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One Day Revision

Cost & Management Accounting

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DIRECT MATERIAL COSTING

Background:-

- "One Product Cost" – Main Material cost, labour cost and overhead cost.
- Material cost - Major portion in total cost & Direct Material cost & Indirect Material cost
- Indirect Material cost – Overhead Cost
- Direct Material cost – Variable Cost

Purpose

- Marks Weightage – 8 Marks to 12 Marks
- More Profit - Reduce material Cost

Most Important Concepts

- EOQ
- Stock Levels

ECONOMIC ORDER QUANTITY (EOQ) – How Much to order in single order so that Carrying & Ordering cost are minimized Assuming Total Annual Purchase Cost remain Same.

1. Ordering cost (Cost of placing an order),
2. Carrying cost (cost of keeping material safe and usable till use in production) and
3. Purchase cost (Quantity purchased x price per unit)

Carrying Cost (%) = Insurance cost (%)+interest cost(%)+storage space cost(%)+obsolescence cost rate(%)

- Carrying cost per unit per annum normally remain same.
- Carrying cost shall change if it is given as a % of material price **and** material price keeps on Changing

Formula $\mathbf{Q} = \sqrt{\frac{2 \times A \times O}{C}}$ (Derivation Covered in class)

Annual Ordering cost = Total number of orders in a year X Ordering cost per order

$= \frac{\text{Annual requirement of raw material (A)}}{\text{Quanity ordered each time (C)}}$ X Ordering cost per order (O) $= \frac{A \text{ X } O}{Q}$

Annual carrying cost = Average Inventory X Average carrying cost per unit

$= \frac{\text{Quantity ordered each time (Q)}}{2}$ X Avg. carrying cost per unit (C) $= \frac{Q \text{ X } C}{2}$

How to Learn EOQ Formula

Background:- "Ek Ladka galike 2 ladko ko dhamki dete hue"

Tum DonokeDono (2)	Aa Jao (A)	Open (O)	Challenge (C) he	KaatDunga (Divide)	Gahr me ghuskar (Square root sign)
2	A	O	C	DIVIDE	$\sqrt{}$

Exception:- (EOQ is not always optimum order size quantity)

- Optimum order size may not be EQO if **discount for bulk purchase** is given.
- Order size involving minimum material cost shall be optimum order size. (*Calculate total material cost at different order size including EOQ size)

Special EOQ:- EOQ in Range type-question

Range type question are those question in purchase price per unit decreases as order size is increased from one range to another.

Step 1:- Calculate EOQ for each range.
Step 2:- If EOQ falls within respective range then it will be valid EOQ otherwise invalid EOQ.

Frequency of order

- FOO is the time gap between placing two consecutive orders e.g.

$$\text{FOO} = \frac{Total\ number\ of\ days\ in\ a\ year}{Total\ number\ of\ orders}$$

Lead Time:

- it is time gap between date of placing the order with supplier and date of receipt of ordered material e.g. if order is placed on 4th Nov. 2016 and material is received on 8th Nov. 2016 then the lead time is 4 days.

Re-order Level

- When to Order
- It is that level of stock of raw material at which a fresh order for raw material should be placed otherwise the firm may face stock-out situation. This level lies between maximum and minimum level.

A Car tank petrol normal full capacity is 25 litre. Reserve level is 5 litre.

Formula 1:- Maximum Usage X Max lead time
Formula 2:- Minimum Stock + Avg. Usage X Avg. Lead Time
Formula 3:- Safety Stock + Avg. Usage X Avg. Lead Time

Minimum Level:

- It is that level of stock below which stock in hand of raw material should not be allowed to fall.

Formula

F1 - Re-order Level – Avg. Usage X Avg. Lead Time **OR**
F2 - Max. Lead Time X Max. Usage – Avg. Lead Time X Avg. Usage **OR**
F3 - Safety Stock

Maximum level:

- It is that level of stock above which stock in hand of raw material should not be allowed to exceed. Like 25 litre in car petrol.

F1 - Re-order Level + Re-order quantity – Minimum Usage X Minimum Lead Time.

Average Stock Level

Formula 1:- Avg. stock held by an organization = $\frac{Max.Stock\ Level+Minimum\ Stock\ Level}{2}$

Formula 2 :- Min. Stock Level + $\frac{Re-order\ Quanity}{2}$

Danger Level:-

- It is the level at which raw material kept for emergency is used for production of FG (Normal issues of raw material is not possible).

When all petrol in car is used. Now car is running on reserve. This is danger level.

Danger Level = Avg. Usage X Max. Lead Time for emergency purchase

Material Turnover Ratio / Inventory Turnover Ratio for raw material

MTR:-It is a ratio between **raw material consumed** during a year and **average stock of raw material** maintained during the year.

MTR Formula = $\frac{Raw\ material\ consumed\ during\ a\ year}{Avg.stock\ of\ raw\ material}$

Avg. stock of raw material = $\frac{Opening\ Stock+Closing\ stock}{2}$

Raw Material holding period or Inventory Turnover period:- it is a ratio between No. of days/months in a year and MTR.

Formula = $\frac{365\ Days\ or\ 12\ months}{Material\ Turnover\ Ratio}$

It tell number of days material is kept (holded) in godown before further use.

Low MTR means High RM holding period which means high carrying cost hence unfavourable. (RM called slow moving)
High MTR means low RM holding period which means less carrying cost hence favourable. (RM Called fast moving)

Valuation of raw material:- while calculating per unit cost of raw material purchased, some items are considered as follows:-

1. Trade Discount	Deduct from purchase price
2. Quantity Discount	Deduct from purchase price
3. Cash Discount	**Not Deduct** from purchase price since it is finance benefit.
4. Road Tax/Toll Tax / Octroi / Entry Tax	Add to purchase cost
5. GST Integrated GST - paid on inter-state supply of goods and services State GST – Paid on intra-state supply of goods and services Central GST – Paid on mfd& supply of goods	Add to purchase cost if no input tax credit availed. Unless specifically mentioned in question, it will be excluded from cost of purchase assuming that credit is available.
6. Demurrages / Detention Charges / Fine / Penalty	**Deduct** from purchase price since it is a penalty
7. Insurance Cost / Comm. / Brokerage Paid / Freight Inwards	Add to purchase cost
8. Cost of containers (if specifically charged)	• Add to purchase cost if it is non-returnable. • Don't add to purchase cost if it is returnable.
9. Normal Loss	Good units shall absorb cost of normal loss of material.

Note:-Cost per unit = $\frac{Total\ Cost}{Total\ units - normal\ loss\ units}$

How to Calculate cost of material consumed and cost of closing stock of material if material purchase prices keeps on changing

3 methods

1. FIFO (First in First Out):- Material issued for production shall be priced at the price of material purchased **first** till its quantity exhausts. When the quantity exhausts, **next** price shall be used as basis.

2. LIFO (Last in First Out):-Material issued for production shall be priced at the price of material purchased **LAST** till its quantity exhausts. When the quantity exhausts, **previous** price shall be used as basis.

3. Weighted Average method:- With every receipt of material, price is averaged and this averaged price used for issue of material till next receipt of material. On next receipt of material, average price changes. Used when difficult to identify material physically e.g. petrol storage in a tank.

Note:- We will prepare stores ledger Account to find out cost of material issued and closing stock.

Treatment of normal and abnormal loss of units in valuation

a. Normal Loss in units:- Price per unit of remaining material shall be increased.
b. Abnormal loss in units:- it shall be treated as issue of material. Cost of material lost shall be charged to costing P&L A/c as loss.

If given in question "Shortage will be charged as overhead" then it means cost of such issues shall be treated as overhead cost (material Cost became indirect material cost). It is neither normal loss nor abnormal loss.

ABC ANALYSIS (Example of a Father having 3 daughters)

Practical steps to classify material in category A, B and C

Step 1:- Calculate value of each raw material by multiplying annual consumption of each raw material by its unit price.
Step 2:-Calculate total value of all raw materials.
Step 3:-Calculate % of value of each raw material in relation to total value of all raw materials.
Step 4:-Assign ranking to above calculated % i.e. Rank 1 to highest %, Rank 2 to second highest % and so on.
Step 5:- Classify items having nearly 70% value under category A, 20% value under category B and 10% value under category C.

Input-output ratio

It explains the relationship between input consumption and output produced using that input.

Formula = $\frac{input}{output}$ x 100

Example:- suppose in a manufacturing process, output obtained is 200 kg from use of input of 260 kg then input-output ratio shall be 130% i.e$\frac{260\ kg}{200\ kg}$ x 100

If input-output ratio is 130%, it means that

- Input consumption is 130% of the output.
- manufacturing loss is of 30% of output.

This ratio is treated as unfavorable if it is more than 100% while it is regarded as favorable if it is near 100%.

Material cost for 1 unit of output = Input – Output Ratio x Purchase price of RM **(Derivation Explained in Class)**

Stock-out situation

When a supplier could not supply ordered units of FG then such a situation is called Stock out situation.

Stock-out ratio (Finished Goods) = $\frac{units\ for\ which\ order\ got\ cancelled}{total\ units\ for\ which\ orders\ received\ in\ whole\ year}$

Inventory turnover ratio for FG (ITR for FG)

1. Inventory turnover ratio for finished goods = $\frac{Cost\ of\ sales}{Average\ inventory\ of\ finshed\ goods}$
2. Average inventory of finished goods = $\frac{Opening\ stock\ of\ FG + closing\ stock\ of\ FG}{2}$
3. Avg. stock of finished goods = $\frac{365\ days\ or\ 12\ months}{inventory\ turnover\ ratio\ of\ FG}$

Low ITR for FG means High inventory holding period which means high holding cost hence unfavourable. High ITR for FG means Low Inventory holding period which means low holding cost hence favourable.

Stock out cost = stock out units x Stock out cost per unit x probability (%).

Raw material mix ratio

- When 2 or more type of raw materials are required in producing a product then the ratio in which material is used is, called raw material mix ratio.

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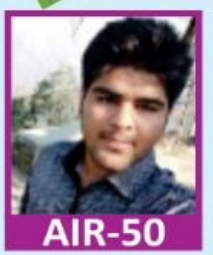
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Direct Labour Cost (DLC)

Basic Knowledge

- Direct wages Cost is major portion in total cost of a product hence a company always desires to minimize to earn good profit.
- DLC includes payment made to those workers who are directly involved in production. It means DLC does not include payment made to those workers who are not directly involved in production.
- Example Salary paid to guard sitting at factory gate is indirect labour cost since he is not doing any production in factory
- Direct Workers are paid wages based on 3 basis
    1. Time basis: in such case workers are paid on time basis e.g. Rs. 100 per hour, Rs. 1000 per day
    2. Piece rate basis: in such case workers are paid on the basis of production e.g. Worker shall be apdi Rs.200 per unit produced.
    3. Piece rate wage system with guaranteed time wages:- in this system, Worker is paid according to piece rate with minimum security of getting guaranteed time wages.
- Total Wages of a worker under time based wage method = No. of hours worked x wage rate per hour.
- Total Wages of a worker under piece rate wage system = No. of units produced x piece rate per unit.
- This chapter is totally dedicated to study techniques which motivate. Pay more to workers and get more work

Company always focus on win-win situation

- Suppose a worker is producing 10 units in 1 day of 8 hours and getting Rs.100 per hour. Ta end of the day he will receive Rs.800.
- Suppose worker is told that if will produce 10 units in lesser time then company will pay him 50% of wages equivalent to time saved.
- Now workers produced 10 units in 4 hours.
- Now total wages of worker shall be = Rs.100 x 4 working hours + Rs.100 x 4 Saved hours x 50% = Rs.600

Analysis of above situation

Before motivation	Worker got Rs.800	DLC Per unit to Company = $\frac{Rs.800}{10\ units}$ = Rs.80 Per unit
After motivation	Worker got Rs.600 & 4 hours extra as enjoy time	DLC Per unit to Company = $\frac{Rs.600}{10\ units}$ = Rs.60 Per unit

- Worker will be happy since he is getting paid for enjoy time also.
- Company will be happy since its DLC per unit reduces.

Various Motivation schemes to boost up moral of workers

There are 2 formula oriented bonus schemes as follows:-

1 **Halsey Plan**

Total wages = hours worked x wage rate + hours saved x $\frac{50}{100}$x hourly wage rate **(Called Bonus)**

2 **Rowan Scheme**

Total Wages = hours worked x wage rate + hours saved x $\frac{time\ taken}{time\ allowed}$x hourly wage rate **(Called Bonus)**

Example:- suppose time allowed for a work is 40 hours. Actual time taken by worker is 25 hours. Wage rate is Rs. 6 per hour. Calculate earnings for 25 hour time worked under Halsey and Rowan scheme?

Solution:- Time saved = 40 hour – 25 hour = 15 hour

Total Earning (Wages)	Hours worked x hourly wage rate + Hours Saved x Hourly wage rate x worker sharing ratio
Halsey	25 hour x Rs. 6 per hour + 15 hour x 50% x Rs.6 = 195
Rowan	25 hour x Rs. 6 per hour + 15 hour x $\frac{25\ hour}{40\ hour}$ x Rs. 6 per hour = Rs. 206.25

- Direct labour cost per unit = $\frac{\text{Total Wages}}{\text{Total Unit produced}}$
- Effective Wage Rate = $\frac{\text{Total Wages}}{\text{Total Actual hours worked}}$

Control Ratios

- Activity Ratio = $\frac{std\ hours\ for\ actual\ output\ obtained}{budgeted\ hours\ for\ budgeted\ production}$x100 = $\frac{S}{B}$
- Capacity ratio = $\frac{actual\ hours\ worked}{budgeted\ hours\ for\ budgeted\ production}$x100 = $\frac{A}{B}$
- Efficiency ratio = $\frac{std.hours\ for\ actual\ output\ obtained}{actual\ hours\ worked}$x100 = $\frac{S}{A}$

Treatment of Overtime

- Overtime means working over & above normal working hours e.g. suppose job time is 9Am to 5Pm and worker works from 9AM to 7Pm hence he is doing overtime working for 2 hours.
- Worker is paid at more rate during overtime e.g. if worker is getting Rs.100 per hour during 9 to 5 Job then he will get more than Rs.100 per hour for overtime.
- Payment made to worker for overtime is called overtime payment. Here we will study how to treat this extra payment made for overtime i.e. add this cost as direct labour cost or production overhead cost

Cases	Treatment of overtime
1. When overtime working is always required due to shortage of labour. (Workers are not available in market hence overtime always needed by available workers)	Overtime payment is charged to product using **inflated wage rate.**
2. When worker has to work overtime since customer was demanding production instantly.	Overtime payment shall be charged to job (Recovered from customer)
3. When company had to overtime since working during day stopped due to abnormal situations e.g. breakdown of machine.	Overtime payment is charged as loss in costing profit and loss account.
4. When sometimes company to work overtime to fulfill production requirements.	Overtime payment is treated as production overhead. (Indirectly charged to products)

Labour Turnover Rate (LTR)

Labour turnover does not mean sales of labour. It is crime.

Labour turnover means change in workers of company as follows

1. Old worker resigns from company if they get better opportunity **(Called Resignation / Retirement / Left).**
2. Old workers are fired from company if they does not perform well **(Called retrenchment / discharged).**
3. New workers are recruited to fill in vacancy due to resignation/retrenchment **(Called Replacement). It is not due to expansion plan of company.**
4. New workers are recruited as additional work force if company opened a new factory **(Called Fresh recruitment).**

High LTR means high cost of replacement and training to workers hence company always desires Low LTR.

There are 4 methods of calculating labour turnover rates as follows:-

1. Labour turnover under **separation method**:- $\frac{No.of\ separations\ in\ a\ year}{Average\ no.of\ workers\ on\ the\ roll\ during\ the\ period}$x100

   Separations (S) = **Resignation + Retirement + left ++ retrenchment+ discharged**

Note:- Average no. of workers on roll = $\frac{workers\ on\ the\ beginning\ of\ the\ period+workers\ at\ the\ end\ of\ period}{2}$

2. Labour turnover under **replacement method** = $\frac{No.of\ replacements\ in\ the\ period}{Average\ no.of\ workers\ on\ roll\ during\ the\ period}$x100

   Replacement (R)= New workers are recruited to fill in vacancy due to resignation/retrenchment

   Replacement does not include those works who are engaged due to expansion scheme.

3. Labour turnover under **accession method** = $\frac{No.of\ accessions\ in\ the\ period}{Average\ No.of\ workers\ on\ the\ roll\ during\ the\ period}$x100

   Accession (A) = Replacement + Fresh recruitment

4. Labour turnover under **Flux method**

   C.1:-(If fresh recruitment due to expansion not considered) =

   $\frac{(No.of\ separtions\ in\ a\ year+No.of\ replacements\ in\ a\ year}{Average\ no.of\ workers\ on\ the\ roll\ during\ the\ period}$x100

   C.2:-(If fresh recruitment due to expansion considered) =

   $\frac{(No.of\ separtions\ in\ a\ year+\ No.of\ accessions}{Average\ no.of\ workers\ on\ the\ roll\ during\ the\ period}$ x 100

Since Accession includes **both replacement and fresh recruitment.**

Treatment of Normal Idle Time &Abnormal idle Time

Idle time when worker keep on sitting without working. Idle time is categorized in 2 categories:-

1. Normal Idle Time:- Like lunch time, small 10 minutes beak etc.:- Cost of such normal idle time is absorbed into cost of product.
2. Abnormal idle time:- Like breakdown of machine, charged as a loss in costing P&L A/c. Cost of abnormal idle time is charged as loss to costing P&L Account.

Example:- Amitabh bacchan, a worker works from 9 AM to 5:30 PM with hour-an-hour break. He is paid Rs. 800 per day. Mr. bacchan takes 1 day in producing a product "A". When Mr. bacchan goes out for lunch break. People gather and ask Mr. bacchan "Reason of working in factory of Purushottam Sir". Mr. Amitabh bacchan says "Aaj khush to bhut hoge tum, ki mene Abhishek bacchan ko paida kiya"Jisne meri ue halat kardi, Haiiiii"

He wasted 4 hours outside factory?

Calculate the wages chargeable to product?

Answer

working hours	4.50 hours	Rs. 100 per hour	Rs. 450	Shall be added to cost of product
Normal idle time	0.50 hours	Rs. 100 per hour	Rs. 50	Shall be added to cost of product
Abnormal idle time	3.00 hours	Rs. 100 per hour	Rs. 300	Shall be charged as loss in costing P&L A/c

Effective hours = Total hours – normal idle hours

Effective wage rate per hour = $\frac{Total\ wages}{Total\ effective\ hours}$ = $\frac{Rs.800}{8\ hours}$ = Rs. 100 per hour

97 Marks in Costing

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Name	AYUSH RATHI
Group I	
Accounting	069
Corporate and Other Laws	057
Cost and Management Accounting	097
Taxation	065
Total	288
Result	PASS
Group II	
Advanced Accounting	072
Auditing and Assurance	057
Enterprise Information Systems & Strategic Management	046
Financial Management & Economics for Finance	080
Total	255
Result	PASS
Grand Total	543

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93 Marks in Costing

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Roll Number	802926
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Reg No	NRO0457407
Total marks	591
Rank No	36

Intermediate (New) Examination Results, Nov 2018

Pass With Distinction

Roll Number	802926
Name	ASHISH GARG
Group I	
Accounting	092
Corporate and Other Laws	064
Cost and Management Accounting	093
Taxation	082
Total	331
Result	PASS
Group II	
Advanced Accounting	074
Auditing and Assurance	041
Enterprise Information Systems & Strategic Management	056
Financial Management & Economics for Finance	089
Total	260
Result	PASS
Grand Total	591

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OVERHEAD

Overview of this chapter

- Overhead means indirect cost. Indirect cost is sum of Indirect material cost, Indirect labour cost & Indirect Expenses.
- Overhead cost is not incurred for a particular product i.e. indirect cost is incurred and company produce multiple products with the help of it e.g. factory rent is overhead cost. Company took a factory on rent and makes multiple product under this factory.
- Under this chapter, we will learn the ways by which we apportion this common cost into various product and finally calculate cost per unit of a product

Overheads Recovery Rates / Overhead absorption rate

Company use following methods to charging overheads cost to various products

a) Percentage of direct material cost = $\frac{\text{Amount of production overheads}}{\text{Direct material cost}}$ x 100

b) Percentage of direct labour cost = $\frac{\text{Amount of production overheads}}{\text{Direct labour cost}}$ x 100

c) Percentage of prime cost = $\frac{\text{Amount of production overheads}}{\text{Prime cost}}$ x 100

d) Direct labour hours rate = $\frac{\text{Amount of production overheads}}{\text{Direct labour hours}}$

e) Machine hour rate = $\frac{\text{Amount of production overheads}}{\text{Machine hours}}$

Example The following information relates to the production department for a certain period in a factory:

Direct Materials consumed	Rs. 75,000
Direct Wages	Rs. 50,000
Production Overheads	Rs. 1,50,000
Labour Hours	30,000 hours
Machine Hours	25,000 hours

For one Order No. 101 carried out in the department during the period, the relevant data were:

Direct Material consumed	Rs. 14,000
Direct Wages	Rs. 11,000
Machine hours worked	5000 hours
Labour hours worked	7000 hours

Required: Prepare a Comparative Statement of Cost of this order by using the following methods:

(i) Direct Material Cost Percentage; (ii) Direct Labour Cost Percentage; (iii) Prime Cost Percentage; (iv) Labour Hour Rate; (v) Machine Hour Rate.

Solution:

Step 1 Computation of Production Overhead Rate

(i) Direct Material Cost Percentage = $\frac{\text{Production Overheads}}{\text{Direct Material Cost}} \times 100 = \frac{1,50,000}{75,000} \times 100 = 200\%$ of DMC

(ii) Direct Labour Cost Percentage = $\frac{\text{Production Overheads}}{\text{Direct Labour Cost}} \times 100 = \frac{1,50,000}{50,000} \times 100 = 300\%$ of DLC

(III) Prime Cost Percentage = $\frac{\text{Production Overheads}}{\text{Prime Cost}} \times 100 = \frac{1,50,000}{1,25,000} \times 100 = 120\%$ of Prime Cost

(iv) Labour Hour Rate = $\frac{\text{Production Overheads}}{\text{Direct Labour Hours}} = \frac{1,50,000}{30,000}$ = Rs. 5 per labour hour

(v) Machine Hour Rate = $\frac{\text{Production Overheads}}{\text{Machine Hours}} = \frac{1,50,000}{25,000}$ = Rs. 6 per machine hour

Step 2 Comparative Statement of Cost of Order No. 101

Particulars	DMC%	DLC%	Prime Cost%	Direct Labour Hour Rate	Machine Hour Rate
	Rs.	Rs.	Rs.	Rs.	Rs.
Direct Material Cost	14,000	14,000	14,000	14,000	14,000
Direct Labour Cost	11,000	11,000	11,000	11,000	11,000
Prime Cost	25,000	25,000	25,000	25,000	25,000
Production Overheads					
200% of DMC	28,000	—	—	—	—
300% of DLC	—	33,000	—	—	—
120% of Prime Cost	—	—	30,000	—	—
@ Rs. 5 per Direct Labour Hour	—	—	—	35,000	—
@ Rs. 6 per Machine Hour	—	—	—	—	30,000
	53,000	58,000	55,000	60,000	55,000

Allocation of overheads VS apportionment of overheads:-

Allocation means charging a full amount of overhead directly to a department for which this amount has been incurred.

For example, suppose in factory there are 3 departments namely Dept. 1, Dept. 2 and Dept. 3. A supervisor is appointed in each department and salary paid to supervisor of dept. 1 is Rs. 10,000, salary paid to supervisor of dept. 2 is Rs. 15,000 and salary paid to supervisor of dept. 3 is Rs. 20,000. Hence total Rs. 45000 has been paid for whole factory. Now Rs. 10000 will be charged to Dept. 1, Rs. 15000 will be charged to Dept. 2 and Rs. 20000 will be charged to Dept.3.

Apportionment of overheads:- when separate identification of overhead department-wise is not possible then we have to divide cost of whole overheads among all departments on logical basis then it is called apportionment of overheads.

For example, factory rent paid for whole factory as whole shall be divided to all departments on the basis of floor area occupied.

Common Expense, i.e. Overhead	**Basis of Apportionment**(Multiple Options)
Rent ofFactory Building	• Area of Deptt. If Area Given • Equal if area not given
Factory Lighting Expenses	• Number of Light Points or • Area if light points not given
Depreciation of machines	• Number of machines of each deptt if value not given • Value of machines
Power for Machines	• Horse Power (HP) Rating or • HP Rating × Machine Hours • Machine hours
Indirect Wages	• Direct Wages

Treatment of under/over absorption (Recovery) of overheads:-

Meaning of unabsorbed OH:- When overhead cost has been incurred more and overhead has been recovered less then in such situation, difference is called less recovery of overhead cost. Technically calls it unabsorbed overheads.

Example:- A company started to produce a product named as "B". The company provided following information to you.
Factory Rent (Annual) = Rs. 10,00,000
No. of units expected to be produced in a year = 10,000 units
Actually produced units = 9,000 units
Calculate amount of under absorbed Overhead?

Answer:- Overhead Recovery Rate = $\frac{\text{Rs.}10,00,000}{10,000 \text{ units}}$ = Rs. 100 per unit
Actually absorbed Overhead amount = Rs. 100 per unit x 9000 units = Rs. 9,00,000
Under absorption OH (Rs.) = Rs. 10,00,000 – Rs. 9,00,000 = Rs. 1,00,000

Under absorption of OH means that amount of OH absorbed over products is less than the amount of actual OH incurred.
Over absorption of OH means that amount of OH absorbed over products is more than the amount of actual OH incurred.

Accounting Treatment:- Under or over absorbed overheads are disposed off by any of following methods:-

a. One method suggest that the **under or over absorbed overheads should be charged to costing profit & loss account as loss or profit.**

b. Second method suggest that **unabsorbed / over-absorbed overheads should be charged to WIP, Finished goods- stock and units sold**

- by using supplementary rate **OR**
- in the ratio of their value in case units are not given in question.

Note 1:- supplementary rate = $\frac{unabsorbed\ or\ over\ absorbed\ OH}{Total\ production\ in\ units\ including\ equivalent\ units\ of\ WIP}$

Note 2:- The **under absorbed overhead** relating to **inefficiency or defective planning or defective production policy** is abnormal loss hence it is charged to profit and loss account as loss.

Note 3:- For calculation of unabsorbed / over absorption OH, **Actual overhead incurred** should not include non-recurring expenses

- amount paid to worker as per court order
- previous years' expenses booked to current year
- wages paid in strike period
- obsolete stores written off.

Re-distribution of overheads

There are 2 kinds of departments in all companies – first is production departments & second is service departments. Production Deptt. Earns income & incur expenditure but service septt. Does not earn income and it only incurs expenditure. So We need to re-distribute cost of service departments over production departments to calculate Overhead recovery rate. 4 methods are used for re-distribution

1) Repeated / continuous distribution method:- Following steps shall be applied under this method assuming 3 production deptt. As P1, P2, P3 and 3 service deptt. S1, S2 and S3.

S.1 **Original Cost** of S1 is distributed among P1, P2, P3, S2 and S3 in given %.**(1:5)**
S.2 **Original Cost** of S2 Plus **shared cost** from S1 is distributed among P1, P2, P3, S1, S3 in given %.**(1:5)**
S.3 **Original cost** of S3 plus **shared cost** from S1 & S2 is distributed among P1, P2, P3, S1 and S2 in given %.**(1:5)**
S.4 Repeat the above step -1, step – 2 and then step -3 until cost of S1, S2 and S3 becomes small figure. (Rs. 1 or Rs. 2). Now distribute this small figure over P1, P2 and P3

Example:- Distribution of Service Department Expenses (Repeated Distribution Method)

Particulars	Production Deptt.		Service Deptt.	
	Machine Shop (Rs.)	Packing Plant(Rs.)	General Plant (Rs.)	Stores & Maintenance (Rs.)
Total Overhead	**83,920**	**30500**	**20000**	**30000**
Distt. Of OH of Stores to OtherDeptt. (5:2:3)	15000	6000	9000	(30000)
Distt. Of OH of General Plant to Other Deptt. (20:10:5)	16,571	8,286	(29000)	4,143
Distt. Of OH of Stores to Other Deptt. (5:2:3)	2072	829	1242	(4143)
Distt. Of OH of General Plant to Other Deptt. (20:10:5)	710	355	(1242)	177
Distt. Of OH of Stores to Other Deptt. (5:2:3)	88	36	53	(177)
Distt. Of OH of General Plant to Other Deptt. (20:10:5)	30	15	(53)	8
Distt. Of OH of Stores to Other Deptt. (5:2:3)	4	2	2	(8)

Distt. Of OH of General Plant to Other Deptt. (20:10)	1	1	(2)	--
Total of Overhead Cost	**1,18,396**	**46,024**	--	--

2) Trial and error method:-Following steps are applied under this method assuming 3 production deptt. As P1, P2, P3 and 3 service deptt. S1, S2 and S3.

S.1 **Original Cost** of S1 is distributed among S2 and S3 in given %.**(1:2)(No amount shall be reduced from S1)**

S.2 **Original Cost** of S2 along with **shared cost from S1** is distributed among S1 & S3 in given %.**(1:2)(No amount shall be reduced from S2)**

S.3 **Original Cost** of S3 along with **shared cost from S1 & S2** is distributed among S1 & S2 in given %.**(1:2)(No amount shall be reduced from S3)**

S.4 Repeat the process of distribution again beginning with S1 until the **additional amount** becomes small amount (Rs.1 or Rs.2)

S.5 Now distribute the [**100% - Share of other Service Deptt**.] cost of S1, S2 and S3 among P1, P2 and P3 **only once.**

Example: Redistribution of Service Department's expenses:

	Service Departments	
	X (Rs)	**Y** (Rs)
Overheads as per primary distribution	4,750	5,350
(i) Apportionment of Dept-X expenses to Dept-Y (10% of Rs 4,750)	---	475
(ii) Apportionment of Dept-Y expenses to Dept-X [5% of (Rs 5,350 + Rs 475)]	291	---
(i) Apportionment of Dept-X expenses to Dept-Y (10% of Rs 291)	---	29
(ii) Apportionment of Dept-Y expenses to Dept-X (5% of Rs.29)	2	---
Total	5,043	5,854

Observation:- Amount to be distributed has increased hence this amount shall be reduced that's why 90% or 95%.

Distribution of Service departments' overheads to Production departments

	Production Departments		
	A (Rs)	**B** (Rs)	**C** (Rs)
Overhead as per primary distribution	2,700	3,700	6,000
Dept- X (90% of Rs. 5,043) (in 45:15:30)	2,269	756	1,513
Dept- Y (95% of Rs. 5,854) (in 60:35:0)	3,513	2,049	---
	8,482	**6,505**	**7,513**

Please Note:-

1. 90% of Rs. 5043 + 95% of Rs.5854 = Rs. 10,100
2. Rs. 4,750 + Rs. 5,350 = Rs. 10,100

3) Simultaneous equation method:- Following steps are applied under this method assuming 3 production deptt. As P1, P2, P3 and 2 service deptt. S1 and S2.

S.1 Make2 equation to show the total cost of S1 & S2 including its share (%) in S2 & S1 respectively.
S.2 Solve these 2 equationsto find out the cost of S1 and S2.(**Called Calculated Cost**)
S.3 This calculated cost of S1 and S2 is then distributed **only once** over production deptt and service deptt. in given %.

Example to Recall

Simultaneous equation:- Cost of deptt. X= x & Cost of deptt. Y = y
x = 20000 + 0.05y
y= 10000 + 0.10x
On solving:- x= 20603 and Y = 12060

Statement showing O.H. Distribution

Particulars	Basis of allocation	Production Deptt.			Service Deptt.	
		A	B	C	X	Y
Allocated OH cost	Given	80000	40000	20000	20000	10000
Distribution of:						
Cost of Deptt. X	20:30:40:10	4121	6181	8241	(20603)	2060
Cost of Deptt. Y	20:25:50:5	2412	3015	6030	603	(12060)
Total		**86533**	**49196**	**34271**	**0**	**0**

4) Step ladder method:- following steps are applied under this method assuming 3 production deptt. As P1, P2, P3 and 4 service deptt. S1, S2, S3 & S4.

- ✓ S1 provide services to P1, P2, P3, S2, S3 & S4. **(1:6)**
- ✓ S2 provide services to P1, P2, P3, S3 & S4. **(1:5)**
- ✓ S3 provides services to P1, P2, P3 and S4. **(1:4)**
- ✓ S4 provides services to P1, P2 & P3.**(1:3)**

S.1 Original Cost of S1 is distributed among P1, P2, P3, S2, S3 & S4.
S. 2 Original Cost of S2 along with **shared cost from S1** is distributed among P1, P2, P3, S3 & S4.
S.3 Original Cost of S3 along with **shared cost from S1 & S2**is distributed among P1, P2, P3 and S4.
S.4 Original Cost of S4 along with **shared cost from S1, S2& S3**is distributed among P1, P2 & P3.

Example to Recall

Schedule Showing the Distribution of Overhead Costs among Departments

	Service				Production		
	P (rs)	Q (rs)	R (rs)	S (rs)	X (rs)	Y (rs)	Z (rs)
Overhead costs	45,000	75,000	1,05,000	30,000	1,93,000	64,000	83,000
Distribution of over-head cost of Dept. 'P' No. of EEs (0:50:40:50:100:125:85)	(45,000)	5,000	4,000	5,000	10,000	12,500	8,500
Distribution of over head costs of Dept. 'Q'		(80,000)	24,000	12,000	16,000	12,000	16,000

(Direct Labour Hours) (0:0:6:3:4:3:4)							
Distribution of over-head cost of Dept. 'R' (Sq. Meter) (0:0:0:10:30:15:15)			(1,33,000)	19,000	57,000	28,500	28,500
Distribution of over-head costs of Dept. 'S' (Direct labour Hours) (0:0:0:0:4:3:4)				(66,000)	24,000	18,000	24,000
Total (A)					3,00,000	1,35,000	1,60,000

Different Capacity

Meaning	Capacity of a factory refers to its ability to produce with the available resources and facilities. It is expressed in terms of (a) Units of product *e.g.* 100 cars per day [20 costing Question per day] (b) Production Hours e.g.100 hours per day [Study 10 hours per day]		
Types **1. Maximum / Rated Capacity**	It refers to the maximum possible production capacity of a factory which can never be achieved practically and it isonly a theoretical capacity. ***Example*** A factorycan work 8 hours per day. Here, Maximum capacity = 365 days × 8 = 2,920 hours		
2. Practical Capacity	It refers to the maximum capacity of a factory **reduced** by capacity lost due to Normal repairs& maintenance, Sundays, Holidays etc. Thus, **Practical capacity = Maximum capacity – Normal loss of capacity** **Example** A factory can work 8 hours per day during a six day week and remains closed for 18 holidays (exclusive of Sundays) during a year. Average idle hours per month is 20 for cleaning and maintenance.		
	Maximum capacity (365 days × 8 hours)		2,920 hours
	Less: Idle capacity due normal reasons:		
	Sundays (52 × 8)	416 hours	
	Holidays (18x8)	144 hours	
	Maintenance (20 × 12)	240 hours	800 hours
	Practical Capacity		2,120 hours
3. Normal Capacity / Average Capacity	It refers to average of capacity utilised of factoryduring **one full business cycle** which may extend over 3 to 5 years ignoring the abnormal year of highest and lowest utilisation. **Example** Actual Capacity during the last 5 years was: I 30,000 II 38,000, III 31,000 IV 30,800, V 26,900. Here year II being two high and Year V being too low are to be ignored.		

	Hence, Normal Capacity = Average of (30,000 + 31,000 + 30,800) = 30,600 hours.
4. Actual Capacity	It refers to the capacity actually utilised during a given period.

Machine hour rate

$$\text{Machine hour rate} = \frac{\text{Amount of production overheads}}{\text{Machine hours}}$$

- All expenses related to **operating of machine** are divided into fixed/standing charges and running/machine expenses.
- Comprehensive machine hour rate =Simple machine hour rate +**direct wages per machine hour**$\left(\frac{Total\ Direct\ wages)}{Total\ machine\ hours}\right)$

STATEMENT SHOWING THE COMPUTATION OF MACHINE HOUR RATE

Particulars	Amount (Rs.)
A. Fixed/Standing Charges:	
(a) Rent & Rates	XXX
(b) Heating & lighting cost	XXX
(c) Supervision cost	XXX
(d) Insurance cost	XXX
(e) Department & general overheads	XXX
(f) Sundry Shop Supplies	XXX
(g) Depreciation of factory – building	
Total Fixed/Standing Charges	**XXX**
B. Machine Expenses per hour:	
(a) Depreciation = $\frac{\text{Original Cost + Installation Exp. – Scrap Value}}{\text{Effective useful life (in hours)}}$	
(b) Powerconsumed cost / Electricity	
(c) Repair & Maintenance	
(d) Lubricating oil & Consumable stores	
(e) Other running expenses	
C. **Machine Hour Rate**	

Note:- Calculation of Effective machine hours

Particulars	Hours
Maximum Capacity (365 days x 8 hours in a day(	XXX
Less:- Hours spent on holidays, festivals, Sundays, repair & maintenance	(XXX)
Practical capacity (In hours)	XXX
Less:- Set up time (If unproductive)	(XXX)
Effective machine hours	XXX

Note:- if set-up time is considered productive then it shall not be reduced.

Note:- A student sit for study at 9 AM. He opened his books, pen, calculator to start study. This preparation took 15 minutes. These 15 minutes are set up time. He has right to decide it productive or Non-productive.

Note:-Depreciation of machine shall be fixed exp. if life of machine is based on Time **OR** Depreciation of machine shall be variable exp. if life of machine is based on machine hours. Depreciation of factory building shall always be fixed.

JOB AND BATCH COSTING

Job Costing is that form of specific order costing under which each job is treated as a cost unit and costs are ascertained separately for each job. A job may consist of a job, product, contract, a service or any other specific order.

Batch Costing is that form of specific order costing under which each batch is treated as a cost unit and costs are accumulated and ascertained separately for each batch. **Each batch consists of a number of like units.**

> Example:- **Batch costing** states that cost per unit shall be less as number of units increases and total cost of batch shall increase as number of units increases in a batch. **Example Rs. 200 for 100 visiting cards while Rs.300 for 200 visiting cards etc.**

Economic Batch Quantity **(EBQ)** (Similar as **Economic order quantity**)

EBQ refers to the optimum quantity batch at which Set up & Processing Costs and Carrying Costs are together minimised.

$$E.B.Q = \sqrt{\frac{2 \times \text{Annual Demand} \times \text{Set up cost per batch}}{\text{Cost of carrying per unit of production per annum}}}$$

OPERATING COSTING OR TRANSPORT COSTING OR SERVICE COSTING

- Related to service industries e.g. hospitals, transport companies.
- Amount to be charged from Customer = Cost of providing service + Desired Profit

Transport Service providers

1. Transport of Passengers
2. Transport of Goods

Various Cost per unit shall be calculated as follows:-

Service Provider	Cost per unit	Formula
Ola Cab / Taxi	Cost per Km.	$\frac{\text{Total Cost of operating}}{\text{Total Kms. run}}$
School Bus, Chartered Bus, Railways, Airlines	Cost per passenger	$\frac{\text{Total Cost of operating}}{\text{Total Passengers}}$
Metro, DTC Bus	Cost per passenger per km	$\frac{\text{Total Cost of operating}}{\text{Total Passengers} - \text{Kms}}$
Goods Transport Service providers	Cost per tonne per km	$\frac{\text{Total Cost of operating}}{\text{Total Tonne} - \text{Kms}}$

Total Passenger – Kms = Total No. of Passengers x Total Kms.

All expenses in 2 categories

a. Fixed Exp. / Standing Charges :- e.g. Salary to driver, Insurance, Road Tax etc
b. Running Charges / Variable Expense:- Purely dependent on running of vehicle like petrol exp. diesel, Repairs.

In case of transport of goods services, we shall calculate cost per tonne-km.

Total Tonne-km = Total Tonne x Total Kms.

Tonne km are of 2 types:-

1. Absolute Tonne Km = Weight in tonne x km run
2. Commercial Tonne – Km = Total Km x Avg. Tonne Km.

Note:- If nothing is specified in question then absolute tonne km shall be used to calculate cost per tonne-km.

Total Collection for transport industry is called as total takings.

Particulars	Amount (Rs.)
Total operating Cost	XXX
Add:- Profit	XXX
Net Takings	**XXX**
Add:- Passenger Tax	XXX
Total Takings	**XXX**

SERVICE Costing for Hospital

1. Operating cost of a hospital can be divided into 2 parts
    a. Fixed Costs:- Cost which is based on time and not dependent on services provided. For example, staff salaries, depreciation on building and equipment etc.
    b. Variable Costs:- costs which vary with level of services provided. For example, cost of food supplied to patients, power cost etc.

Special Note:- Repair & Maintenance shall be assumed to be fixed in case of Hospital. In Transport service provider, it was assumed to be Variable.

Rent per patient per day = $\frac{Total\ operating\ cost + Desired\ profit}{Total\ No.of\ patient\ days}$

Patient Days = No. of beds x No. of Days x Occupancy Rate

Break Even Points (In Number of patient Days)

BEP Points (No. of Units) = TFC / (S.p.p.u – V.Cost p.u.) = TFC / Contribution Per unit

In case of hospital (unit means patient-day)

- No. of units = No. of patient Days
- V. cost per unit = V cost per patient Day

SERVICE COSTING FOR CANTEEN COSTING

Fixed menu in Thali

Cost per meal / Thali = $\frac{\text{Total Operating cost}}{\text{No.of meals}}$

SERVICE Costing for Lodge

Same like Hotels

Cost per room per day = $\frac{\text{Total operating cost}}{\text{Total number of room days}}$

Total Room Days = No. of Rooms X Occupancy ratio x No. of Days

SERVICE Costing for Software Developing companies

Cost is calculated on project-by-project basis.

Cost of project = Cost per project = Specific Cost involved for project + Overhead cost absorbed (Normally on the basis of salaries).

SERVICE Costing for Toll Roads

Construction of Highway – 10 Year right to recover Toll from vehicles passing through

3 types of expenditure:-

- Capital cost = Huge amount incurred in beginning in construction of Road
- Operating Cost = salary of persons involved in collecting tolls
- Maintenance Cost = Cost incurred in maintain repairs every year.

Price per vehicle = Toll Rate per vehicle =

Formula 1:- Cost per vehicle + profit per vehicle

Cost per vehicle = $\frac{\text{Total of capital cost+operating cost+maintenance cost}}{\text{Total number of vehicles estimated to be passing through this highway}}$

Formul1 2:- $\frac{\text{Total Cost+Total Profit}}{\text{Total Number of chargeable Vehicles}}$

Cost per Km - Constructed = $\frac{\text{Total of capital cost+operating cost+maintenance cost}}{\text{Total Length of Road (Total Km)}}$

SERVICE Costing for Financial Institutions

Loan to persons for buying a house, buying a car, buying Switzerland ticket etc.

Processing Cost per home loan application = $\frac{\text{Total Processing Cost in a year}}{\text{Total number of loan applications in a year}}$

SERVICE Costing for POWER HOUSE

Generate electricity & calculate cost per unit of electricity generated

Cost per unit of electricity generated = $\frac{\text{Total Cost}}{\text{Total chargeable Units Generated}}$

Note:- Sale of ashes shall be reduced from total expenses to calculate total cost.

MARGINAL COSTING

Meaning of Contribution

Formula 1:- Contribution per unit = Selling price per unit – Variable Cost per unit
Formula 2:- Total Contribution = Total Sales – Total Variable Costs
Formula 3:- Contribution = Fixed Cost + Profit **(Derivation covered in class)**
Formula 4:- Contribution = Fixed Cost – Loss **(Derivation covered in class)**

Marginal cost Equation

Sales	XXX
Less:- Variable Cost	(XXX)
Contribution	**XXX**
Less:- Fixed Cost	(XXX)
Profit	**XXX**

Contribution to Sales Ratio = $\frac{Contribution}{Sales}$x100 (Expressed in %)

- Called Profit-Volume Ratio (P/V Ratio)
- Fixed Cost is ignored in Decision Making

Formula 5:- Contribution = Sales x P/V Ratio

P/V ratio = $\frac{Sales-Variable\ Cost}{Sales}$x100 = $\frac{Fixed\ Cost+Profit}{Sales}$x100 = $\frac{Fixed\ cost-loss}{Sales}$x100

Break Even Point Sales

- BEP Sales means “No Loss Sales” OR “Survival Sales”

(Derivation covered in class)

BEP (In units) = $\frac{Fixed\ Cost}{contribution\ per\ unit}$ (Formula 1)

BEP Sales in rupees = $\frac{Fixed\ Cost}{p/vraio}$ (Formula 2)

Calculating P/V Ratio when break-even sales given

$$\text{P/v ratio} = \frac{Fixed\ Cost + Profit}{Sales} \times 100$$

At BEP, Profit = Zero & Sales means BEP Sales

$$\text{P/V Ratio} = \frac{Fixed\ Cost}{Break\ Even\ Sales} \times 100 \text{ (Formula)}$$

Calculating P/V Ratio when profit and sales volume of 2 periods are given. (Derivation covered in class)

$$\text{P/V Ratio} = \frac{difference\ in\ profit}{difference\ in\ sales}$$

Margin of safety sales

- Sales generating profit
- MOS sales means excess of actual sales over break-even point sales

$$\text{MOS Sales units} = \frac{profit}{contribution\ per\ unit}$$ **(Derivation covered in class)**

$$\text{MOS Sales in Rs.} = \frac{profit}{pv\ ratio}$$ **(Derivation covered in class)**

Break Even Sales Ratio and MOS Sales Ratio

(Derivation covered in class)

Break Even Sales ratio + MOS Sales Ratio = 100%

Variable cost to sales ratio = $\frac{variable\ cost}{sales} \times 100$

If variable cost to sales ratio is 60% then it means that if sales is made for Rs. 100 the variable cost of Rs. 60 is incurred

Relation between PV Ratio & Variable Cost to Sales Ratio

P/V Ratio + variable cost to sales ratio = 100% **(Derivation covered in class)**

Required sales level to earn desired profit

Desired level of Sales (In units) = $\frac{Fixed\ Cost+Profit}{Contribution\ per\ unit}$ (Sum of BEP Sales and MOS Sales Formula)

Desired level of Sales (In Rs.) = $\frac{Fixed\ Cost+Profit}{PV\ Ratio}$ (Sum of BEP Sales and MOS Sales Formula)

Cost indifference point(also called cost BEP)

Level of production at which total production cost (including both fixed and variable cost) under labour intensive and capital intensive method is **same**.

Cost BEP = $\frac{difference\ in\ fixed\ cost}{difference\ in\ variable\ cost\ per\ unit}$ **(Derivation covered in class)**

Decision about selection of a production method

(Target:- Low Total Production Cost)

1. If actual production is equal to Cost BEP units then any one method can be selected.
2. If actual production is less than Cost BEP units then High VC incurring method will be selected.
3. If actual production is more than Cost BEP units then Low VC incurring method will be selected.

Merger of 2 departments or companies

If management of 2 or more companies decides to merge companies which are operating at same or different capacity level then Merged company desires to know following things:-

1. P/V Ratio
2. BEP in rupees

3. Capacity utilization at BEP
4. Desired Sales
5. Desired Profit
6. Desired capacity utilization of merged plant

Step1:- Make marginal cost equation of all companies at 100% capacity level

Step2:-Add all figures to calculate Sales, Variable Costs, Fixed Costs and Contribution of merged company.

Note:- Fixed cost shall include additional fixed cost involved in merger, if any

P/V Ratio of merged co. = $\frac{Total\ contribution\ of\ all\ co.at\ 100\%\ capacity}{Total\ sales\ of\ all\ co.at\ 100\%\ capacity}$x100

BEP in rupees of merged co. = $\frac{Total\ Fixed\ cost\ of\ all\ co.+Additiona\ FC\ of\ merger,if\ any}{PV\ Ratio\ of\ merged\ co.}$x100

Capacity utilization at BEP of merged co. = $\frac{BEP\ of\ merged\ co.}{Total\ sales\ of\ merged\ co.at\ 100\%\ capacity}$x100

Desired sales to earn given profit = $\frac{Fixed\ cost\ of\ merged\ co.+desired\ profit}{PV\ Ratio\ of\ merged\ co.}$x100

Capacity utilization at desired sales = $\frac{desired\ sales}{Total\ sales\ of\ merged\ co.at\ 100\%\ capacity}$x100

Cash BEP

- Minimum level of sales at which company is able to recover out fixed cost incurred in cash.

Cash BEP in units= $\frac{Cash\ Fixed\ cost}{contribution\ per\ unti}$

Cash BEP in rupees = $\frac{cash\ Fixed\ cost}{PV\ ratio}$

Cash fixed cost = Total FC – Non-FC

Non-cash FC are those which do not involve cash outflow e.g. depreciation

BEP for multiple products – Together

- One Packet – Multiple Products
- Each Product – Different Selling Price
- BEP For Packets

Shut down Point

- Decision as to whether Produce or discontinue loss making product

FC is divided in 2 category:-

1. Unavoidable FC:- FC which has to be incurred whether or not item is produced.
2. Avoidable FC :- FC which can be avoided by stopping production.

SDP Sales (units) = $\frac{Avoidable\ Fixed\ Cost}{contribution\ per\ unit}$

SDP Sales (Rs.) = $\frac{Aviodable\ FC}{PV\ Ratio}$

Avoidable FC = Total FC – Unavoidable FC

Calculation of BEP in case of range type FC

- Total FC Changes Range-Wise

IF FC is Rs.1,000 for producing every next 50 units then it shall be Range Type FC. Hence

Fixed Cost for	Shall be Rs.
1-50 units	1,000
51-100 units	2,000
101-150 units	3,000

- Calculate BEP for each range.
- If Calculated BEP units falls within that range then it shall be valid BEP otherwise it is invalid BEP.

Absorption Vs Marginal costing:-

Income statement under Marginal costing approach

Particulars	Amount (Rs.)
Variable (Direct Material Cost)	XX
Variable (Direct Labour Cost)	XX
Variable (Direct Expenses)	XX
Variable Factory OH	XX
Variable manufacturing cost of Quantity Produced	**XX**
Add:- Opening FG	XX
Less:- Closing FG	(XX)
Variable manufacturing cost of Quantity Sold	**XX**
Add:- Variable Office & Admin OH	XX
Add:- Variable Selling & Distribution OH	XX
Variable Cost of Sales (A)	**XX**
Sales (B)	XX
Contribution (B – A)	XX
Less:- Fixed Factory OH Fixed Office and Admin OH Fixed Selling & Distribution OH	(XX) (XX) (XX)
Profit	**XX**

Income statement under Absorption costing approach

Particulars	Amount (Rs.)
Variable (Direct Material Cost)	XX
Variable (Direct Labour Cost)	XX
Variable (Direct Expenses)	XX
Variable Factory OH	XX
Fixed Factory OH **absorbed** units produced x standard rate per unit	XX
Total manufacturing cost of Quantity Produced	**XX**
Add:- Opening FG	XX
Less:- Closing FG	(XX)
Total manufacturing cost of Quantity Sold	**XX**
Add:- Variable Office & Admin OH Fixed Office and Admin OH Variable Selling & Distribution OH Fixed Selling & Distribution OH	XX XX XX XX
Add:- Under absorbed OH (Actual OH incurred – OH absorbed) Less:- Over absorbed OH (OH absorbed – Actual OH incurred)	XX (XX)
Total Cost of Sales (A)	**XX**
Sales (B)	XX
Profit (B – A)	**XX**

Reason for difference in profit

Particulars	**Amount (Rs.)**
Profit under marginal costing	**Xxx**
Add:- Opening stock Excess in marginal costing Closing stock Excess in absorption in marginal costing	Xxx Xxx
Less:- Opening stock Excess in absorption Costing Closing stock Excess in Marginal costing	(xxx) (xxx)
Profit under absorption costing	**Xxx**

DCP Approach

RECONCIALITION OF PROFIT UNDER COST AND FINANCIAL ACCOUNTING

Reasons of Difference

- Different basis of Overheads
  - In Costing – Overheads absorbed are shown
  - In Trading – Actual Overheads incurred are shown.
- Closing stock valuation
  - In Costing – Cl. Shock at cost
  - In Trading – Cost or Market Price whichever is lower
- Depreciation on machine
  - In Costing – based on life of machine or machine hours
  - In Trading – SLM Or WDV
- Some Financial Items only in financial e.g. Interest income, Dividend Income, Rental Income

How Calculate Profit

- Under Costing -- Just make Cost Sheet and Reduce total cost from Total Sales
- Under Financial – Make Trading and Profit & loss Account

Format to Make Reconciliation

Particulars	Plus Items	Minus Items
Profit / Loss as per cost Records		
Add:- Items demanding addition should be added here in plus items heading		
Less:- Items demanding deletion should be deducted here in minus items heading		
Total (Make Total of both the columns i.e. “Plus items and Minus Items”		
Profit/Loss as per financial records **(Rs. XXX – Rs. XXX) = Rs. XXX**		

Memorandum Reconciliation Account

- All Plus Column Items ----- Credit Side of MRA
- All Minus Column Items ---- Debit Side of MRA
- Difference shall be profit / loss as per financial records.

Example to Decide Addition/Deletion

Expense Side

	Amount (Rs.)	Implication **(Other Items Assumed Constant)**
An Exp. Charged in Cost	50,000	Profit as per costing will be less by Rs.10000
Same Exp. Charged in Trading	40,000	Profit as per financial will be more by Rs.10000
Difference	10,000	

Treatment

- If we use costing profit as starting point then we need to **Add Rs.10000**
- If we use trading profit as starting point then we need to **Reduce Rs.10000**

Revenue Side

	Amount (Rs.)	Implication **(Other Items Assumed Constant)**
An Revenue Item in Cost	Zero	Profit as per costing will be less by Rs.10000
Same Revenue Item in Finan.	10,000	Profit as per financial will be more by Rs.10000
Difference	10,000	

Treatment

- If we use costing profit as starting point then we need to **Add Rs.10000**
- If we use trading profit as starting point then we need to **Reduce Rs.10000**

Special Trick Given in Class

COST SHEET

Main Things

1. Never break sequence
2. One Format Based Chapter

Format to make Cost Sheet

Particulars	Amt (Rs.)	Total units
Opening stock of raw material		
Add:- Purchase of raw material including carriage inwards		
Less:- Closing stock of raw material		
Direct material consumed / DMC		Units produced
Direct Labour Cost		Units produced
Direct Expenses / Chargeable Expenses		Units produced
Prime Cost/Direct Cost		Units produced
Factory/works/Manufacturing/Production overhead		
Plus Opening stock of WIP		
Less closing stock of WIP		
Factory Cost		Units produced
Quality Control Cost		
Research & Development Cost (Process Related)		
Adm. Overheads (Related to Production Activity)		
Less:- Credit for Recoveries / Scrap / By –Products / Misc. Income		
Primary Packing Cost		
Cost of Production (For FG Produced)		Units produced
Plus opening stock of finished goods		
Less closing stock of finished goods		
Cost of goods Sold (For FG Sold)		Units Sold
Selling and distribution overhead		Units Sold
General Admin Overheads		Units Sold
Total cost / Cost of sales		Units Sold
Total Profit		
Total Sales		

Trick to Learn :- Opening = P stands for Plus

Closing = L stands for Less

Special Notes

- Note:- No. of units produced = Sales (units) + Closing Stock (units) – Opening Stock (units)
- No. of units Sold = Opening Stock (units) + produced (units) – closing Stock (units)
- While preparing the cost sheet, following amounts are ignored

✓ Items of financial nature e.g. income tax, cash discount, interest on loan/capital, dividend, goodwill written off

✓ Abnormal expenses

Conversion cost:- It means cost incurred to convert raw material into finished goods.

Method1:- Conversion cost = direct labour cost + direct expenses + factory overheads
Method 2:- Conversion Cost = Factory Cost – Direct material cost

Note:- Method 2 is applicable only when Opening & Closing WIP is not given.

How to categorise a cost into variable cost & fixed cost.

- A Cost, which is same on per unit basis under different production level, is variable cost per unit.

Variable Cost per unit = $\frac{Total\ variable\ Cost}{Total\ units}$

- A Cost, which is same on Totality basis under different production level, is Total Fixed Cost.
- A Cost, Which does not meet any above criteria, is called semi-variable cost / semi-fixed cost.

Variable portion in semi-variable cost = $\frac{Change\ in\ Total\ Cost}{Change\ in\ Total\ Units}$ **(Derivation covered in class)**

Fixed portion in semi-variable cost = Total Cost – Variable portion (Units x variable portion per unit)

Impact of a word in Costing solution

Example 1 **Semi-variable overheads** per annum at 75% capacity is Rs. 60,000

Case 1:- (it will increase by Rs. 4,000 per annum for increase of every 5% of the capacity utilisation **or any part** thereof)

Solution:-

Capacity Level	Annual Semi-variable OH
75%	60000
80%	60000+4000 = 64000
90%	60000+4000x3 = 72000
86%	60000+4000x3 = 72000

Case 2:- (it will increase by Rs. 4,000 per annum for increase of every 5% of the capacity utilisation thereof)

Solution:-

Capacity Level	Annual Semi-variable OH
75%	60000
80%	60000+4000 = 64000
90%	60000+4000x3 = 72000
86%	60000+4000x2 + 4000 x $\frac{1\%}{5\%}$ = 68800

Example 2

Particulars	Total Cost	Variable Cost	Fixed Cost
Administration OHs (75% Fixed)	150000	150000 x 25% = 37500	150000 x 75% = 112500
Administration OHs – Fixed (75%)	150000	$\frac{150000}{75\%}$ x 25% = 50000	150000

Apportionment of total cost in various products

(How to calculate separate cost of 2 products if collective cost is given)

Total direct material cost of product A & B = Rs. 100000
Units produced for product A is 1000 units and units produced for product B is 2000 units.
Calculate total material cost of A & B under each case ?

Case 1:- Material cost ratio per unit (A:B) = 1:2
Ratio to divide total cost shall be 1:4
A = 1000 units x 1 = 1000
B = 2000 units x 2 = 4000

Case 2:- Material Cost ratio (A:B) = 1:2
Ratio to divide total cost shall be 1:2 since not given on per unit basis

Detailed Explanation of reduction of increase in efficiency

Case 1:- When Labour Efficiency reduced

- Reduction in efficiency or workers means workers are producing less units in same time

Question: Suppose earlier worker was producing 4 units in 1 hour and we were paying him Rs.100 per hour then in such direct labour cost per unit shall be Rs.25 per unit.

If now question says that efficiency of worker has been reduced by 25%.

It means now worker is producing 3 units [4 units – 4 units x 25%] in 1 hour hence now direct labour cost per unit would be Rs 33.33 since we are paying worker on time basis i.e. Rs. 100 per hour.

Alternative way to calculate New DLC per unit

$$\frac{Old\ DLC\ per\ unit}{100\% - Reduction\ in\ Effciency} = \frac{Rs\ 25}{100\% - 25\%} = 33.33 \text{ per unit}$$

Case 2:- When Labour Efficiency Increased

Alternative way to calculate New DLC per unit = $\frac{Old\ DLC\ per\ unit}{100\% + Reduction\ in\ Effciency}$