COSTING MARATHON CMA INTER

Chapter 1 Introduction

Cost Accounting: process of accounting for cost which begins with the recording of income and expenditure and ends with the preparation of periodical statements ascertaining costs.

Costing: the technique and process of ascertaining per unit cost of goods and services

Cost Accountancy: presentation of information for the purpose of managerial decision making.

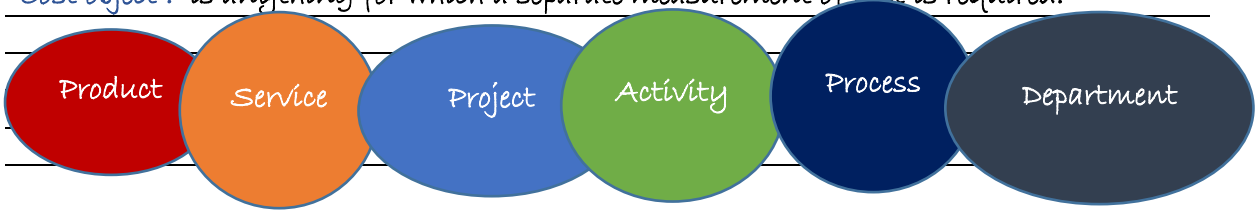
Management Accounting: assists management by provision of relevant information for planning, organising, controlling, decision making etc.

Cost: amount of expenditure (actual or notional) incurred on or attributable to a specified article, product or activity.

OBJECTIVES OF COST ACCOUNTING

- Ascertainment of Cost
- Determination of Selling Price and Profitability
- Cost Control
- Cost Reduction
- Assisting Management in decision Making

Cost object : is anything for which a separate measurement of cost is required.



Cost Unit: It is a unit of product, service or time in relation to which costs may be ascertained or expressed.

Industry	Cost Units
Automobile	Number
Cement	Ton/ per bag etc.
Chemicals	Litre, gallon, kilogram, ton etc.
Power	Kilo-watt hour (kWh)
Steel	Ton
Transport	Passenger- kilometer
Gas	Cubic feet
Brewing	Barrel
Brick-making	1,000 bricks
Coal mining	Tonne/ton
Electricity	Kilowatt-hour (kWh)
Engineering	Contract, job
Oil	Barrel, tonne, litre
Hotel/Catering	Room/meal
Professional services	Chargeable hour, job, contract
Education	Course, enrolled student, succe
Hospitals	Patient day

RESPONSIBILITY CENTRES : To have a better control over the organisation, management delegates its responsibility and authority to various departments or persons. These departments or persons are known as responsibility centres

Types

Cost Centre

held accountable for incurrence of costs which are under its control

Revenue Centres: The responsibility centres which are accountable for generation of revenue for

Profit Centres: These are the responsibility centres which have both responsibility of generation of revenue and incurrence of expenditures

Investment Centres

authority to make capital investment decisions

LIMITATIONS OF COST ACCOUNTING

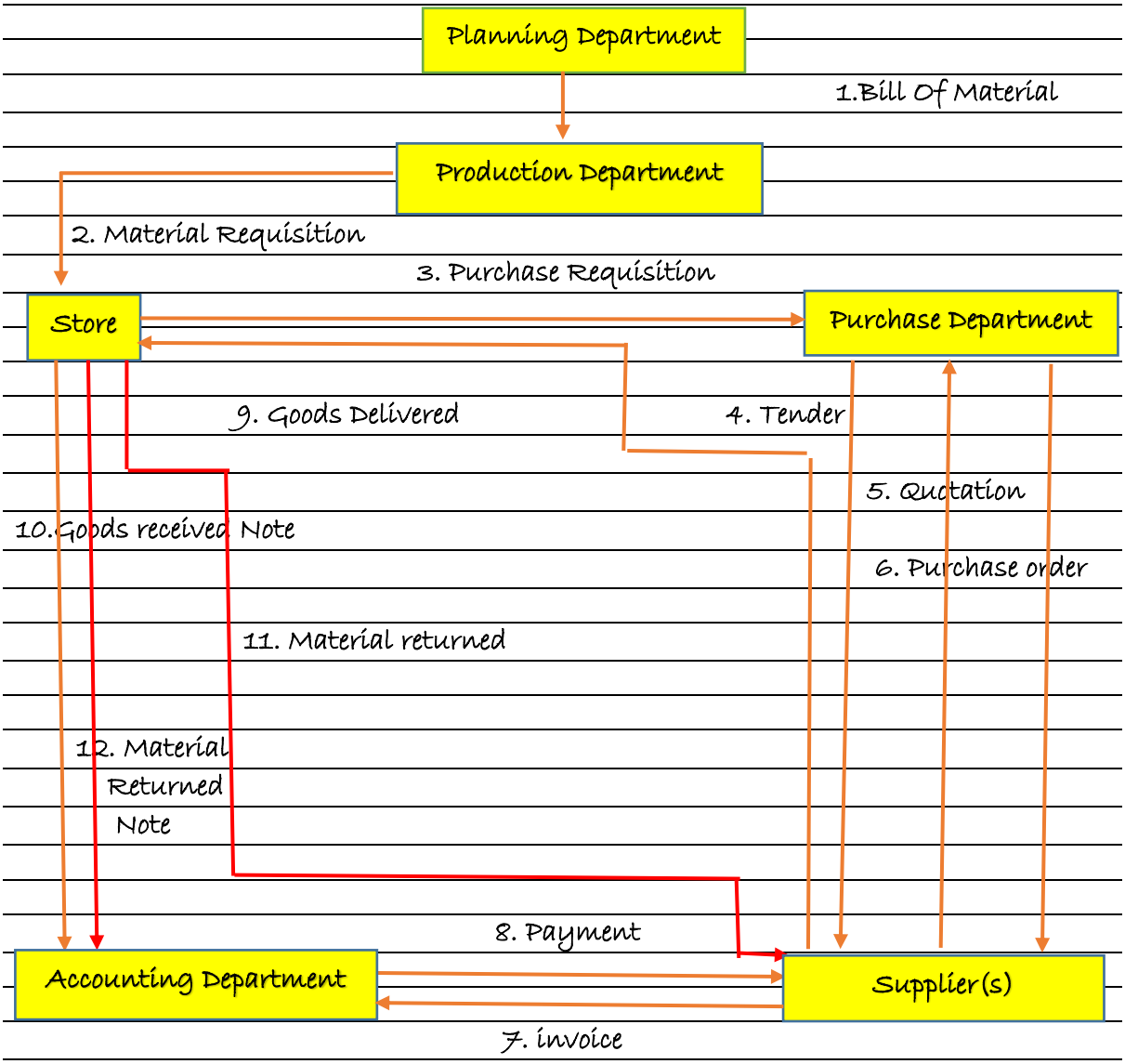
Expensive Requirement of Reconciliation Duplication of Work Inefficiency

Cost Accounting / Financial accounting / Management accounting

Basis	Cost accounting	Financial Accounting	Management Accounting
Nature	Records Quantitative aspects Only	Records Monetary aspect	Records Quantitative and Qualitative aspect
Area	Deals with cost ascertainment	Deals with profit ascertainment	Deals with financial accounting, financial management , taxation
Objective	Records cost of producing a product	Provides information about Financial performance	Provides Information to management for cordination and planning

Chapter 2 Material

Concept 1 : Material Procurement Procedure



Concept 2 Economic Order Quantity

Size Of an order at which total carrying and ordering Cost is minimum

√2xAnnual Demand X Cost Per Order / Carrying Cost per unit per annum

Total Carrying Cost = Average quantity carried in stock x carrying coat per unit p.a.

Average quantity carried in stock = Order size / 2

Total Ordering cost = No. of order x cost per order

No. of order = Annual demand / order size

Q1. Compute E.O.Q. and the total variable cost for the following:

Annual Demand	=	5,000 units
Unit price	=	₹ 20.00
Order cost	=	₹ 16.00
Storage rate	=	2% per annum
Interest rate	=	12%per annum
Obsolescence rate	=	6% per annum

(ii) Determine the total cost that would result for the items if an incorrect price of ₹ 12.80 is used. (SM, ICAI)

Concept 3 Stock Level

ROL = Maximum consumption x Maximum lead time

or(Normal consumption x normal lead time) + safety stock

Maximum Stock = ROL – (Minimum consumption x Minimum lead time) + EOQ

Minimum Stock / Safety stock = ROL – (Normal consumption x Normal lead time)

Average Stock = Maximum stock + minimum Stock /2

Or Minimum consumption + EOQ/2

Danger Level = Average consumption x emergency delivery time

Q2. M/s Tube Ltd. Are the manufacturers of picture Tube for TV. The following are the details of their operation.

Average Monthly Market Demand	2000 Tube
Cost of placing an order	₹ 100

Inventory carrying cost	20% p.a.
Lead item to supply	4-6 weeks
Minimum Usage	50 Tube per week
Maximum Usage	200 Tube per week
Average Usage	100 Tube per week
Cost of Tube	₹ 500 per Tube

Compute

a. EOQ, if the supplier is willing to supply 1500 units at a discount of 5%, is it worth accepting?
b. Maximum level of stock
c. Minimum level of stock
d. Re -Order Level (SM, ICAI)

Solution:

Annual Demand of Raw Material = 100 x 52 = 5200

a.EOQ = √ 2 x Annual Demand x Cost per order / Carrying cost per unit p.a.

EOQ √ 2 x 5200 X 100 /20% of 500 = 101.98 units

b.Statement showing total inventory cost under each alternative

Order size	Purchase Cost	Carrying Cost	Ordering Cost	Total Cost
101.98	5200 x 500 = 26,00,000	(101.98/2) x 100*=5099	(5200/101.98)x100=5099	26,10,198
1500	5200 x 475= 24,70,000	(1500/2) x 95* =71,250	(5200/1500)x100=346.66	25,41,596.66

*20% of purchase cost per unit

Discount offer must be accepted, saving to company ₹ 68,601.34

ROL = Max Consumption x Max Lead Time

200 X 6 = 1200

Minimum Level = ROL - (Normal consumption x Normal Lead Time)

1200 - (100 X 5) = 700

Maximum Level = ROL - (Min Consumption x Min Lead Time) + EOQ

1200 - (50 X 4) + 101.98 = 1101.98

Average Stock = Max Level + Min Level /2

(700 + 1101.98) / 2 = 901

Concept 4 Valuation of Material Received

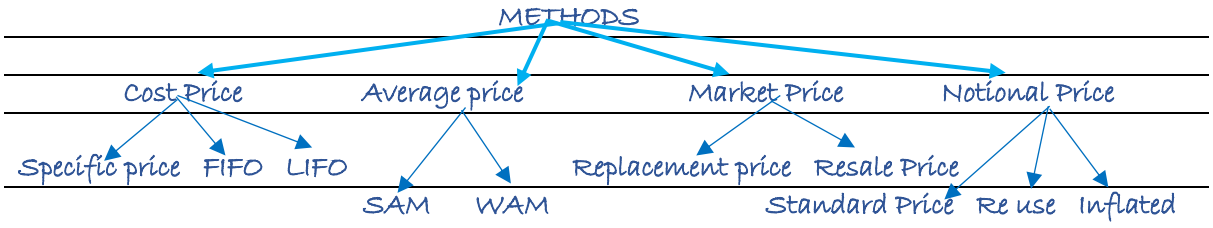
Item	Treatment
Trade Discount	Deducted
Quantity Discount	Deducted
Cash Discount	Not deducted
Subsidy / Grant / Incentive	Deducted
Road Tax / toll tax	Included
GST	
Credit available	Ignore
Credit Not available	Included
Custom duty	Included
Transit Insurance	Included
Demurrage	Included
Penalty / Fine / Detention Charges	Ignore
Freight	Included
Cost of Container	
Returnable	Ignore
Non returnable	Included
Shortage	
Normal	Scrap is subtracted
Abnormal	Cost is subtracted

Q3. An invoice in respect of a consignment of chemicals A and B provides the following information :

	(₹)
Chemical A: 10,000 kgs. at ₹ 10 per kg.	1,00,000
Chemical B: 8,000 kgs. at ₹ 13 per kg.	1,04,000
~~Basic custom duty @ 10% (Credit is not allowed)~~	~~20,400~~
Railway freight	3840
~~Total cost~~	~~2,28,240~~

A shortage of 500 kgs. in chemical A and 320 kgs. in chemical B is noticed due to normal breakages. You are required to determine the rate per kg. of each chemical, assuming a provision of 2% for further deterioration. (SM, ICAI)

Concept 5 Valuation of material Issued



Q4. X Ltd furnishes the following store transactions for July

Date	Particulars	Qty / Rate
1	Opening Balance	200 units value ₹ 2000
4	Receipts from B & Co., GRN No. 11	300 units @ ₹ 12 per unit
7	Issue to production department X Req. no. 101	400 units
10	Receipts from M & Co. GRN 12	400 Units @ ₹ 14 per unit
13	Returned by Deptt X; Issued vide Req no. 101 – MRN No. 21 (This Material was received from B &Co.)	20 Units
16	Returns to B & Co.	10 Units
19	Issues Req No. 102	300 Units
22	Receipts from N & Co. GRN NO 13	200 units @ ₹ 16 per unit
25	Receipts replacement from B & Co. GRN No.14	
28	Issue Req No. 103	300 Units
29	Transfer from job 182 to job 187 in the deptt MTR No. 6	
30	Shortage in stock Taking	20 Units

Required: Prepare the store ledger using FIFO and LIFO Method

Concept 6 Inventory Turnover Ratio

High inventory turnover ratio indicates that the material in the question is a fast moving one. A low turnover ratio indicates over-investment and locking up of the working capital in inventories.

Inventory Turnover Ratio = Raw material consumed / Average quantity of raw material; Raw material consumed = opening stock + purchases – closing stock

Q5. From the following data for the year ended 31st December, 2017, Calculate the inventory turnover ratio of the two items and put forward your comments on them.

	Material A (₹)	Material B (₹)

Opening stock 1.1.20X1	10,000	9000
Purchase during the year	52,000	27,000
Closing stock 31.12.20X1	6000	11,000

Solution:

	Material A	Material B
Raw Material Consumed	10,000+ 52,000 -6000 = 56,000	9000 +27,000 – 11,000 = 25,000
Average Stock	10,000 + 6000 / 2 = 8000	9000 + 11,000 / 2 = 10,000
Inventory Turnover Ratio	56,000 / 8000 = 7 Times	2.5 Times
Nature	Fast Moving	Slow Moving

Concept 7 Stock out Cost

Q6. M/s Tyrotubes trades in four wheeler tyres and tubes. It stocks sufficient quantity of tyres of almost every vehicle. In year end 2017-18, the report of sales manager revealed that M/s Tyrotubes experienced stock-out of tyres.

The stock-out data is as follows :

Stock out of Tyres	No. of Times
100	2
80	5
50	10
20	20
10	30
0	33

M/s Tyrotubes loses ₹ 150 per unit due to stock-out and spends ₹ 50 per unit on carrying of inventory. Determine optimum safest stock level. (SM, ICAI)

Concept 8 Inventory Control Technique

ABC	FSN	VED	HML
As per	As per	As per	As per
Value	frequency usage	Criticality of production	Value of item

Concept 9 Defective / scrap / Spoilage / Waste

Waste: The portion of raw material which is lost during storage or production and discarded.

Scrap: The materials which are discarded and disposed-off without further treatment.

Spoilage: It is the term used for materials which are badly damaged in manufacturing operations, and they cannot be rectified economically and hence taken out of process to be disposed of in some manner without further processing.

Defectives: It signifies those units or portions of production which do not meet the quality standards.

Obsolescence: Obsolescence is defined as "the loss in the intrinsic value of an asset due to its supersession".

Chapter 3 Labour

Concept 1 Labour Turnover

labour turnover in an organisation is the rate of change in the composition of employee force during a specified period measured against a suitable index.

Replacement Method: $\frac{\text{No. of employees replaced during the year}}{\text{Average no. of employees on roll during the year}} \times 100$

Separation method: $\frac{\text{No. of employees separated during the year}}{\text{Average no. of employees on roll during the year}} \times 100$

Flux Method : $\frac{\text{No. of Separations + No. of Replacements}}{\text{Average no. of employees on roll}} \times 100$

Or

$\frac{\text{No. of Separations + No. of Accession}}{\text{Average no. of employees on roll}} \times 100$

Causes of Employee (Labour) Turnover:

Personal causes:

(i) Change of jobs for betterment.

(ii) Premature retirement due to ill health or old age.

(iii) Domestic problems and family responsibilities.

(iv) Discontent over the jobs and working environment.

Unavoidable Causes:

(i) Seasonal nature of the business;

(ii) Shortage of raw material, power, slack market for the product etc.;

(iii) Change in the plant location;

(iv) Disability, making a worker unfit for work;

(v) Disciplinary measures;

Avoidable Causes:

1. Dissatisfaction with job, remuneration, hours of work, working conditions, etc.,
2. Strained relationship with management, supervisors or fellow workers;
3. Lack of training facilities and promotional avenues;
4. Lack of recreational and medical facilities;
5. Low wages and allowances.

Cost of Employees (Labour) Turnover:

Preventive Costs: The cost incurred to prevent employee turnover or keep it as lowest as possible.

Replacement Costs: These are the costs which arise due to employee turnover. If employees leave soon after they acquire the necessary training and experience of good work, additional costs will have to be incurred on new workers

Q1. The following information relates to personnel department of a factory for the month of April 2016

Number of workers on April 1, 2016	950
Number of workers on April 30, 2016	1050
Number of worker who quit the factory in April	10
Number of worker who discharged in April	30
Number of workers engaged in April (Including 120 on account of expansion scheme)	140

Calculate the labour turnover rate and equivalent annual rate under different methods. (Ans. LTR Sep 4%; Rep 2%; Flux 6%; EAR Sep 48.67%; Rep 24.33%; Flux 73%)

Q2. The management of Sunshine Ltd. wants to have an idea of profit lost / foregone as a result of labour turnover last year.

Last year sales accounted to ₹ 66,00,000 and P/V Ratio was 20%. The total number of actual hours worked by direct workers force was 3,45,000. As a result of the delays by the personnel department in filling vacancies due to labour turnover 75,000 potentially productive hours were lost. The actual direct labour hours included 30,000 hours attributable to training new recruits, Out of which half of the hours were unproductive. The cost incurred consequent to labour turnover revealed on analysis the following

	₹
Settlement Cost due to leaving	27,420
Recruitment Cost	18,725
Selection Cost	12,750
Training Cost	16,105

Assuming that the potential production lost due to labour turnover could have been sold at prevailing prices, ascertain the profit foregone / lost last year on account of labor turnover. (Ans. 3,75,000) (SM, ICAI)

Concept 2 Direct / Indirect employee Cost

Direct employee cost	Indirect employee cost	
It is the cost incurred in payment of employees who are directly engaged in the production process.	Cost incurred for payment of employee who are not directly Engaged in production process	
Direct employee cost can be easily identified and allocated to cost unit.	Indirect employee cost is Apportioned on some appropriate basis.	on
Direct employee cost varies with the volume of production and has positive relationship with the volume.	Indirect employee cost may not vary with the volume of production.	

Concept 3 Idle Time

The time during which no production is carried-out because the worker remains idle but are paid.

Causes of Idle time

Normal Idle Time	Abnormal Idle Time
1.The time lost between factory gate and the place of work,	1.Abnormal factors like lack of coordination
2.The interval between one job and Another	2. Power failure, Breakdown of machine
3.The setting up time for the Machine	3. Non availability of raw material, strike
4.Normal rest time, break for lunch	4. Abnormal reason Like flood, fire
Treatment	Treatment
It is treated as a part of cost of Production	shown as a separate item in the Costing Profit & Loss Account

Q3. In a factory working six days in a week and eight hours each day, a worker is paid at the rate of ₹ 100 per day basic plus D.A. @ 120% of basic. He is allowed to take 30 minutes off during his hours shift for meals-break and a 10 minutes recess for rest. During a week, his card showed that his time was chargeable to :

Job X	15 hrs.
Job Y	12 hrs.
Job Z	13 hrs.

The time not booked was wasted while waiting for a job. In Cost Accounting, STATE how would you allocate the wages of the workers for the week?

Solution : Working notes:

(i) Total effective hours in a week:

[(8 hrs. – (30 mts. + 10 mts.)] × 6 days = 44 hours

(ii) Total wages for a week:

(₹ 100 + 120% of ₹ 100) × 6 days = ₹ 1,320

(iii) Wage rate per hour = ₹ 30

(iv) Time wasted waiting for job (Abnormal idle time):

=44 hrs. – (15 hrs. + 12 hrs. + 13 hrs.) = 4 hrs.

Allocation of wages in Cost Accounting

Job	Hours	Amount
X	15	15 X 30
Y	12	12 X 30
Z	13	13 X 30
Abnormal idle time	4	4 X 30

Concept 4 Overtime

Work done beyond normal working hours is known as 'overtime work'.

Overtime premium:

As per the Factories Act 1948 "Where a worker works in a factory for more than nine hours in any day or for more than fourty eight hours in any week, he shall, in respect of overtime work, be entitled to wages at the rate of twice his ordinary rate of wages."

Whichever is beneficial to worker

Q4. Calculate earnings of A and B from the following particulars for a month and allocate labour cost to each job X, Y and Z

	A	B

Basic Wages	₹ 100	₹ 160
Dearness Allowance	50%	50%
Contribution to PF (On basic wages)	8%	8%
Contribution to ESI (On basic wages)	2%	2%
Overtime	10 Hours	-

The normal working hours for the month are 200. Overtime is paid at double the total of normal wages and dearness allowance. Employer's contribution to state insurance and provident fund are at equal rate with employee's contribution. The two workers were employed on jobs X, Y and Z in the following proportions:

Jobs	X	Y	Z
Worker A	40%	30%	30%
Worker B	50%	20%	30%

Overtime was done on job Y

(SM, ICAI)

Treatment:

Causes of overtime	Treatment of overtime premium
At the desire of customer	Charged to job
Due to general pressure of work to increase the output	Charged to general overheads
Due to negligence or delay	Charged to department concerned
Due to circumstances beyond control like	Charged to costing profit and loss account

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Q5. In a factory, the basic wage rate is ₹ 100 per hour and overtime rates are as follows:

Before and after normal working hours	175% of basic wage rate
Sundays and holidays	225% of basic wage rate
During the previous year, the following hours were worked	
- Normal time	1,00,000
- Overtime before and after working hours	20,000
Overtime on Sundays and holidays	5000
Total	1,25,000

The following hours have been worked on job 'Z'

Normal	1000
Overtime before and after working hrs.	100
Sundays and holidays	25
Total	1125

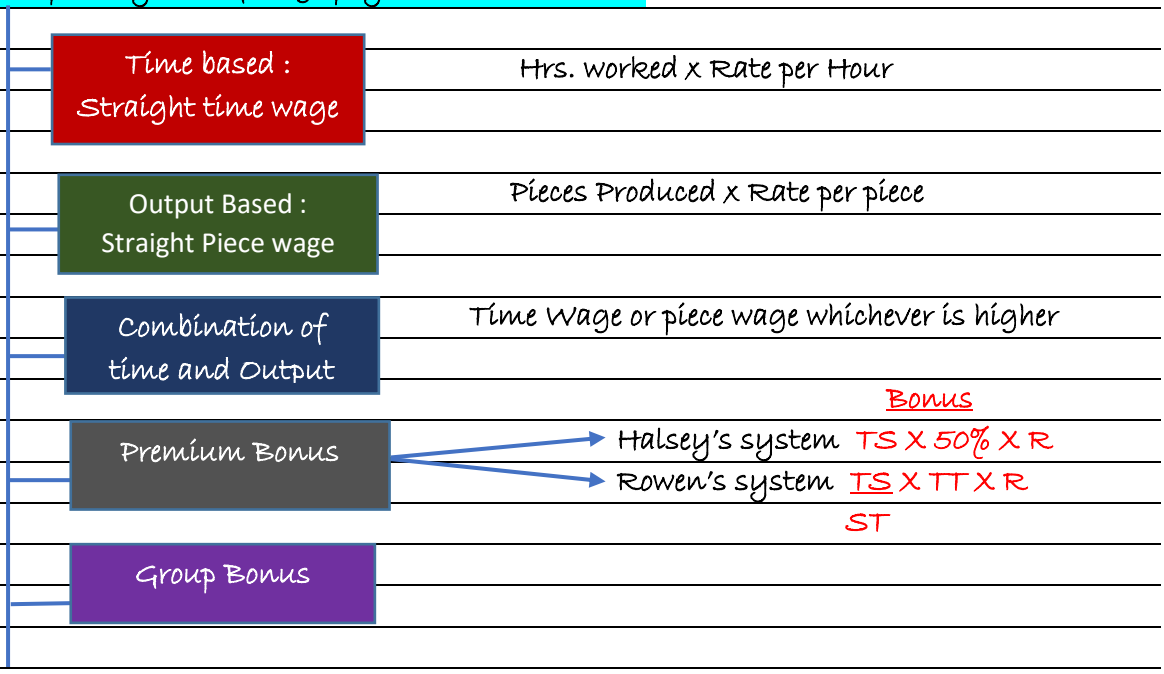
You are required to CALCULATE the labour cost chargeable to job 'Z' and overhead in each of the following instances:

(a) Where overtime is worked regularly throughout the year as a policy due to the workers' shortage.

(b) overtime is worked irregularly to meet the requirements of production.

(c) Where overtime is worked at the request of the customer to expedite the job.

Concept 5 System of wage payment and incentive



Conclusion :

TT = 50% of ST, Bonus under both plan shall be same

TT > 50% of ST, Bonus under Rowen shall be higher

TT < 50% of ST, bonus under Halsey shall be higher

Q6. A company has its factories at two locations. Rowen plan is in use at Location A and Halsey plan at Location B. Standard time and basic rate of wages are same for a job which is similar and is carried out on similar machinery. Time allowed is 60 hour

Job at Location A is completed in 36 hours while at location B, it has taken 48 hour Conversion cost at respective places are ₹ 1224 and ₹ 1500. Overheads account for ₹ 20 per hour.

Required (a) To find out normal rate of wages (b) To compare respective conversion Cost

Solution: Let Normal Wage rate per hour be ₹ Y

	Location A	Location B
Wages Factory Overheads	36Y + 14.4 Y 36X20	48Y + 6Y 48X20
Factory Cost	1224	1500

$50.4\ Y + 720 = 1224$

$54\ Y + 960 = 1500$

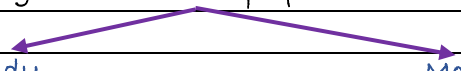
On solving above Equation, Normal wage rate per hour will be ₹ 10.

Statement showing Conversion Cost on substituting Value of Y

	Location A	Location B
Wages Factory Overheads	50.4X10 36X20	54X10 48X20
Factory Cost	1224	1500

Concept 6 EFFICIENCY RATING PROCEDURES

Step 1: Determining standard time/performance standards:



Step 2: Measuring Actual Performance of workers

Step 3: Efficiency % = Standard Time / Time Taken x 100

If the time taken by a worker on a job equals or less than the standard time, then he is rated efficient.

Need for efficiency rating

1. when a firm follows a system of payment by results, the payment has a direct relationship with the output given by a worker.
2. The efficiency rating also helps the management in preparing employee requirement budget or for preparing manpower requirements.

Employee Productivity: It is measured by the output in relation to input.

Factors for increasing Employee productivity:

1. Employing only those workers who possess the right type of skill.
2. Placing a right type of person to a right job.
3. Training young and old workers by providing them the right types of opportunities.
4. Taking appropriate measures to avoid the situation of excess or shortage of employees.

Concept 7: Absorption rates of Employee cost:

Employee cost as stated above include monetary compensation and non-monetary benefits to workers.

Basic pay	Medical facilities;
Bonus	Educational and training facilities
DA	Housing and social welfare
Pf / ESI Contribution	Cost of subsidised canteen
~~Night shift allowance : extra payment is not for any particular job~~	
Holiday and leave wages	

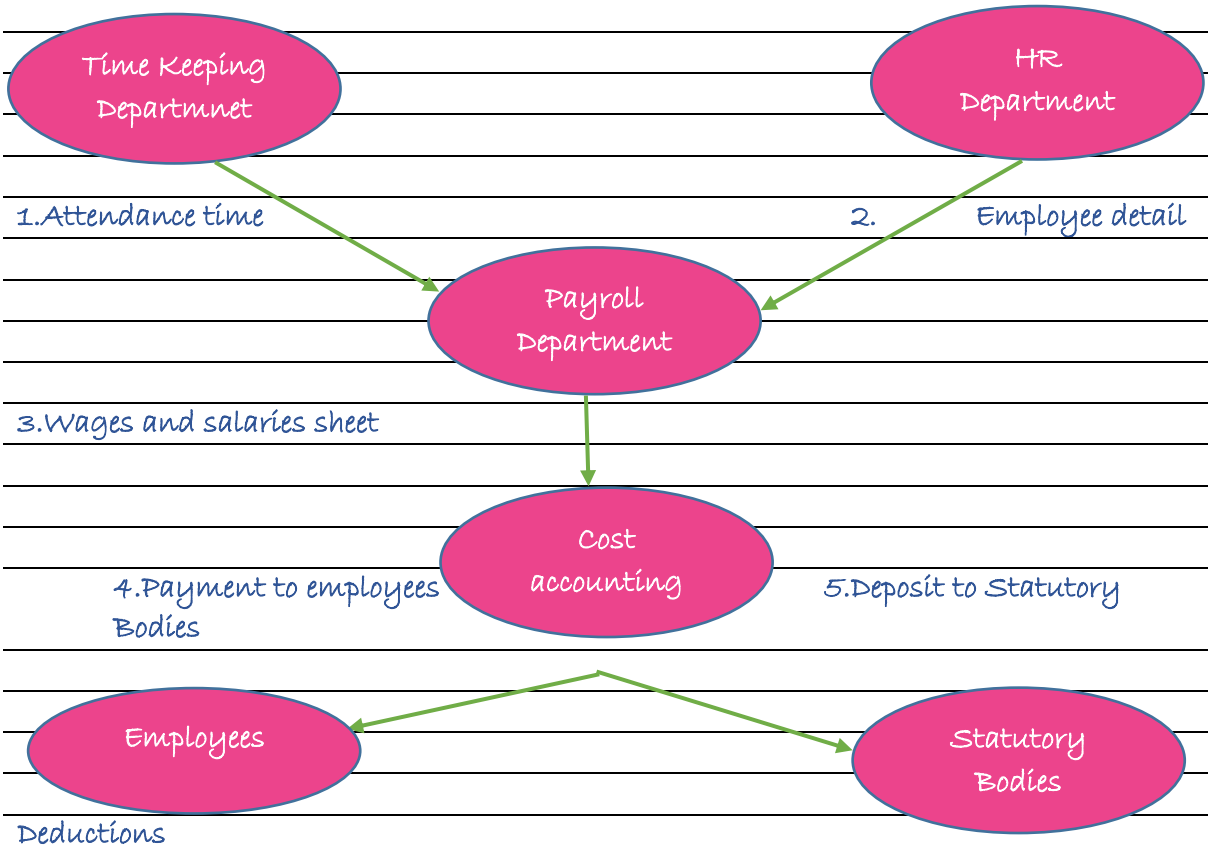
$$\text{Rate per hour} = \frac{\text{Total of monetary and non- monetary benefits}}{\text{Total Hours – Normal Idle Time}}$$

Q7. A worker is paid ₹10,000 per month and a dearness allowance of ₹ 2,000 p.m. Worker contribution to provident fund is @ 10% and employer also contributes the same amount as the employee. The Employees State Insurance Corporation premium is 6.5% of wages of which 1.75% is paid by the employees. It is the firm's practice to pay 2 months' wages as bonus each year.

The number of working days in a year are 300 of 8 hours each. Out of these the worker is entitled to 15 days leave on full pay. CALCULATE the wage rate per hour for costing purposes.

Solution: Wages paid to worker during the year {(` 10,000 +2,000) × 12}	1,44,000
Add: Employer Contribution to:	
Provident Fund @ 10%	14,400
E.S.I. Premium @ 4.75% (6.5 – 1.75)	6840
Bonus at 2 months' wages (Basic + DA)	24,000
Total	1,89,240
Effective hours	2280
Rate per hour	₹ 83

Concept & Payroll Procedure



Deductions

Contribution to PF, ESI, TDS, Professional Tax, Voluntary Contribution to PF, Contribution to benevolent Fund, Loan deduction, other deductions

Time Keeping

Objectives

1. Preparation of payrolls
2. Calculating Overtime
3. Ascertaining Idle time
4. Disciplinary purpose

Methods

Manual	Automated
Attendance Register	Punch Card
Metal Disc.	Bio-Metric

Time Booking : Each activity of employee is recorded.

Objectives

1. For costing purpose
2. For Measuring efficiency
3. For fixing responsibility

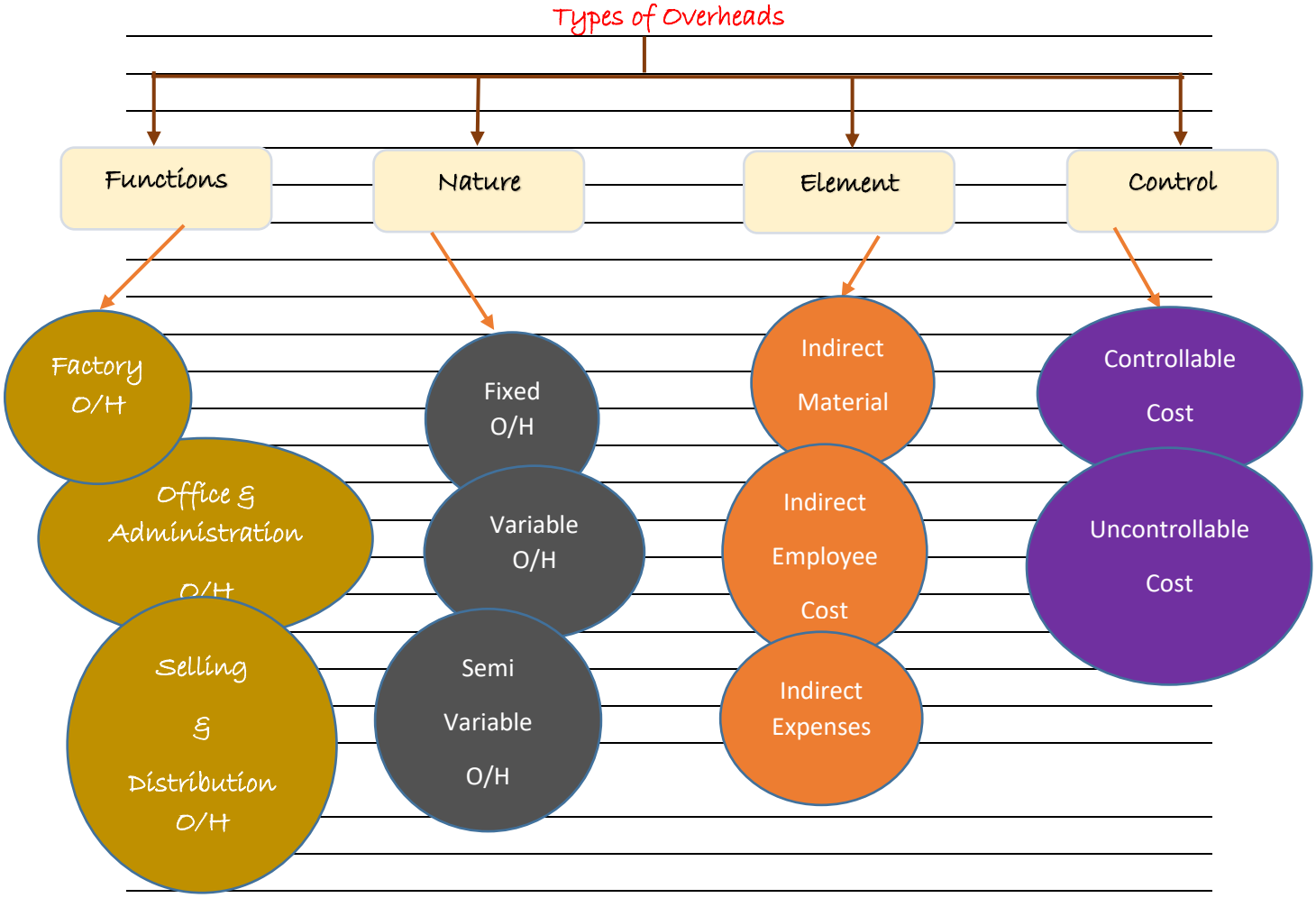
To do this job card is opened

Analysis of time with reference to each job or with reference to each employee

Chapter 4 Overheads

Concept 1 Meaning and types of overheads

Overheads are the expenditure which cannot be conveniently traced to or identified with any particular cost unit. Overheads also represent expenses that have been incurred in providing certain services which facilitate the carrying out of the production process



Concept 2 Accounting and Control of Manufacturing Overheads

Step 1: Cost Allocation: The term 'allocation' refers to the direct assignment of cost to a cost object which can be traced directly.

Step 2: Cost Apportionment: The allotment of proportions of items of cost to cost centres or departments

Step 3: Re-apportionment: The process of assigning service department overheads to production departments is called reassignment or re-apportionment

Step 4: Absorption: This process of recovering overheads of a department or any other cost center from its output is called recovery or absorption.

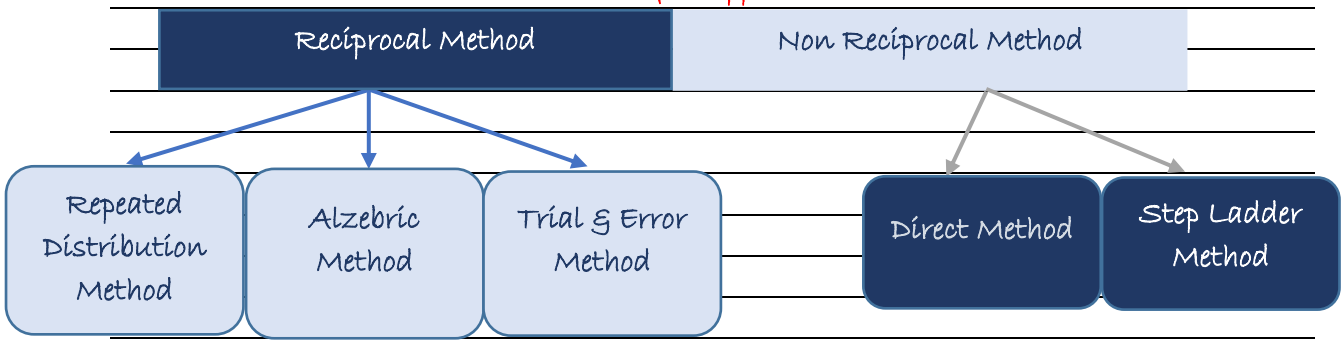
Basis For apportionment

Overheads	Basis
Rent, Lighting, heating, Fire precaution service, Air-conditioning, other building expenses	Flour area
Perquisites, Labour welfare expenses, time keeping, supervision, Personal office	Number of Workers
Compansation to worker, Holiday pay, ESI, Pf	Direct Wages
General Overheads	Direct Wages
Depreciation, Repairs, Insurance of Machine	Capital value
Power / Steam, internal transport, managerial salaries	Technical estimate
Lighting	No. of Light points
Electric power	HP, HP HRS
Material handling, stores overheads	Direct material

Basis of Re-apportionment

Service Department	Basis
Maintenance and Repair shop	Direct labour hours, Machine hours,
Planning and progress	Direct labour wages, Asset value
Tool room	Hours worked
Canteen and Welfare	No of direct workers
Hospital and Dispensary	No. of employees etc.
Personnel Department	
Time Keeping	Number of cards punched
Computer Section	Computer hours
Power House	HP, KWH
Stores Department	No. of Requisition

Methods of Reapportionment



Q1. A factory has two service departments P and Q and three production departments A, B and C. You are supplied with following information

Particulars	Total	A	B	C	P	Q
	₹	₹	₹	₹	₹	₹
Rent	12,000	2400	4800	2000	2000	800
Electricity	4000	800	2000	500	400	300
Indirect Labour	6000	1200	2000	1000	800	1000
Depreciation of machinery	5000	2500	1600	200	500	200
Sundries	4500	910	2143	847	300	300
Estimated Working hours		1000	2000	1400		

The expenses of Service Department are allocated as under:

	A	B	C	P	Q
P	30%	40%	20%	-	10%
Q	10%	20%	50%	20%	-

You are required to show the apportionment of overheads under different methods of apportioning inter-service departments and also work out the production hour rate recovery of overheard.

Solution:

Particulars	Total	A	B	C	P	Q
	₹	₹	₹	₹	₹	₹
Rent	12,000	2400	4800	2000	2000	800
Electricity	4000	800	2000	500	400	300
Indirect Labour	6000	1200	2000	1000	800	1000
Depreciation of machinery	5000	2500	1600	200	500	200
Sundries	4500	910	2143	847	300	300
Total	31500	7810	12543	4547	4000	2600

Let expenses of S1 Deptt be apportioned equals to X and of Deptt S2 be Y

S1 S2

4000	2600
+ .20	+ .10
Y	X
X	Y
–	–

$X = 4000 + .20\ Y$

$Y = 2600 + .10\ X$

Substitute value of Y in equation 1

$X = 4000 + .20\ (2600 + .10\ X)$

$X = 4612;\ Y = 3061$

Statement of Re-apportionment of overheads

	A	B	C	P	Q
O/H	7810	12543	4547	4000	2600
Re-apportionment of overheads					
S1 (4612) in 30%, 40%, 20%. 10%	1384	1845	922	(4612)	461
				(612)	3061
S2 (3061) in 10%, 20%, 50%, 20%	306	612	1531	612	(3061)
Total	9500	15000	7000	0	0
Working Hours	1000	2000	1400		
O/H per Hour	9.50	7.50	5.00		

Concept 3 Methods of Absorbing Overheads to various Products

(1) Percentage of direct materials = $\frac{\text{Total Production Overheads}}{\text{Budget Direct Material cost}} \times 100$

(2) Percentage of prime cost = $\frac{\text{Total Production Overheads}}{\text{Prime cost}} \times 100$

(3) Percentage of direct labour cost = $\frac{\text{Total Production Overheads}}{\text{Direct Labour cost}} \times 100$

(4) Labour hour rate = $\frac{\text{Total Production Overheads}}{\text{Direct Labour Hour}}$

(5) Rate per unit of Output = $\frac{\text{Amount of overheads}}{\text{Number of Units}}$

(6) Machine Hour Rate

(i) Direct machine Hour rate: Expenses directly or immediately connected with the operation of machine are taken

(ii) Comprehensive Machine Hour Rate : Other expenses like incurred for department as a whole also taken.

Q2. A machine shop has 8 identical Drilling machines manned by 6 operators. The machine cannot be worked without an operator wholly engaged on it. The original cost of all these machines works out to ₹ 8 lakhs. These particulars are furnished for a 6 months period:

Normal available hours per month	208
Absenteeism (without pay) hours	18
Leave (with pay) hours	20
Normal idle time unavoidable-hours	10
Average rate of wages per worker for 8 hours a day.	₹ 20
Production bonus estimated	15% on wages
Value of power consumed	₹ 8,050
Supervision and indirect labour	₹ 3,300
Lighting and electricity	₹ 1,200

These particulars are for a year

Repairs and maintenance including consumables 3% of value of machines.

Insurance ₹ 40,000

Depreciation 10% of original cost.

Other sundry works expenses ₹ 12,000

General management expenses allocated ₹ 54,530.

You are required to WORK OUT a comprehensive machine hour rate for the machine shop.

Q3. Job No. 198 was commenced on October 10, 20X8 and completed on November 1, 20X8. Materials used were ₹ 600 and labour charged directly to the job was ₹ 400. Other information is as follows:

Machine No. 215 used for 40 hours, the machine hour rate being ₹3.50.

Machine No. 160 used for 30 hours, the machine hour rate being ₹ 4.00. 6 welders worked on the job for five days of 8 hours each : the Direct labour hour per welder is ₹ 0.20. Expenses not included for CALCULATING the machine hour or direct labour hour rate total led ₹ 2,000, total direct wages for the period being ₹ 20,000. Ascertain the works costs of job No. 198.

Concept 4 Treatment of over and under Recovery
Overhead expenses are usually applied to production on the basis of pre-determined rates.
Production overheads are to be determined in advance for fixing selling price,
The actual overhead rate will rarely coincide with the pre- determined overhead.
Treatment of Under-absorbed and Over-absorbed of overheads

Transfer To cost P&L A/C	Apply Supplementary Rate Method
Amount of under/over Absorption is small Or	Charge to Cost of Sales A/c. Finished Goods A/c and W-I-P A/c.
Due to wrong estimation and abnormal reasons	

Q4. In a factory, overheads of a particular department are recovered on the basis of ₹ 5 per machine hour. The total expenses incurred and the actual machine hours for the department for the month of August were ₹ 80,000 and 10,000 hours respectively. Of the amount of ₹ 80,000, ₹ 15,000 became payable due to an award of the Labour Court and ₹ 5,000 was in respect of expenses of the previous year booked in the current month (August). Actual production was 40,000 units, of which 30,000 units were sold. On analysing the reasons, it was found that 60% of the under-absorbed overhead was due to defective planning and the rest was attributed to normal cost increase. EXPLAIN how would you treat the under-absorbed overhead in the cost accounts?

Solution: Under-absorbed overhead expenses during the month of August

	(₹)	(₹)
Total expenses incurred in the month of August:		80,000
Less: The amount paid according to labour court award (Assumed to be non-recurring)	15,000	
Expenses of previous year	5,000	20,000
Net overhead expenses incurred for the month		60,000
Overhead recovered for 10,000 hours @ ₹5 per hour		50,000

Under-absorbed overheads	10,000

₹4,000 may be distributed over Finished Goods and Cost of Sales as follows:

Finished Goods	* ₹1,000
Cost of Sales	* ₹3,000

*Working notes

Under-absorbed overhead :	₹4,000
Units produced :	40,000
Rate of under-absorbed overhead recover	₹ 0.10 per unit
Amount of under-absorbed overheads charged to finished goods (10,000 × ₹ 0.10)	₹ 1,000
Amount of under-absorbed overheads charged to cost of sales : (30,000 × ₹ 0.10)	₹ 3,000

Concept 5 Accounting and Control of Administrative Overheads

There are three methods of accounting of administrative overheads

1. Apportioning Administrative Overheads between Production and Sales Departments: When this method is adopted, administrative overheads lose their identity and get merged with Production and selling Overheads
2. Charging to Profit and Loss Account: Cost of products is understated as administrative overheads are not charged to costs.
3. Treating Administrative Overheads as a separate addition to Cost of Production/ Sales: This method considers administration as a separate function like production and sales

Control of Administrative Overheads

a. Classification and analysis of overheads by administrative departments according to their functions, and a comparison with the accomplished results
b. Control through Budgets
c. Control through Standard

Q5. In an engineering company, the factory overheads are recovered on a fixed percentage basis on direct wages and the administrative overheads are absorbed on a fixed percentage basis on factory cost.

The company has furnished the following data relating to two jobs undertaken by it in a period:

	Job 101 (₹)	Job 102 (₹)
Direct materials	54,000	37,500
Direct wages	42,000	30,000
Selling price	1,66,650	1,28,250
Profit percentage on Total Cost	10%	20%

Required:

(i) COMPUTATION of percentage recovery rates of factory overheads and administrative overheads.

(ii) CALCULATION of the amount of factory overheads, administrative overheads and profit for each of the two jobs.

(iii) Using the above recovery rates FIX the selling price of job 103. The additional data being:

Direct materials	₹ 24,000
Direct wages	₹ 20,000
Profit percentage on selling price	12-1/2%

Solution : Let factory overhead recovery rate, as percentage of direct wages be F and administrative overheads recovery rate, as percentage of factory cost be A.

Factory Cost of Jobs:

Job 101 = ₹96,000 + ₹42,000F

Job 102 = ₹67,500 + ₹30,000F

Total Cost of Jobs:

Job 101 = (₹ 96,000 + ₹42,000F) + (₹96,000+ ₹42,000F) A = ₹ 1,51,500

Job-102 = (₹ 67,500 + ₹ 30,000F) + (₹67,500+ ₹30,000F) A = ₹ 1,06,875

(Refer to working note)

On solving above relations: F = 0.60 and A = 0.25

Hence, percentage recovery rates of factory overheads and administrative overheads are 60% and 25% respectively.

Working note:

	Job 101	Job 102

Total cost (₹)	1,51,500	1,06,875
Selling price / (100% + Percentage of profit)	(₹ 1,66,650/110%)	(₹ 1,28,250/120%)

(ii) Statement of jobs, showing amount of factory overheads, administrative overheads and profit

	Job 101	Job 102
	(₹)	(₹)
Direct materials	54,000	37,500
Direct wages	42,000	30,000
Prime cost	96,000	67,500
Factory overheads		
60% of direct wages	25,200	18,000
Factory cost	1,21,200	85,500
Administrative overheads		
25% of factory cost	30,300	21,375
Total cost	1,51,500	1,06,875
Profit	15,150	21,375
Selling price	1,66,650	1,28,250

(iii) Selling price of Job 103

	(₹)
Direct materials	24,000
Direct wages	20,000
Prime cost	44,000
Factory overheads (60% of Direct Wages)	12,000
Factory cost	56,000
Administrative overheads	14,000

(25% of factory cost)	
Total cost	70,000
Profit margin (balancing figure)	10,000
	80,000

Concept 6 Accounting and Control of Selling Overheads

Selling cost or overhead expenses are the expenses incurred for the purpose of promoting the marketing and sales of different products. Distribution expenses, on the other hand, are expenses relating to delivery and dispatch of goods sold.

Accounting of selling and distribution overheads: separate fixed expenses from variable expenses. Apportion the fixed expenses according to the benefit derived by each product. To this should be added the variable expenses which will be different for each product.

Control of Selling & Distribution Overheads :

1. The incidence of selling and distribution overheads depends mainly on external factors, such as distance of market, extent and nature of competition, terms of sales, etc. which are beyond the control of management.

2. These overheads are dependent upon the customers, behaviour, their liking and disliking, tastes etc. Therefore, as such control over the overheads may result in loss of customers.

Q6. A company which sells four products, some of them unprofitable, proposes discontinuing the sale of one of them. The following information is available regarding income, costs and activity for the year ended 31st March, 20X9.

	A	B	C	D
Sales (₹)	30,00,000	50,00,000	25,00,000	45,00,000
Cost of sales (₹)	20,00,000	45,00,000	21,00,000	22,50,000
Area of storage (Sq.ft.)	50,000	40,000	80,000	30,000
Number of parcels sent	1,00,000	1,50,000	75,000	1,75,000
Number of invoices sent	80,000	1,40,000	60,000	1,20,000

Selling and Distribution overheads and the basis of allocation are:

	₹	Basis of allocation to Products
Fixed Costs		
Rent & Insurance	3,00,000	Square feet
Depreciation	1,00,000	Parcel
Salesmen's salaries & expenses	6,00,000	Sales volume

Administrative wages and salaries	5,00,000	No. of Invoive
Variable Costs:		
Packing wages & materials	₹ 2 per parcel	
Commission	4% of sales	
Stationery	₹ per invoice	

You are required to prepare costing Profit and Loss a Statement, showing the Percentage of profit or loss for each product.

Concept 7 CONCEPTS RELATED TO CAPACITY

Installed/ Rated capacity: It refers to the maximum capacity of producing goods or providing services.

Practical capacity: It is defined as actually utilised capacity of a plant. This capacity takes into account loss of time due to repairs, maintenance, minor breakdown, idle time, set up time, normal delays, Sundays and holidays, stock taking etc.

Normal capacity: Normal capacity is the volume of production or services achieved or achievable on an average over a period under normal circumstances

Actual capacity: It is the capacity actually achieved during a given period. It is presented as a percentage of installed capacity.

Idle capacity: It is that part of the capacity of a plant, machine or equipment which cannot be effectively utilised in production.

Treatment of Idle capacity costs: Idle capacity costs can be treated in product costing, in the following ways:

(a) If the idle capacity cost is due to unavoidable reasons such as repairs, maintenance, changeover of job etc. a supplementary overhead rate may be used to recover the idle capacity cost. In this case, the costs are charged to the production capacity utilised.

(b) If the idle capacity cost is due to avoidable reasons such as faulty planning, power failure etc.; the cost should be charged to costing profit and loss account.

(c) If the idle capacity cost is due to seasonal factors, then, the cost should be charged to the cost of production by inflating overhead rates.

Chapter 5 Activity Based Costing

Meaning : ABC is an accounting methodology that assigns costs to activities rather than products and services. The enables resources & overhead costs to be more accurately assigned to products & services that consume them.

Factors prompting development of ABC

1. Growing overhead cost because of increased automated production
2. Increasing market competition which necessitated automated production
3. Increasing product diversity to secure economies of scope & in5reased market share
4. Decreasing cost if information processing because of continual improvements and Increasing application of Information technology.

Advantages

a. Better understanding overhead
b. Utilizes unit cost rather than just total cost
c. Integrates well six sigma and other continuous improvement programs
d. Facilitates benchmarking
e. More accurate costing of products / services, customers

Difference

ABC	Traditional Absorption Costing
Overheads are related to activities and grouped into activity cost pools	Overheads are related to cost centres
Cost are assigned to Cost objects e.g. customers, products, services etc.	Cost are assigned to cost units i.e. products, services etc.
Activity – wise cost drivers are determined	Time (hours) are assumed to be the only cost driver governing costs in all department.
Activity –wise recovery rates are determined and there is no concept of a single overhead recovery arte	Either multiple overhead recovery rate or a single overhead recovery rate may be determined for absorbing overheads.

Activity Based Budgeting (ABB)

Activity based budgeting analyse the resource input or cost for each activity.

key elements of activity based budgeting

Type of work to be done

Quantity of work to be done
Cost of work to be done

Q1. MNO Ltd. manufactures two types of equipment A and B and absorbs overheads on the basis of direct labour hours. The budgeted overheads and direct labour hours for the month of March 2019 are ₹15,00,000 and 25,000 hours respectively. The information about the company's products is as follows:

	Equipment X	Equipment y
Budget production Volume	3200 units	3850 units
Direct material cost	₹ 350 per unit	₹ 400 per unit
Direct labour Cost		
A 3 hours @ ₹120 per hour	₹ 360	
B 4 hours @ ₹ 120 per hour		₹ 480

Overheads of ₹ 15,00,000 can be identified with the following three major activities:

Order Processing: ₹ 3,00,000

Machine Processing: ₹ 10,00,000

Product Inspection: ₹ 2,00,000

These activities are driven by the number of orders processed, machine hours worked and inspection hours respectively. The data relevant to these activities is as follows:

	Orders processed	Machine hours worked	Inspection hours
A	400	22,500	5,000
B	200	27,500	15,000
Total	600	50,000	20,000

Required:

I. Prepare a statement showing the manufacturing cost per unit of each product using the absorption costing method assuming the budgeted manufacturing volume is attained.

II. Determine cost driver rates and prepare a statement showing the manufacturing cost per unit of each product using activity based costing, assuming the budgeted manufacturing volume is attained.

III. MNO Ltd.'s selling prices are based heavily on cost. By using direct labour hours as an application base, calculate the amount of cost distortion (under costed or over costed) for each equipment. (SM, ICAI/ MAY 2019)

Solution (i) Statement of Cost as per Absorption Costing

	A	B
Direct Material Cost	3200 x 350 = 11,20,000	3850 x 400 = 15,40,000
Direct Labour Cost	3200 x 360 = 11,52,000	3850 x 480 = 18,48,000
Overheads 15,00,000 / 25,000 = ₹ 60 per hour	3200 x 3 x 60 = 5,76,000	3850 x 4 x 60 = 9,24,000
Total Cost	28,48,000	43,12,000
Per Unit Cost	28,48,000 / 3200 = 890	43,12,000 / 3850 = 1120

(ii) Statement of Cost as per Activity based Costing

	A	B
Direct Material Cost	3200 x 350 = 11,20,000	3850 x 400 =
Direct Labour Cost	3200 x 360 = 11,52,000	15,40,000
Overheads		3850 x 480 =
Order Processing cost		18,48,000
3,00,000/ 600 = ₹ 500 per Order	400 x 500 = 2,00,000	
		200 x 500 = 1,00,000
Machine Processing Cost		
10,00,000/50,000 = ₹ 20 per M/C Hr	22,500 x 20 = 4,50,000	
		27,500 x 20 = 5,50,000
Inspection Cost		
2,00,000/20,000 = ₹ 10 per Hour	5000 x 10 = 50,000	
		15,000 x 10 = 1,50,000
Total Cost	29,72,000	41,88,000
Per Unit Cost	29,72,000 / 3200 = 928.75	41,88,000 / 3850 = 1087.79

(iii) Cost distortion

	A	B
Absorption costing	890	1120
ABC	928.75	1087.79
Cost Distortion	(38.75)	32.21

Q2. PQR Ltd. has decided to analyse the profitability of its five new customers. It buys soft drink bottles in cases at ₹ 45 per case and sells them to retail customers at a list price of Rs. 54 per case. The data pertaining to five customers are given below:

	Customers				
	A	B	C	D	E
Number of Cases Sold	9360	14200	62000	38000	9800
List Selling Price ₹	54	54	54	54	54
Actual Selling Price ₹	54	53.40	49	50.20	48.60
Number of Purchase Orders	30	50	60	50	60
Number of Customers Visits	4	6	12	4	6
Number of Deliveries	20	60	120	80	40
Kilometers travelled per delivery	40	12	10	20	60
Number of expediate Deliveries	0	0	0	0	2

Its five activities and their cost drovers are:

Activity	Cost Driver
Order taking	₹ 200 per purchase order
Customer visits	₹ 300 per each visit
Deliveries	₹ 4.00 per delivery km travelled
Product Handling	₹ 2.00 per case sold
Expedited deliveries	₹ 100 per each such delivery

You are required to:

(i) Compute the customer level operating income of each of five retail customers by using the Cost Driver rates.

(ii) Examine the results to give your comments on Customer 'D' in comparison with Customer 'C' and on Customer 'E' in comparison with Customer 'A'.

Solution : Customer level operating Income

Particulars	A	B	C	D	E
Sales	9360 x 54	14200x53.40	62000x49	38000x50.20	9800x48.60
Less,					
Cost	9360 x 45	14200x45	62000x45	38000x45	9800x45
Order Taking	30 x200	50 x 200	60 x 200	50 x 200	60 x 200
Cost	4 x 300	6 x 300	12 x 300	4 x 300	6 x 300
Customer visit					
Cost	20x40x4	60x12x4	120x10x4	80x20x4	40x60x4
Delivery Cost	9360 x 2	14200 x 2	62000 x 2	38000 x 2	9800 x2
Product					
Handling Cost	0	0	0	0	2 x 100

Expediate Delivery Cost					
Profit	55,120	76,200	103600	104000	(7920)

(ii) Comment : Customer D is purchasing less quantity in comparison to Customer C, but profit is almost same from both customers, this is because of higher discount to customer C. Further Customer D is placing more orders, that is less quantity per order in comparison to customer C

Customer E is giving Loss, as compared to A, because heavy discount to E, further placing expediate delivery request, more orders, more visit, higher distance travelled per delivery.

Chapter 6 Cost Sheet

Direct Material Consumed	Xxx
Direct Labour	Xxx
Direct Expenses	Xxx
Prime Cost	Xxx
Factory Overheads	Xxx
Gross Factory Cost	Xxx
+Opening Stock of Work in Progress	Xxx
-Closing Stock of Work in Progress	Xxx
Factory Cost	Xxx
Quality Control Cost	Xxx
Research and development Cost	Xxx
Administrative overheads (relating to production)	Xxx
Primary Packing	Xxx
(Scrap sale)	Xxx
Cost of Production	Xxx
+Opening Stock of Finished Goods	Xxx
-Closing stock of finished Goods	Xxx
Cost of goods sold	Xxx
Administration Overheads (General)	Xxx
Selling Overheads	Xxx
Distribution Overheads	Xxx
Cost of sales	Xxx
Profit	Xxx
Sales	xxx

1. Direct Material Consumed :

Opening Stock of Raw Material

+ Purchase of Raw Material

-Closing Stock of raw material

+ Frieght / Cartage

-Scrap sale of raw material

2. Direct Employee (labour) Cost:

(a) Wages and salary;

(b) Allowances and incentives;

(c) Payment for overtimes;

(d) Employer's contribution to Provident fund and other welfare funds;

(e) Other benefits (leave with pay, free or subsidised food, leave travel concession etc.)

3. Direct Expenses:

(a) Royalty paid/ payable for production or provision of service;

(b) Hire charges paid for hiring specific equipment;

(c) Cost for product/ service specific design or drawing;

(d) Cost of product/ service specific software;

(e) Other expenses which are directly related with the production of goods or provision of service.

4. **Factory Overheads:**

(a) Consumable stores and spares

(b) Depreciation of plant and machinery, factory building etc.

(c) Lease rent of production assets

(d) Repair and maintenance of plant and machinery, factory building etc.

(e) Indirect employees cost related with production activities

(f) Drawing and Designing department cost.

(g) Insurance of plant and machinery, factory building, stock of raw material & WIP etc.

(h) Amortized cost of jigs, fixtures, tooling etc.

(i) Service department cost such as Tool Room, Engineering & Maintenance, Pollution Control etc.

5. **Quality Control Cost:** This is the cost of resources consumed towards quality control procedures.

6. **Research & Development cost:** It includes only those research and development related cost which is incurred for the improvement of process, system, product or services.

7. **Credit for recoveries:** The realised or realisable value of scrap or waste is deducted as it reduces the cost of production.

8. **Packing Cost (primary):** Packing material which is essential to hold and preserve the product for its use by the customer.

9. **Administrative Overheads:**

a) Depreciation and maintenance of, building, furniture etc. of corporate or general management.

b) Salary of administrative employees, accountants, directors, secretaries etc.

c) Rent, insurance, lighting, office expenses etc.

Selling Overheads:

(a) Salary and wages related with sales department and employees directly related with selling of goods.

(b) Rent, depreciation, maintenance and other cost related with sales department.

(c) Cost of advertisement, maintenance of website for online sales, market research etc.

Distribution Overheads:

(a) Salary and wages of employees engaged in distribution of goods.
(b) Transportation and insurance costs related with distribution.
(c) Depreciation, hire charges, maintenance and other operating costs related with distribution vehicles etc.

Q1. DFG Ltd. manufactures leather bags for office and school purpose. The following information is related with the production of leather bags for the month of September 2019.

(i) Leather sheets and cotton cloths are the main inputs, and the estimated requirement per bag is two meters of leather sheets and one meter of cotton cloth. 2,000 meter of leather sheets and 1,000 meter of cotton cloths are purchased at ₹3,20,000 and ₹15,000 respectively. Freight paid on purchases is ₹8,500.

(ii) Stitching and finishing need 2,000 man hours at ₹80 per hour.

(iii) Other direct cost of ₹10 per labour hour is incurred.

(iv) DFG has 4 machines at a total cost of ₹22,00,000. Machine has a life of 10 years with a scrape value of 10% of the original cost. Depreciation is charged on straight line method.

(v) The monthly cost of administrative and sales office staffs are ₹45,000 and ₹72,000 respectively. DFG pays ₹1,20,000 per month as rent for a 2400 sq.feet factory premises. The administrative and sales office occupies 240 sq. feet and 200 sq. feet respectively of factory space.

(vi) Freight paid on delivery of finished bags is ₹18,000.

(vii) During the month 35 kg. of leather and cotton cuttings are sold at ₹150 per kg.

(viii) There is no opening and closing stocks for input materials. There is 100 bags in stock at the end of the month.

Required: PREPARE a cost sheet following functional classification for the month of September 2019. (RTP NOV 2019)

Solution : Cost sheet

		₹
Direct Material Consumed		3,43,500
Direct Labour	2000 x 80	1,60,000
Direct Expenses	2000 x 10	20,000
Prime Cost		5,23,500
Factory Overheads		114500
Gross Factory Cost		6,38,000
+Opening Stock of Work in Progress		-

-Closing Stock of Work in Progress	-
Factory Cost Quality Control Cost Research and development Cost Administrative overheads (relating to production) Primary Packing (Scrap sale)	6,38,000 - - 57,000 - (5250)
Cost of Production +Opening Stock of Finished Goods -Closing stock of finished Goods 689750 / 1000 x 100	6,89,750 - (68975)
Cost of goods sold Administration Overheads (General) Selling Overheads Distribution Overheads	6,20,775 - 1,00,000 -
Cost of sales	7,20,775

Workings

1. Material Leather = ₹ 3,20,000
   Cotton = ₹ 15,000
   Freight = ₹ 8500
   ₹ 3,43,500
2. Factory Overheads Depreciation = 22,00,000 – 2,20,000 / 10 x 1/12 = 16,500
3. Overheads

	Factory	Administration	Selling
Depreciation	16,500	-	-
Staff Cost	-	45,000	72,000
Rent	1,20,000 – 12000 – 10,000=98000	1,20,000 / 2400 x240 = 12,000	1,20,000 / 2400 x 200 = 10,000
Freight			18,000
Total	1,14,500	57,000	1,00,000

4. Administrative overheads are assumed to be relating to production.

Q2. Following details are provided by M/s ZIA Private Limited for the quarter ending 30 September, 2018:

(i)	Direct expenses	₹ 1,80,000
(ii)	Direct wages being 175% of factory overheads	₹ 2,57,250
(iii)	Cost of goods sold	₹ 18,75,000
(iv)	Selling & distribution overheads	₹ 60,000
(v)	Sales	₹ 22,10,000

(vi)	Administration overheads are 10% of factory overheads	

Stock details as per Stock Register:

Particulars	30.06.2018 ₹	30.09.2018 ₹
Raw material	2,45,600	2,08,000
Work-in-progress	1,70,800	1,90,000
Finished goods	3,10,000	2,75,000

You are required to prepare a cost sheet showing:

(i) Raw material consumed

(ii) Prime cost

(iii) Factory cost

(iv) Cost of goods sold

(v) Cost of sales and profit (Nov 2018)

Solution: Cost sheet

	₹
Direct Material Consumed	12,60,250
Direct Labour	2,57,250
Direct Expenses	1,80,000
Prime Cost	16,97,500
Factory Overheads	1,47,000
Gross Factory Cost	18,44,500
+Opening Stock of Work in Progress	1,70,800
-Closing Stock of Work in Progress	(1,90,000)
Factory Cost	18,25,300
Quality Control Cost	-
Research and development Cost	-
Administrative overheads (relating to production)	14,700
Primary Packing	-
(Scrap sale)	-
Cost of Production	18,40,000
+Opening Stock of Finished Goods	3,10,000
-Closing stock of finished Goods	(2,75,000)
Cost of goods sold	18,75,000
Administration Overheads (General)	-
Selling Overheads	60,000
Distribution Overheads	-

Cost of sales Profit	19,35,000 2,75,000
Sales	22,10,000

Workings

1. Direct wages = Factory overheads x 175%
   2,57,250 = Factory overheads x 175%
   Factory overheads = 2,57,250 / 175% = 1,47,000
2. Administration Overheads = 10% of 1,47,000 = 14,700 (Assumed to be relating to production)
3. Raw material Consumed = Raw material purchases + Opening stock of Raw material – Closing stock of raw material
   12,60,250 = Raw material purchases + 2,45,600 – 2,08,000
   Raw material purchases = 12,22,650

Note : If administration overheads are taken as General then profit will be ₹ 2,60,300

Q3. M/s Areeba Private Limited has a normal production capacity of 36,000 units of toys per annum. The estimated costs of production are as under:

(i) Direct Material ₹ 40 per unit

(ii) Direct Labour ₹ 30 per unit (subject to a minimum of ₹ 48,000 p.m.)

(iii) Factory Overheads:

(a) Fixed ₹ 3,60,000 per annum

(b) Variable ₹ 10 per unit

Semi-variable ₹ 1,08,000 per annum up to 50% capacity and additional 46,800 for every 20% increase in capacity or any part thereof.

(v) Administrative Overheads ₹ 5, 18,400 per annum (fixed)

(vi) Selling overheads are incurred at ₹ 8 per unit.

(vii) Each unit of raw material yields scrap which is sold at the rate of ₹ 5 per unit.

(viii) In year 2019, the factory worked at 50% capacity for the first three months but it was expected that it would work at 80% capacity for the remaining nine months.

(ix) During the first three months, the selling price per unit was ₹ 145.

You are required to:

(i) Prepare a cost sheet showing Prime Cost, Works Cost, Cost of Production and Cost of Sales.

(ii) Calculate selling price for remaining nine months to achieve total profit of ₹ 8,76,600. (May 2019)

Solution : Cost sheet

	3 Months	9 months
Direct Material Consumed	1,57,500	7,56,000
Direct Labour	1,44,000	6,48,000
Direct Expenses	-	-
Prime Cost	3,01,500	14,04,000
Factory Overheads (FIXED + VARIABLE +SEMI)	1,62,000	6,37,200
Gross Factory Cost	4,63,500	20,41,200
+Opening Stock of Work in Progress	-	-
-Closing Stock of Work in Progress	-	-
Factory Cost	4,63,500	20,41,200
Quality Control Cost	-	-
Research and development Cost	-	-
Administrative overheads (relating to production)	1,29,600	3,88,800
Primary Packing	-	-
(Scrap sale)	-	-
Cost of Production	5,93,100	24,30,000
+Opening Stock of Finished Goods	-	-
-Closing stock of finished Goods	-	-
Cost of goods sold	5,93,100	24,30,00,000
Administration Overheads (General)	-	-
Selling Overheads @ 8 per unit	36,000	1,72,800
Distribution Overheads	-	-
Cost of sales	6,29,100	26,02,800
Profit	23,400b.f.	8,53,200
Sales	6,52,500	34,56,000

Workings :

	First 3 Months	Next 9 Months
1.Units	36,000 x 50% x 3/12 = 4500	36,000 x 80% x 9/12 = 21,600
2.Material -Scrap	4500 x 40 -4500 x5 = 1,57,500	21,600 x 40-21,600 x 5 = 7,56,000
3.Labour	4500 x 30 = 1,35,000	21,600 x 30 = 6,48,000
	Or	Higher Or
Higher		
	48,000 x 3 = 1,44,000	48000 x 9 = 4,32,000
4.Factory Overheads		
Fixed	3,60,000 x 3/12 = 90,000	3,60,000 x 9/12 = 2,70,000
	+	+

Variable	4500 x 10 = 45,000	21,600 x 10 = 2,16,000
Semi- variable	1,08,000 x 3/12	(1,08,000+ 46,800 + 46,800)x9/12
5.Administration Overhead	5,18,400 x 3/12 = 1,29,600	5,18,400 x 9/12 = 3,88,800
6. profit		8,76,600 – 23,400 = 8,53,200
7. Selling Price		34,56,000 / 21,600 = ₹ 160 per unit

8. Administration overheads are taken as relating to production

Chapter 7 Cost Accounting System

Non integral System

Journal entries

1. Purchase of Material (Cash / Credit / Direct / indirect)

Store ledger Control A/C Dr.

To Cost Ledger Control A/C

2. Material Returned to Vendor

Cost ledger Control A/C Dr.

To Store Ledger Control A/C

3. Direct Material issued to production / Special Job

WIP Control A/C Dr.

To Store Ledger Control A/C

4. Indirect Material issued to production / For Repairs

Production Overhead Control A/C Dr.

To Store Ledger Control A/C

5. Material Returned from shop to store

Store Ledger Control A/C Dr.

To WIP Ledger Control A/C

6. Material Transfer from between Jobs

No entry

7. Normal Loss of Material

Production Overhead Control A/C Dr.

To Store Ledger Control A/C

8. Abnormal Loss of Material

Costing P&L Control A/C Dr.

To Store Ledger Control A/C

9. Direct Wages Paid to Worker

Wage Control A/C Dr.

To Cost Ledger Control A/C

WIP Control A/C Dr

To Wage Control A/C

10. Indirect Wages Paid to Worker in Production

Wage Control A/C Dr.
To Cost Ledger Control A/C

Production Overhead Control A/C Dr
To Wage Control A/C

11. Indirect Wages Paid to Worker in Administration

Wage Control A/C Dr.
To Cost Ledger Control A/C

Administration Overhead Control A/C Dr
To Wage Control A/C

12. Indirect Wages Paid to Worker in Selling Department

Wage Control A/C Dr.
To Cost Ledger Control A/C

selling Overhead Control A/C Dr
To Wage Control A/C

13. Direct Expenses

WIP Control A/C Dr.
To Cost Ledger Control A/C

14. Factory Overheads Incurred / Recovered

Factory Overheads Control A/C Dr.
To Cost Ledger Control A/C

WIP Control A/C Dr
To Factory Overheads Control A/C

15. Administration Overheads Incurred / Recovered

Administration Overheads Control A/C Dr.
To Cost Ledger Control A/C

Finished Goods Control A/C Dr
To Factory Overheads Control A/C

16. Selling Overheads Incurred / Recovered

Selling Overheads Control A/C Dr.
To Cost Ledger Control A/C

Cost of Sales Control A/C Dr
To Factory Overheads Control A/C

17. Under Recovery of Overheads

Costing P&L A/C Dr.	
TO Overheads Control A/C	

18. Over Recovery of Overheads

Overheads Control A/C Dr.	
TO Costing P&L Control A/C	

19. Sales

Cost Ledger Control A/C Dr	
TO Costing P&L A/C	

Integral Account

CLC A/C is not maintained

Q1. As on 31st March 2016, the following balances existed in a firm's Cost ledger:

	Dr (₹)	Cr (₹)
Stores ledger control Account	3,01,435	
Work in progress control Account	1,22,365	
Finished stock ledger control Account	2,51,945	
Manufacturing overhead control Account		10,525
Cost ledger control account		6,65,220
	6,75,745	6,75,745

During the next three months the following items arose :

	₹
Finished product (at cost)	2,10,835
Manufacturing overhead incurred	91,510
Raw material purchased	1,23,000
Factory wages	50,530
Indirect labour	21,665
Cost of sales	1,85,890
Material issued to production	1,27,315
Sales returned at cost	5380

Material returned to suppliers	2900
Manufacturing overhead charged to production	77,200

Q2. During the year ended 31st March 2016, the profits of a company stood at ₹ 36,450 as per financial accounts. The Cost book, however, showed a profit of ₹ 51,950 for the same period.

You are required to reconcile the profit as shown by two set of accounts.

1	Opening stock overstated in Cost account	3500
2	Closing stock understated in cost account	4600
3	Factory overhead under recovered in cost account	2500
4	Administration overhead over recovered in cost account	750
5	Selling and distribution overhead under recovered in cost account	1650
6	Depreciation over recovered in cost account	1500
7	Interest on investment not included in cost account	5000
8	Obsolesce loss in respect of machineries charged in financial account	2450
9	Income tax provided in financial account	25,000
10	Bank interest credited in financial account	1500
11	Store adjustment debit in financial account	750

Q3. Given below is the trading and profit & loss account of a company for the year ended 31st

March 2016

Profit and loss account

	₹		₹
Material	27,40,000	Sales (60,000 units)	60,00,000
Wages	15,10,000	Stock (2000 units)	1,60,000
Factory Expenses	8,30,000	Work-in-progress	
Administration Expenses	3,82,000	Material 64,000	

Selling Expenses	4,50,000	Wages 36,000	
Preliminary Expenses	60,000	Factory expenses 20,000	1,20,000
Net Profit	3,26,000	Dividend received	18,000
	62,98,000		62,98,000

In cost accounts

7. Factory expenses have been allocated to production 20% of prime cost
8. Administrative overhead at ₹ 6 per unit
9. Selling expenses at ₹ 8 per unit sold

Prepare costing profit and loss account of the company and reconcile the same with the profit disclosed by the financial account.

CHAPTER 8 Unit & Batch Costing

UNIT COSTING : Unit costing is a method of costing, used where the output produced is identical and each unit of output requires identical cost.

Q1. Atharva Pharmacare Limited produced a uniform type of product and has a manufacturing capacity of 3,000 units per week of 48 hours. From the records of the company, the following data are available relating to output and cost of 3 consecutive weeks

Week Number	Units Manufactured	Direct Material ₹	Direct Labour ₹	Factory Overheads ₹
1	1,200	9,000	3,600	31,000
2	1,600	12,000	4,800	33,000
3	1,800	13,500	5,400	34,000

Assuming that the company charges a profit of 20% on selling price, FIND OUT the selling price per unit when the weekly output is 2,000 units (SM, ICAI)

Solution : Statement of Cost and Selling price for 2,000 units of output

Particulars	Cost Per Unit	Total Cost
Direct Materials	7.50	15,000
Direct Labour	3.00	6000
	10.50	21,000
Add: Factory Overheads (Refer working note-2)	17.50	35,000
Total cost	28.00	56,000
Add: Profit (25% of Cost)	7.00	14,000
Sales	35.00	70,000

Batch Costing : specific order costing where articles are manufactured in predetermined lots, known as batch

COSTING PROCEDURE IN BATCH COSTING:

One number is allotted for each batch.

Material cost is arrived at on the basis of material requisitions for the batch

labour cost is arrived at by multiplying the time spent on the batch with wage rate

Overheads are absorbed on some suitable basis like machine hours, direct labour hours etc.

Q2. Arnav Confectioners (AC) owns a bakery which is used to make bakery items like pastries, cakes and muffins. AC use to bake atleast 50 units of any item at a time. A customer has given an order for 600 muffins. To process a batch of 50 muffins, the following cost would be incurred:

Direct materials- ₹ 500

Direct wages- ₹ 50

Oven set- up cost ₹150

AC absorbs production overheads at a rate of 20% of direct wages cost. 10% is added to the total production cost of each batch to allow for selling, distribution and administration overheads. AC requires a profit margin of 25% of sales value.

DETERMINE the selling price for 600 muffins. (SM, ICAI)

Solution: Statement of cost per batch and per order

No. of batch = 600 units ÷ 50 units = 12 batches

Particulars	Cost per Batch	Total cost
Direct Material Cost	500.00	6,000
Direct Wages	50.00	600
Oven set-up cost	150.00	1,800
Add: Production Overheads (20% of Direct wages)	10.00	120
Total Production cost	₹710.00	8,520
Add: S&D and Administration overheads (10% of Total production cost)	₹71.00	852
Total Cost	₹781.00	9,372
Add: Profit (1/3rd of total cost)	260.33	3,124
Selling price	1,041.33	12,496

ECONOMIC BATCH QUANTITY (EBQ): Economic Batch quantity is the size of a batch where total cost of set-up and holding costs are at minimum.

The total production cost under Batch production comprises two main costs namely

1. Machine Set Up Costs and
2. Inventory holding costs.

If the size is higher, the set up cost may decline due to lesser set ups required but units in inventory will go up leading to higher holding costs. If the lot size is lower, lower inventory holding costs are accomplished but only with higher set up costs.

Q3. A customer has been ordering 90,000 special design metal columns at the rate of 18,000 columns per order during the past years. The production cost comprises ₹2,120 for material, ₹60 for labour and ₹20 for fixed overheads. It costs ₹1,500 to set up for one run of 18,000 column and inventory carrying cost is 5%.

(i) FIND the most economic production run.

(ii) CALCULATE the extra cost that company incur due to processing of 18,000 columns in a batch. (SM, ICAI)

Chapter 9 Job & Contract Costing

JOB COSTING

Meaning: Each job is treated as a separate entity for the purpose of costing. Job costing is carried out for the purpose of ascertaining cost of each job and takes into account the cost of materials, employees and overhead etc.

Industries where it is followed: printing; furniture; hardware; ship-building; heavy machinery; interior decoration, repairs and other similar work.

Suitability of Job Costing:

1. When jobs are executed for different customers according to their specifications.
2. when no two orders are alike and each order/job needs special treatment.
3. Where the work-in-progress differs from period to period on the basis of the number of jobs in hand.

JOB COST CARD/ SHEET : To ascertain cost of a particular job, it is necessary to record all the expenditure related with a job separately

Q1. A shop floor supervisor of a small factory presented the following cost for Job No. 303, to determine the selling price.

	Per unit (₹)
Materials	70
Direct wages 18 hours @ ₹ 2.50	45
(Deptt. X 8 hours; Deptt. Y 6 hours; Deptt. Z 4 hours)	
Chargeable expenses	5
	120
Add : 33-1/3 % for expenses cost	40
	160

Analysis of the Profit/Loss Account
(for the year 20X9)

		(₹)		(₹)
Materials used		1,50,000	Sales less returns	2,50,000
Direct wages:				
Deptt. X	10,000			
Deptt. Y	12,000			
Deptt. Z	8,000	30,000		

Special stores items		4,000		
Overheads:				
Deptt. X	5,000			
Deptt. Y	9,000			
Deptt. Z	2,000	16,000		
Works cost		2,00,000		
Gross profit c/d		50,000		
		2,50,000		2,50,000
Selling expenses		20,000	Gross profit b/d	50,000
Net profit		30,000		
		50,000		50,000

It is also noted that average hourly rates for the three Departments X, Y and Z are similar.

You are required to:

(i) PREPARE a job cost sheet.

(ii) CALCULATE the entire revised cost using 20X9 actual figures as basis.

(iii) Add 20% to total cost to DETERMINE selling price.

Solution : job Cost sheet

Direct Material	₹ 70
Direct wages	
Deptt X 8 hrs x 2.50 = 20	
Deptt Y 6 hrs x 2.50 = 15	
Deptt Z 4 hrs x 2.50 = 10	45
Chargeable exp	5
Prime Cost	120
Overheads	
Deptt X 50% of 20 = 10	
Deptt Y 75% of 15 = 11.25	
Deptt Z25% of 10 = 2.50	23.75
Works Cost	143.75
Selling cost 10 % of works cost	14.38

Total Cost	158.13
Profit 20% of total cost	31.63
Selling Price	189.76

CONTRACT COSTING

Contract costing is a form of specific order costing where job undertaken is relatively large and normally takes period longer than a year to complete

TERMS USED IN CONTRACT COSTING

Work-in-Progress: contract which is not complete at the reporting date

Work Certified : value of the work completed as on a particular date; assessment of the completion of work is carried out by an expert

Work Uncertified: cost of the work which has been carried out by the contractor but has not been certified by the expert

Progress Payment: Advance Payment

Retention Money: To have a cushion against any defect or undesirable work, the contractee upholds some money payable to contractor.

Notional Profit: It represents the difference between the value of work certified and cost of work certified.

Estimated Profit: It is the excess of the contract price over the estimated total cost of the contract.

COST PLUS CONTRACT: value of the contract is determined by adding an agreed percentage of profit to the total cost.

Escalation Clause in a Contract : . As per this clause, the contractor increases the contract price if the cost of materials, employees and other expenses increase beyond a certain limit.

Q3. The following expenses were incurred on a contract:	(₹)
Materials purchased	6,00,000
Material drawn from stores	1,00,000
Wages	2,25,000
Plant issued	75,000
Chargeable expenses	75,000
Apportioned indirect expenses	25,000

The contract was for ₹ 20,00,000 and it commenced on January 1, 20X8. The value of the work completed and certified upto 30th November, 20X8 was ₹ 13,00,000 of which 10,40,000 was received in cash, the balance being held back as retention money by the contractee. The value of work completed subsequent to the architect's certificate but before 31st December, 20X8 was ₹ 60,000. There were also lying on the site materials of the value of ₹ 40,000. It was estimated that the value of plant as at 31st December, 20X8 was ₹ 30,000.

You are required to COMPUTE value of work certified, cost of work not certified and notional profit on the contract till the year ended 31st December, 20X8. (SM, ICAI)

Solution : Contract Account

Particulars	(₹)	Particulars	(₹)
To Material purchased	6,00,000	By Work-in-progress:	
" Stores issued	1,00,000	Value of work certified	13,00,000
Wages	2,25,000	Cost of work uncertified	60,000
" Plant	75,000	" Material unused	40,000
" Chargeable expenses	75,000	Plant less depreciation	30,000
" Indirect expenses	25,000		
" Costing P&L A/c (Notional profit) (bal. figure)	3,30,000		
	14,30,000		14,30,000

Q4. A contractor prepares his accounts for the year ending 31st December each year. He commenced a contract on 1st April, 20X8.

The following information relates to the contract as on 31st December, 20X8:

	(₹)
Material issued	2,51,000
Wages	5,65,600
Salary to Foreman	81,300

A machine costing ₹ 2,60,000 has been on the site for 146 days, its working life is estimated at 7 years and its final scrap value at ₹ 15,000.

A supervisor, who is paid ₹ 8,000 p.m. has devoted one-half of his time to this contract. All other expenses and administration charges amount to ₹ 1,36,500.

Material in hand at site costs ₹ 35,400 on 31st December, 20X8.

The contract price is ₹ 20,00,000. On 31st December, 20X8 two-third of the contract was completed. The architect issued certificates covering 50% of the contract price, and the contractor had been paid ₹ 7,50,000 on account.

PREPARE Contract A/c and show the notional profit or loss as on 31st December, 20X8

Solution **Contract Account**

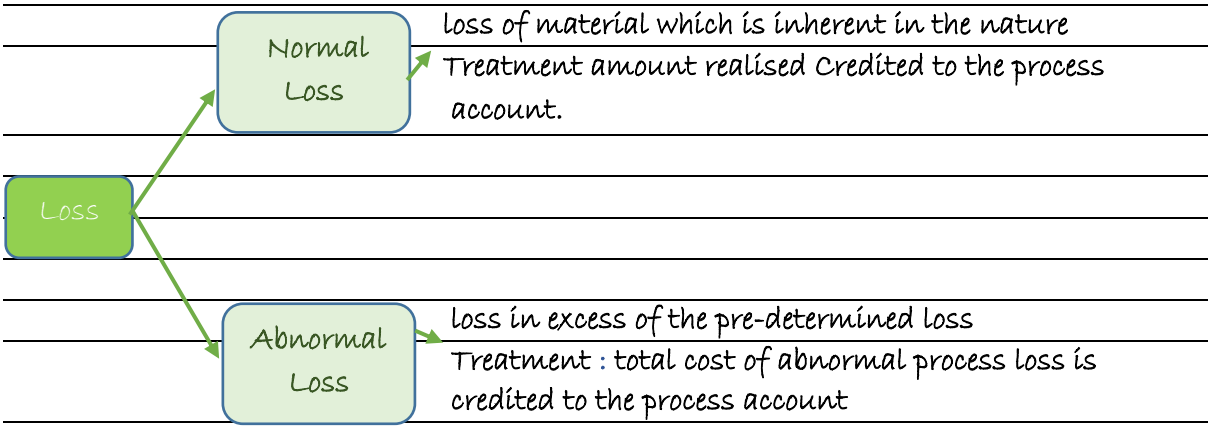
Particulars	(`)	Particulars	(`)
Material issued	2,51,000	Machine (Working note 1)	2,46,000
Wages	5,65,600	Material (in hand)	35,400
Foreman's salary	81,300	Works cost (balancing figure)	10,49,000
Machine	2,60,000		
Supervisor's salary (` 8,000 × 9)/2	36,000		
Administrative charges	1,36,500		
	13,30,400		13,30,400
Works cost	10,49,000	Value of work certified	10,00,000
Costing P&L A/c (Notional profit)	2,13,250	Cost of work uncertified (Working Note 2)	2,62,250
	12,62,250		12,62,250

Chapter 10 Process Costing

Meaning : Process Costing is a method of costing used in industries where the material has to pass through two or more processes

Industries where it is followed: steel, paper, medicines, soaps, chemicals, rubber, vegetable oil, paints, varnish

Loss: Process loss is defined as the loss of material arising during the course of a processing operation



Abnormal Process Gain/ Yield: actual production exceeds the expected figures.

Treatment: The process account is debited with the abnormal gain and credited to abnormal gain account

$$\text{Cost Per Good Unit} = \frac{\text{Total cost} - \text{Normal Loss Scrap}}{\text{Total Units} - \text{Normal loss units}}$$

Q1.A product passes through three process A, B and C. The normal wastage at each process is as follows:

Process A	3%
Process B	5%
Process C	8%

Wastage of process A was sold at 25 paise per unit, that of process B at 50 paise per unit and of process C at ₹ 1 per unit. 10,000 units were issued to process A in the beginning of October 2016 at a cost of ₹ 1 per unit, the other expenses were as follows:

	Process A ₹	Process B ₹	Process C ₹
Sundry materials	1000	1500	500
Labor	5000	8000	6500

Direct expenses	1050	1188	2009

Actual output was:

Process A	9500 units
Process B	9100 units
Process C	8100 units

Prepare the process accounts assuming that there were no opening or closing stock. Also give the abnormal wastage and abnormal effectiveness account.

Q2. The following details are given in respect of manufacturing unit for the month of April:

a. Opening WIP 5000 units

Material (100% complete)	₹ 8,750
Labour (60% complete)	₹ 7500
Overheads (60% complete)	₹ 3750

b. Units introduced in process 17,500 units

c. 17,500 units are transferred to next process

d. Process cost for the period are

Material	₹ ,50,000
Labour	₹ ,95,000
Overheads	₹ 97,500

e. The stage of completion of units in closing WIP are estimated to be Material 100%, Labour 50%, Overhead 50%

You are required to prepare a statement of equivalent units of production; statement of cost of (a) Output transferred (b) Closing WIP

In some process industries the output of one process is transferred to the next process not at cost but at market value or cost plus a percentage of profit. The difference between cost and transfer price is known as inert process profit.

Advantages

1. Comparison between cost of output and its market price at the stage of completion is facilitated
2. Each process is made to stand by itself as to the profitability

Disadvantages

1. The use of inter process profit involve complication
2. The system shows profits which are not realised because of stock not sold out.

Question 3. A Ltd. Produces AXE which passes through two processes before it is completed and transferred to finished stock. The following data relate to Jan 2016

	Process 1 ₹	Process 2 ₹	Finished stock ₹
Opening Stock	7500	9000	22,500
Direct material	15,000	15,750	
Direct wages	11,200	11,250	
Factory overheads	10,500	4500	
Closing stock	3700	4500	11,250
Inter process profit included in op. Stock		1500	8250

Output of process I is transferred to process 2 at 25% profit on transfer price

Output of process 2 is transferred to finished stock at 20% profit on transfer price. Stock in process are valued at prime cost. Finished stock is valued at the price at which it is received from process 2. Sales during the period are ₹ 1,40,000

Prepare process account and finished goods account.

Solution: process 1 A/C

Particulars	Cost	profit	Total	Particulars	Cost	Profit	Total
Opening stock	7500	-	7500	Transfer to Process 2 A/C	40,500	13,500	54,000
D Material	15,000	-	15,000				
D Labour	11,200	-	11,200				
Prime Cost	33,700	-	33,700				
-Closing Stock	-3700	-	-3700				
	30,000	-	30,000				

Factory Overheads	10,500	-	10,500				
	40,500	-	40,500				
Profit (1/3)	-	13,500	13,500				
	40,500	13,500	54,000		40,500	13,500	54,000

Chapter 11 Joint product and By Product

Joint Product: two or more products of equal importance, produced, simultaneously from the same process, with each having a significant relative sale value

By Product: by-product is a secondary or subsidiary product which emanates as a result of manufacture of the main product.

Co- Products : two or more products which are contemporary but do not emerge necessarily from the same material in the same process

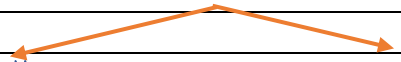
METHODS OF APPORTIONMENT OF JOINT COST TO JOINT PRODUCTS

Physical units Methods	Apportioned on the basis of some physical base, such as weight, numbers etc.
NRV at split off	Sales value - Estimated profit margins - Post split- off costs -Selling and distribution expenses
Technical Estimate	uses technical estimates to apportion the joint costs over the joint products
Sale Value at Spiltt Off	Apportioned on the basis of sale value at split off
Sale Value after further processing	Total sales value of finished products
Average unit Cost Method	Total process cost (upto the point of separation) / Total units of joint product produced
Contribution Margin Method	V/C apportioned on the basis of Physical units and F/C as per contribution

TREATMENT OF BY-PRODUCT COST IN COST-ACCOUNTING

1. When they are of small total value : credited to the Costing Profit and Loss Account or deductions from the total costs.
2. When the by-products are of considerable total value: regarded as joint products rather than as by-products.

3. Where they require further processing: Total NRV IS



Small	Considerable
As per 1 above	As per 2 above

METHODS OF APPORTIONMENT OF JOINT COST TO BY-PRODUCTS

1. Net Realisable Value method: The realisation on the disposal of the by-product may be deducted from the total cost of production so as to arrive at the cost of the main product.
2. Standard cost in Technical Estimates: may be determined by averaging costs recorded in the past and making technical estimates of the number of units of original raw material going into the main product and the number forming the by-product
3. Comparative price: Under this method, the value of the by-product is ascertained with reference to the price of a similar or an alternative material.
4. Re-use basis: In some cases, the by-product may be of such a nature that it can be reprocessed in the same process as part of the input of the process. In that case the value put on the by-product should be same as that of the materials introduced into the process.

Q1. Sellwell Ltd. Operates a chemical process which produces four products A, B, C and D from a basic raw material. The company's budget for a month is as under:

	₹
Raw Material Consumption	17,520
Initial processing wages	16,240
Initial processing overheads	16,240

Products	Production (kgs)	Sales (₹)	Additional proc cost after split
A	16,000	1,09,600	28,800
B	200	5600	-
C	2000	30,000	16,000
D	360	21,600	6600

The company presently intends to sell product B at the point of split off without further processing. The remaining products A, B and D are to be further processed and sold. However management has been advised that it would be possible to sell all the four

products at the split off point without further processing and if this course was adopted, the selling price would be as follows.

Products	A	B	C	D
Selling price per Kg.	4.00	28.00	8.00	40.00

The joint cost are to be apportioned on the basis of sale value realization at the point of split off.

You are required to

1. Prepare a statement showing apportionment of joint cost.
2. Prepare a statement showing the product wise and total budgeted profit or loss based on the proposal to sell product B at the split off point and products A, C and D after further processing.
3. Prepare a statement to show the products wise and total profit or loss if the alternative strategy to sell all the products at split off stage was adopted.
4. Recommend any other alternative which, in your opinion, can increase the total profit further. Calculate the total profit as also the product wise total profit or loss based on your recommendation.

Solution: Workings: Joint Cost

Raw material consumption	17,520
Initial processing wages	16,240
Initial processing overheads	16,240
Total	50,000

a. Allocation of Joint Cost

Method: Sale value at split off point

	A	B	C	D
Sale Value at spilt off	16000 x 4	200 x 28	2000 x 8	360 x 40
Joint Cost 50,000 in (64:5.6:16:14.4)	32,000	2800	8000	7200

b. Profit Statement (sale after processing)

	A	B	C	D	Total
Final Sale value	1,09,600	5600	30,000	21,600	1,66,800
Less,					

Pre Separation Cost	32,000	2800	8000	7200	50,000
Post Separation Cost	28,800	-	16,000	6600	51,400
Profit	48,800	2800	6000	7800	65,400

c. Profit Statement (sale at split off point)

	A	B	C	D	Total
Sale value at split off	64,000	5600	16,000	14,400	1,00,000
Less,					
Pre separation Cost	32,000	2800	8000	7200	50,000
Profit	32,000	2800	8000	7200	50,000

Processed further	Not to process further
A 48,800	B 2800
D 7800	C 8000

Total expected net income is ₹ 67,400

Chapter 12
Service Costing

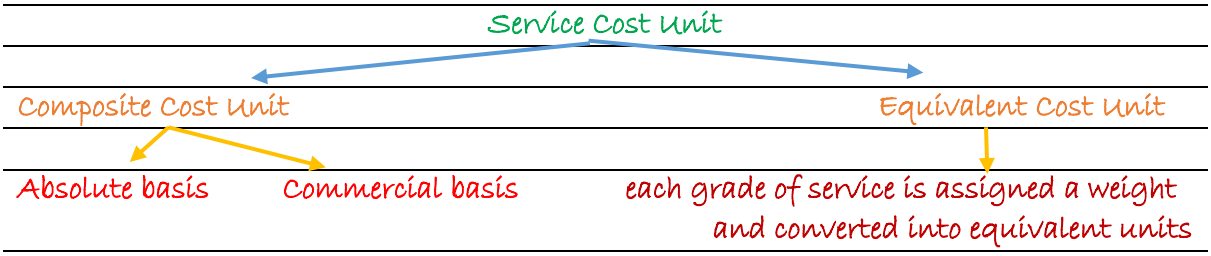
Service costing / Product costing

services are intangible and cannot be stored

Use of Composite cost units for cost measurement

Employee (labour) cost constitutes a major cost element than material cost.

Administration overheads are generally have a significant proportion in total cost



COSTING OF TRANSPORT SERVICES: Transport organizations can be divided into two categories viz. Goods transport and Passenger transport.

The cost unit for Goods transport organization is Ton- Kilometer – that means cost of carrying one Ton of goods over a distance of one kilometer.

Cost unit for Passenger transport organization is Passenger- Kilometer – that means cost of carrying one Passenger over a distance of one kilometer.

Q1. AXA Passenger Transport Company is running 5 buses between two towns, which are 40 kms apart. Seating capacity of each bus is 40 passengers. Following etails are available from their books, for the month of April 20X9:

	Amount (₹)
Salary of Drivers, Cleaners and Conductors	*24,000*
Salary to Supervisor	*10,000*
Diesel and other Oil	*40,000*
Repairs and Maintenance	*8,000*
Tax and Insurance	*16,000*

Depreciation	*26,000*
Interest	*20,000*
	1,44,000

Actual passengers carried were 75% of the seating capacity. All the four buses run on all days for the month. Each bus made one round trip per day. CALCULATE cost per passenger – Kilometer.

Solution: Working Note:

Total Passenger Kilometres =

Number of Buses × Distance × Seating Capacity × Used Capacity × Number of days in the month × Number of trips

(a) 5 Buses × 40 kms. × 40 Seats × 75% × 30 Days × 2 Single trips (1 Round Trip)

(b) 3,60,000 Passenger-Kms.

Cost per Passenger-Km = Total costs ÷ Total Passenger Kilometers

Statement of Cost per Passenger – Km

Particulars	**Cost Per Month**	**Cost per Passenger – Km**
A. Standing Charges:		
Wages of Drivers, Cleaners and Conductors	24,000	
Salary to Supervisor	10,000	
Tax and Insurance	16,000	
Depreciation	26,000	
Interest	20,000	
Total Standing Charges	96,000	0.267
B. Running Charges		
Diesel and other Oil	40,000	0.111

C. Maintenance Charges		
Repairs and Maintenance	8,000	0.022
Total	1,44,000	0.400

Cost per Passenger-Km = ` 0.40

Q2.ABC Transport Company has given a route 40 kilometers long to run bus.

(a) The bus costs the company a sum of ₹20,00,000

(b) It has been insured at 3% p.a. and

(c) The annual tax will amount to ₹20,000

(d) Garage rent is ₹20,000 per month.

(e) Annual repairs will be ₹2,04,000

(f) The bus is likely to last for 5 years

(g) The driver's salary will be ₹30,000 per month and the conductor's salary will be ₹25,000 per month in addition to 10% of takings as commission [To be shared by the driver and conductor equally].

(h) Cost of stationery will be ₹1,000 per month.

(i) Manager-cum-accountant's salary is ₹17,000 per month.

(j) Petrol and oil will be ₹500 per 100 kilometers.

(k) The bus will make 3 up and down trips carrying on an average 40 passengers on each trip.

(l) The bus will run on an average 25 days in a month.

Assuming 15% profit on takings, CALCULATE the bus fare to be charged from each passenger.

Solution: Working Note:

(1) Total Kilometres run per annum:

= Number of Buses × Distance × Number of days in the Month × Number of trips × 12 months

= 1 Bus × 40 kms × 25 Days × 6 Single trips (3 Round Trips) × 12 months = 72,000 kms.

(2) Total Passenger Kilometres per annum:

Total Kilometres run per annum × Seating Capacity

= 72,000 Kms × 40 Seats = 28,80,000 Passenger-Kms.

(3) Petrol & oil Consumption per annum:

Total Kilometres run per annum × Petrol Consumption per KM

= 72,000 Kms × (₹500 / 100 Kms) = ₹ 3,60,000

Statement of Cost per Passenger – Km

Particulars	Per Annum	Per Passenger - Kilometer
A. Standing Charges:		
Insurance @ 3% on `10,00,000	30,000	
Annual Tax	20,000	
Garage rent (`20,000 × 12)	2,40,000	
Depreciation	4,00,000	
Salary of Driver (fixed part)	3,60,000	
Salary of Conductor (fixed part)	3,00,000	
Stationary	12,000	
Manager-cum-accountant's salary	2,04,000	
Total Standing Charges	**15,66,000**	0.5438
B. Running Charges:		
Diesel and other Oil (WN-3)	3,60,000	
Commission to Driver*	1,42,000	
(10%×`28,40,000×1/2)		
Commission to Conductor*	1,42,000	
(10%×`28,40,000×1/2)		
Total Running Charges	**6,44,000**	0.2236
C. Maintenance Charges:		
Repairs	2,04,000	0.0708
Grand Total (A+B+C)	**24,14,000**	0.8382

Profit (15%×`28,40,000)	4,26,000	0.1479
Fare per Passenger Kilometer		**0.9861**

*Total takings = Standing Charges + (Running cost + Commission on takings)

+ Maintenance cost + Profit

Let Takings = X

Or, X = 15,66,000 + (3,60,000 + 0.1X) + 2,04,000 + 0.15X Or, X

– 0.25X = 21,30,000

Or, X = 28,40,000

COSTING OF HOTELS AND LODGES

Q3. A company runs a holiday home. For this purpose, it has hired a building at a rent of ₹10,000 per month along with 5% of total taking. It has three types of suites for its customers, viz., single room, double rooms and triple rooms.

Following information is given:

Type of suite	*Number*	*Occupancy percentage*
Single room	*100*	*100%*
Double rooms	*50*	*80%*
Triple rooms	*30*	*60%*

	(`)
Staff salaries	*14,25,000*
Room attendants' wages	*4,50,000*
Lighting, heating and power	*2,15,000*
Repairs and renovation	*1,23,500*
Laundry charges	*80,500*
Interior decoration	*74,000*
Sundries	*1,53,000*

Provide profit @ 20% on total taking and assume 360 days in a year. Calculaye rent to be charged for each type of room

Working Notes:

(i) Total equivalent single room suites

Nature of suite	Occupancy (Room-days)	Equivalent single

		room suites (Room-days)
Single room suites	36,000 (100 rooms · 360 days · 100%)	36,000 (36,000 · 1)
Double rooms suites	14,400 (50 rooms · 360 days · 80%)	36,000 (14,400 · 2.5)
Triple rooms suites	6,480 (30 rooms · 360 days · 60%)	32,400 (6,480 · 5)
		1,04,400

Statement of total cost:

	(`)
Staff salaries	14,25,000
Room attendant's wages	4,50,000
Lighting, heating and power	2,15,000
Repairs and renovation	1,23,500
Laundry charges	80,500
Interior decoration	74,000
Sundries	1,53,000
	25,21,000
Building rent {(`10,000 · 12 months) + 5% on total taking}	1,20,000+ 5% on total takings
Total cost	26,41,000 + 5% on total takings

Profit is 20% of total takings

∴ Total takings = ₹26,41,000 + 25% (5% +20%) of total takings Let R be rent for single room suite

Then 1,04,400 R = 26,41,000 + (0.25 × 1,04,400 R)

Q4. From the following data pertaining to the year 20X8-X9 PREPARE a cost statement showing the cost of electricity generated per kwh by Chambal Thermal Power Station.

Total units generated	10,00,000 kWh
	(₹)
Operating labour	15,00,000
Repairs & maintenance	5,00,000
Lubricants, spares and stores	4,00,000
Plant supervision	3,00,000
Administration overheads	20,00,000

5 kWh. of electricity generated per kg. of coal consumed @ ₹ 4.25 per kg.

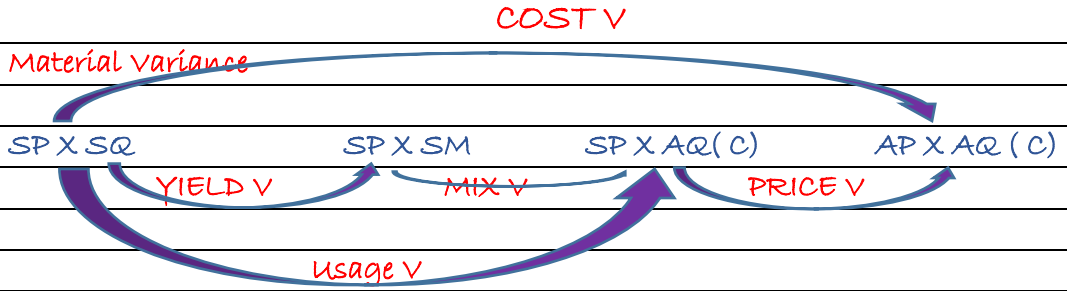
Depreciation charges @ 5% on capital cost of ₹ 2,00,00,000.

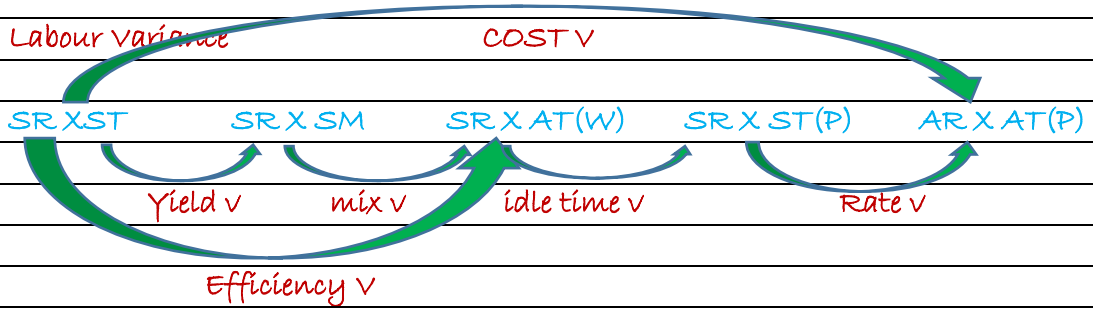
Chapter 13 Standard Costing

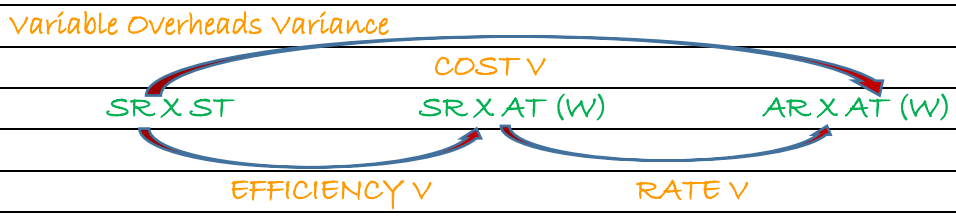
Meaning of Standard Cost : Planned unit cost of the product, component or service produced in a period

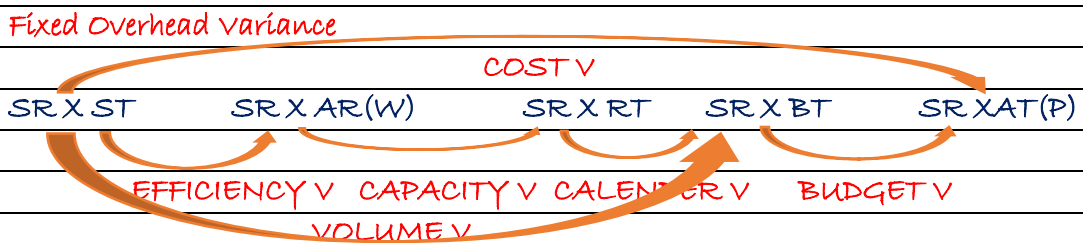
PROCESS OF STANDARD COSTING

- Setting of Standards:
- Ascertainment of actual costs:
- Comparison of actual cost with standard cost:
- Investigate the reasons for variances
- Disposition of variances:









Q1. The standard cost of certain chemical mixture is as under :

40% of material A at ₹ 20 per tonne. 60% of material B at ₹ 30 per tonne.

A standard loss of 10% is expected in production. The following actual cost data is given for the period.

180 tonnes material A at a cost of ₹ 18 per tonne.

220 tonnes of material B at a cost of ₹ 34 per tonne.

The weight produced is 364 tonnes.

Calculate material variances.

Solution: Let Standard Input be 100 tonnes

Data For Standard

Raw Material	Standard Quantity	Standard price
A	40	20
B	60	30

Standard Output = 90

Data For Actual

Raw Material	Actual Quantity	Actual price
A	180	18
B	220	34

Actual Output = 364

SP X SQ	SP X SM	SP X AQ (C)	AP X AQ (C)
20 X 161.77 = 3235.40	20 X 160 = 3200	20 X 180 = 3600	18 X 180 = 3240
30 X 242.66 = 7279.8	30 X 240 = 7200	30 X 220 = 6600	34 X 220 = 7480

MCV = SP X SQ - AP X AQ (C)

A 3235.40 - 3240 =

B 7279.8 - 7480 =

MPV = SP X AQ (C) - AP X AQ (C)

A 3600 - 3240 =	360 (F)
B 6600 - 7480 =	880 (A)
	520 (A)

MUV = SP X SQ (C) - SP X AQ (C)

A 3235.40 - 600 =	364.60 (A)
B 7279.80 -6600 =	679.8 (F)
	315.2 (F)

MMV = SP X SM - SP X AQ (C)

A 3200 - 3600	400 (A)
B 7200 - 6600	600 (F)
	200 (F)

MYV = SP X SQ - SP XSM

A 3235.40 - 3200	35.40 (F)
B 7279.80 - 7200	79.80 (F)
	115.20 (F)

Q2. Following information is given regarding standard composition and standard rates of gang of worker

Standard composition	Standard hourly rate
10 men	₹ 0.625
5 women	0.400
5 boys	0.350

According to the given specifications, a week consists of 40 hours and standard output for a week is 1000 units. In a particular week, gang consisted of 13 men, 4 women, 3 boys and actual wages were paid as follows

Men	@₹ 0.6 per hour
Women	@₹ 0.425 per hour
Boys	@₹ 0.325 per hour

Two hours were lost in the week due to abnormal idle time. Actual production was 960 units in the week. Find out

(a) Labour rate variance (b) labour mix variance

(c) Labour idle time variance (d) Labour yield variance

(e) Labour efficiency variance (f) Labour cost variance

Solution:

Data For Standard

Labour	Standard Time	Standard Rate
Men	10 X 40 =400	.625
Women	5 X 40 = 200	.40
Boys	5 X 40 = 200	.35

Standard Output = 1000

Data For Actual

Labour	Standard Time	Standard Rate
Men	13 X 40 =520	.60
Women	4 X 40 = 160	.425
Boys	3 X 40 = 120	.325

Actual Output = 960

LCV = SR X ST - AR X AT (P)

Men 240 - 312 =

Women 76.80 - 68 =

Boys 67.20 - 39 =

LRV = SR X AT(P) - AR X AT(P)

Men 325 - 312 =

Women 64 - 68 =

Boys 42 - 39 =

LEV = SR X ST- SR X AT(W)

Men 240 - 308.75 =

Women 76.80 - 60.80 =

Boys 67.20 - 39.90 =

LMV = SR X SM - SR X AT(W)

Men 237.50 - 308.75 =

Women 76 - 60.80 =

Boys 66.50 - 39.90 =

LYV = SR X ST - SR X SM

Men 240 - 237.50 =

Women 76.80 - 76 =

Boys 67.20 - 66.50 =

LITV = SR X AT(W) - SR X AT(P)

Men 308.75 - 325 =

Women 60.80 - 64 =

Boys 39.90 - 42 =

ST = Standard time for Actual Output

Men = (400/1000) X 960 = 384

Women = (200/1000) X 960 = 192

Boys = (200/1000) X 960 = 192

SM = Standard Mix, Actual time worked in standard Ratio

(494 + 152 + 114) in 400:200:200; Men 380, Women 190, Boys 190

Q3. From the following calculate the fixed overhead variances.

	Budgeted	Actual
No. of working days	20	22
Man hours per day	8000	8400
Output for man hours in units	1.0	0.9
Overhead cost (₹)	1,60,000	1,68,000

Solution:

	Budget	Actual
Fixed Overheads	1,60,000	1,68,000
Hours	800 x 20 = 1,60,000	8400 x 22 = 1,84,800
Days	20	22
Units	1,60,000 x 1 = 1,60,000	1,84,800 x 0.9 = 1,66,320

SR = Budget fixed Overheads / Budget Hours = 1,60,000 / 1,60,000 = ₹ 1
AR = Actual Fixed Overheads / Actual Hours = 1,68,000 / 1,84,800 = 1680/1848 ST = Standard time for Actual Output = (1,60,000/ 1,60,000) x 1,66,320 = 1,66,320 RT = (Budget Hours x Actual Days) / Budget Days = (1,60,000 x 22) / 20 = 1,76,000

SR X ST	SR X AT(W)	SR X RT	SR X BT	AR X AT (P)
1 X 1,66,320	1 X 1,84,800	1 X 1,76,000	1 X 1,60,000	1680/1848X1,84,800
1,66,320	1,84,800	1,76,000	1,60,000	1,68,000

Fixed Overhead Cost Variances = SR X ST – SR X AT(P)
1,66,320 – 1,68,000 = 1680 (A)

Fixed Overheads Volume Variance = SR X ST – SR X BT
1,66,320 – 1,60,000 = 6320 (F)

Fixed Overheads Budget Variance = SR X BT – SR X AT(P)
1,60,000 – 1,68,000 = 8000 (A)

Fixed Overheads Calendar Variance = SR X RT – SR X BT
1,76,000 – 1,60,000 = 16,000(A)

Fixed Overhead Capacity Variance = SR X AT(W) – SR X RT

1,84,800 – 1,76,000 = 8800(A)

Fixed Overheads Efficiency Variance = SR X ST – SR X AT(W)
1,666,320 – 1,84,800 = 18,480 (A)

Chapter 14 marginal Costing

1. BEP (UNITS) = Fixed Cost / Contribution per unit OR BEP (in ₹) / SP Per unit
2. BEP (₹) = Fixed Cost / PV ratio OR BEP (in ₹) x SP Per unit
3. Sale units to earn desired Profit = Fixed cost + desired profit / Contribution per unit
4. Sale ₹ to earn desired profit = Fixed Cost + Desired Profit /PV ratio
5. Contribution per Unit = SP per unit – VC Per unit
6. PV Ratio (profit Volume ratio) = Contribution / sales X100 OR
    i. Contribution per unit / Selling price per unit x 100
7. Margin of safety (units) = Actual sales in units – BEP sale in units
8. Margin of safety (₹) = Actual sales in ₹ - BEP sale in ₹
9. MS Ratio = Margin of safety / sales x 100
10. Total sales = BEP sale + MES
11. Profit = Sale – VC – FC OR Contribution – FC OR Margin of safety (₹) x PV ratio
12. General Equation : Sales – VC = FC + Profit OR Sales x PV ratio = FC + Profit Contribution + Sales – VC OR FC + Profit OR Sales x PV ratio
13. Before tax profits = After tax profits / 1- Tax rate
14. If PV ratio is 40% of sales than VC ratio will be 60% of sales
15. PV Ratio If information of two years are given = Change in profit/ change in sales x 100
16. Cost BEP = Change in FC / Change in VC Per unit
    a. Decision criteria in case of COST BEP

Expected production	17. Alternate
Below Cost BEP	18. Alternate with less FC
Equals to Cost BEP	19. Any Alternate

Above COST BEP	20. Alternate with less VC

18. Overall BEP (UNITS) FC/ Weighted Contribution per unit

19. Weighted contribution per unit = Total Contribution /$\sum$ w

20. Overall BEP (₹) = FC / Weighted PV Ratio

21. Weighed PV Ratio = Total contribution / Total Sales x 100

22. If Overall BEP is in units than it will be divided in the ratio of W, If it is in ₹ than it will be d ratio of sales in ₹

(a) Format Under Marginal Costing

Sales		**xxxx**
Less, variable cost		
Direct material	Xxxx	
Direct Labour	Xxxx	
Direct expenses	xxxx	
Variable factory overhead	xxxx	
Variable cost of goods produced	xxxx	
+ opening stock of finished goods	xxxx	
-closing stock of finished goods	xxxx	
[redacted]	[redacted]	
Variable cost of goods sold	xxxx	
+ Variable administration overhead	xxxx	
+ Variable selling overhead	xxxx	
Total variable cost		**Xxxx**
Contribution		Xxxx
Less, Fixed factory overheads		Xxxx
Fixed administration overhead		Xxxx
Fixed selling overhead		**Xxxx**
Profit		**xxxx**

Format Under Absorption Costing

Sales		xxxx
Less, Manufacturing cost of goods sold	Xxxx	
Direct material	Xxxx	
Direct Labour	xxxx	
Direct expenses	xxxx	
Variable factory overhead	xxxx	
Fixed factory overheads	xxxx	
Manufacturing cost of goods produced	xxxx	
+ opening stock of finished goods	xxxx	
-closing stock of finished goods	xxxx	
Standard cost of goods sold	xxxx	
+ Under Recovery		Xxxx
-Over Recovery		Xxxx
Manufacturing cost of goods sold		Xxxx
Gross profit		Xxxx
- Variable administration overhead		Xxxx
-Fixed administration overhead		Xxxx
- Variable selling overhead		**xxxx**
-fixed selling overhead		
Profit		

Q1. The following data are obtained from the records of a company

	First year (₹)	Second Year (₹)
Sales	80,000	90,000
Profit	10,000	14,000

Calculate BEP

Solution: P/V Ratio = (Change in Profits / Change in Sales) x 100

Change in profit 14,000 – 10,000 = 4000

Change in Sales 90,000 – 80,000 = 10,000

(4000 / 10,000) x 100 = 40%

Sales x P/V Ratio = Fixed Cost + Profit

Ist Year

80,000 x 40% = Fixed Cost + 10,000

Fixed Cost = 22,000

BEP = Fixed Cost / P V Ratio22,000 / 40% = ₹ 55,000

Q2. XY Limited has been offered a choice to buy machine A or Machine B. From the following data, you are required to Compute :

(d) Break even point for each of the machines.
(e) The level of sales at which both machines earn equal profits.
(f) The range of sales at which one is more profitable than the other Machines

	A	B
Annual output (in units)	10,000	10,000
Fixed Cost (₹)	30,000	16,000
Profit at given level of production (₹)	30,000	24,000

The market price of the product is expected to be ₹ 10 per unit.

Q3.XY Ltd. makes two products X and Y, whose respective fixed costs are F_1 and F_2. You are

given that the unit contribution of Y is one fifth less than the unit contribution of X, that the total of F_1 and F_2 is ₹ 1,50,000, that the BEP of X is 1,800 units (for BEP of X F_2 is not considered) units is the indifference point between X and Y. (i.e. X and Y make equal profits at 3,000 unit volume, considering their respective fixed costs). There is no inventory build up as whatever is produced is sold.

Required : Find out the values F1 and F2 and units contributions of X and Y.

Q4. Mr. X has ₹ 2,00,000 investments in his business firm. He wants a 15 per cent return on his money. From an analysis of recent cost figures, he finds that his variable cost of operating is 60 per cent of sales, his fixed costs are ₹ 80,000 per year. Show computations to answer the following questions:

I. What sales volume must be obtained to break even?

II. What sales volume must be obtained to get 15 per cent return on investment?

IV. Mr. X estimates that even if he closed the doors of his business, he would incur ₹ 25,000 as expenses per year. At what sales would he be better off by locking his business up?

Q5. WONDER LTD. manufactures a single product, ZEST. The following figures relate to ZEST for a one-year period:

	50%	100%
Sales and Production units	400	800
Sales	₹ 8,00,000	₹ 16,00,000
Production Costs:		
- Variable	3,20,000	6,40,000
- Fixed	1,60,000	1,60,000
Selling and Distribution Costs:		
- Variable	1,60,000	3,20,000
- Fixed	2,40,000	2,40,000

The normal level of activity for the year is 800 units. Fixed costs are incurred evenly throughout the year, and actual fixed costs are the same as budgeted. There were no stocks of ZEST at the beginning of the year.

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

Required:

(a) What would be the fixed production costs absorbed by ZEST if absorption costing is used?

(b) What would be the under/over-recovery of overheads during the period?

(c) What would be the profit using absorption costing?

(d) What would be the profit using marginal costing?

Chapter 15 Budgetary control

Fixed / Flexible budget : fixed budget is a budget designed to remain unchanged irrespective of the level of activity actually attained .
Flexible budget is a budget which by recognizing the difference between fixed, semi-variable and variable cost is designed in relation to level of activity attained

Long term budget: Prepared for a period longer than a year, helpful in business forecasting and forward planning. Capital expenditure budget and R & D budget are examples of long term budget.
Short term budget: prepared for period for less than a year, cash budget is an example of short term budget; such types of budgets are prepared in cases where a specific action has to be immediately taken to bring any variation under control

Q1. A department of Company X attains sale of ` 6,00,000 at 80 per cent of its normal capacity and its expenses are given below:

Administration costs:	(₹)
Office salaries	90,000
General expenses	2 per cent of sales
Depreciation	7,500
Rates and taxes	8,750
Selling costs:	
Salaries	8 per cent of sales
Travelling expenses	2 per cent of sales
Sales office expenses	1 per cent of sales
General expenses	1 per cent of sales
Distribution costs:	
Wages	15,000
Rent	1 per cent of sales
Other expenses	4 per cent of sales

PREPARE flexible administration, selling and distribution costs budget, operating at 90 per cent, 100 per cent and 110 per cent of normal capacity.

Solution **Flexible Budget of Department....of Company 'X'**

	80% (₹)	90% (₹)	100%(₹)	110%(₹)
Sales	6,00,000	6,75,000	7,50,000	8,25,000
Administration Costs:				
Office Salaries (fixed)	90,000	90,000	90,000	90,000
General expenses (2% of Sales)	12,000	13,500	15,000	16,500
Depreciation (fixed)	7,500	7,500	7,500	7,500

Rent and rates (fixed)	8,750	8,750	8,750	8,750
(A) Total Adm. Costs	1,18,250	1,19,750	1,21,250	1,22,750
Selling Costs:				
Salaries (8% of sales)	48,000	54,000	60,000	66,000
Travelling expenses (2% of sales)	12,000	13,500	15,000	16,500
Sales office (1% of sales)	6,000	6,750	7,500	8,250
General expenses (1% of sales)	6,000	6,750	7,500	8,250
(B) Total Selling Costs	72,000	81,000	90,000	99,000
Distribution Costs:				
Wages (fixed)	15,000	15,000	15,000	15,000
Rent (1% of sales)	6,000	6,750	7,500	8,250
Other expenses (4% of sales)	24,000	27,000	30,000	33,000
(C) Total Distribution Costs	45,000	48,750	52,500	56,250
Total Costs (A + B + C)	2,35,250	2,49,500	2,63,750	2,78,000

Q2. Float glass Manufacturing Company requires you to PREPARE the Master budget for the next year fro
information:

Sales:

Toughened Glass ₹ 6,00,000

Bent Glass ₹ 2,00,000

Direct material cost 60% of sales

Direct wages 20 workers @ ₹ 150 per month

Factory overheads:

Indirect labour –

Works manager ₹ 500 per month

Foreman ₹ 400 per month

Stores and spares 2.5% on sales

Depreciation on machinery	₹ 12,600
Light and power	₹ 3,000
Repairs and maintenance	₹ 8,000
Others sundries	10% on direct wages
Administration, selling and distribution expenses	₹ 36,000 per year

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Q3. Following data is available for DKG and Co:

Standard working hours	8 hours per day of 5 days per week
Maximum capacity	50 employees
Actual working	40 employees

Actual hours expected to be worked per four week 6,400 hours

58

Std. hours expected to be earned per four weeks	8,000 hours
Actual hours worked in the four- week period	6,000 hours
Standard hours earned in the four- week period	7,000 hours.

The related period is of 4 weeks. In this period there was a one special day holiday due to national event. CALCULATE the following ratios:

(1) Efficiency Ratio, (2) Activity Ratio, (3) Calendar Ratio, (4) Standard Capacity Usage Ratio, (5) Actual Capacity Usage Ratio. (6) Actual Usage of Budgeted Capacity Ratio.

Solution; Maximum Capacity *in a budget period*

= 50 Employees × 8 Hrs. × 5 Days × 4 Weeks = 8,000 Hrs.

Budgeted Hours

40 Employees × 8 Hrs. × 5 Days × 4 Weeks = 6,400 Hrs.

Actual Hrs. = 6,000 Hrs. (given)

Standard Hrs. for Actual Output = 7,000 Hrs.

Budget No. of Days = 20 Days = 20 Days (4 Weeks x 5 Days)

Actual No. of Days = 20 – 1 = 19 Days

1. Efficiency Ratio $= \frac{\text{Standard Hrs}}{\text{Actual Hrs}} \times 100 = \frac{7{,}000 \text{ hours}}{6{,}000 \text{ hours}} \times 100 = 116.67\%$

2. Activity Ratio $= \frac{\text{Standard Hrs}}{\text{Budgeted Hrs}} \times 100 = \frac{7{,}000 \text{ hours}}{6{,}400 \text{ hours}} \times 100 = 109.375\%$

3. Calendar Ratio $= \frac{\text{Available working days}}{\text{Budgeted working days}} \times 100 = \frac{19 \text{days}}{20 \text{days}} \times 100 = 95\%$

4. Standard Capacity Usage Ratio $= \frac{\text{Budgeted Hours}}{\text{Max. possible hours in the budgeted period}} \times 100$

$= \frac{6{,}400 \text{ hours}}{8{,}000 \text{ hours}} \times 100 = 80\%$

5. Actual Capacity Usage Ratio $= \frac{\text{Actual Hours worked}}{\text{Max. possible working hours in a period}} \times 100$

$= \frac{6{,}000 \text{ hours}}{8{,}000 \text{ hours}} \times 100 = 75\%$

6. Actual Usage of Budgeted Capacity Ratio $= \frac{\text{Actual working Hours}}{\text{Budgeted Hours}} \times 100$

$= \frac{6{,}000 \text{ hours}}{6{,}400 \text{ hours}} \times 100 = 93.75\%$

Q4. Action Plan Manufacturers normally produce 8,000 units of their product in a month, in their Machine Shop. For the month of January, they had planned for a production of 10,000 units. Owing to a sudden cancellation of a contract in the middle of January, they could only produce 6,000 units in January.

Indirect manufacturing costs are carefully planned and monitored in the Machine Shop and the Foreman of the shop is paid a 10% of the savings as bonus when in any month the indirect manufacturing cost incurred is less than the budgeted provision.

The Foreman has put in a claim that he should be paid a bonus of ₹ 88.50 for the month of January. The Works Manager wonders how anyone can claim a bonus when the Company has lost a sizeable contract. The relevant figures are as under:

Indirect manufacturing Expenses	Expenses for a normal month	Planned for January	Actual Cost in January

Salary of foreman	1000	1000	1000
Indirect Labour	720	900	600
Indirect Material	800	1000	700
Repairs	600	650	600
Power	800	875	740
Tools consumed	320	400	300
Rtaes and Taxes	150	150	150
Depreciation	800	800	800
Insurance	100	100	100
	5290	5875	4990

Do you agree with the Works Manager? Is the Foreman entitled to any bonus for the performance in January? Substantiate your answer with facts and figures.