced Score Card in India, we are presenting here the practice of Balanced Score Card in some organisations in India and feedback on it.
- ❖ The history of Balanced Score Card in India is short and there have so far been limited studies on Balanced Score Card in India with mixed experiences.
- ❖ Among the most renowned companies in India that have adopted the Balanced Scorecard are: Godrej, GE Appliances Limited, Godless Nerolac Paints Limited, Philips Electronics, Infosys Technologies, Tata Consultancy Services, Castrol India, Taj Group or India Hotels (Singh and Kumar 2007).

Case-1: A research study conducted by Anand et.al. (2005) about the state of Balanced Score Card adoption in 53 companies revealed some interesting findings:

- The Balanced Scorecard adoption rate is above 45% in corporate India which compares favourably with 43.90% even in the US.
- The financial perspective has been found to be the most important one (87.5%) followed by the customer perspective (66.6%), internal business perspective (54.2%) and learning and growth perspective (54.2%) in that order.
- Management performance scorecard with respect to environmental and social perspectives, the Indian companies have been found monitoring the indicators as per ISO 14000 norms.
- The establishment of the cause-and-effect relationship among perspectives has been found the most critical aspect in the implementation of Balanced Score Card in Indian corporations.
- Most companies recognised that the implementation of the Balanced Scorecard has proved useful in cost reductions and the bottom-line Improvement.

Case-2: According to Anderson and Linen (1999) In a research study on management accounting practices of 14 Indian firms, the researchers found that the maximum significance in gathering information was assigned to the aspects such as customer satisfaction, competitors' performance, and internal process in that order.

Case 3: In another study covering 60 large and medium-sized manufacturing firms working in India, it was found that financial measures such as return on investment, variance analysis, and budgetary control were assigned greater significance and customer

satisfaction and other non-financial measures moderate significance in performance management and evaluation (Joshi 2001: 85-109).

Case 4: The Commercial Vehicle Business Unit (CVBU) of Tata Motors, the first Indian company to have implemented the Balanced Score Card in India, was inducted in the Balance Scorecard Hall of Fame offered by the Balanced Scorecard Collaborative, Inc.
The implementation of the Balanced Scorecard in CVBU of Tata Motors has given greater focus on defining, cascading, and communicating strategies across the organisation. The scorecard incorporates safety, quality, delivery, cost and morale (SQDCM) and also volume, market share, customer satisfaction, dealer satisfaction and receivables (VMCDR). Ravi Kant, the executive director, CVBU, Tata Motors, said, "While we were conscious of the benefits of the Balanced Scorecard when we began. One of the greatest problems in implementing the Balanced Score Card faced by corporate India is the difficulty in assigning the appropriate weightage to the different perspectives and then establishing the true and fair cause and effect relationship among them. The reason is that all perspectives are inter-related and inter-dependent and, therefore, to ascertain or assign true weightage to an individual perspective is difficult.
Implementing it three years back, we are extremely pleased that it has helped us achieve significant improvements in our overall performance. I am quite positive that the Balanced Score Card will play an important objective to become a world-class organisation.

Case-5: Implementation of Balanced Score Card in Godrej-GE Appliances has mixed experiences (Singh and Kumar (2007). The positive experiences of Balanced Score Card include:

1. All the supply chain initiatives tied to the balanced scorecard on supplier management have added significant improvement to the bottom line, with a gross impact of over 19 crores in savings.
2. Nearly three-fourths (72%) of the suppliers are below the 1,000 parts per million defects (4.5 Sigma) benchmark.
3 The process has resulted in a strong upstream supply chain and an improved vendor base backbone. The costs take out and value engineering process has contributed to over ₹5 crore. As a matter of fact, the company has ultimately reported a profit of 21 crore in 1998-1999 against 3 crores in the year 1997-1998.

However, the negative experiences of Godrej-GE Appliances relating to Balanced Score Card implementation include:

1. Inaccurate assumptions on account of a change in the strategic context.
2. The second-level drivers in the organisation could not be duly educated due to the time constraint.
3. The company fell short of the targeted bottom line to the tune of about ₹21 crore.

Case 6: Gumbus and Bridget (2002) studied the implementation of Balanced Score Card in Philips Electronics, a large multinational company. The company followed top- down approach in building its Balanced Score Card and started its use in all divisions and companies the world over.

The company identified the following four critical success factors (CSFs) for developing its Balanced Score Card (see Table 1).

Financial	Process	Customer	Competence
Economic profit-realised Income from operations Working capital	Percentage reduction in process cycle time Number of engineering changes Capacity utilisation Process capability	Rank in customer survey Repeat order rate Complaints Brand index	Leadership competence Percentage of patent protected turnover Training days per employee Quality improvement team participation.

The Philip's experience of implementing the balanced scorecard showed that all units faced with six common indicators:

- Profitable Revenue Growth;
- Customer Delight;
- Employee Satisfaction;
- Drive To Operational Excellence;
- Organisational Development, And It Supports.

Case-7: Infosys Technologies Ltd., one of the world's top IT companies also implemented the **Balanced Score Card**. The underlying philosophy behind using **Balanced Score Card** in measuring performance was to follow a holistic approach towards implementing strategy since in an organisation every function is important and no one role is less significant than the other.

The major benefits derived by Infosys Technologies Ltd. by implementing a Balanced Score Card framework include the following:

(1) Facilitates communication across the entire organisation and enhances the understanding of the vision, mission, and strategy of the organisation.
(2) Ties the vision, mission, and strategy to the goals and objectives of individuals and departments concerned.
(3) Facilitates a clear understanding for the reasons and helps identify initiatives to achieve the relevant performance, if an objective is not attained.
(4) Acts as an effective basis for resource allocation with focus on both managing current performance as well as long-term value.

10.9 Problems in implementing the Balanced Score Card

However, the implementation of Balanced Score Card is beset by certain problems also.

1. One of the greatest problems in implementing the Balanced Score Card faced by corporate India is the difficulty in assigning the appropriate weightage to the different perspectives and then establishing the true and fair cause and effect relationship among them. The reason is that all perspectives are inter-related and

inter-dependent and, therefore, to ascertain or assign true weightage an individual perspective is difficult.
2. The other major difficulty is assigning true weightage to different measures within each perspective and quantifying them accurately.

10.10 Prerequisites are necessary for the Successful Implementation

The experience of companies using the Balanced Score Card in India and elsewhere in the world shows that certain conditions or prerequisites are necessary for the successful implementation of the Balanced Score Card. These include:

1. Dolce mining the critical success factors (CSFS)
2. Converting CSFs into measurable objectives, also called metrics.
3. Establishing a sound communication system to disseminate the advantages of the Balanced Score Card at all levels of organisation
4. Developing and linking the Balanced Score Card across the organisation
5. Devising and establishing a simple but sound monitoring system
6. Dedicated commitment and continuous and unflinching support from the top management

10.11 History of Economic Value Added (EVA)

- Economic Value Added (EVA) Reporting was developed and registered by a New York-based consulting firm, Stern Steward & Co in 1990 to promote value-maximising behaviour in corporate managers.
- It is a single, value- based measure that was intended to evaluate business strategies, capital projects and to maximise long-term shareholders wealth.
- The concept of Economic Value Added (EVA) is closely related to the concept of residual income of economics. Economic Value Added is a financial performance measure that comes closer than any other measure in disclosing the true economic profit of an enterprise.
- EVA is a performance measure, which reflects the impact of the performance on the shareholders' wealth. Economic value-added measures the profitability of a company after taking into account the cost of capital.
- It is the post-tax return on capital employed (adjusted for the tax shield on debt) less the cost of capital employed. Companies which earn higher returns than cost of capital known as value creator, and companies which earn lower returns than cost of capital are deemed destroyers of shareholder value.

- **Formula: EVA= NOPAT- (WACC *CE)**

Here, NOPAT Net operating profit after tax, WACC Weighted average cost of capital, CE= Capital employed

10.12 Meaning of Economic Value Added (EVA):

- EVA is developed by Stern, Stewart and Company as a measure of corporate value creation.

- ❖ EVA is management of a company generates returns that over the opportunity cost of capital. EVA is a tool for measuring the return on investment.
- ❖ EVA refers to the excess of return over the cost of capital. EVA is also known as Shareholders' Value Added. EVA improves if Operating profits grow without employing more capital, implying greater efficiencies. Additional capital is invested in projects that return more than the cost of capital. Capital is curtailed in activities that do not cover its costs- minimizing or eliminating unproductive capital.

10.13 Objective and Uses of Economic Value Added (EVA):

The basic objective of an enterprise is to maximize shareholders' wealth. EVA helps managers to incorporate this into their decision-making. The value of a company depends on the extent to which investors expect the EVA to grow year on year. A sustained increase in EVA will increase the market value of the company, and this results in a continuous increase in shareholders' wealth.

There are three ways to increase EVA and, thereby, the shareholders' wealth.
1. Improve operating efficiency, so that higher NOPAT can be achieved.
2. Invest capital in projects where the rate of return is greater than cost of capital.
3. Withdraw capital from projects where the rate of return is less than cost of capital.

Bausch & Lomb Inc., The Coca-Cola Company, and Whirlpool Corporation are some well-known companies that use EVA.

- ❖ In order to maximize shareholders value, decisions must be made as to how best to allocate capital, how to evaluate investment opportunities and how to measure performance.
- ❖ EVA provides a suitable framework to owners and executives for the allocation of capital among business units, the measurement of corporate performance, and the determination of executive incentive compensation.
- ❖ EVA measures value added creation is based on the premise that to create value a company must earn more than its cost of capital.

10.14 Advantages of Economic Value Added (EVA)

- ❖ Easy to calculate
- ❖ Less subject to manipulation than earnings per share
- ❖ Less variable than accounting earnings
- ❖ Can be easily adapted across industries or countries
- ❖ Adjustments to net operating profit can be custom-tailored to reflect company/ industry specific facets Measures if an executive is generating company earnings greater than comparably risky portfolio of debentures and equity. If he can grow the company by investing in profitable projects and/or by minimizing the cost of capital, then the company and its owners will enjoy rising economic value added (EVA) causes the manger to adopt the mentality of a business owner, adopt sound long-term decisions and to operate with a renewed sense of urgency.
- ❖ It makes a number of adjustments to conventional earnings in order to eliminate accounting anomalies and bring them closer to true economic results.

- ❖ It allows the design of incentive compensation systems for managers based on improvements in EVA. Under an EVA bonus plan, the only way managers can earn more money is by creating greater value for shareholders.
- ❖ EVA helps in achieving goal congruence between managers and shareholders as it links the compensation and incentives of managers and other employees with the EVA measures.
- ❖ It provides better goal congruence than ROI.
- ❖ It facilitates communication and cooperation among divisions and departments by providing a common language for employees across all corporate functions. This helps to improve the organizational culture.
- ❖ EVA helps to link the strategic planning function with the operating divisions, and it eliminates the mistrust that typically exists between the operations and finance departments.
- ❖ It provides significant information beyond traditional accounting measures like Earning per Share (EPS), Return on Assets (ROA), and Return on Equity (ROE).
- ❖ It streamlines and speeds up the decision-making process.

10.15 Limitations of Economic Value Added (EVA)

In spite of all the benefits just mentioned, EVA does have some drawbacks. The limitations are:

- ❖ It is based on financial accounting methods which can be manipulated.
- ❖ It does not take into consideration size differences across plants or divisions.
- ❖ Too high an emphasis on EVA may make managers focus on short-term results. This may reduce the focus on innovation.

10.16. Formula and Calculation of Economic Value Added (EVA)

EBIT	✓
Less Interest	✓
EBT	✓
Less Tax	✓
PAT	✓
Add Interest (Net of Tax)	✓
Net operating profit after tax	✓
Less Cost of Capital	✓
Economic value added	✓

Explanation:

1. ***Average capital employed*** =
   Opening + Closing Capital employed/2
2. ***Capital employed (CE)*** =
   Equity shares capital (E) + Preference shares capital (P) + Long Term Borrowing (LTB)

3. ***Equity*** =
   Equity shares capital and reserves and surplus, excluding revaluation reserve. This is also called of equity book value of equity.

4. ***Long Term Borrowing =***
   Debt instruments, which are contractually payable after one year.
5. ***Weighted Average Cost of Capital (WACC)*** =

   Cost of Equity + Cost of Debt
6. *Cost of Equity (Ke)* = Risk Free Rate + Beta factor (Long Run Market Rate - Risk Free Rate)

7. ***Beta (B)*** = Beta (***β***) is used as a risk indicator in market model. It is responsiveness of stock return or portfolio return to market return. Value of beta depends on the degree of corresponding changes in share price, when Index changes. It is the slope of the regression line or regression coefficient. Always maximum of yearly beta of a company should be taken to play safe.

8. ***Market return =*** Market return helps to decide the opportunity cost of equity. Individual equity shareholder expects that the share in which he has invested should at least earn the market return at a risk similar to that assumed by the market. This means achieving market return with ***(β).***

9. Cost of Debt (K) =
Interest on LTB (1-tax rate) 100

Illustration-1: Following information is given to you by SKW Limited:

- Earnings before interest and tax: 3,50,000
- Equity Capital Rs. 4,50,000
- Reserves and surplus Rs. 3,00,000
- 10% Debentures Rs. 10,00,000
- Dividend at the end of the year (D_1) Rs. 35 per share
- Market value of Shares Rs. 1,400 per share
- Growth rate 15%
- Income tax rate 30%.

Solutions:

Calculation of Cost of Equity:
(Ke = cost of Equity)

Ke = cost of Equity D1+g MV	Ke =35+0.15/1400	**17.50%**	
Kd = cost of debts Interest less tax on interest Market value of debts	1,00,000-30,000 Rs 10,00,000	**7%**	
Cost of capital Capital:	Amount Rs.	**Specific cost**	Cost of capital
Equity share Capital 10% Debentures Rs. Total	7,50,000 10,00,000 17,50,000	**17.5%** **7%**	1,31,250 70,000 2,01,250
Ko =	2,01,250 x100 17,50,000	**11.50**	
Finally, calculation of EVA:			
EBIT		3,50,000	
Less Interest	10,00,000 *10%	1,00,000	
EBT		2,50,000	
Less Tax	2,50,000*30%	75,000	
PAT		1,75,000	
Add Interest (after Tax)	1,00,000-30000	70,000	
Net operating profit after tax		2,45,000	
Less Cost of Capital	17,50,000*11.5%	2,01,250	
Economic value added		43,750	

Shareholders are equally also interested in the tangible as well intangible assets, which are responsible for the shareholders' value creation were even those who are not included in the financial statements of the companies. At international level Brand contributed per more than 60 percent of the market capitalisation of the all leading US companies and out of 50 top rank brands 30 In brands alone belong to US-based companies. In India, brand valuation is not as popular when compared to international level, but few Indian companies are valuing their brands for the benefit of potential investors and their existing shareholders as a part of fair reporting and disclosure practices. Companies such as in Infosys Technologies Ltd and Satyam Tech Mahindra are providing information about brand in their annual reports.

10.17 Indian Corporates and EVA Reporting

Infosys is using EVA for the better corporate information system, Marico industries are using it as singling device that capital is important and better utilisation, Dr Reddy's EVA is criterion for various rewards, such as pay hike, stock options and performance bonus. Tata Consultancy Services explains the part EVA plays in transforming TCS from an Indian enterprise with a global reach to a truly global organisation. Their firsthand experience of the tool was a revelation of the fact that EVA results in an enlarged pie which benefits both the individual and the organisation. For the Godrej Group, EVA has been a tool to measure, motivate, manage and finally, overhaul the mindsets of people.

INFOSYS	EVA is used as a tool to tell its clients that the value delivered by Infosys is greater than what the client pays for.
MARICO	As a signalling device to tell its employees that capital is important.
Dr. REDDY'S LAB	As a qualifying criterion to grant rewards such a variable pay, stock options and performance bonuses.
TCS	Here EVA is linked to compensation and has been implemented in great detail.
BHEL	EVA linked with the company's Business strategy and values along with discharge of economic and social responsibility.
HERO HONDA	EVA linked with the performance appraisal and reward to the employees and analyse value creation process.
HUL	Used EVA as a basis to measure the performance of each of its division. EVA locates performance on the basis of operating profit after charging the cost of capital.
GODREJ	EVA is used not only as financial, but also as a way of structuring performance linked variable remuneration. EVA has been a tool to measure, motivate, manage and finally, overhaul the mindsets of people.

(Source: Compiled from annual reports of the sample companies).

EVA is new tool to measure companies' true earning capacity in the modern competitive era. EVA supported corporate entities to increase the profitability with the help of minimisation of the wasteful activities. It also enhances the good governance and reporting and disclosure practices of the corporate in the information age. To increase EVA, a company can improve its efficiency, reduce its cost of capital, or increase its capital. It's an issue of both quality and quantity.

Over the last one decade, companies in India have paid a great deal of attention to improving their EVA. Many companies they are reorganising Capital employed, their capital structure and sound working capital management. As far as shareholders point of view is concerned, EVA is a new tool to measure their real wealth creation rather than simple profitability and uniform reporting and disclosing practices of Indian companies create a right environment for transparent reporting practices.

10.18 Market Value Added (MVA)

Market value added or MVA is a measure of the amount of wealth a company has created since its inception. It is an extension of EVA. MVA itself is the stock market's assessment of the net present value (NPV) of EVA. In other words, MVA is the difference between the market value of a company (which includes both equity and debt) and the capital that lenders and shareholders have invested in the company over the years. To put it more simply, MVA is the difference between what investors have invested to buy the shares and what they can get back by selling the shares at today's price. A positive value of MVA signifies that the company has increased the value of capital invested with it by the shareholders and has been successful in increasing shareholder wealth. On the other hand, a negative value of MVA means that the company has decreased the value of capital invested with it by the shareholders. General Electric, Microsoft Corporation, and Wal-Mart Stores Inc. are among the top- rated companies in the US based on MVA.

Market Value Added (MVA) - 1-C

Market value Added (MVA) is the difference between the current market value of a firm and the capital contributed by investors. If MVA is positive, the firm has added value. If it is negative the firm has destroyed value. To find out whether management has created or destroyed value since its inception, the firm's MVA can be used:

Market value of capital employed

This calculation shows the difference between the market value of a company and the capital contributed by investors (both bondholders and shareholders).

In other words, it is the sum of all capital claims held against the company plus the market value of debt and equity. Calculated as:

The higher the MVA, the better. A high MVA indicates the company has created substantial wealth for the shareholders. A negative MVA means that the value of the actions and investments of management is less than the value of the capital contributed to the company by the capital markets, meaning wealth or value has been destroyed. The aim of the company should be to maximize MVA. The aim should not be to maximize the value of the firm, since this can be easily accomplished by investing ever-increasing amounts of capital following situation:

(1) If, MVA >0 →The Market Value of the capital is greater than capital invested, so company can create the value, i.e., positive situation
(2) If, MVA <0 not creates the value, i.e., negative situation)
(3) If, MVA=0 The market value of the capital is equivalent to capital invested, so company doesn't create or destroying any value, i.e., neutral position. if MVA=0 The market value of the capital is less than capital invested.

Illustration-2: The capital structure of W limited whose shares are quoted on the NSE is as under.

Particulars	
Equity shares of Rs. 100 each fully paid	Rs. 505 lakhs
9% convertible Preference shares of Rs. 10 each	Rs. 150 lakhs
12% Secured Debentures of Rs. 10 each	Rs 5,00,000
Reserves	Rs. 101 lakhs
Statutory fund	Rs. 50,50,000

The statutory fund is compulsorily required to be invested in Government securities. The ordinary shares are quoted at a premium of 500%; Preference shares at Rs. 30 per share and debentures at par value.

You are required to ascertain the market value added of the company and also give your assessment on the market value added as calculated by you.
Solution: market value added (MVA) -2,68.5 lakhs

Assessment on the market value added (MVA)

Particulars	**Calculations:**	**Amounts in lakhs**
Equity share capital: market value	505 lacs x 60	3030
Preference share capital	15 lacs x 30	450
Debentures: **Current Market value: A**		50 **3530**
Less: Equity share capital	505	
Preference share capital	150	
Reserves	101	
Debentures	50	
Statutory reserves	50.50	
Current Market value: B		**856**
Market value added (A-B)		**2673.50**

Positive MVA implies that management of W limited has created wealth for its shareholders and market investors are willing to pay a price greater than the historical net worth of the company.

10.19 Shareholder Value Added (SVA)

1. Shareholder Value-Added (SVA) represents the economic profits generated by a business above and beyond the minimum return required by all providers of capital,
2. "Value" is added when the overall net economic cash flow of the business exceeds the economic cost of all the capital employed to produce the operating profit.

3. Therefore, Shareholder Value-Added integrates financial statements of the business (profit and loss, balance sheet and cash flow) into one meaningful measure.
4. The Shareholder Value-Added approach is a methodology which recognizes that equity holders as well as debt financiers need to be compensated for bearing investment risk.
5. The Shareholder Value-Added methodology is a highly flexible approach to assist management in the decision-making process.
6. Its applications include performance monitoring, capital budgeting, output pricing and market valuation of the entity.

Advantages:

1. Value-based performance measures result in greater accountability for the investment of new capital, as well as for the use of existing investments.
2. Organization shall have the opportunity to apply a meaningful private sector benchmark to evaluate performance.
3. Managers will be provided with an improved focus on maximizing shareholder value.

Limitations

1. Enterprises subject to any degree of price regulation shall not be able to adjust output prices to achieve a commercial return in response to upward movements in input prices which may result in SVA getting reduced even though there may have been no decrease in overall efficiency.
2. Requires understanding of the value drivers and activities specific to a given firm. As we know that there are various ways to create the shareholder value traditional (EPS, ROI, EPS/DPS analysis) as well as innovative techniques (TSR, EVA, MVA, CVA etc), but EVA is one of the important tools to measure shareholder value creation with the benchmark of the cost of capital. There are many Indian companies which are also using EVA for the different managerial aspect.

❖ EXERCISE

SECTION –A

1. Define Balanced Scorecard (BSC) and Discuss Characteristic of Balanced Score Card?
2. Explain the Philosophy behind Balanced Scorecard?
3. Explain the Disadvantage of The Balanced score card?
4. Write short note on Aspects of the Balanced Score Card?
5. How to Build and Implement the Balanced Score Card? Explain.
6. How work balance score card? Explain.
7. Discuss present status of Balanced score card in Corporate India?
8. What are Problems in implementing the Balanced score card?
9. What Prerequisites are necessary for the successful implementation?
10. What is Economic Value Added (EVA)?
11. Discuss Advantages and Limitations of Economic Value Added (EVA)?

12. Explain Formula and Calculation of Economic Value Added (EVA) with practical illustration?
13. What is role of EVA Reporting in Indian Corporates? Explain.
14. Explain the Market Value Added (MVA) and shareholder value added (SVA)?
15. Following information given to you by ABC limited:

Particulars	Amount
EBIT	3,50,000
Capital Structure:	
Equity Share Capital	Rs.4,25,000
Reserves and Surplus	Rs. 3,25,000
10% Debentures	Rs. 10,00,000
Dividend at the end of the year [D-1]	Rs. 35 per share
Market value of shares	Rs. 1,400 per share
Growth rate	15%
Income tax rate	15%
Income tax rate	30%

Calculate economic value added with the help of above information.
Answer: Economic value Added: 43,750.

16. VS limited provides you with the following as at 31St march 2024. (Rs in lakhs)

Liabilities	Amounts	Assets	Amounts
Equity Share Capital	1000	Fixed Assets	3000
Reserves and Surplus	2000	Investment	150
Long term debt	200	Current Assets	100
Sundry creditors	50		
Total	3250		3250

Additional information Provide is as follow:

1. EBIT (profit before interest and tax Rs 1000 (Rs in Lakhs)
2. Interest: Rs 20 (Rs in Lakhs)
3. Tax: 35.875%
4. Risk free rate: 10%
5. Market rate: 15%
6. Beta (β) factor -1.4%

Compute EVA.

Answer:

- Cost of equity :10+1.4 (15%-10%) = 17 %.
- Cost of debt: 6.4125 %
- Cost of capital: (522.825*100/300=16.34%)
- EVA: NOPAT 641.250 -WACC 522.88 =118.37 Rs.

SECTION: B

Answer the following question from option:

1. What is the formula to calculate Economic Value Added?
A) Net profit – WACC B) Revenue - (capital invested x WACC)
C) Net profit, after tax – WACC D) Net profit after tax - (capital invested x WACC)
Answer: D) Net profit after tax - (capital invested x WACC)

2. If you have net profit of Rs.100,000, invested capital of Rs.50,000 and WACC of 10%, what is your economic value added?
A). Rs.50,000 B) Rs. 40,000 C) Rs.10,000 D) Rs.95,000
Answer: D) Net profit after tax - (capital invested x WACC)
1,00,000 - (50,000 *10%) = Rs.95,000

3. Market value added is the difference between
(A) EPS and Price Earning per share
(B) Cost of capital and economic value added
(C) The Company's adjusted value for inflation and book value of various assets
(D) The Company's market and book value of shares.
Answer: (D) The Company's market and book value of shares.

4. _____ represents the economic profits generated by a business above and beyond the minimum return required by all providers of capital.
(A) Shareholder Value Added (SVA) (B) Economist Value Added (EVA)
(C) Market Makers Value Added (MMVA) (D) Debt holders Value Added (DVA)
Answer: (A) Shareholder Value Added (SVA)

5. _____can be defined as the value created by the activities of a firm, that is, sales less the cost of bought-in goods and services.
(A) Economic value added (B) Value added,
(C) Market value-added (D) Shareholders value-added
Answer. (B) Value added,

SECTION: C

Answer the following questions:

1. What is EVA?
2. What is balance scorecard?
3. What are the components of balance score card?
4. Who developed BSC model?
5. Which companies use Balanced Score Card most?
6. What are benefits of Balance Score Card?
7. How will you explain market value added?
8. Do you know about shareholder value added?
9. How will use balance score card?
10. Explain how will you understand formula of EVA?

BAOU
Education for All

યુનિવર્સિટી ગીત

સ્વાધ્યાયઃ પરમં તપઃ
સ્વાધ્યાયઃ પરમં તપઃ
સ્વાધ્યાયઃ પરમં તપઃ

શિક્ષણ, સંસ્કૃતિ, સદ્‌ભાવ, દિવ્યબોધનું ધામ
ડૉ. બાબાસાહેબ આંબેડકર ઓપન યુનિવર્સિટી નામ;
સૌને સૌની પાંખ મળે, ને સૌને સૌનું આભ,
દશે દિશામાં સ્મિત વહે હો દશે દિશે શુભ-લાભ.

અભણ રહી અજ્ઞાનના શાને, અંધકારને પીવો ?
કહે બુદ્ધ આંબેડકર કહે, તું થા તારો દીવો;
શારદીય અજવાળા પહોંચ્યાં ગુર્જર ગામે ગામ
ધ્રુવ તારકની જેમ ઝળહળે એકલવ્યની શાન.

સરસ્વતીના મયૂર તમારે ફળિયે આવી ગહેકે
અંધકારને હડસેલીને ઉજાસના ફૂલ મહેંકે;
બંધન નહીં કો સ્થાન સમયના જવું ન ઘરથી દૂર
ઘર આવી મા હરે શારદા દૈન્ય તિમિરના પૂર.

સંસ્કારોની સુગંધ મહેંકે, મન મંદિરને ધામે
સુખની ટપાલ પહોંચે સૌને પોતાને સરનામે;
સમાજ કેરે દરિયે હાંકી શિક્ષણ કેરું વહાણ,
આવો કરીયે આપણ સૌ
ભવ્ય રાષ્ટ્ર નિર્માણ...
દિવ્ય રાષ્ટ્ર નિર્માણ...
ભવ્ય રાષ્ટ્ર નિર્માણ

DR. BABASAHEB AMBEDKAR OPEN UNIVERSITY
(Established by Government of Gujarat)
'Jyotirmay' Parisar,
Sarkhej-Gandhinagar Highway, Chharodi, Ahmedabad-382 481
Website : www.baou.edu.in