

BCCA

CMA INTER COSTING



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In the view of costing entire business industry can be classified into two types such as manufacture industry and service industry.

The main objective to study costing is a

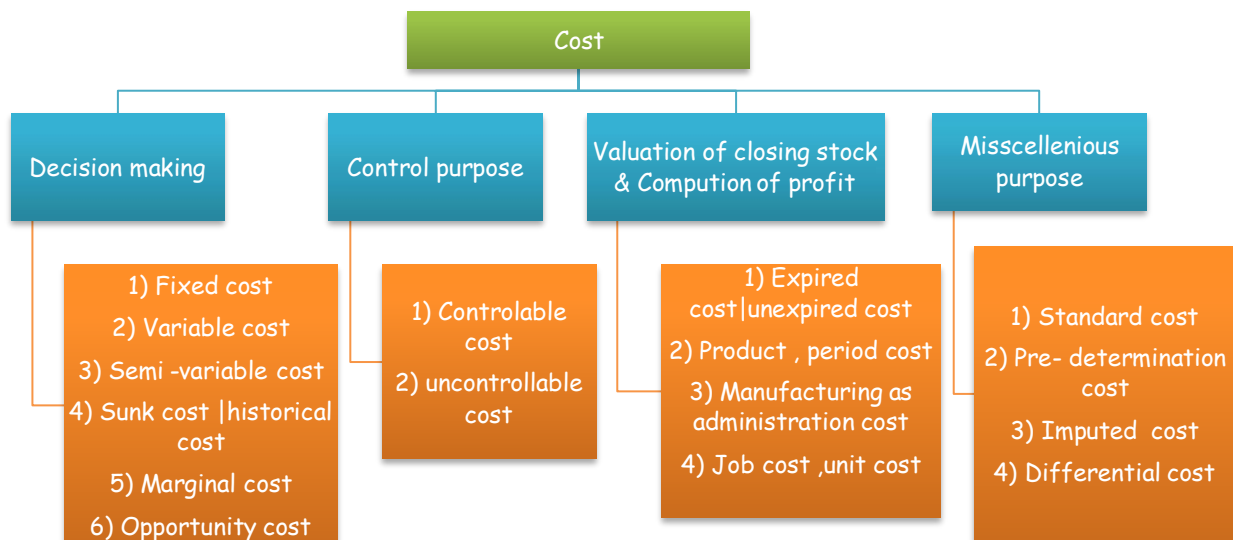
- Ascertain of selling price
- Determination of total cost
- Determination of profit
- Cost control (temporary process reduce the cost to achieve temporary goal)
- Cost reduction (Permanent process to achieve permanent goal)

Meaning of cost:-

- According OMA London, cost means cost incurred by organization for the purpose of production of goods on rendering of services is called cost and includes opportunity cost.
- According Ca cost means incurred by organization for the purpose of manufacturing of cost or rendering of services is called cost. However cost includes opportunity cost subject to following condition.
 - Such opportunity cost is meant for business purpose.
 - Such opportunity cost can be measured in terms of money.
- Opportunity cost is also known as sacrificing cost means cost which is satisfied by the organization for opting best option among other alternatives is called sacrificing cost.

Cost Classification:-

- Cost can be classified into various types on to achieve some purpose
- There are four types of purposes for purpose of cost classification such as -

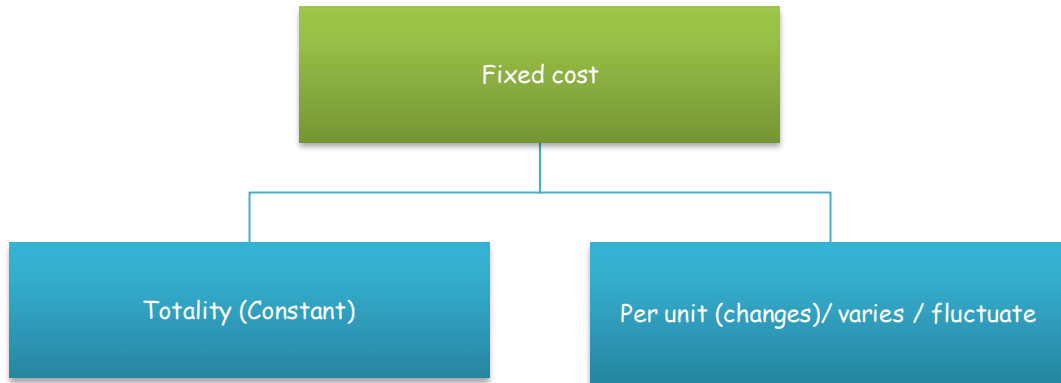


Cost Classification on basis:-

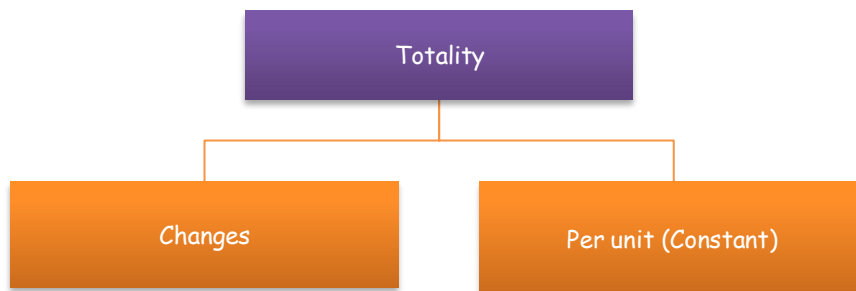
- 1) Fixed cost means cost which does not vary with the change in the volume of activity in the short run | shut down point.

Nature of fixed cost:-

To identify whether cost given in the question paper is fixed or not



- 2) Variable cost means which change depends upon level of output is called variable cost



- SVC means cost which neither fixed nor variable is 2 called semi variable cost
Therefore

$$SVC = TC = TFC + TVC$$

Conclusion:-

Concept of fixed cost, variable cost, SVC will be useful for decision making such as whether to continue the business operation, discontinue the business operation either permanently or temporarily.

➤ Segregation of SVC:-

There are 3 steps procedure involved in the process of such as,

Step 1: Calculate variable cost per unit

$$VC \text{ per unit} = \frac{\Delta \text{ Cost}}{\Delta \text{ Cost}}$$

Step 2: Calculate variable cost

$$VC = \text{units} \times \text{step 1 ans:-}$$

Step 3: Calculate fixed cost

$$\text{Fixed cost} = \text{Total cost} - \text{step 2 Ans:-}$$

Ex :- ABC. Ltd furnish the following information relating to their manufacturing.

Units	Rupees
1000	6000
3000	10000

You are required:

- Determine nature of the above cost.
- If your answer in (a) is semi -variable cost. Then segregate the fixed and variable costs separately.

Sol:-(a)The above given cost is referred as semi-variable cost , because the above given cost is does not match the condition nature of fixed cost , variable cost.

(b) As per ques (a) the given cost of rupees 6000, ₹ 10,000 is semi variable cost. As per GACP semi - variable cost will include fixed portion, variable portion

∴ The following are the steps involved for segregation of semi-variable cost such as

Step:- 1 Calculation of variable cost per unit.

$$V.C.P.U = \frac{\text{Change in cost}}{\text{Change in units}}$$

$$\begin{array}{r} 1000 \\ 6000 \\ \hline 3000 \\ 10000 \\ \hline \end{array} = \frac{4000}{2000} = 2$$

Step:- 2 Calculate variable cost

$$V.C = \text{Units} \times \text{Step 1 Ans} \text{ Case (i)} = 1000 \times 2 = 2000$$

$$\text{Case (ii)} = 3000 \times 2 = 6000$$

Step:- 3 Calculate fixed cost FC = Total cost - step 2 Ans

$$\text{Case (i)} = 6000 - 2000$$

$$= 4000$$

$$\text{Case (ii)} = 10,000 - 6000$$

$$= 4000$$

Concept of Budget:-

- Budget means it is an estimated statement for future purpose based on present capability is called 'budget'.
- Generally, budget can be classified into two types, such as
 - (1) Functional budget
 - (2) Flexible budget
- If any budget is drafted for the purpose of one particular department, such budget will be referred as 'functional budget'.

- If any budget is drafted is based on entire organization is called 'flexible budget'.
- Example for functional budget is sales budget, production budget, raw material purchase budget, raw material consumption, labor budget, cash budget.

➤ **Concept of flexible budget:-**

- 1) Flexible budget can be classified into two types, such as
 - (i) Master budget
 - (ii) Estimated (or) projected budget.
- 2) While solving the exam problem relating to flexible budget master budget should disclose first, rather than projected budget.
- 3) Unless, otherwise given in the question paper, while solving flexible budget problems is assumed as cost will be referred as variable cost.
- 4) The concept of flexible budget is useful to determine total cost per unit at different levels of capacity.
- 5) Flexible budget is nothing but it is an statement of analysis above fixed cost, variable, semi-variable cost.
- 6) Format of flexible budget as shown below:

Particulars	Present(₹) capacity	Estimated (₹) capacity
1. Variable cost	xx	xx
2. Fixed cost	xx	xx
3. Total cost ($P_1 + P_2$)	xx	xx

Ex:- Mn Ltd. Having capacity to produce 10,000 units but due to certain technical reasons organization producing 7,000 units and incurred the following expense.

	Per units
Material	₹ 5 per unit
Labour	₹ 3 per unit
Packing exp	₹ 2 per unit (60% variable)
Advertise exp	₹ 1 (20% fixed) per unit
Selling exp	₹ 4 per unit
Factory over head	₹ 2 (40% fixed) per unit

Draw flexible budget at 50% capacity, 80% capacity.

Important points:-

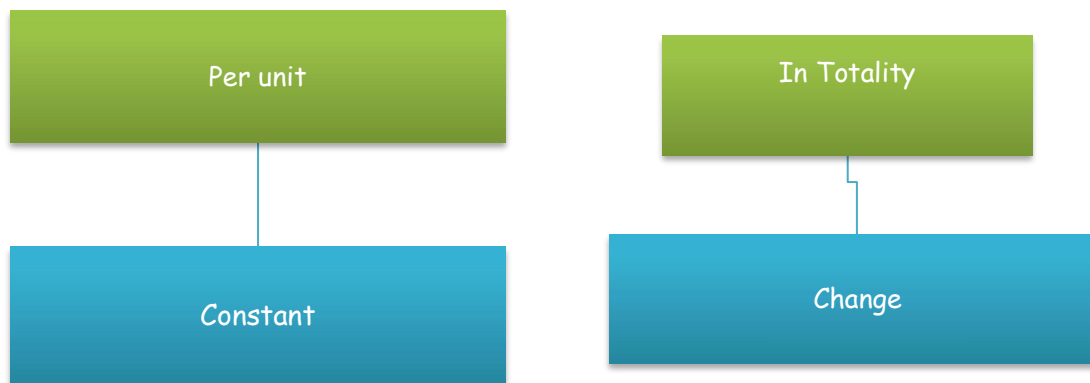
- 1) It simple saying that flexible budget is nothing but it is a statement containing variable cost (VC) & fixed cost (FC).
- 2) While solving the exam problem,
 - (a) In case of variable cost we should calculate each and every value for all capacities.(i.e., present & estimation)
 - (b) In case of fixed cost we should calculate Fixed cost for present capacity only and same value will be recorded for estimated budgets, because fixed cost never change.
- 4) **Sunk cost:-**
 - Sunk cost is also Known as historical cost.
 - Historical cost means cost which is incurred in the past period is called historical

cost.

- Generally, sunk cost will not be relevant for decision making in the current year.

5) Marginal cost:-

- Marginal cost is also known as variable cost
- Marginal cost means cost varies or which change or fluctuate depends upon level of output is called marginal cost
- Nature of the marginal cost is



6) Opportunity cost:-

- O.C is also known as sacrificing cost.
- Sacrificing cost means cost which a lives in the course of business by opting best alternative option is called opportunity cost.
- As per ICMAI, opportunity cost shall be firm part of cost subject to condition suchas,
 - (i) Opportunity cost is arrives for the purpose of business (business means business including profession)
 - (ii) Such opportunity cost can be measured in terms of money.

Cost classification on the basis of controllability:-

1) Controllable cost :-

- (a) Controllable cost means cost :- which can be controlled if management taken appropriate action / appropriate attention / care is called controllable cost.
- (b) Controllable cost is also known as " abnormal loss"
- (c) In other words, abnormal loss means an actual loss over & 5 above the normal loss is called abnormal loss
- (d) As per GACP, A.L shall be transferred to costing P& L A/c as debit side.

2) Uncontrollable cost:-

- (a) Uncontrollable cost means cost which cannot be controlled even though appropriate care taken by the management is called uncontrollable cost.
- (b) Uncontrollable cost is also known as "normal loss"
- (c) In other words, N.L means it's an unavoidable loss due to in variant nature of materials and it can be estimated on the basis of prior experience in such business field is called normal loss.

- (d) Generally, Normal loss can be recovered from effective (or) good units (or) from customer.

Important points;-

- Sometimes an actual loss is reduced (or) below the normal loss is called abnormal gain .
- In other words, abnormal gain means reduction in the normal loss is called abnormal gain
- Generally, abnormal gain shall be transferred to costing P & L credit side.

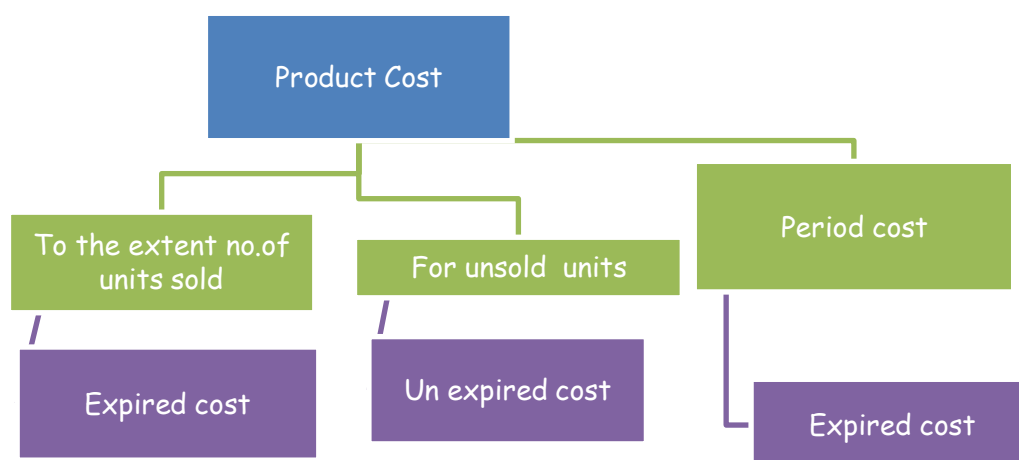
Cost classification of the basis of valuation of C.S:

1) Expired/ unexpired cost:-

- Expired cost means cost which is charge against current year revenue is called expired cost
- Unexpired cost means cost which is not charged against current year revenue is called unexpired cost
- It simply saying that expired cost means it is a cost of representative of sold units.
- It simply saying that unexpired cost means cost which is representative of unsold units.

2) Product /Period cost:-

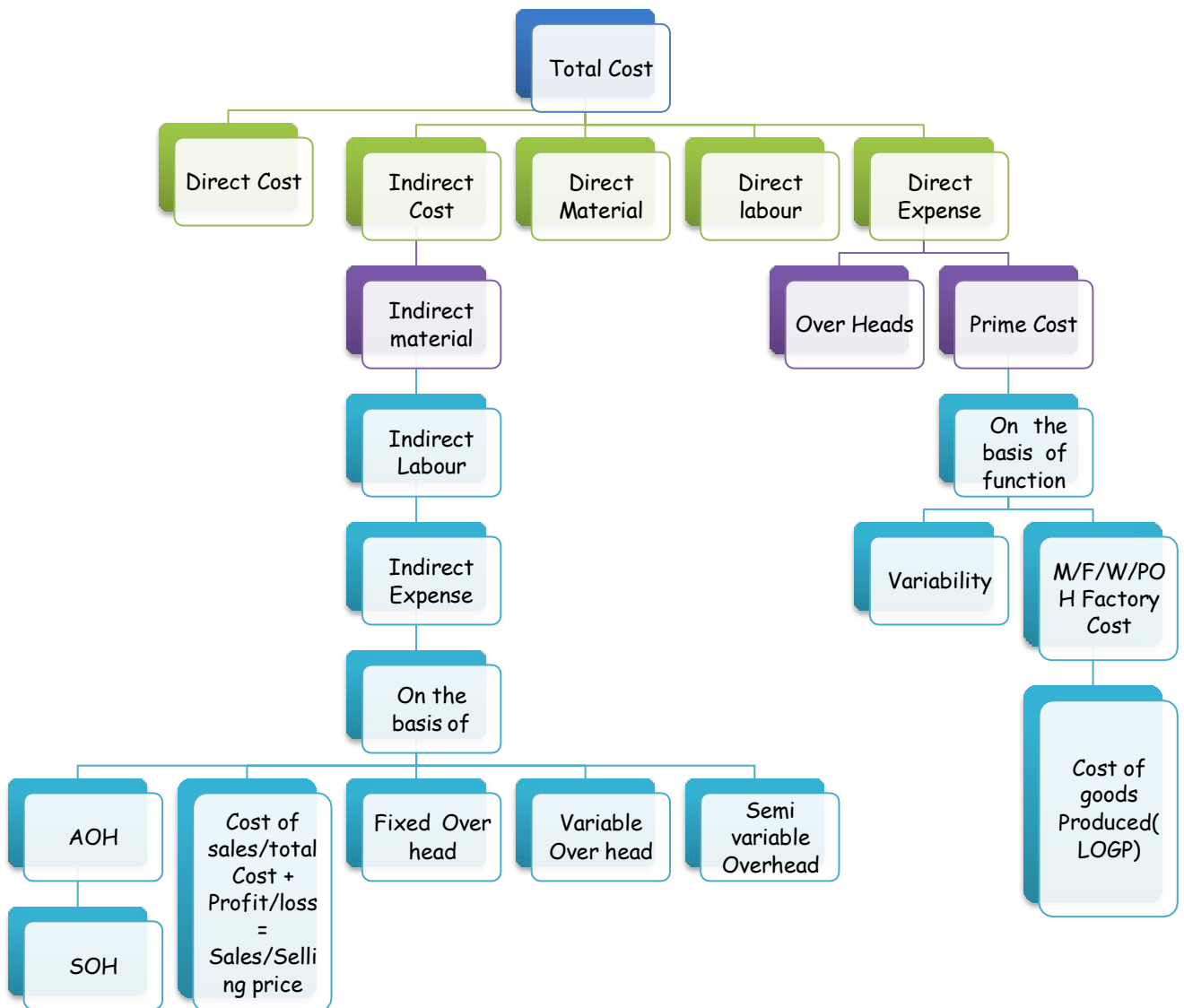
- Product cost means cost which is incurred for the purpose of manufacturing of goods is called Product cost.
- It simply saying that all trading A/c items will be referred as product cost.
- Period cost means cost which is incurred by the organization for the purpose of sold units is called Period cost.
- It Simply saying that all P & L A/c items will be referred as period cost.
- As per GACP, product cost is expired up to the portion of sold units and product cost is unexpired up to the portion of closing stock / unsold units.
- Now ever, as per GACP period cost is fully expired because such cost incurred by the organization only for the purpose of sold units.



3) Manufacturing cost:-

Manufacturing cost means any cost which is incurred by the organization for the purpose of manufacturing of a goods (or) rendering of services is called manufacturing cost.

- Any cost = Total cost



- The above chart indicates basic cost sheet on the basis of assumption that there is no opening stock of work - in - Progress (W.I.P), closing stock of W.I.P, O.S of initial good.

- The format of cost sheet is as shown below:

Particulars	Rupees (₹)
Direct Material	xx
Direct Labour	xx
Direct Expenses	xx
Prime cost	xx
(+) P/W/F/MOH	xx
Factory cost	xx
(+) AOH	xx
Cost of goods produced	xx
(+) SOH	xxx
Cost of sales / total cost	xxx
(+) Profit / (Loss)	xx
Sales / Selling price	xxxx

Note:-

POH	= Production overhead
MOH	= Manufacturing overhead
FOH	= Factory overhead
WHO	= Works Overhead
AOH	= Administrative overhead
SOH	= Selling and distribution overhead

- **Format of cost sheet** on the basis of assumption that there is opening stock of WIP, opening stock of finished good , closing stock of finished good.

Particulars	Rupees (₹)
Direct Material	xx
Direct Labor	xx
Direct Expenses	xx
Prime cost	xxx
(+)Production overhead/ FOH/MOH/WOH	xx
Factory cost (gross)	xxx
(+) Stock of WIP	xx
(-) Closing stock of WIP	xx
Factory cost (Net)	xxx
(+) Administrative overhead (AOH)	Xx
Cost of goods produced (COGP)	xxx
(+) Opening stock of finished good	Xxx
(-) Closing stock of finished good	xx(Note (i))
Cost of goods sold (COS)	xxx

(+) Sales overhead (SOH)	xx
Cost of sales (Cos)/Total cost	xxx
(+) Profit /(Loss)	xx
Sales / Selling Prices (S.P)	xxxx

Note:-

- (a) Sometimes, Question paper will specify Closing stock units and value of closing stock , then such value of closing stock should be considered for the purpose of closing stock should be considered for the purpose of cost sheet.
- (b) However, sometimes question paper will specify only closing stock units and not specified value of closing stock Then As per GACP , value of closing stock is based on cost of production

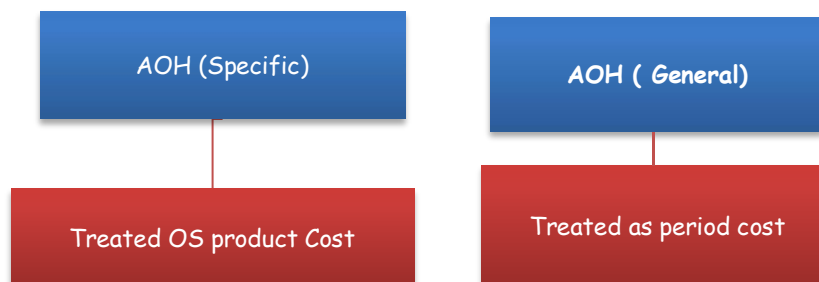
Therefore, value of closing stock = $\frac{\text{Closing stock (0)}}{\text{Production (units)}} \times \text{Cost of goods produced (COGP)}$

Production (units)

4) Administration cost :-

Administration cost means cost which is incurred by the organization for the purpose of sold units is called 'Administration cost'.

- As per ICAI A>C can be classified into two types, such as



- Hence if question paper silent regarding whether AOH is general (or) specific, then it shall be assumed the AOH (General).
- Hence AOH (General) is fully expired ,

5) Ascending cost / selling and distribution cost :-

SOH cost means cost which is incurred by the organization for the purpose of sold units is called ' Selling cost '

- Hence, SOH shall be referred as period cost, therefore it shall be fully expired.

6) Job cost, unit cost:-

Under unit costing, cost can be ascertained on average basis,

- Unit cost is applicable to those industry producing similar goods
- Under job costing, cost can be ascertained on separate basis
- Job costing is applicable to those industry producing not similar good

Miscellaneous purpose:-

1) Pre-determined cost, standard cost:-

Pre-determined cost means it is an estimated cost based on estimated production for a particular period is called ' Pre-Determined cost '

- Generally, pre-determined cost can be calculated before commencement of production activities to know feasibility of production.
- Standard cost means it is an estimated cost based on actual production is called 'Standard cost ' .
- In practical terms, FOQ the purpose of computation of variance analysis you are comparing standard cost with actual cost. To determine favorably variance (or) adverse variance.
- If organization getting favorable variance, then organization will investigate whether quality of the production process is compromise or not.

2) Imputed cost:-

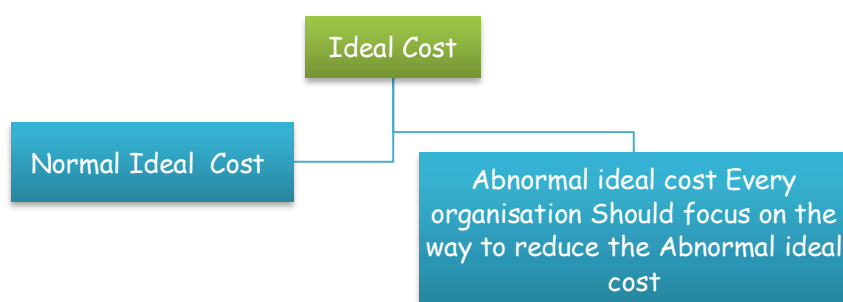
Imputed cost is also known as national cost.

National cost means it is a cost which is not incurred by the organization but such amount is recorded in the books of costing is called ' Imputed cost ' .

3) Engineered cost :-

Engineered cost means cost which is incurred by the organization from the purpose of supervision of machinery is called ' Engineered cost ' .

- Generally the concept of engineering cost is arrived when the organization incurred cost for maintenance of the machinery on preventive basis
- Generally if any organization incurred engineered cost then organization having chance to reduce abnormal ideal time.
- Ideal time means organization paid wages but not receiving any benefit for a particular hour is called ideal cost.



4) Differential cost :-

Differential cost means cost which is changed due to change in the level of output is called ' Differential cost ' .

- Generally different cost can be traceable with help of variable cost , fixed cost, Semi-variable cost.

Difference between Accounts and costing.

Accounts	Costing
1) The main objective of the accounts is a) To know the profit or loss from various sources. b) To ascertain financial position of the organization.	1) The main objective as a) Ascertainment of selling price b) Determination of total cost. c) Ascertaining profit & loss d) Cost control e) Cost reduction
2) Accounting data is presented based on historical.	2) Costing data is presented based on present & cost incurring.
3) Accounting is presented based on GAAP and relevant & applicable Accounting standards (AS)	3) Costing is presented based on GACP and relevant & applicable costing accounting standards.
4) User:- The accounting information will be useful for management (internal people).	4) Costing data will be helpful for decision making only for management.
5) Stock valuation is based on As-2 i.e., (or) NRV whichever is lower.	5) As per GACP stock shall be valued based on cost. (i.e., there is no concept of NRV)
6) Accounts doesn't reveal efficiency of plant and machinery, labor.	6) Costing will be revealed the efficiency of the labor.
7) Generally accounting will prepare for a part period (or) definite period.	7) However, costing statements will be prepared as and when required by the management.
8) Accounting (or) books of accounts are maintained as per management of company's tax act (i.e., Sec - 44AA of income tax Act)	8) Costing books are maintained as per requirements of the management.

Installation of cost Accounting system:-

- In the view of legal every organization should maintain books of accounts.
- However, maintenance of books of costing is not mandatory as per law.
- Hence, installation of costing system into the organization is optional.
- If organization want to install cost accounting system then such organization should

Consider the following elements such as:-

- a) Manufacturing process
- b) Size of the organization.
- c) Nature of the product and no. of products.
- d) Nature of raw materials
- e) Management control need
- f) Organization structure.
- g) External Factors.

Advantages of the costing	Disadvantages of the costing
1) To ascertainment of S.P	1) Installation of costing system is expensive because installation of costing system is optional.
2) Determination of T.C	2) Installation of costing system will lead to duplication of the work.
3) Determination of product	3) Installation of the Costing system will lead to profit as per accounts and profit as per costing is deferred because Accounting data is presented based on GAAP and accounting standards but, presentation of costing data is based on GACP & CAS.
4) Determination of profit	4) In practical terms organization may not achieve 100%, cost control & cost reduction.
5) Cost control	
6) Cost reduction	

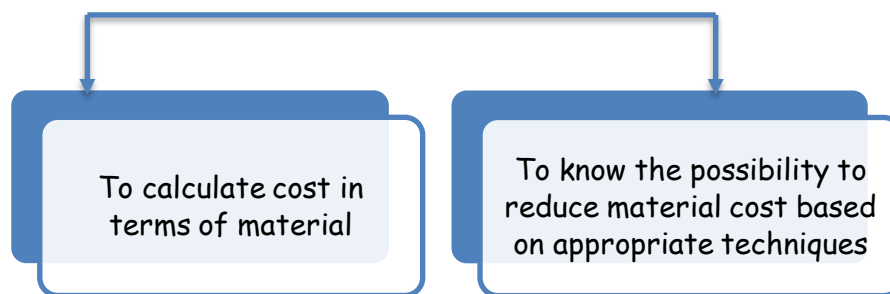
Topics to be covered:

1. Introduction to material cost
2. Material procurement procedure
3. Material issue procedure.
4. Techniques of controlling (or) reducing material cost.
5. Maintenance of stores recording on the basis of fee-lifo, lee- lifo, simple average, weighted average, base stock method, FIFO.
6. Concept of wastage, scrap, spoilage, defective and its cost accounting treatment.

1. Introduction to material cost:

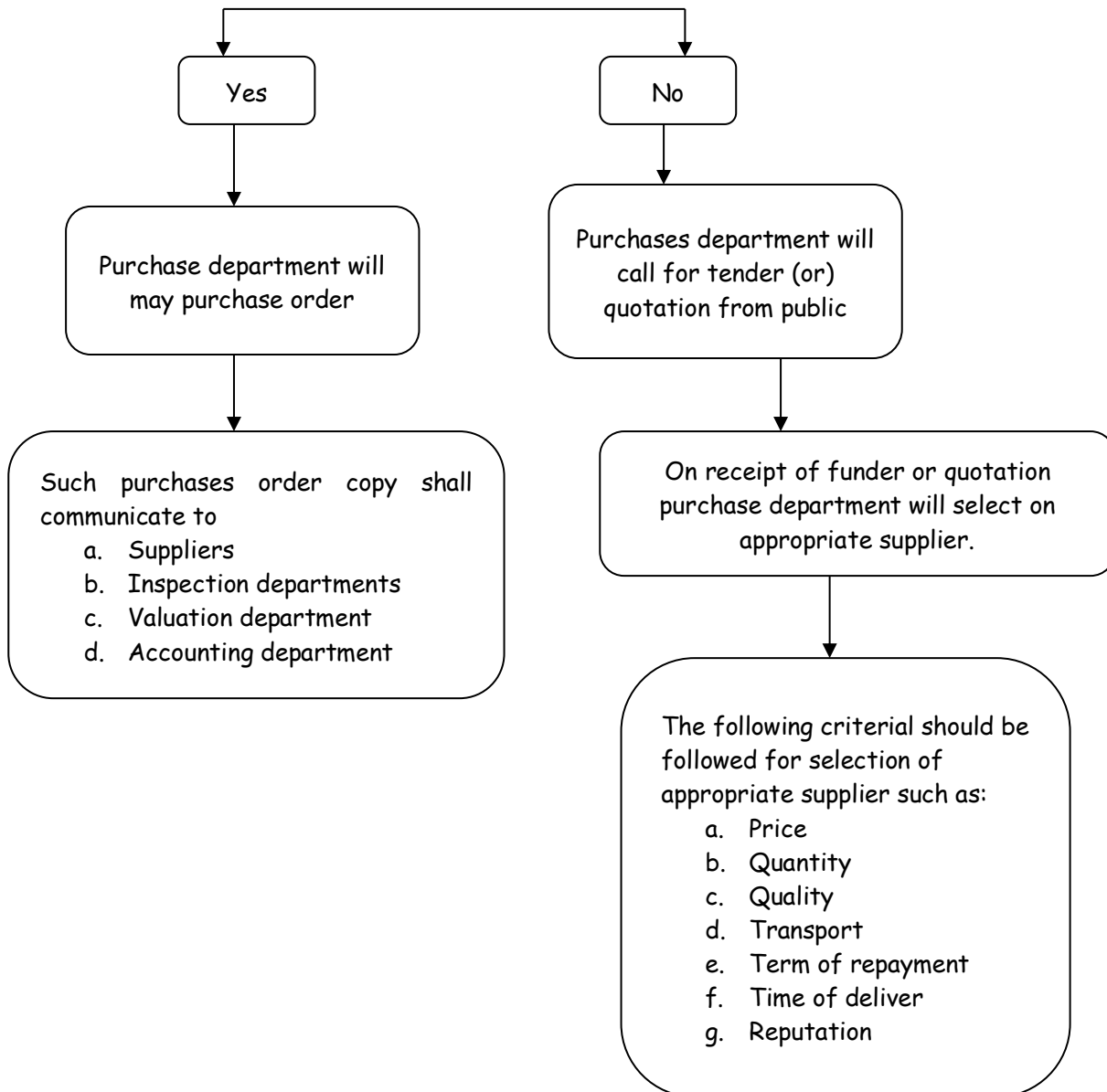
In the competitive field if any organisation, having intention to continue the business in long-run, then such organisation should try to give quality of the product.

- Quality of the product will give assurance of customer satisfaction.
- Is any organisation won't to produce quality of the production and it based on two factors, such as
 - a. Quality of raw materials.
 - b. Appointment of appropriate labour.
- Entire this chapter will be studied in two views, such as



Material procurement procedure:

- ✓ Production department will prepare material requisition note based on bill of material and such document shall communicate to store departments.
- ✓ On receipt of material requisition stores department will check whether appropriate raw material is available or not with the help of BIN CARD (or) stores ledger (or) stock control card.
- ✓ If raw material is not available or not adequately available then, stores department will prepare, purchases requisition notes and communicate to purchase department.
- ✓ On receipt of purchases requisition note, purchases department will check whether existing list of suppliers is available.



- ✓ After the above procedure purchase debt make purchase order.
- ✓ Purchase debt will preserve 3 appropriate quotation tenders for future reference.
- ✓ Inspection dept having responsibility to check the goods before accepting.
- ✓ Inspection dept will inspect the goods received on the basis of purchases order way.
- ✓ If any goods are not as per purchases order then such goods will be rejected.
- ✓ If goods received is as per purchases order then such goods will be accepted and inspection dept will draft goods received note based on goods accepted.
- ✓ Such goods received note shall communicate to costing dept, supplier, stores, accounts department.
- ✓ Finally accounts department will settle an amount to the supplier, based on terms & conditions.

Important terminologies involved in material procurement procedures

1. Bills of material
2. Material requisition note (goods received note [GRN])
3. BIN CARD {removed from new syllabus}
4. Stores ledger
5. Stock control card {removed from new syllabus}
6. Purchases requisition note.
7. Purchases order.

1. Material requisition note:

- Material requisitions note means it is an official document prepared by production department and communicate into store department. Regarding supply of required raw materials is called material requisition note.
- M.R.N will be prepared by the HOD of the production dept

2. Bill of materials:

- Bill of materials means it is an official document prepared by chgineering department & communicate to production department. Regarding quantity of raw material is to be used for production of one unit.

3. Purchases requisition note:

- ➔ Purchases requisition note means it is an official document prepared by stores department and communicate to purchase department regarding purchases of required raw material is called purchases requisition note.
- ➔ Purchase requisition note means will be prepared by head of store department head.

4. Purchase order:

Purchase order means it is an official document prepared by purchase department communicate to various persons including suppliers regarding supply of raw material is called purchase raw material.

- ➔ Purchase order copy will distribute to supplier, inspection department, valuation department, accounts department.
- ➔ Purchases order will be prepared by head of purchases department.

5. Goods received note:(GRN)

Goods received note means it is an official document prepared by inspection department and communicate to various persons including suppliers, regarding the quantity of goods accepted.

- ➔ GRN shall be prepared by head of inspection department.

6. Stores ledger:

- ➔ Stores ledger is similar to stock control cost.
- ➔ According to this method stores ledger is maintained on the basis of LIFO, FIFO, (or) simple average (or) weighted average, based on stock method.
- ➔ Generally, in every organisation stores ledger will be prepared and maintained by costing department.

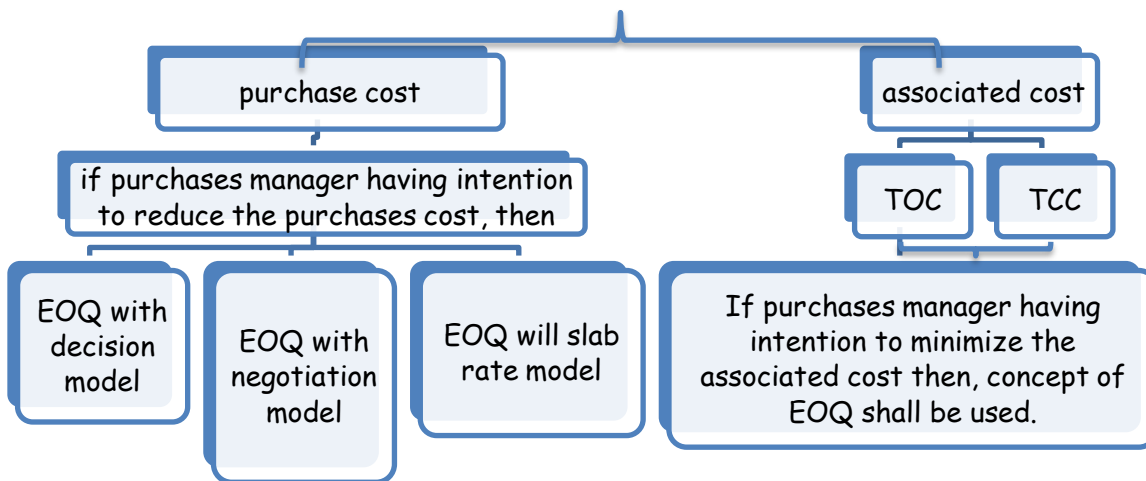
Techniques to control material cost:

- Every organisation having intention to control (or) reduce the material cost then such organisation should use the following techniques, such as:

- Implementation of EOQ
- Fixation of various levels
- Analysis ABC
- Use of ratios
- FSN analysis
- Perceptual inventory system
- Periodic stock taking
- Continuous stock taking
- To BIN system. (old syllabus)
- Implementation system of JIT

i. Implementation of EOQ system:

- Every purchases department manager will face the problem regarding how much quantity to be purchase?
- As per CAS, every purchases manager having freedom to purchase the raw material at their desired quantity subject to condition that selected desired quantity should be minimise the total material cost.
- Total material cost be classified into two types such as



$$EOQ = \sqrt{\frac{2AO}{C}}$$

Where ,

A = annual demand of raw material/ annual consumption on of raw material.

O = ordering cost per order

C = caring cost per unit per annum

Important points to be related to EOQ: -

- Finished goods is different from raw material finished goods means organisation having intention to sell is called finished good.

Raw material means organisation having intention to use during the manufacturing process.

2. Generally, caring cost is express in terms of %, such % should be applied on cost of raw material.
3. If question paper is silent (or) if question paper is not specified information regarding input, output ratio always 1:1
4. While calculating caring cost % relating to working capital shall be considered as percentage of caring cost.

EOQ with decision model:

This model is also knowing as EOQ with "discount model",

- As per this method, decision is based on total cost.
- Total cost calculation is as shown below.

	1	2	3	4	5	6	7
	No of orders (NOO)	Quantity per order (QTY)	Average inventory (AL)	Total ordering cost (TOC)	Total caring cost (TCC)	Total material cost (TMS)	Total cost (TC)
EOQ	Xx	Xx	Xx	Xx	Xx	Xx	Xxxxx
proposal	Xx	Xx	xx	Xx	xx	Xx	Xxxx

$$\text{Number of orders} = \frac{\text{Annual demand}}{\text{quantity per order}}$$

$$\text{Average inventory} = \text{column (2)} / 2$$

$$\text{TOC} = \text{column (1)} \times \text{ordering cost}$$

$$\text{TCC} = \text{Column (3)} \times \text{caring cost}$$

$$\text{TMC} = \text{annual demand} \times \text{material cost per unit}$$

$$\text{TC} = \text{column (4)} + \text{column (5)} + \text{Column (6)}$$

Concept of time - lag between one order to another order: -

$$\text{Time - lag between one order to another order} = \frac{365d/52w/12m}{\text{No.of orders}}$$

EOQ with negotiate model:

- Something organisation will get a situation to quote discount % to the suppliers, such situation shall be referred EOQ with negotiation model.
- According to this decision is based on extra cost.
- As per this method discount negotiation of discount is based on extra cost only.
- In other words, discount negotiation = extra cost burden to the organisation, if supplier offer is accepted.
- ∴ extra cost = total cost as per proposal - total cost as per EOQ.
- For the purpose of total cost calculation, you have to drawn decision table.

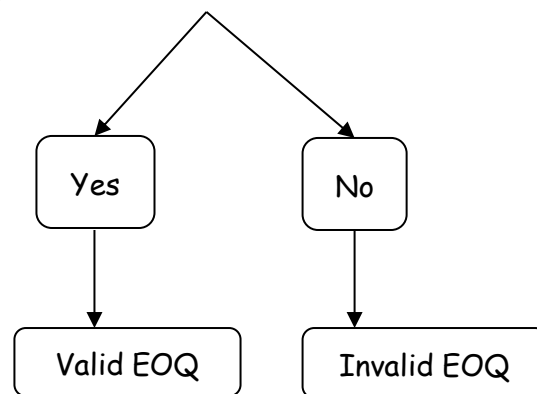
Concept of EOQ with slab rate model:

1. Something, organisation will get quotation of prices at different levels then organisation will get problem while making in decision making.
2. For solving these type of problems Williamson's model & Baumohr's model theory shall be used.
3. As per this theory, the following steps shall be followed.

Step 1: calculate EOQ at all levels.

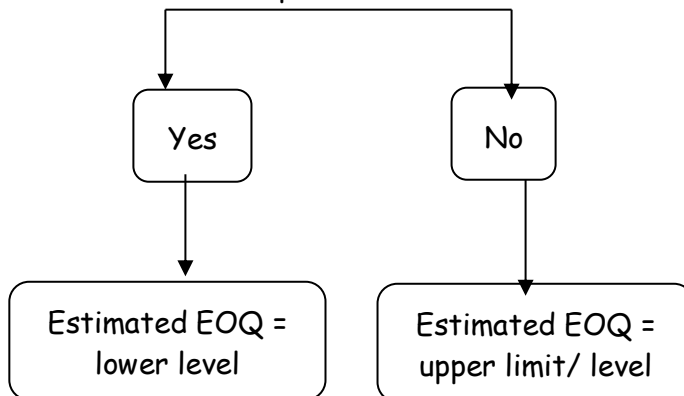
Steps 2: check the step 1 answer is valid (or) not.

- i. For checking or validating of EOQ, check whether step 1 ANS lies in between limit & lower limit?



Step 3: calculate estimated EOQ for those levels of EOQ are invalid in step 2

- i. Check whether step: -1 answer is below the lower limit?



Step 4: on the basis of EOQ & estimated EOQ, draw decision table and select least cost.

Important points related to EOQ: -

1. If question paper not specified input & output ratio = 1:1
2. In case EOQ with decision model, EOQ with negotiation model, then decision table should to be drafted.
3. While solving exam problem relating to EOQ with discount model, then percentage of discount shall be reduced from raw material and this information shall be used for calculation of revised C.C (carrying cost) and TMC (total material cost.)

Levels

- Every organisation should follow levels for achieving efficiency (or) to take appropriate decision making.
 - As per GACP, there are four levels in the cost accounting. Such as
 - Maximum level
 - Minimum level
 - Average level
 - Danger level
- a) Maximum level: -
- ➔ Maximum level indicates organisation should not purchase raw material beyond this level is called "maximum level".
 - ➔ The concept of maximum level will be useful to determine (or) reduce (or) minimize working capital (minimization of W.C leads to effective utilization of company funds towards capital busting.)
 - ➔ Formula for maximum level is

$$\text{Maximum level} = \text{re-order level (ROL)} + \text{Re-order quantity (ROQ)} - (\text{minimum consumption} \times \text{minimum lead time / ROP})$$
 - ➔ Sometimes, TOL information is not given in the question paper, then the following formula shall be used, such as check whether organisation maintain safety stock.



- ➔ The concept of safety stock is arising on the basis of to BIN system.
 - ➔ $\text{TOQ} = \text{EOQ} \left(\sqrt{\frac{2AO}{C}} \right)$
- b) **Minimum level:** - Minimum level indicates such organisation should maintain raw material at the minimum level of quantity otherwise organisations will get abnormal time.
- If any organisation not maintaining raw material properly at minimum level then such organisation cannot control cost structure of product (or) service.
 - The formula for minimum level is

$$\text{Minimum level} = \text{reorder level} - [\text{average consumption} \times \text{average reorder period}]$$

$$\text{(Or)}$$

$$= \text{ROL} [\text{normal consumption} \times \text{normal re-order period}]$$
- c) **Average level:** If any organisation having intention to save money in terms of FM then organisation should use "average level"
- ✓ Calculation of average level is

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

Or

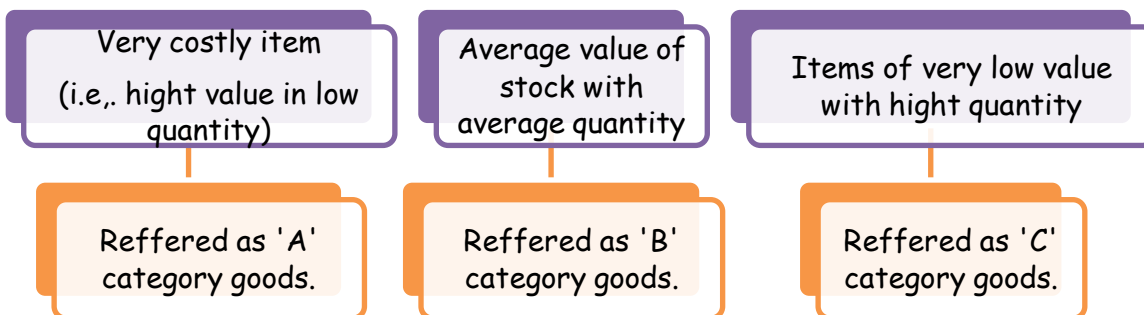
= minimum level + 1/2 (ROQ)

- d) **Danger level:** This level indicates organisation gaining to fall in emergency and it may lead to stop the production.
- Hence, if any organisation falls under danger level then organisation should purchase raw material immediately without observing the raw material cost per unit.
 - The formula for danger level is

$$\text{Danger level} = \text{normal rate of consumption} \times \text{maximum re-order period for emergency purchases.}$$

ABC Analysis:

- The main theme of ABC analysis is to control or reduce material cost by avoiding waste (or) theft.
- According to this technique entire raw material can be classified into 3 types such as
 - 'A' category goods
 - 'B' category goods
 - 'C' category goods.
- According to this technique if any organisation implementing ABC analysis effectively then such organisation can reduce cost in terms of raw material.
- According to this technique raw material can be classified into three types such as



- As per this technique raw material is segregating into A, B, C category goods on the basis of 70:20:10 (or) 60:30:10
- The following are the procedure for calculating of ABC analysis such as

Step 1: Arrange the entire raw materials on the basis of highest to lowest value.

Step 2: Calculate weight of each raw material

Step 3: Calculate cumulative weight of the raw material.

Step 4: on the basis of step 3: arrange the (or) classify the raw materials into A, B, C category goods on the basis of 70:20:10 (or) 60:30:10.

Q. AB Ltd disclosed the following information for quantity of raw material such as

Raw material numbers	Quantity	Value per unit
501	1,000	3
502	1,00,000	0.4

507	40,000	1.2
600	20,000	2.5
603	50,000	4
708	2,00,000	0.8

You are required to classify the raw materials into A, B, C category goods by using ABC analysis.

Sol: working notes:

Raw material numbers	Quantity	Value per unit	Value	
501	1,000	3	3000	603
502	1,00,000	0.4	40,000	708
507	40,000	1.2	48,000	600
600	20,000	2.5	50,000	507
603	50,000	4	2,00,000	502
708	2,00,000	0.8	1,60,000	501

Raw material numbers	Quantity	Value	Weight (individual value/ aggregate X 100)	Cumulative	
603	50,000	2,00,000	39.92	39.92	→ 'A'
708	2,00,000	1,60,000	31.93	71.85	} 'B'
600	20,000	50,000	9.98	81.83	
507	40,000	48,000	9.58	91.41	} 'C'
502	1,00,000	40,000	7.98	99.39	
501	1000	3,000	0.59	99.98	
		<u>5,01,000</u>			

Conclusion:

According to ABC analysis on the basis of 70:20:10, it is concluded that

A category goods = raw material "603"

B category goods = raw material "708", "600"

C category goods = raw materials other than A and B category goods.

FSN analysis:

This analysis will be helpful to identify the fast-moving goods and slow-moving goods.

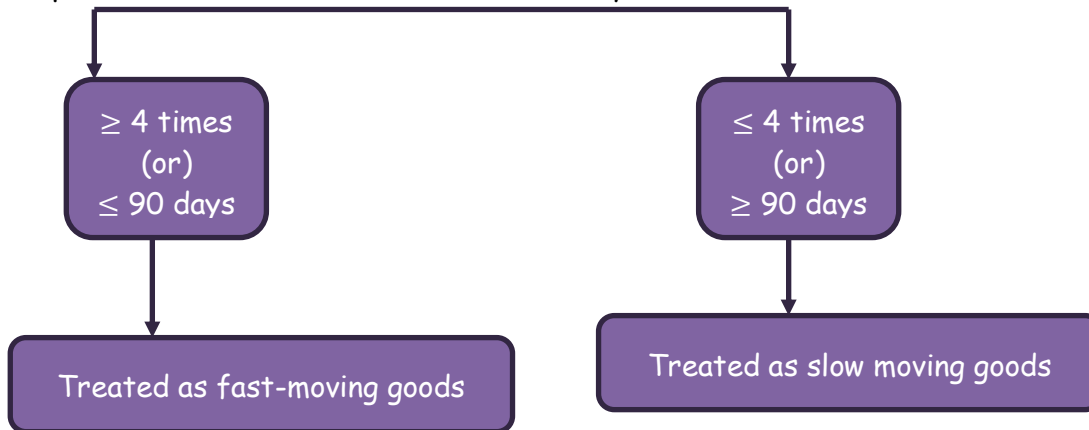
- ✓ Every organisation should segregate raw material into fast moving & slow moving goods for the purpose of better decision making.
- ✓ Generally, every organisation should try to invest more amount on fast moving goods rather than slow moving goods.
- ✓ FSN analysis can be determined by using inventory turnover rate for identification of fast, slow moving goods.

✓ Calculation of inventory turnover ratio.

i. $\text{Cost of raw material consumed} \div \text{average cost of raw material}$
= XX times

ii. $\text{Average stock of raw material} \div \text{cost of raw material consumed} \times 365 \text{ days}$
= xx days

✓ Interpretation of the above result of inventory turnover ratio



✓ Average stock of raw material = $\frac{\text{opening stock} + \text{closing stock}}{2}$

✓ Raw material consumed = opening stock + purchases - closing stock

Just in time techniques

- It is a Japanese techniques
- Whenever organisation having intention to reduce caring cost as "zero" then this technique will be implemented.
- According to this technique organisation should purchase quantum of raw material as much as required.
- Implementation of this techniques is very risky because if supplier may not supply raw material within the time it may lead to hamper in the production process.
- Hence this method will be implemented only when organisation having strong relationship with supplier.
- The following are the advantage of JIT system such as
 - a) Caring cost will become zero.
 - b) If any organisation implementing JIT system then burden of working capital will reduce.
 - c) Supplies of raw material are be made at regular interval
 - d) It reduces (or) minimises storage space.
 - e) If reduces the chances of inventory damage.

Perpetuals inventory system:

- ❖ Perpetual means "continuous" (or) far ever.
- ❖ According to this technique's enterprise maintain inventory records on continuous basis as immediately transaction to place.
- ❖ Hence as per this system there is a less change in the view of errors.

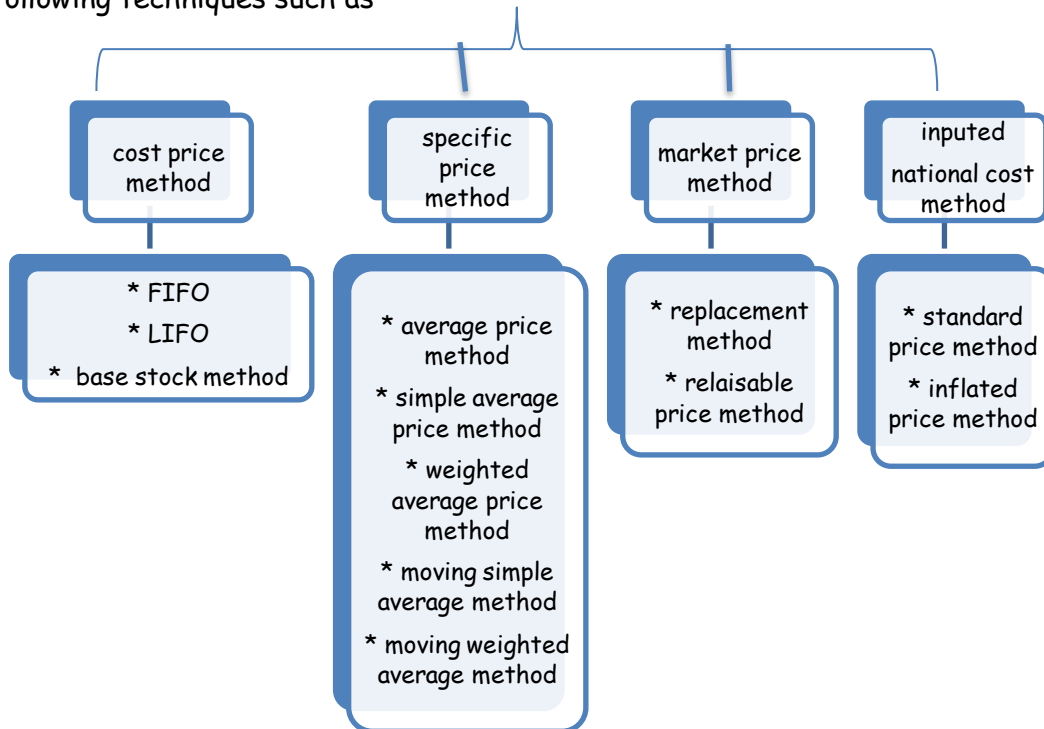
- ❖ As per this techniques books of inventory shall be examined on continuous basis.
- ❖ Generally, this method will be followed by the organisation on the basis of "BIN CARD" (or) 'stock control card'.

TWO BIN system:

- ✓ According to this system BIN can be classified into two types such as small bin, large bin.
- ✓ Generally, as per this technique's materials can be issued by stores department from large BIN.
- ✓ In other words, any raw material containing in small bin cannot be issue unless there is an emergency production order.

Stores ledger:

Generally, every stores department will follow (or) prepare (or) maintaining stores ledger, by using the following techniques such as



Base stock method: (safety stock)

Generally, stores ledger will be prepared on the basis of FIFO, (or) LIFO with the help of base stock method.

- According to this method raw material will be preserved as safety stock (or) base stock.
- Quantum of raw material in the base stock will not be used unless emergency situation.
- While solving the examination problem principles of FIFO (or) LIFO shall be used except safety stock (or) base stock.

Specific identification price method:

Generally, this method is followed by stores department.

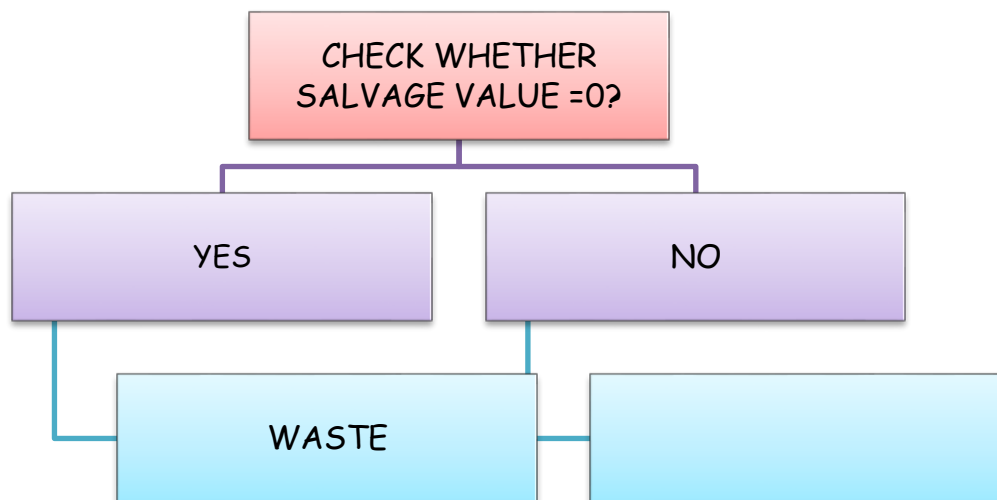
- ✚ As per this method issue price will be constant.
- ✚ As per this method materials are issued at standard price
- ✚ Standard price = $\frac{\text{opening stock (units)} \times \text{opening stock (price)}}{\text{No. of units}} \pm \text{price variance}$
- ✚ Generally, variants will be given in the question paper.

CONCEPT OF WASTE, SCRAP, SPOILAGE, DEFECTIVE AND ITS COST ACCOUNTING TREATMENT

It is a loss during the production process



CW SALVAGE VALUE=0...?



1. The following information relating to a type of Raw material is available:

Annul demand	2000 units
Unit price	Rs. 20
Ordering cost per order	Rs.20
Storage Cost	2% p.a.
Interest rate	8% p.a.
Lead time	Half month

Calculate economic order quantity and total annual inventory cost of the raw material

2. ZED Company supplies plastic crockery to fast food restaurants in metropolitan city. One of its products is a special bowl, disposable after initial use, for serving soups to its customers. Bowls are sold in pack of 10 pieces at a price of Rs. 50 per pack.

The demand for plastic bowl has been forecasted at a fairly steady rate of 40,000 packs every year. The company purchases the bowl direct from manufacturer at Rs. 40 per pack within a three days lead time. The ordering and related cost is Rs. 8 per order. The storage cost is 10% per annum of average inventory investment.

Required:

- (i) Calculate Economic Order Quantity.
 - (ii) Calculate number of orders needed every year.
 - (iii) Calculate the total cost of ordering and storage bowls for the year.
 - (iv) Determine when should the next order to be placed. (Assume 1 year = 360 days)
3. PQR Limited produces a product which has a monthly demand of 52,000 units. The product requires a Component X which is purchased at Rs. 15 per unit. For every finished product, 2 units of Component X are required. The ordering cost is Rs. 350 per order and the carrying cost is 12% p.a.
- Required:
- Calculate the economic order quantity for Component X.
 - If the minimum lot size to be supplied is 52,000 units, what is the extra cost, the company has to incur?
 - What is the minimum carrying cost, the company has to incur ?
4. G. Ltd produces a product which has a monthly demand of 4,000 units. The product requires a component X which is purchased at Rs. 20. For every finished product, one unit of component is required. The ordering cost is Rs. 120 per and the holding cost is 10% p.a.
- You are required to calculate -
- (i) Economic order quantity,
 - (ii) If the minimum lot size to be supplied is 4,000 units, what is the extra cost, the company has to incur ?
 - (iii) What is the minimum carrying cost, the company has to incur ?

5. A Limited a toy company purchases its requirement of raw material from S Limited at Rs. 120 per kg. The company incurs a handling cost of Rs. 400 plus freight of Rs. 350 per order. The incremental carrying cost of inventory of raw material is Rs. 0.25 per kg per month. In addition the cost of working capital finance on the investment in inventory of raw material is Rs. 15 per kg per annum. The annual production of the toys is 60,000 units and 5 units of toys are obtained from one kg. of raw material.

Required:

- (i) Calculate the Economic Order Quantity (EOQ) of raw materials.
 - (ii) Advise, how frequently company should order to minimize its procurement cost. Assume 360 days in a year.
 - (iii) Calculate the total ordering cost and total inventory carrying cost per annum as per EOQ.
6. An automobile company purchases 27,000 spare parts for its annual requirements. The cost per order is Rs. 240 and the annual carrying cost of average inventory is 12.5%. Each spare part costs Rs. 50. At present, the order size is 3,000 spare parts. (Assume that number of days in a year = 360 days)
- Findout:
- (i) How much the company's cost would be saved by opting EOQ model?
 - (ii) The Re-order point under EOQ model if lead time is 12 days.
 - (iii) How frequently should orders for procurement be placed under EOQ model?
7. A company deals in trading of a toy car 'Terminator'. The annual demand for the toy car is 9,680 units. The company incurs fixed order placement and transportation cost of Rs. 200 each time an order is placed. Each toy costs Rs. 400 and the trader has a carrying cost of 20 percent p.a. The company has been offered a quantity discount of 5% on the purchase of 'Terminator' provided the order size is 4,840 units at a time.

Required:

- (i) Compute the economic order quantity
 - (ii) State whether the quantity discount offer can be accepted.
8. A company manufactures a product from a raw material, which is purchased at Rs. 54 per kg. The company incurs a handling cost of Rs. 1,500 plus freight of Rs. 4,000 per order. The incremental carrying cost of inventory of raw material is Rs. 1.50 per kg per month. In addition, the cost of working capital finance on the investment in inventory of raw material is Rs. 8 per kg per annum. The annual production of the product is 96,000 units and 4 units are obtained from one kg of raw material.

Required:

- (i) Calculate the economic order quantity of raw materials.

- (ii) Advise how frequently orders should be placed for procurement.
- (iii) If the company proposes to rationalize placement of orders on quarterly basis, determine what percentage of discount in the price of raw materials should be negotiated?

9. The Complete Gardener is deciding on the economic order quantity for two brands of lawn fertilizer: Super Grow and Nature's Own. The following information is collected:

Fertilizer	Super Grow	Nature s Own
Annual demand	2,000 bags	1,280 bags
Relevant ordering cost per purchase order	Rs. 1,200	Rs. 1,400
Annual relevant carrying cost per bag	Rs. 480	Rs. 560

Required—

- i) Compute EOQ for Super Grow and Nature's Own.
- ii) For the EOQ, what is the sum of the total annual relevant ordering costs and total annual relevant carrying costs for Super Grow and Nature's Own ?
- iii) For the EOQ, compute the number of deliveries per year for Super Grow and Nature's Own

10. A company manufactures a product from a raw material, which is purchased at Rs. 60 per kg. The company incurs i handling cost of Rs. 360 plus freight of Rs. 390 per order. The incremental carrying cost of inventory of raw material is Re. 0.50 per kg. per month. In addition, the cost of working capital finance on the investment in inventory of raw material is Rs. 9 per kg. per annum. The annual production of the product is 1,00,000 units and 2.5 units are obtained from one kg. of raw material.

Required:

- i) Calculate the economic order quantity of raw materials.
- ii) Advise, how frequently should orders for procurement be placed.
- iii) If the company proposes to rationalise placement of orders on quarterly basis, what percentage of discount in the price of raw materials should be negotiated?

11. RST Limited has received an offer of quantity discount on its order of materials as under:

Price per ton (Rs.)	Tons number
9,600	Less than 50
9,360	50 and less than 100
9,120	100 and less than 200
8,880	200 and less than 300
8,640	300 and above

The annual requirement for the material is 500 tons. The ordering cost per order is Rs. 12,500 and the stock holding cost is estimated at 25% of the material cost per annum.

Required:

- (i) Compute the most economical purchase level.
- (ii) Compute EOQ if there are no quantity discounts and the price per ton is Rs. 10,500.

12. From the following particulars with respect to a particular item of materials of a manufacturing company, calculate the best quantity to order:

Ordering quantities (tonne)	Price per ton Rs.
Less than 250	6.00
250 but less than 800	5.90
800 but less than 2,000	5.80
2,000 but less than 4,000	5.70
4,000 and above	5.60

The annual demand for the material is 4,000 tonnes. Stock holding costs are 20% of material cost p.a. The delivery cost per order is Rs.6.00

13. The annual carrying cost of material 'X' is Rs.3.6 per unit and its total carrying cost is Rs.9,000 per annum. What would be the Economic order quantity for material 'X', if there is no safety stock of material X?
14. A company manufactures 5,000 units of a product per month. The cost of placing an order is Rs. 100. The purchase price of the raw material is Rs. 10 per kg. The re-order period is 4 to 8 weeks. The consumption of raw materials varies from 100 kgs. to 450 kgs. per week, the average consumption being 275 kgs. The carrying cost of inventory is 20% per annum. You are required to calculate: (i) Re-order quantity; (ii) Re-order level; (iii) Maximum level; (iv) Minimum level; (v) Average stock level
15. PQR Tubes Ltd. are the manufacturers of picture tubes for T. V. The following are the details of their operations during 2008-09:

Ordering cost	Rs. 100 per order	Normal usage	100 tubes per week
Inventory	20% p.a.	Minimum usage	50 tubes per week
Cost of tubes	Rs. 500 per tube	Maximum usage	200 tubes per week
		Lead time to supply	6 - 8 weeks

Required -

- Economic order quantity. If the supplier is willing to supply quarterly 1,500 tubes at a discount of 5% is it worth accepting ?
 - Re-order level
 - Maximum level of stock
 - Minimum level of stock.
16. A company manufactures 5000 units of a product per month. The cost of placing an order is Rs.100. The purchase price of the raw material is Rs.10 per kg. The re-order period is 4 to 8 weeks. The consumption of raw materials varies from 100 kg to 450 kg per week, the average consumption being 275 kg. The carrying cost of inventory is 20% per annum.
- You are required to calculate

- (i) Re-order quantity
- (ii) Re-order level
- (iii) Maximum level
- (iv) Minimum level
- (v) Average stock level

17. A company has the option to procure a particular material from two sources:
 Source I assures that defective will not be more than 2% of supplied quantity.
 Source II does not give any assurance, but on the basis of past experience of supplies received from it, it is observed that defective percentage is 2.8%.
 The material is supplied in lots of 1,000 units. Source II supplies the lot at a price, which is lower by Rs. 100 as compared to source I. The defective units of material can be rectified for use at a cost of Rs. 5 per unit. You are required to find out which of the two sources is more economical.
18. You are presented with the following information by Om Engineering Company related to the first week of December, 2003. The transactions in connection with the materials are as follows :

Days	Receipts		Issue (Unit)
	Units	Rate per Unit (Rs.)	
1st	40	15.00	-
2nd	20	16.50	-
3rd	-	-	30
4th	50	17.10	-
5th	-	-	20
6th	-	-	40

Calculate the cost of materials issued under (i) FIFO Method; (ii) LIFO Method; of materials and value of closing stock under the methods aforesaid.

19. Prepare a statement showing the pricing of issues, on the basis of
- (a) Simple Average and
 - (b) Weighted Average methods from the following information pertaining to Material-D
 March
 - 1 Purchased 100 units @ Rs. 10 each
 - 2 Purchased 200 units @ Rs.10.2 each.
 - 5 Issued 250units to Job X vide M.R.No. 12
 - 7 Purchased 200 units @ Rs.10.50 each
 - 10 Purchased 300 units @ Rs. 10.80 each
 - 13 Issued 200 units to Job Y vide M.R.No. 15
 - 18 Issued 200 units to Job Z vide M.R.No. 17
 - 20 Purchased 100 units @ Rs. 11 each
 - 25 Issued 150 units to Job K vide M.R.No.25

LABOUR COSTING

Topics to be covered:

1. Introduction to labour.
2. Concept of labour cost.
3. Concept of remuneration system.
4. Concept of labour turnover.
5. Concept of over time.
6. Concept of idle time.
7. Concept of measurement of labour cost.

1. Introduction to labour: -

For every manufacturing industry there are two key roles for its success such as

- a) Raw material
- b) Labour

- ✓ Hence labour should be treated as asset for the organisation. hence as a cost manager we should properly take care with the labour.
- ✓ If cost manager is not properly taken then it leads to labour turnover. (if labour turnover increases organisation getting loss due to various reasons.) hence HR manager and cost manager should properly co-ordinate with the labour because labour is a dynamic factor.
- ✓ Generally, labour is a dynamic factor hence every HR has obligation to control and motivate labour (by way of implementing proper remuneration system).

2. Concept of labour cost: -

As per CAS, labour cost may increase but organisation should try to reduce labour cost per hour.

- HR manager and costing manager having obligation to co-ordinate between organisation & employees.
- HR manager should appoint appropriate person as a labour (selection procedure in transparent manner).
- Every organisation should try to create ethical work environment

Conclusion: -

Concept of labour cost will be effectively implemented with the help of proper remuneration system. (basic wages + bonus + any other amount)

3. Concept of remuneration system: -

- i. Time rate system
- ii. Piece rate system
- iii. Halsey premium system
- iv. Halsey wage system

- v. Rowan system
- vi. Taylor plans
- vii. Merricks plan
- viii. Gant task plan
- ix. Emmersions efficiency plan
- x. Barth system
- xi. Acceplating premium plan
- xii. Beaudaux plan system

i. Time - rate system:

Time rate system

$$\text{Wages} = T \times R$$

Where, T = actual time worked / actual hours worked

R = rate per hour

ii. Piece rate system: -

Wages = no. of units produced $\times$ rate per piece.

- ✓ Sometimes questions paper will not specify information related to rate per piece in that situation we have to calculate as shown below.
- ✓ As per CAS "rate per piece means rate per piece which is representative for production of one unit.
- ✓ It simply saying that rate per piece it is a representative of salary / wages for time to produce one unit.
- ✓ Rate per piece = $\frac{\text{One hour salary}}{60} \times \text{time to procedure one unit}$

iii. Halsey premium method: -

$$\text{Wages} = (T \times R) + 50\% (S - T) \times R$$

Where, T = actual time worked / actual hour worked.

R = rate per hour.

S = standard hours.

(S - T) = time saved.

- ✓ In the above formula the portion of 50% of (S-T) $\times$ R will be referred as "Bonus".
- ✓ Therefore, while calculating exam problem bonus should be positive value (or) zero. (i.e., bonus element should not be negative value.)

iv. Halsey wire system: -

$$\text{Wages} = (T \times R) + 30\% (S - T) \times R$$

v. Rowan system: -

$$\text{Wages} = (T \times R) + T/S (S - T) \times R$$

vi. Taylor plan: -

Wages of the labour will be decided by two factors, such as

a. Efficiency of the labour

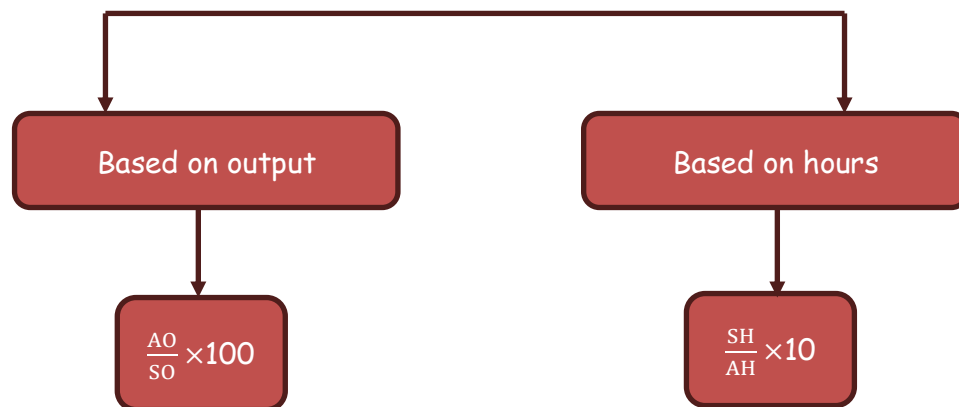
b. Piece rate system.

✓ Calculation of wages under Taylor plan is

Efficiency wages

Below 100%	→	83% of PRS
at (or) above 100%	→	125% of PRS

✓ Calculation of efficiency can be done either of the following 2 ways such as



vii. **Merricks plan:** -

EFFICIENCY

Upto 83%	→	wages OPRS
> 83% to 100%	→	110% of OPRS
> 100%	→	120% of OPRS

viii. **Gant task plan:** -

EFFICIENCY

Below 100% / standard	wages guarantee time wages (T × R)
@ standard	120% of GTW
Above standard	120% of PRS

ix. **Emmersions efficiency plan:** -

upto 66.6666%	→	GTW
>66.6666 to 100%	→	GTW + GTW 20%
>100%	→	GTW + 20% of GTW + 1% bonus for every 1% of Eff in excess of 100% efficiency

x. **Barth system:** -

Wages = $R \times \sqrt{SH \times AH}$

Where SH = standard hours.
AH = actual hours.

xi. **Accelerating premium plan:** -

wages = 0.8 (X2) of GTW
where, X = eff of labour

xii. **Beaudaux plan system:** -

$$BS = (T \times R) + 75\% \left[\frac{BPS}{60} \times R \right]$$

BPS = Beaudaux point saved

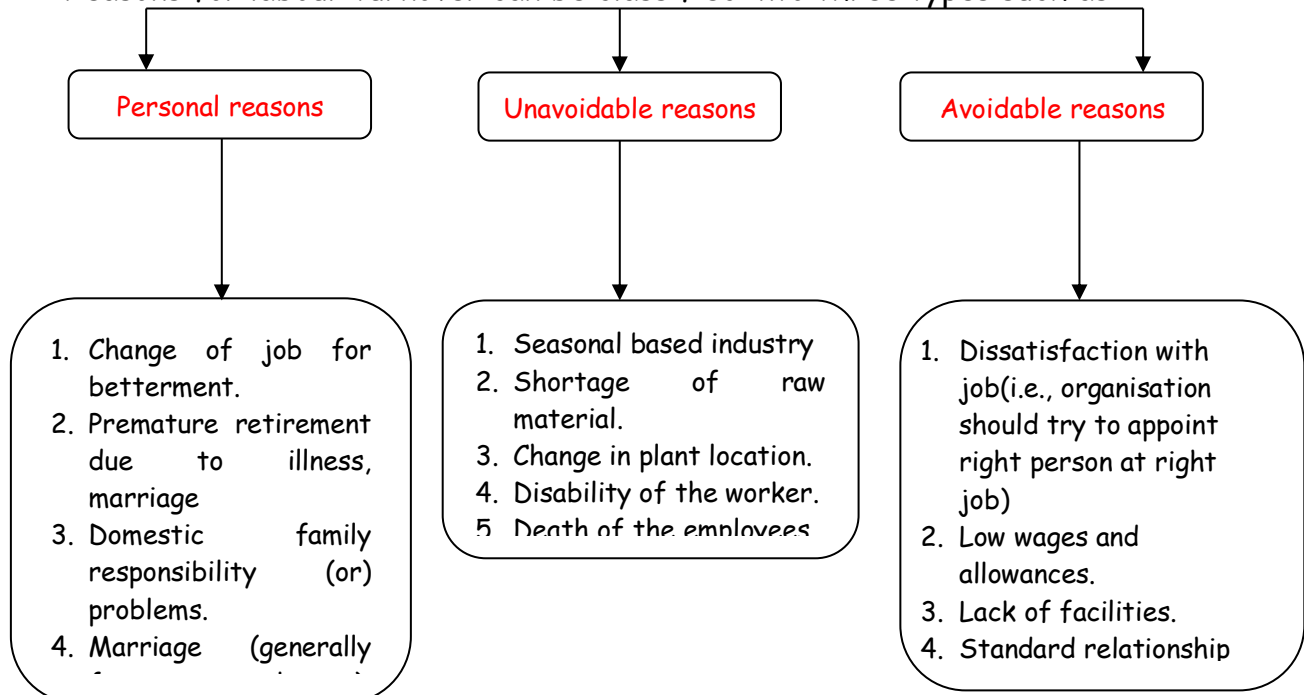
- 1 min saved = 1BPS

Gantt task plan: -

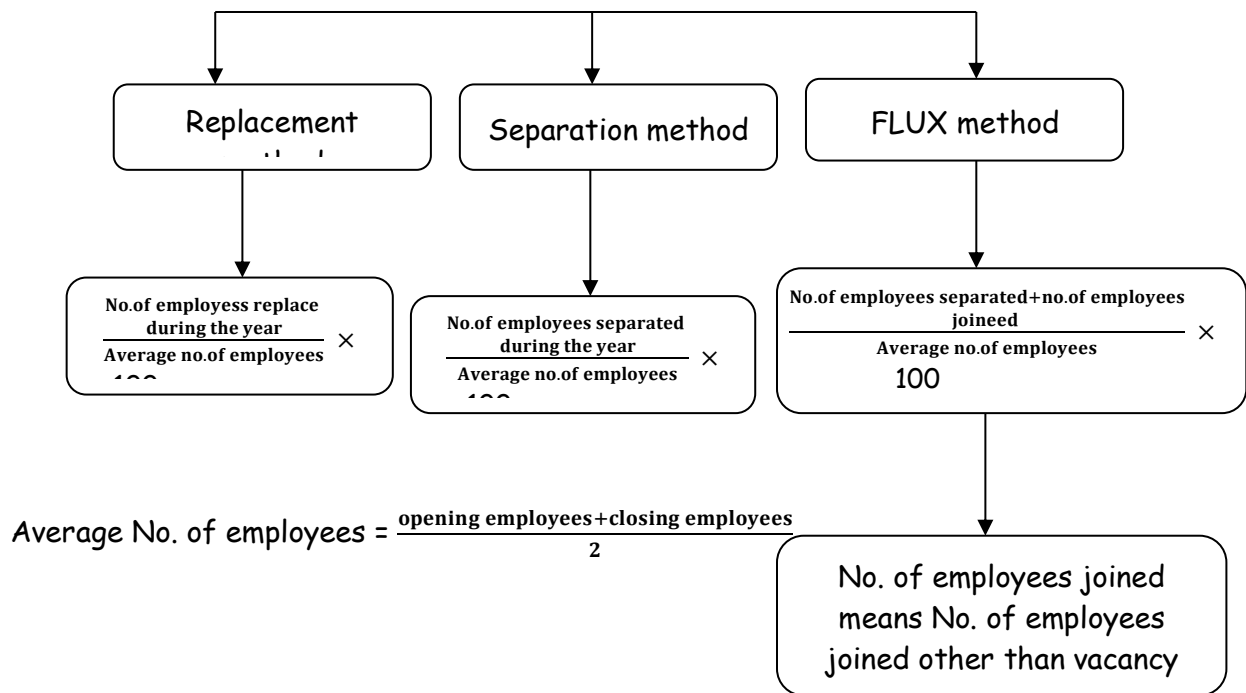
Below standard → GTW
@ standard → 120% of GTW
Above standard → high piece rate

4. Concept of labour turnover:

- Labour turnover means employees change from one organisation to another organisation for various reasons is called labour turnover.
- If labour turnover increase organisation will get loss due to
 - a. Settlement of dues for old employees.
 - b. Cost involved for requirement of new employee.
 - c. Training cost,
 - d. Loss due to unproductive work.
- Reasons for labour turnover can be classified into three types such as

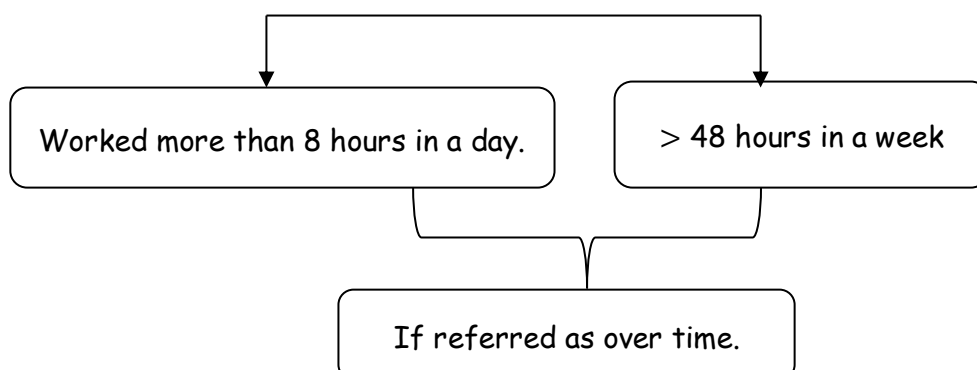


- Every Hr manger should try to reduce labour turnover.
- Every HR manager should conduct exist interview to know the reason of resignation (or) labour turnover.
- HR manger should try to retained the employee (if employees disclose avoidable manager should calculate LTO percentage.

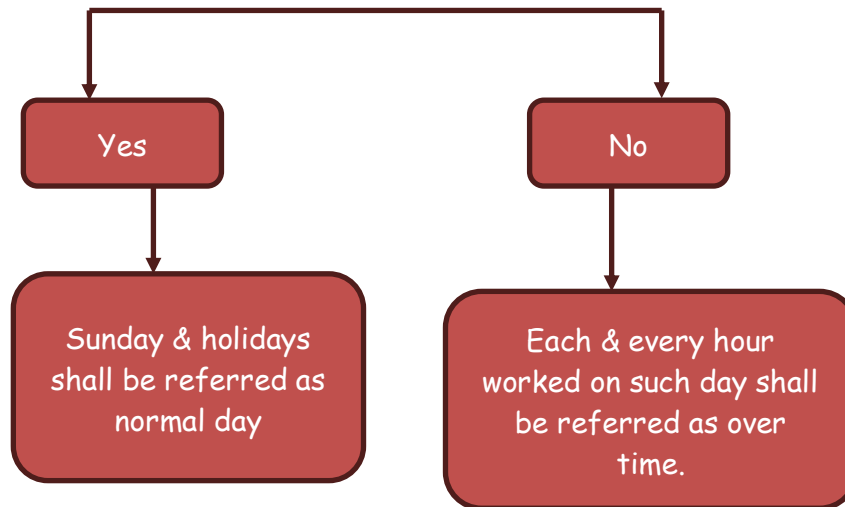


5. Concept of over time: -

- If employee worked more than regular hours is called over time. (regular hours mean 8 hours as per factories act.)
- Generally, as per factories act, if labour.



- Generally as per factories act, Sunday & festivals will be referred as holidays.
- If any employee working on Sunday (or) on festival day. Check whether employer granted substitutional holiday in next week.



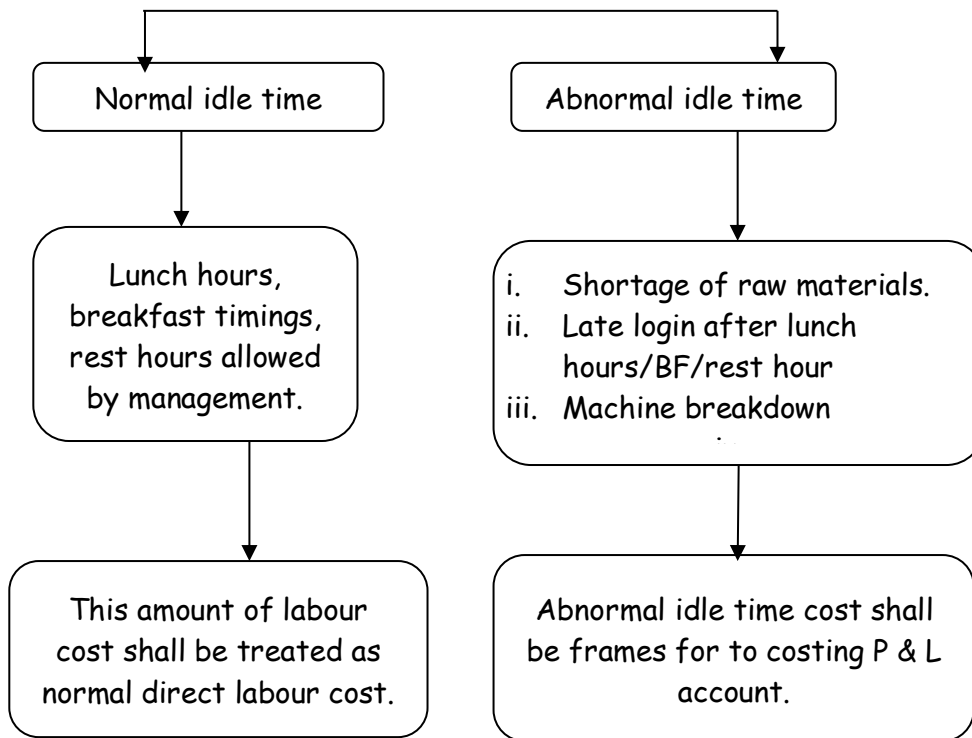
- **Cost accounting treatment** of over time:

Situation	Cost accounting treatment
1. OT is regular	OT wages shall be treated as normal wages (or) regular wages by inflating direct labour per hour by using previous year / period data.
2. OT is irregular	OT wages shall be treated as POH/FOH/WHO/MOH
3. OT is a raised at failure of one department	OT wages shall be charged to particular department.
4. OT is at the request of the customer	OT wages shall be charged to particular customer.
5. OT is a raised due to abnormal reasons	OT transfer to costing P & L.

- As a cost manager we should try to avoid OT situation (unless it requests from the customers).

6. Concept of idle time: -

- ✓ Idle time means organisation paying wages for a particular hour but organisation not getting any benefit for such hour is called "idle time".
- ✓ Generally idle time can be classified into two types, such as



❖ Important factors for the control of employee cost:

1. Any organisation having intention to control labour cost then the following factors shall be considered effectively such as
 - a. Assessment of man power requirement (i.e., operation costing)
 - b. Control over time keeping and time booking.
 - c. Time study and motion study.
 - d. Control over idle time and over time.
 - e. Control over labour turn over.
 - f. Implementation of proper wage and incentive system.
 - g. Job evaluation and merit rating.
 - h. Employee productivity (refer O.M).

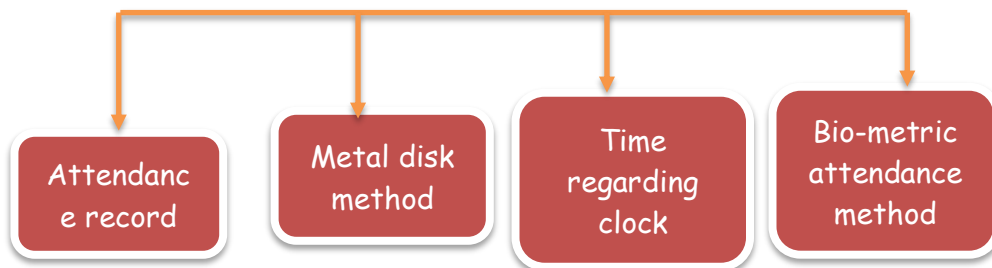
a. **Assessment of man power requirement (i.e., operation costing): -**

- i. The main objective of operation costing is to **determine** optimum no. of labours required.
- ii. If any organisation not maintaining optimum number of labours then it lead to either increase the labour cost (or) increase the labour turnover (LTO).
- iii. According to the operation costing optimum no. of employees determining the using the data product wise / operation wise to calculate operation costing.

b. **Control over time keeping and time booking: -**

- i. HR department costing & play role department with play an important role for the purpose of labour cost control through maintaining a record of each worker

- in time & out time during regular period is called "time keeping".
- ii. Time keeping will promote discipline & punctuality among the workers.
 - iii. If any employee maintains proper time keeping then certain benefits will get like pension, gratuity, leave with pay, bonus, P.F, promotion.
 - iv. Computation of labour hours is possible through time keeping records.
 - v. Generally, time keeping is the statutory requirement under labour law.
 - vi. Time keeping will be helpful to determine (or) to calculate standard cost for completion of one unit.
 - vii. Generally, there are four methods for maintaining time keeping such as.



1. Attendance record: -

- ✚ This is the simplest and oldest method of making attendance of every labour.
- ✚ In this method separate book (or) register should be maintained
- ✚ Under this method every worker signs in the attendance register against his name.
- ✚ If any labour not signed that indicates leave taken by the labour.
- ✚ Under this method leaves, late reporting shall be marked on the attendance register separately.
- ✚ However, there is a less control on attendance register method, hence there may be possibility regarding irregularities in recording.

2. Metal disk method: -

- ✚ It is also of the old method for recording arrival and departure time.
- ✚ As per this method a metal disk which bears the identification number of each worker is given to each one.
- ✚ According to this method when worker comes in he puts up the disk from tray near the gate of the factory and drop such metal disk into the box in a board against his number and same procedure shall be followed at the time of leaving the factory.
- ✚ The main disadvantage of this method, there is a possibility of marking the attendance of a work by his friend i.e., proxy.

3. Time- recording clock: -

- ✚ It is mechanised method of time recording.
- ✚ Each worker punches on the card given to him when he comes in and goes out.
- ✚ This time and date automatically recorded in the clock.

- ✚ The main disadvantage of this method it is tough (or) difficulty to recording the time -in & time-out.
- ✚ One more disadvantage of this method is register under this method does not show productive time of worker.

4. Bio-metric attendance method: -

- ✚ According to the bio- metric attendance method attendance of the employee is marked by recognising employee based physical attendance.
- ✚ According to this method any employee unique identify like figure, face(or) retina image.
- ✚ Time attendance, finger print recognition system, face recognition system.
- ✚ However, it may not be possible for implantation of bio-metric system for small organisation.

❖ Essentials of a good time- keeping system: -

A goods time keeping system is supposed to have following requirements

- a) System of time - keeping should not allow proxy of another employee under any circumstances.
- b) There should be a provision of recording of time so that discipline coil be created.
- c) Time of arrival, time of departure of employees should be recorded so that total time of employees can be recorded and wages can be calculated accordingly.
- d) Method of recording time should be mechanical as much as possible so that chances of dispute regarding time may not arise between employee and time keeper.
- e) Late comers should record late arrival, the time keeper should follow the discipline strictly.

❖ Time booking

- ✓ Time booking means it is an internal attendance i.e., difference between time login & time log out.
- ✓ Time keeping aims that so to know the no. of hours spent by worker in the factory, however time booking will be recoded productive hours spent by the labour.
- ✓ There are 5 methods regarding time booking such as
 - a) Daily time sheet
 - b) Weekly time sheet
 - c) Job ticket method
 - d) Labour cost card
 - e) Time & job card
- ✓ The main objective of the booking are as follows: -
 - a) To know the standard estimation time to complete the job.
 - b) To determine productive time, send by such each worker.
 - c) To determine the quantity and value of each worker.

- d) To determine appropriate earnings including bonus
- e) To determine efficiency of the workers.

1. Daily time sheet method

In this method each worker records that time spent by him and the work during the day for which work sheet is provided to each worker.

- the time is recorded on a daily basis
- this document is valid for one day
- the main disadvantage of this method is lot of paper work involved as sheet is valid for one day only.

2. Weekly time sheet method: -

The only difference between daily time sheet & weekly time sheet is document validation.

- According to this method each worker prepares reports on weekly basis.
- The main advantage (as compared to previous method) paper work is greatly reduced.
- The main disadvantage is to fill up the inaccurate information relating to work done.

3. Job ticket method:

Job tickets are given to all workers where at the time of commencement of the work (or) job.

- It will record complete records (i.e., nature of the labour, status of the labour, gender of the labour, job commencement time, job ending time)
- According to this method job ticket is given for each job after completion of a particular job organisation will allot another job.

4. Labour cost card: -

This card is meant for a job which involves several operations (or) stages of completion, instead of giving one card to each worker, one card issued to all workers (this method is applicable to PATT & CPM).

- This card shows the aggregate labour cost of job of the product.

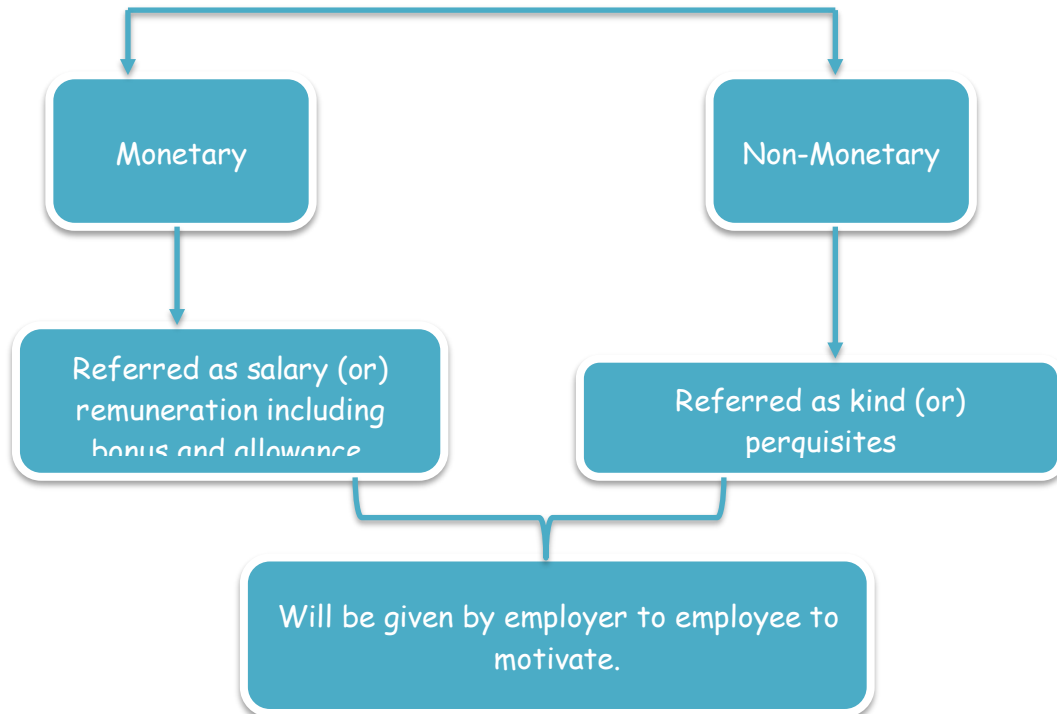
5. Time & job card: -

According to this method it is a combination record disclosing both times taken for completion of the job as well as attendance time.

- Generally, this method is most effective.

Incentives of labour

According to GACAP incentives can be classified into two types such as

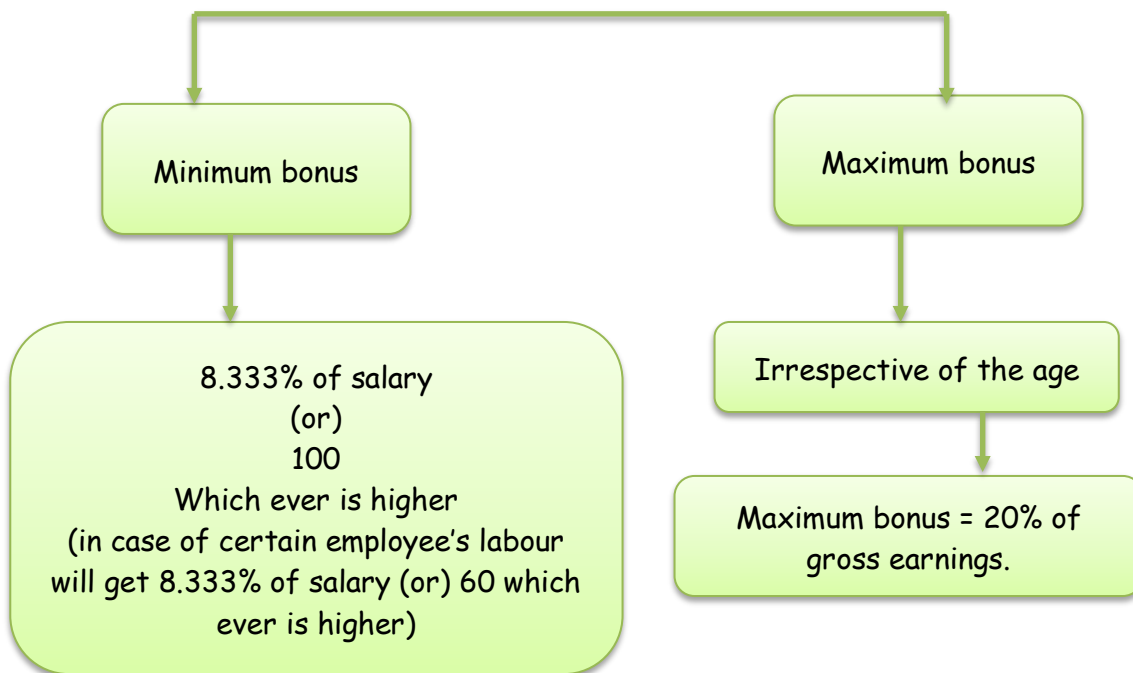


- ➔ If organisation giving proper motivation then labour efficiency can maintain in appropriate manner and on consistent (on timely manner)
- ➔ Generally, the following element will involve such as
 - a) Bonus (statutory obligation bonus)
 - b) Attendance bonus (mutually agreed bonus)
 - c) Leave travel assistance
 - d) Fringe benefits
 - e) Work on holidays.
 - f) Employer contribution to P.F.
 - g) Night shift allowance

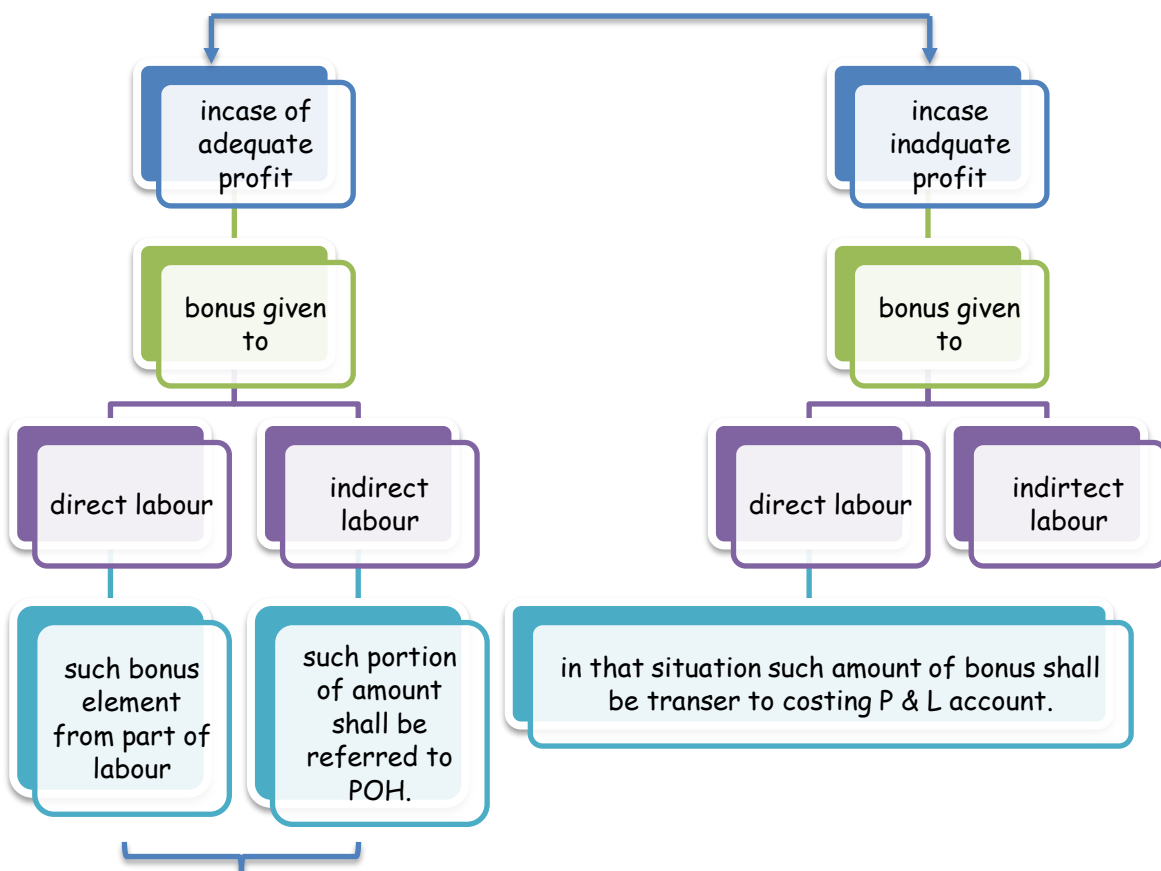
a) Bonus:

According to payment of bonus act, 1965 eligible employee will get bonus as minimum (or) maximum.

- According to payment of bonus acts, 1964, bonus can be classified into two types such as



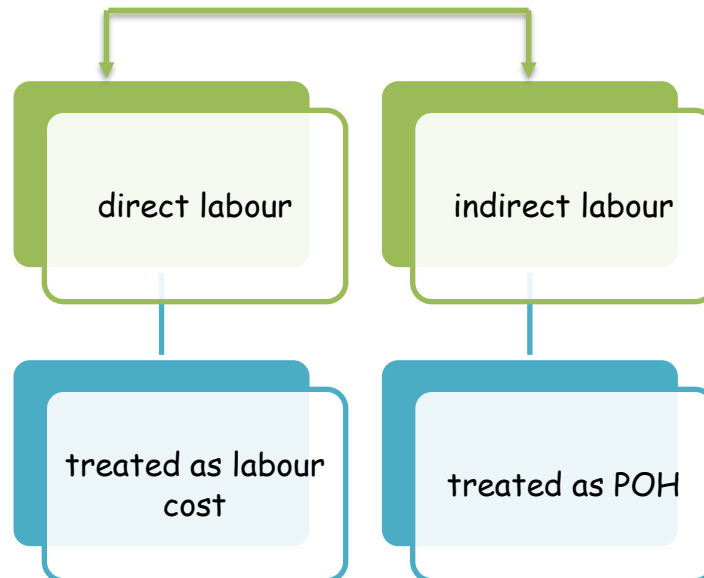
- Even though organisation having then also organisation need to pay at least minimum bonus.
- According to GACAP bonus.



Leave travel assistance:

In partial scenario, employee may or may not consistently work.

- ✓ Sometimes labour require refreshment (or) peace in that scenario organisation will offer leave travel with pay.
- ✓ According to GACAP, leave travel assistance given to



Night shift allowance:

Generally, every organisation will pay extra amount of salary to a labour working in night shift, such amount shall be referred as "night shift allowance"

- However, some additional expenditure caused by general pressure of work in excess of normal then amount shall be as POH.
- However sometimes employee shall worked on night shift basis on request of the customer then such night shift / duty salary shall charge to particular customer.

Work on holiday:

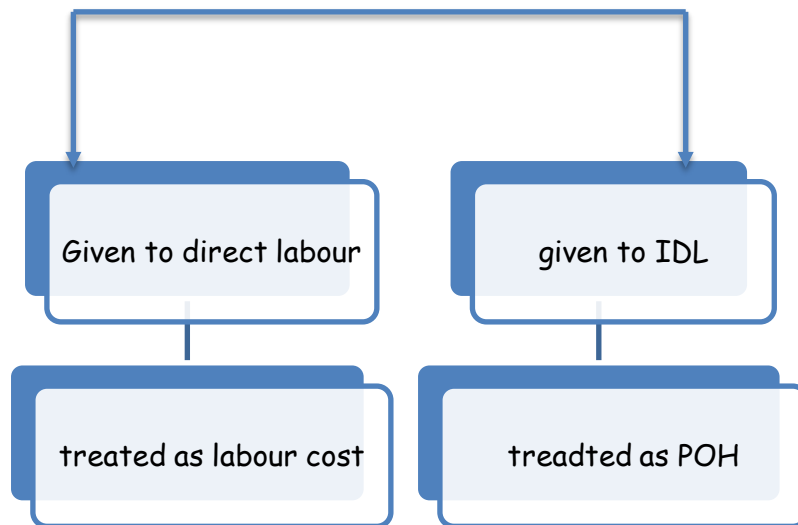
Usually Sunday will be holiday and festival day also holiday.

- If any employee is worked on Sunday (or) festival days then organisation need to pay extra salary referred as over time.
- As per GACAP, cost treatment of work on holidays
= same as cost treatment.

Attendance bonus:

Generally, workers will get bonus on satisfactory attendance

- ✓ Whenever attendance bonus is given by organisation to employees treated as "POH" (irrespective of such amount paid to DL & IDL)
- ✓ However, attendance bonus will be given as regularly throughout the period then it should be treated as



Fringe benefits:

Generally, fringe benefits are those expenses which are spent by employer for the purpose of welfare of the employee.

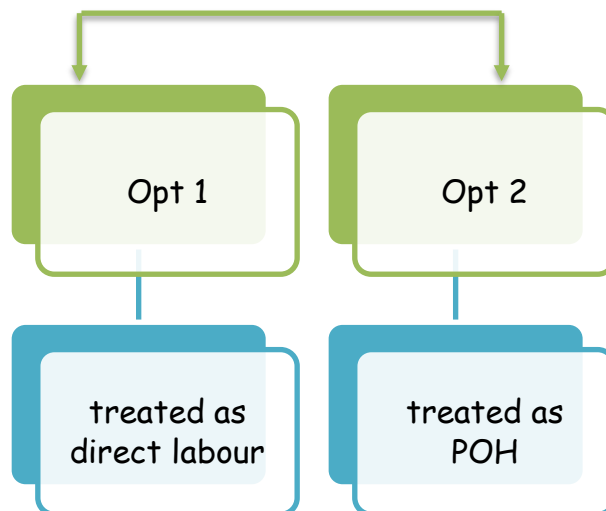
Example ESI contribution made by employer.

- Whenever fringe benefits incurred by organisation it shall be treated as POH.

Employer contribution to P.F: -

As per employer provident fund and miscellaneous act, 1952 every employer should contribute certain percentage of money for the purpose of P.E in the name of employee.

- As per GACAP every organisation having two options such as



Work study

In order to motivate workers, it is necessary to design a proper incentive system of payment of wages.

- ✓ Generally, money is the strongest motivating factor hence for every organisation monetary incentive system become essential.
- ✓ As per this method bonus will be paid if actual performance is higher than standard.
- ✓ However, deciding standard performance (or) standard time is based on method

study.

Method study:

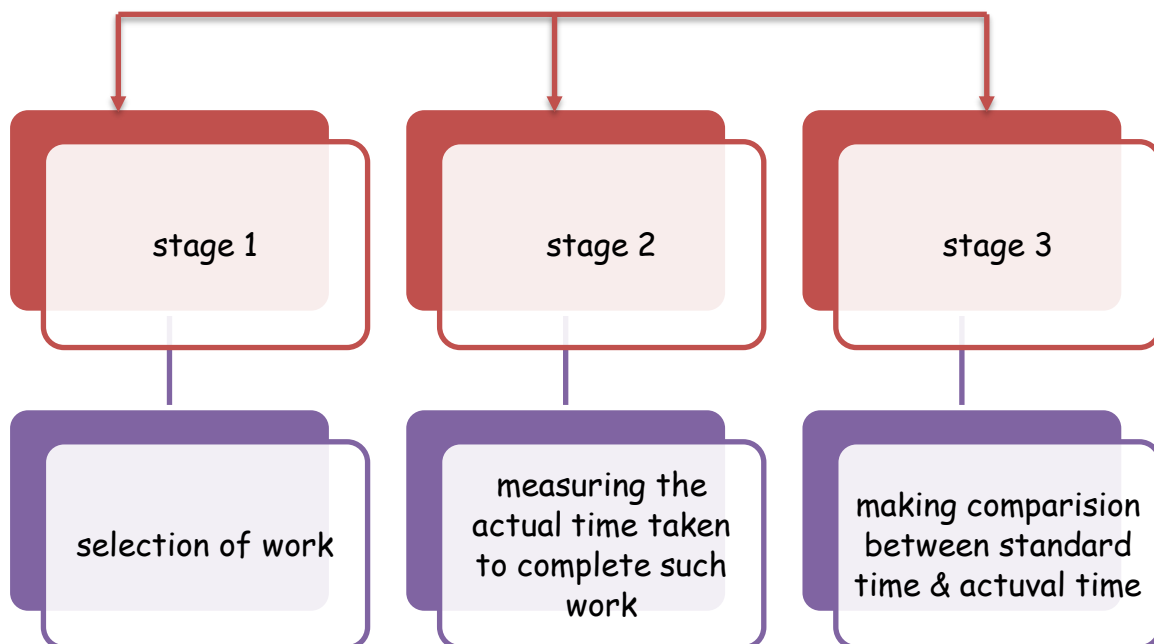
Method study is done to improve the methods of production to achieve most efficient use of organisation resources. (i.e., 3 M's, man, machine, material)

- ✚ The main objective of this method study detailed study of related aspect of specified job which involve complex operations as wen as costly operations.
- ✚ Organisation should for reduction of unnecessary steps involved in the operations of the work. the important step is a after studying the relevant aspects of the job, there should be development of improved method by eliminated unnecessary steps/ operations.
- ✚ If any organisation properly studies method study it will need at right person at right job and it will lead to more efficient people will work on such particular task.

Work measurements

The main objective of work measurement to determine the effective time required to perform the job.

- According to work measurement the ineffective, waste full (or) avoidable time is separated from required time to complete the work.
- Generally, work measurement having following stages.



- ✚ Work measurements will have the following purpose.
 - a) Improving utilisation of material, man, machine
 - b) Assisting in production control.
 - c) Assisting is setting labour hours.
 - d) Cost control & cost reduction.

Job evaluation & merit rating, time study and motion study: -

It is necessary for the management of any organisation will establish proper wage and salary structure for various jobs.

- ✓ It is necessary to determine relative value of jobs hence evaluation must be done.
- ✓ Job evaluation is a technique of analysis easement of job to determine their relative value in the form.
- ✓ The following are the objectives of job evaluation
 - i. It helps in developing a systematic rational wage structure for the job.
 - ii. Job evaluation aims at removing the controversies, analysis puts relating to wage /salary dispercement.
 - iii. To bring farness & stability in the wage and salary.
 - iv. Job evaluation disclose the characterises & conditions relating to different jobs.
 - v. There are three methods for job valuation such as
 - a) Point rating method.
 - b) Ranking method.
 - c) Grading method.

a) Point rating method.

In this method each job is analyse in terms of various factors (or) characteristics like skill requires, efforts involved, working conditions, responsibilities, hazards.

→ According to this method while performing job effectively is given weightage (or) points depending upon value for job

b) Ranking method:

In this method jobs (or) given ranking on the basis of skill require, experience require, conditions of work.

→ As per ranking this method is not beneficial and not having so money complications. However, this method is suitable for small organisation.

c) Grading method:

This method is an important over the ranking method.

→ According to this method each job is analyse in terms of pre-determine grade(or) assigned grade.

→ Generally, grades are such as establish after making investigation of various job factors such as supervision, responsibility, of complicity of job, education.

Merit ranking:

Merit ranking is the compacity and analysis of individual merits of the employee.

- Generally, merit rating will be useful(or) helpful for the purpose of designing of promotional polices.
- The following are the objectives of merit rating such as

- a) Establish & develop a wage system & incentive system.
- b) To determine the suitability of an employee on a particular job.
- c) To evaluate the merit of an employee for the purpose of promotion, increment, reward and other benefits.
- d) To determine suitability of employee for a particular job.
- e) To examine characteristics like cooperation, quality of the work, attendance & regularity, education, skill require, experience, initiative, integrity, character.
- f) To analyse merits (or) limitations of each worker.

Time study and motion study: -

Time study determine the time be spent on job.

- ✚ Generally, time study will be helpful to be fix the standard time
- ✚ However, for the purpose of fixing the standard time, motion study is necessary.
- ✚ Generally, motion study means divided the job into fundamental elements (or) basic operations of the job.
- ✚ Hence the following are the objectives of time & motion study such as
 - i. Eliminating unnecessary movements (or) steps.
 - ii. Improving methods, procedures, techniques, process relating to job.
 - iii. Effective utilisation of 3 M's (man, machine, material) and time.
 - iv. Improving plant and equipment.

✚ The following are the benefits of time & motion study.

- i. Effective utilisation of 3 M's & time
- ii. Helps in designing appropriate incentive system.
- iii. Helps in assessment of labour
- iv. Preparation of labour budget (i.e., operation costing)
- v. Time & motion study in helping for proper planning of
- vi. It will assist in implement of productivity
- vii. If any organisation effectively using the concept of time & motion study then it will improve work methods.

Concept of pay-role departments: -

Generally, pay role department having crucial part to control the labour cost.

- ✓ In every organisation payOrole department having responsibility to gather the information about attendance of the labour, late logins of the labour, performance & efficiency of the labour, nature of the employees (regular or professional employee)
- ✓ Pay-role department will have the following functions such as-
 - a) To compute the wages of the employees.
 - b) To maintain the individual pay-role records.
 - c) Compilation of labour statistics of a particular period to prevent ghost workers

- (or) fake workers
d) To prepare department wise summary of wages.

Activities and their responsibilities': -

S.No.	Activities	S.No.	Responsibilities
1	Attendance and time details	1	Time keeping departments
2	Preparation of list of employees	2	HR department
3	Computation of wages and other incentives	3	Pay-role department
4	Payment to employees	4	Pay-role department
5	Discharge of statutory liabilities	5	Cost accounting department.

LABOUR

Q.1: Calculate the wages payable to 3 workers A, B & C under different methods of remuneration. The following data is relevant for the purpose.

Time Rate Rs. 30 per hour: Std. time allowed for one piece is 20 minutes.

Production made by workers in a day of 8 hours is -

A - 30 units, B - 24 units, C - 20 units.

Calculate their wages under -

- | | |
|---|--|
| (a) Time Rate system | (b) Piece Rate basis |
| (c) Taylor's Differential piece rate system | (d) Merrick's differential piece rate system |
| (e) Gantt task bonus plan | (f) Halsey Premium System |
| (g) Rowan System | (h) Barth Variable sharing plan |
| (i) Bedaux point premium system | (j) Accelerating premium plan |

Q.2: From the following particulars work out the earnings for the week of a worker under -

- Straight Piece Rate
- Differential Piece Rate
- Halsey Premium System
- Rowan System

Number of working hours per week	-	48;
Wages per hour	-	Rs. 3.75;
Normal time per piece	-	24 minutes;
Normal output per week	-	120 pieces.

Actual output for the week - 150 pieces. Differential Piece Rate - 80% of piece rate when output is below standard and 120% when output is above standard.

Q.3: An employee working under a bonus scheme saves 12 hours in a job for which the standard time is 60 hours. Calculate the rate per hour worked and wages payable to a worker, if incentive bonus of 10% on the hourly rate is payable when standard time (namely 100% efficiency) is achieved, and a further incentive bonus of 1% on hourly rate for each 1% in excess of that 100% efficiency is payable. Assume that the normal rate of payment is Rs. 5 per hour.

Q.4: During the first week of April, 2004 the workman Mr. Kalyan manufactured 300 articles. He receives wages for a guaranteed 48 hours week at the rate of Rs. 4 per hour. The estimated time to produce one article is 10 minutes and under incentive scheme the time allowed is increased by 20%. Calculate his gross wages according to -

- Piece-work with guaranteed weekly wage
- Rowan premium bonus and

c. Halsey premium bonus 50% to workman.

Q.5: Calculate the normal and overtime wages payable to a workman form the following data -

Days	Hours worked
Monday	8 hours
Tuesday	10 hours
Wednesday	9 hours
Thursday	11 hours
Friday	9 hours
Saturday	5 hours
Total:	52 hours

Normal Working hours 8 hours per day

Normal Rate Rs. 5 per hour

Overtime rate up to 9 hours in a day at single rate and over 9 hours in a day at double rate or up to 48 hours in a week at single rate and over 48 hours at double rate, whichever is more beneficial to the workman.

Q.5: Piece Rate Systems & Gantt System Calculate the Total Earnings of workers A, B and C under - (a) Straight Piece Rate system, (b) Taylor's Differential Piece Rate System, (c) Merrick's Multiple Piece Rate system, and (d) Gantt's System, from the following particulars - Normal Rate per Hour Rs.60, Standard Time per unit - 1 Minute. - Output in a 8- hour day is as follows: Worker A - 300 units, Worker B-480 units, Worker C - 600 units.

Q6. Emerson's Efficiency System

From the following information, calculate the Bonus and Earnings under Emerson's Efficiency System.

Standard Working Hours : 8 hours day

Standard Output per hour in units : 5

Daily Wage rate : Rs.500

Actual Output : Worker A 25 units, Worker B 40 units,
Worker C 45 units

Q7. Halsey and Rowan Schemes

You are given the following information of Worker X. Worker X worked 9 hours a day.

Ticket No. : 002

Work done and approved : 2,000 units

Work started: 1st April at 8 Am

Time and units allowed: 40 units per hour

Work finished : 5th April at 12 noon

Wage Rate: Rs.25 per hour

Work allotted Production of 2, 160 units

Bonus : 40% of time saved

You are required to calculate the remuneration of the worker on the following basis:

(1) Halsey Plan, and (2) Rowan Plan.

Q8. Halsey, Rowan, Emerson and Barth Systems

2 hours allowed to a worker to produce 5 units and wages has been paid at Rs.25 per hour. In a 48 hours week, the worker produced 170 units. Calculate the Total Earnings and Effective Hourly Rate of earning of the worker under the following incentive wage systems - (a) Halsey 50% System, (b) Rowan System, (c) Emerson's Efficiency System, and (d) Barth System.

Q9. Rowan and Emerson Plans

X executes a piece of work in 120 hours as against 150 hours allowed to him. His Hourly Rate is Rs.10, and he gets a Dearness Allowance of Rs.30 per day of 8 hours worked in addition to his wages. You are required to calculate Total Wages received by X under the following incentive schemes - (a) Rowan Premium Plan, and (b) Emerson Efficiency Plan.

Q10. Calculate the earnings of a worker under (i) Halsey plan and (ii) Rowan plan from the following particulars:

- (1) Hourly rate of wages guaranteed 0.50 paise per hour.
- (2) Standard time for producing one dozen articles - 3 hours.
- (3) Actual time taken by the worker to produce 20 dozen articles - 48 hours.

Q11. Using Taylor's differential piece rate system, find the earning of A from the following particulars:

Standard time per piece	12 minutes
Normal rate per hour (in a 8 hours day)	Rs.20
A produced	37 units

Q12. Standard output in 10 hours is 240 units, actual output in 10 hours is 264 units, Wages rate is Rs.10 per hour. Calculate the amount of bonus and total wages under Emerson plan.

Q13. Calculate the earnings of workers A, B and C under straight piece rate system and Merrick's Multiple Piece Rate System from the following particulars:

Normal rate per hours - Rs. 5.40 Standard time per unit - 1 minute
Output per day is as follows:

Worker A - 390 units; Worker B-450 units; Worker C-600 units. Working hours per day are 8.

Q.14: Mr. A is working by employing 10 skilled workers. He is considering the introduction of some incentive scheme - either Halsey Scheme (with 50% bonus) or Rowan Scheme of wage payment for increasing the labor productivity to cope with the increased demand for the product by 25%. He feels that if the proposed incentive scheme could bring about an average 20% increase over the present earnings of the workers, it could act as sufficient incentive for them to produce more and he has accordingly given this assurance to workers.

As a result of the assurance, the increases in productivity has been observed as revealed by the following figures for the current month:

Hourly rate of wages (guaranteed)	Rs.20
Average time for producing 1 piece by one worker at the previous performance (This may be taken as time allowed)	2 hours
No. of working days in the month	25
No. of working hours per day for each worker	8
Actual production during the month	1,250 units

Required:

1. Calculate effective rate of earnings per hour under Halsey Scheme and Rowan Scheme.
2. Calculate the savings to Mr. A in terms of direct labor cost per piece under the schemes.

Q14(B1) In a manufacturing concern the daily wage rate is ₹ 2.50. The standard output in a 6 day week is 200 units representing 100% efficiency. The daily wage rate is paid without bonus to those workers who show up to of the efficiency standard. Beyond this there is a bonus payable on a graded scale as below:

82% efficiency	5% bonus
90% efficiency	9% bonus
100% efficiency	20% bonus

Further increase of 1% bonus for every 1% further rise in efficiency. In a 6 day week P produced 180 units; Q 164 units; R 200 units; S 208 units and T 130 units. Calculate the earnings of these workers.

Q14(B2) Workmen of a particular grade working on 8 hour shift duty are guaranteed a wage of ₹ 32. An incentive scheme is in operation according to which production bonus is earned directly proportional to performance but only after 100% performance is exceed. Four workmen M, N, O and P produced 48, 60, 75 and 90 units respectively in 6 hours working on a job which has standard time of 6 minutes per unit as measured work content. Remaining 2 hours of the shift are spent in doing unmeasured work for which no incentive bonus can be paid. Find for each workman:

- (a) The production performance level achieved;
- (b) Total earnings for the day.

Q14(B3) In a factory, bonus to workman is paid according to Rowan Plan. Time allotted for a job is 40 hours and the normal rate of wages is ₹ 1.25 per hour. The factory overhead charges are 50 paise per hour for the hours taken. The factory cost of a work order, executed by a worker is ₹ 161.875. The cost of material in each case is ₹ 100.

Calculate the hours of time taken by the workman to complete the work order.

Q14(B4) Two workmen, Jay and Viru, produce the same product using the same material. Their normal wage rate is also the same. Jay is paid bonus according to the Rowan System, while Viru is

paid bonus according to Halsey System. The time allowed to make the product is 100 hours. Jay takes 60 hours while Viru takes 80 hours to complete the product. The factory overhead rate is ₹ 10 per man-hour actually worked. The factory cost for the product for Jay is ₹ 7,280 and for Viru it is ₹ 7,600.

You are required:

- To find the normal rate of wages;
- To find the cost of materials;
- To prepare a statement comparing the factory cost of the products as made by the two men.

Q.15: The management of Sunshine Ltd., wants to have an idea of the profit lost/ foregone as a result of labor turnover last year.

Last year sales accounted to Rs. 66,00,000 and the P/V Ratio was 20%. The total number of actual hours worked by the direct labor force was 3.45 lakhs. As a result of the delays by the Personnel Department in filling vacancies due to labor turnover, 75,000 potentially productive hours were lost. The actual direct labor hours included 30,000 hours attributable to training new recruits, out of which half of the hours were unproductive. The costs incurred consequent on labor turnover revealed on analysis the following;

Particulars	Rs.
Settlement cost due to leaving	27,420
Recruitment costs	18,725
Selection costs	12,750
Training costs	16,105

Assuming that the potential production lost due to labor turnover could have been sold at prevailing prices, ascertain the profit foregone / lost year on account of labor turnover.

Q.16: In a company, labor record disclosed the following:

No. of employees on 1.4.2001 = 1,800
 No. of employees on 31.3.2002 = 2,200
 No. of employees left during the year = 200
 No. of employee joined during the year = 600

Out of those joined during the year, 150 were appointed in the place of those, who left the organization. Calculate the labour turnover ratios under all the 3 methods.

Q17. From the following information, calculate Labour turnover rate and Labour flux rate:

No. of workers as on 01.01.2009 = 7,600, No. of workers as on 31.12.2009 = 8,400. During the year, 80 workers left while 320 workers were discharged. 1,500 workers were recruited during the year of these, 200 workers were recruited because of exits and the rest were recruited in accordance with expansion plans.

Q18: In a factory, the basic wage rate is Rs. 10 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 hours
Overtime before and after working hours	20,000 hours
Overtime on Sundays and holidays	5,000 hours
Total	1,25,000 hours

The following hours have been worked on job 'Z':

Normal	1,000 hours
Overtime before and after working hrs.	100 hours
Sundays and holiday	25 hours
Total	1,125 hours

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

- Where overtime is worked regularly throughout the year as a policy due to the labour shortage.
- Where overtime is worked irregularly to meet the requirements of production.
- Where overtime is worked at the request of the customer to expedite the job.

3. Advice Mr. A about the selection of the scheme to fulfill his assurance.

Q.19: Both direct and indirect labour of a department in a factory are entitled to production bonus in accordance with a group incentive scheme, the outline of which is as follows:

- For any production in excess of the standard rate fixed at 16,800 tons per month (of 28 days) a

general incentive of Rs. 15 per tone is paid in aggregate. The total amount payable to each separate group is determined on the basis of an assumed percentage of such excess production being contributed by it, namely @ 65% by direct labour, @ 15% by inspection staff, @ 12% by maintenance staff and @ 8% by supervisory staff.

(b) Moreover, if the excess production is more than 20% above the standard, direct labour also get a special bonus @ Rs. 5 per ton for all production in excess of 120% of standard.

(c) Inspection staff are penalized @ Rs. 20 per ton for rejection by customer in excess of 2% of production.

(d) Maintenance staff are also penalized @ Rs. 20 per hour for breakdown. From the following particulars for a month, work out the net production bonus earned by each group:

- a) Actual working days : 25
- b) Production : 21,000 tons
- c) Rejection by customer : 500 tons
- d) Machine breakdown : 40 hours.

IMPORTANT POINTS

<i>Types of overheads</i>	<i>Basis of apportionment</i>
Rent and rates, heating, repairs/depreciation of building, lighting etc.	Area occupied. Depreciation can be apportioned on the basis of value of asset and lighting can be apportioned on the basis of number of light points.
Power	Machine hours or horse power of the machine or product of machine hours and horse power.
Depreciation, repairs and insurance of plant	Cost or book value of the asset
Carriage inwards	Value of materials issued
Selling and distribution expenses	Sale value
Advertisement	Sale value
Inspection	No. of inspection visits
Delivery expenses	Tonnes, miles, weight, etc.
Remuneration of director	Direct labour hours or direct wages or No. of employees.

If no suitable base is available for any item, direct labour should be taken as the basis of apportionment.

Q.1: A Cost center in a factory furnished the following working conditions.

Normal working week	-	40 hours
Number of machines	-	15
Normal weekly loss hours on maintenance	-	4 hours per machine
Estimated annual overheads	-	Rs.1,55,520
Number of weeks worked per year	-	48
Actual results in respect of 4 week period are	-	Rs.15,000
Overheads incurred Machine hours produced -		2,200

Your are required to -

- Calculate the overhead rate per machine hour and
- Calculate the amount of under or over absorption of overheads.

Q.2: PH Ltd., is a manufacturing company having 3 production departments A, B and C and 2 service departments X and Y. The following is the budget for December, 20006 -

Particulars	Total Rs.	A Rs.	B Rs.	C Rs.	X Rs.	Y Rs.
Direct Material		1,000	2,000	4,000	2,000	1,000
Direct Wages						
Factory Rent	4,000					
Power	2,500					
Depreciation	1,000					
Other overheads	9,000					
<u>Additional Information:</u>						
Area (Sq.ft)		500	250	500	250	500
Capital value of assets (Rs.000)		20	40	20	10	10
Machine hours		1,000	2,000	4,000	1,000	1,000
Horsepower of machines				0	0	0
		50	40	20	15	25

A technical assessment of the apportionment of expenses of service departments is as under -

	A %	B %	C %	X %	Y %
Service Dept. 'X'	45	15	30	-	10
Service Dept. 'Y'	60	35	-	5	-

You are required to prepare -

- A statement showing distribution of overheads to various departments
- A statement showing re-distribution of service department expenses to production departments.
- Machine hour rates of the production departments A, B, and C.

(Use Trial & Error Method and also Simultaneous Equation Method)

Q.3: Deccan Manufacturing Ltd., have three departments which are regarded as production departments. Service department's costs are distributed to these production departments using the 'Step Ladder Method' of distribution. Estimates of factory overhead costs to be incurred by each department in the forthcoming year are as follows. Data required for distribution is also shown against each department -

Department	Factory overhead Rs.	Direct Labour Hours	No. of employees	Area in sq.mts.
Production				
X	1,93,000	4,000	100	3,000
Y	64,000	3,000	125	1,500
Z	83,000	4,000	85	1,500
Service -				
P	45,000	1,000	10	500
Q	75,000	5,000	50	1,500
R	1,05,000	6,000	40	1,000
S	30,000	3,000	50	1,000

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

Department	Basis
P	Number of Employees
Q	Direct Labour Hours
R	Area in Square meters
S	Direct Labour Hours

Your are required to -

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

Q.4: A company produces a single product in three sizes A, B and C. Prepare a statement showing the selling and distribution expenses apportioned over these three sizes applying the appropriate basis for such apportionment in each case from the particulars indicated. Also express the total of the costs so apportioned to each size as:

- cost per unit sold (nearest paise)
- A percentage of sales turnover (nearest two places for decimal)

Expenses	Amount (Rs.)	Basis of appointment
Sales salaries	10,000	Direct charges
Sales commission	6,000	Sales turnover
Sales office expenses	2,096	Number of orders
Advertisement General	5,000	Seles turnover
Advertisement Specific	22,000	Direct charges
Packing	3,000	Total volume in cft. of product sold
Delivery expenses	4,000	Total volume in cft. of product sold
Warehouse expenses	1,000	Total volume in cft. of product sold
Credit collection exp.	1,296	No. of orders
Total Cost	54,392	

Data available relating to the three sizes are as follows -

Particulars	Total	Size-A	Size-B	Size-C
No. of salesmen all paid same salary	10	4	5	1
Units sold	10,000	3,000	4,000	3,000
No. of orders	1,600	700	800	100
% of specific advertising	100%	30%	40%	30%
Sales turnover (Rs.)	2,00,000	58,000	80,000	62,000
Volume in cft. Per unit of finished product				

Q.5: From the following particulars, transfer service department expenditure to production departments on a suitable basis and indicate the final costs of products P, Q and R.

Nature of Expenses	Total Rs.	Production Dept.		Service Dept.	
		A Rs.	B Rs.	X Rs.	Y Rs.
Direct Material	20,000	9,500	10,500	-	-

Direct Labour	30,000	13,900	16,100	-	-
Indirect Material	4,000	2,000	1,000	700	300
Indirect Labour	6,000	850	920	2,730	1,500
Depn. On Plant	10,000	5,000	3,000	1,500	500
Depn. On Building	12,000	7,000	2,500	1,000	1,500
Insurance	3,000	1,200	800	300	700
Overtime	3,000	750	250	1,200	800
Other factory exp.	10,500	4,500	2,500	2,300	1,200
Total	98,500	44,700	37,570	9,730	6,500

Notes:

1. Rs.2,500 service department charges incurred in department Y have to be transferred to department X. The balance to be charged to departments A, B and X @ 45%, 35% and 20% respectively.
2. Expenses incurred in service department X have to be charged to A and B departments (3:2)
3. 4,000 units of product P is processed through A, the attention to all products being continuous and uniform.
4. Department B manufactures 3,000 units of Q and 2,000 units of product R, the direct material consumed being 3:2. The work is mainly manual and direct labour hours are -

Product Q	Ordinary hrs. 12,000	Overtime 40 hrs
Product R	Ordinary hrs. 4,000	Overtime 85 hrs

Q.6: The machine Shop of an Auto Engineering Factory has 5 distinct group of machines for which the recovery of expenses is at a rate per machine hour. A budge for the machine shop for the year ended 31.12.2006 is framed as under -

Particulars	1	2	3	4	5
Consumable stores Rs.	210	420	700	850	1,260
Maintenance Rs.	630	840	1,500	2,000	1,800
Horse Power	5	15	20	25	35

Space occupied Sq.ft	200	400	600	300	500
Book value of machinery Rs.	30,000	90,000	25,000	60,000	45,000
Estimated utilization Hrs.	5,000	10,000	3,000	7,500	12,500

Common Expenses	Rs.
Power	9,000
Rent, Rates and Taxes	25,000
Heat and Light	5,500
Insurance on building	2,400
Insurance on machinery	7,500
Depreciation	37,500
Shop Supervision	30,400
Other general expenses	60,800
Total	1,78,100

Calculate a machine hour rate for each group indicating the basis of allocation of expenses.

Q.7: Self help Ltd., has gensets and produces its own power. Data for Power Costs are as follows:-

H.P. Hours	Production Dept.		Service Dept.	
	A	B	X	Y
Needed at capacity production	10,000	20,000	12,000	8,000
Used during the month of May	8,000	13,000	7,000	6,000

During the month of May costs for generating power amounted to Rs.9,300; of this Rs.2,500 was considered to be fixed cost. Service Department X renders service A, B and Y in the ration of 13:6:1, while Y renders service to A and B in the ration of 31:3. Given that the direct labour hours in Departments A and B are 1650 hours and 2175 hours respectively, find the Power Cost per labour hour in each of these two Departments.

Q.8: In a factory, overheads of a particular department are recovered on the basis of Rs.5 per machine hour. The total expenses incurred and the actual machine hours for the department for the month of August were Rs. 80,000 and 10,000 hours respectively. Of the amount of Rs.80,000, Rs.15,000 became payable due to an award of the labour court and Rs.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 analyzing 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. How would you treat the under-absorbed overhead in the cost accounts?

Q.9: A factory has three production departments. The policy of the factory is to recover the production overheads of the entire factory by adopting a single blanket rate based on the percentage of total factory overheads to total factory wages. The relevant data for a month are given below:

Departments	Direct material Rs.	Direct wages Rs.	Factory overheads Rs.	Direct labour hours	Machine hours
Budget					
Machining	6,50,000	80,000	3,60,000	20,000	80,000
Assembly	1,70,000	5,50,000	1,40,000	1,00,000	10,000
Packing	1,00,000	70,000	1,25,000	50,000	-
Actual					
Machining	7,80,000	96,000	3,90,000	24,000	96,000
Assembly	1,36,000	2,70,000	84,000	90,000	11,000
Packing	1,20,000	90,000	1,35,000	60,000	-

The details of one Job No. CW 7083 produced during the month are as under:

Department	Direct material Rs.	Direct wages Rs.	Direct labour hours	Machine hours
Machining	1,200	240	60	180
Assembly	600	360	120	30
Packing	300	60	40	-

The factory adds 30% on the factory cost to cover administration and selling overheads and profit.

Required:

- (i) Calculate the overheads absorption rate as per the current policy of the company and determine the selling price of the Job No. CW 7083.
- (ii) Suggest any suitable alternative method(s) of absorption of the factory overheads and calculate the overheads recovery rates based on the method(s) so recommended by you.
- (iii) Determine the selling price of Job CW 7083 based on the overhead application rates calculated in (ii) above.

Q.10: Ram Ltd, manufactures a single product and absorbs the production overheads at a pre-determined rate of Rs.10 per machine hour. At the end of financial year 2005-06, it has been found that actual production overheads incurred were Rs.6,00,000. It included Rs.45,000 on account of 'written off' obsolete stores and Rs.30,000 being the wages paid for the strike period under award. The production and sales data for the year 2005-06 is as under:

Production: Finished goods	20,000 Units
Work in progress (50% complete in all respects)	8,000 Units
Sales: Finished goods	18,000 Units

The actual machine hours worked during the period were 48,000. It has been found that one third of the under absorption of production overheads was due to lack of production planning and the rest was attributable to normal increase in costs.

- (i) Calculate the amount of under absorption of production overheads during the year 2005-06 and
- (ii) Show the accounting treatment of under absorption of production overheads.

Q.11: M/s. Sistas & Co. manufactures product A at the rate of 80 pieces per hour. The company has been producing and selling 1,60,000 units annually during the period 2001 to 2005. However, during the year 2006 the company was able to produce 1,46,000 units

only. The company's annual fixed overheads for 2006 amounted to Rs.5,84,000. The company worked on single shift only at 8 hours per day and 6 days a week. The company has declared 13 holidays (other than weekly holidays) during the year 2006. The quarterly preventive maintenance and repairs work involved 77 hours.

You are required to calculate:

- Maximum capacity, practical capacity, normal capacity and actual capacity in terms of hours;
- Idle capacity;
- Hourly rate of recovery of overhead for each of the capacity computed in (i) above.

Q.12: Govinda Ltd., has calculated a predetermined overhead rate of Rs.22 per machine hour for its Testing department. This rate has been calculated for the budgeted level of activity and is considered as appropriate for absorbing overheads. The following overhead expenditures at various activity levels had been estimated.

Total overheads (Rs.)	Total Machine hours
3,38,875	14,500
3,47,625	15,500
3,56,375	16,500

You are required to;

- Calculate the variable overheads absorption rate per machine hour.
- Calculate the estimated total fixed overheads.
- Calculate the budgeted level of activity in machine hours.
- Calculate the amount of under/over recovery of overheads if the actual machine hours were 15,850 and actual overheads were Rs.3,55,050.
- State the arguments for and against using departmental absorption rates as opposed to single or blanket rate.

SELF EVALUATING PROBLEMS

PROBLEM 1

From the following particulars provided by AADHYA Ltd. Apportion the overheads among various departments:

Particulars	Amount (Rs.)
Rent	84,000

Lighting	2,52,000
Labour welfare expenses	1,00,000
Depreciation of plant	4,84,000
Repairs of plant	2,24,000
Power	5,00,000
Material handling expenses	1,50,000
Stores overheads	2,50,000

Additional Information

Particulars	Department A	Department B	Department C	Department D
Floor area	3,000 Sq.Ft.	5,000 Sq.Ft.	6,000 Sq.Ft.	7,000 Sq.Ft.
No. of lighting points	9	20	25	30
No. of workers	20	30	70	130
Value of plant	5,00,000	8,40,000	15,00,000	20,00,000
Machine hours	6,000	6,000	8,000	8,000
Horse power of the machine	150	150	200	200
Value of materials consumed	4,00,000	5,00,000	6,00,000	10,00,000

PROBLEM 2

In Z Ltd., there are three production departments viz. P1, P2 and P3 and two service departments viz. S1 and S2. S1 provides service to P1, P2, P3 and S2. S2 provides service to P1, P2 and P3. Overheads of S1 are to be distributed equally to P1, P2, P3 and S2, overheads of S2 are to be distributed equally to P1, P2 and P3.

Overheads of P1 are Rs. 10,000, P2 are Rs. 15,000, P3 are Rs. 20,000, S1 are Rs. 16,000 and S2 are Rs. 14,000.

PROBLEM 3

In GAYATHRI Ltd., there are three production departments viz. P1, P2 and P3 and two service departments viz. S1 and S2. S1 provides service to P1, P2 and P3, S2. S2 provides service to P1, P2 and P3. Overheads of S1 are to be distributed equally to P1, P2, P3 and overheads of S2 distributed to P1, P2 and P3 in the ratio of 2:1:1.

Overheads of P1 are Rs. 10,000, P2 are Rs. 15,000, P3 are Rs. 20,000, S1 are Rs. 18,000 and S2 are Rs. 16,000.

Allocate the cost of service departments to production departments using direct distribution method.

PROBLEM 4

In VIDYA Ltd., there are three production departments viz. P1, P2 and P3 and two service departments viz. S1, S2 and S3. S1 provides service to P1, P2, P3, S2 and S3. S2 provides service to P1, P2, P3 and S3. S3 provides service to P1, P2 and P3 only.

Overheads of S1 are to be distributed equally to P1, P2, P3, S2 and S3. Overheads of S2 are distributed to P1, P2, P3 and S3 in the ratio of 2:1:1:1. Overheads of S3 are distributed to P1, P2 and P3 in the ration of 2:1:1.

Overheads of P1 are Rs. 10,000, P2 are Rs. 15,000, P3 are Rs. 18,000, S1 are Rs. 50,000, S2 are Rs. 11,000 and S3 are Rs. 9,000. Allocate the cost of service departments to production departments using step-down method.

PROBLEM 5

In CVS Ltd., there are three production departments viz. P1, P2 and P3 and two service departments viz. S1 and S2. S1 provided service to P1, P2 P3 and S2. S2 provides service to P1, P2, P3 and S1. Overheads of S1 and S2 are to be distributed as follows:

Particulars	P1	P2	P3	S1	S2
Service rendered by S1	25%	25%	25%		25%
Service rendered by S2	20%	20%	30%	30%	

Overheads of P11 are Rs. 10,000, P2 are Rs. 15,000, P3 are Rs. 20,000, S1 are Rs. 13,700 and S2 are Rs. 16,000.

Allocate the cost of service departments to production departments using following methods:

- (i) Repeat distribution method
- (ii) Trial and error method
- (iii) Simultaneous equation method

Problem 6

Following information is available for the first and second quarter of the year 2008-09 of ABC Limited:

	Production (in unit)	Semi-variable cost (Rs.)
Quarter I	36,000	2,80,000
Quarter II	42,000	3,10,000

You are required to segregate the semi-variable cost and calculate:

- (a) Variable cost per unit; and
- (b) Total fixed cost.

Problem 7

The standard departmental overhead rate is Rs. 15 per hour. Based on the following details provided to you, work out the activity level at which the overhead rate has been fixed.

Activity Level (Hours)	Overheads Allowance (Rs.)
6,000	1,20,000
8,000	1,44,000
10,000	1,68,000

OVERHEADS

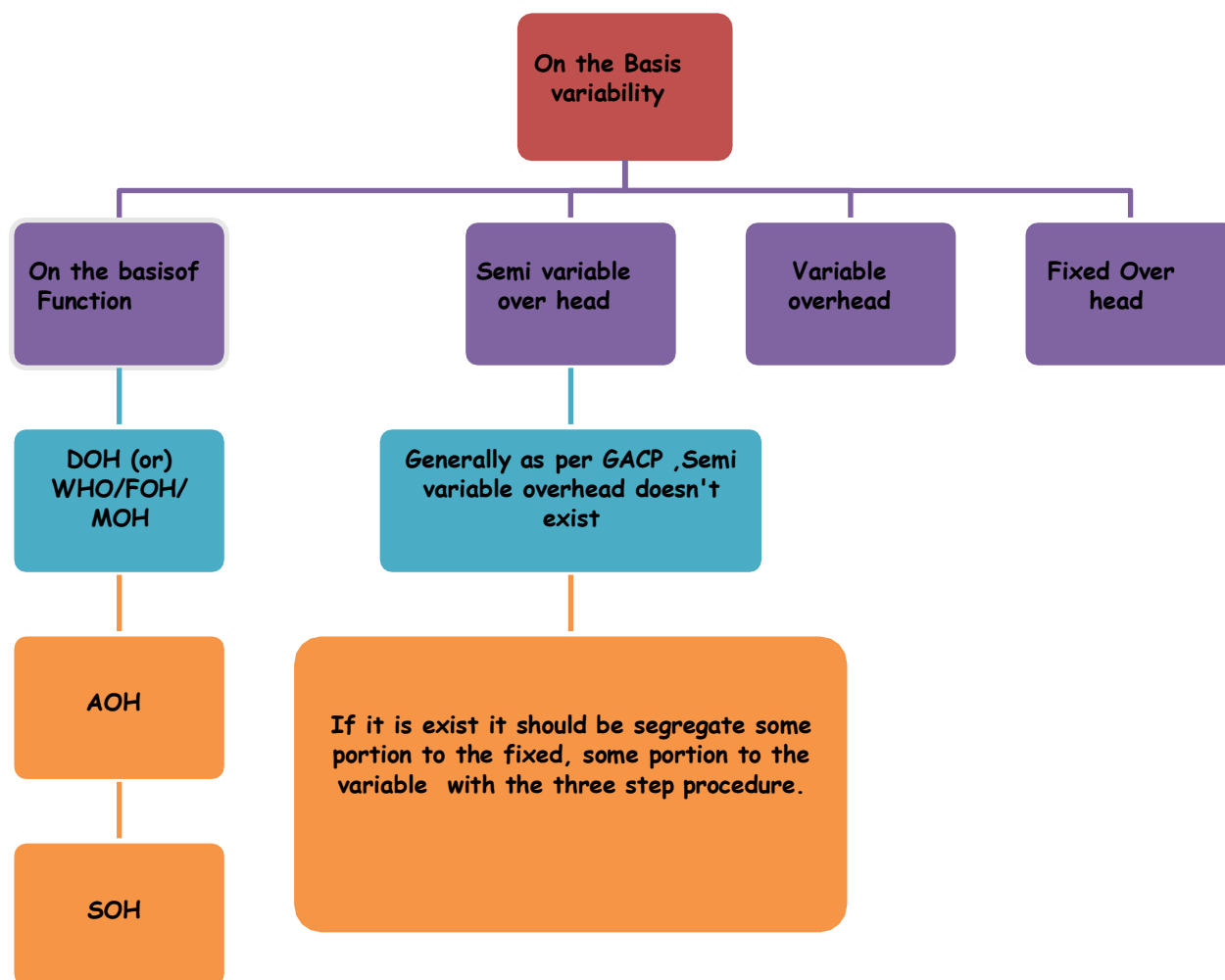
Topics to be covered:-

- 1) Meaning of overhead
- 2) Classification of overhead
- 3) Objectives to study overhead

1) Meaning of overhead:-

Overhead means 'An aggregate' (or) Total of indirect cost such as indirect material, indirect expense is called Overhead.

- Generally, overhead cost can be treated as cost which is not easily traceable.
- As per CA, overhead can be classified into two types suc



2) Objectives of Overhead:-

There are **5 main objectives** to study overhead, such as

- (i) Accounting of overhead
- (ii) Calculating of under (or) over absorption (Recovery)

(iii) Cost accounting treatment of under (or) over recovery overhead

(iv) Calculation of capacities in terms of

- Maximum capacity
- Practical capacity
- Normal capacity
- Actual capacity
- Idle capacity

(v) Calculation of machine hour rate

(1) Accounting of overhead:-

There are 3 steps involved in accounting of overhead, such as

Step :1 Primary distribution table.

Step: 2 Secondary distribution table.

Step :3 Overhead recovery rate.

General Note : (1)

- ▶ In every organisation there are 2 departments exists such as production department, service department, service department.
- ▶ Production department means those department is working for manufacturing of goods (or) rendering of services.
- ▶ Service department means it is an assistant department (or) helping department to the production department for the purpose of manufacturing of goods (or) rendering of services

(2)

- ▶ Production department is also known as income centre because production department will interact with customer and generated on income.
- ▶ Service department is also referred as cost centre because those department will not interact with customers.
- ▶ Income centre means those centre (or) department generating income and incurring cost is called 'income centre'.
- ▶ Cost centre means those centre (or) departments incurring only cost without generating any income is called 'cost centre'.

Explanation for the steps involved in Accounting of overhead:

Step:-1 Allocation (or) Apportionment of overhead to all departments (i.e, production department (or) service department on most suitable basis. (MSB)

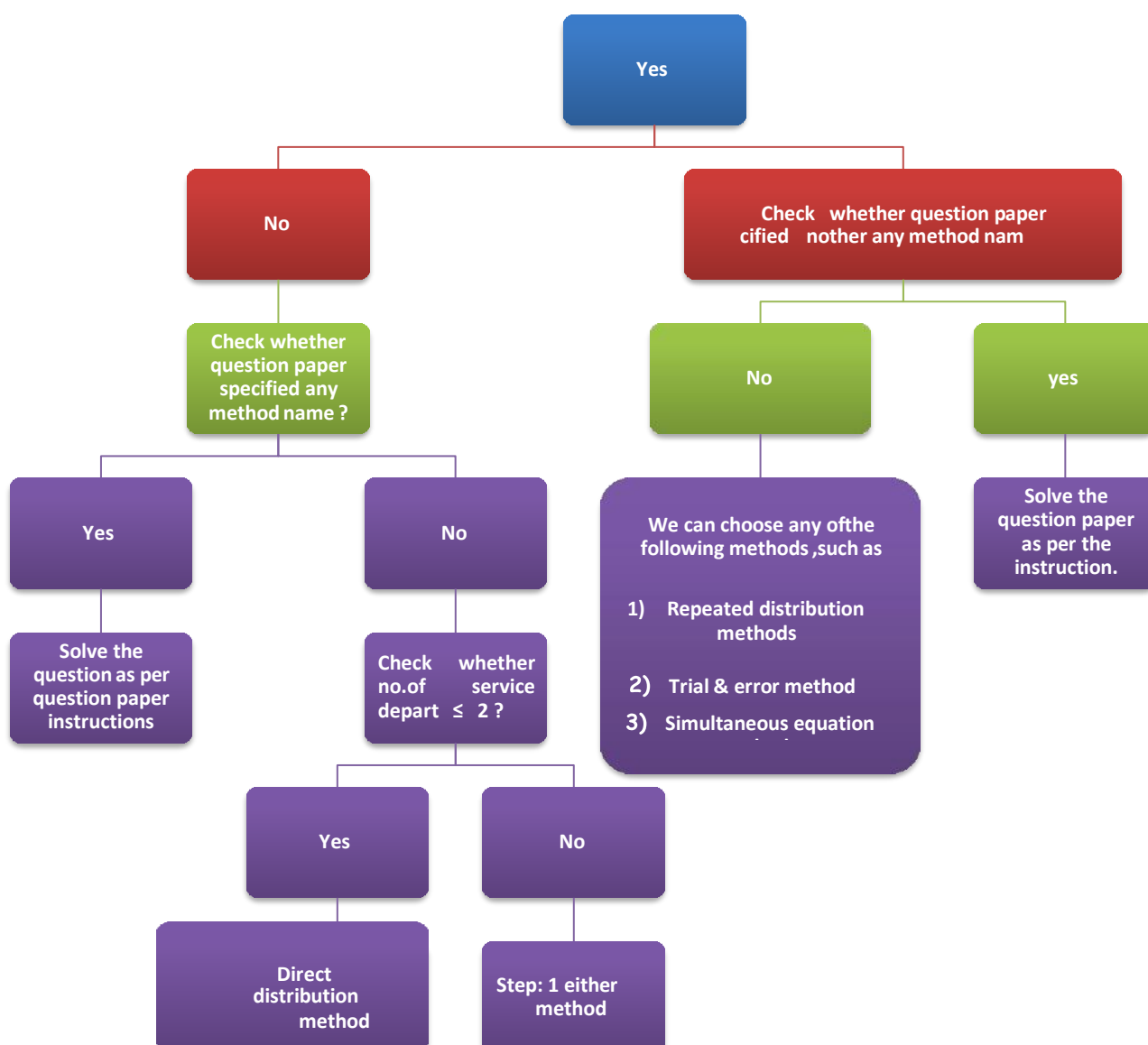
Expense	Most suitable basis
1. Rent	Floor area occupied
2. Depreciation	Value of asset
3. Carriage in words	Value of materials issued
4. Power	Machine hours (or) horse power (or) Kilo vat hour (or) if question paper is specified machine hour/horse

	power then MSB will be machine hour x horse power
5. Delivery expenditure.	Tan/Kilo meters/weight
6. Any other overhead/ General overhead/ overhead not match any basis in the question paper	Direct labour ratio

Step:-2 Reallocation of service department cost to the production department on most appropriate method (MAM)(i.e, secondary distribution table).

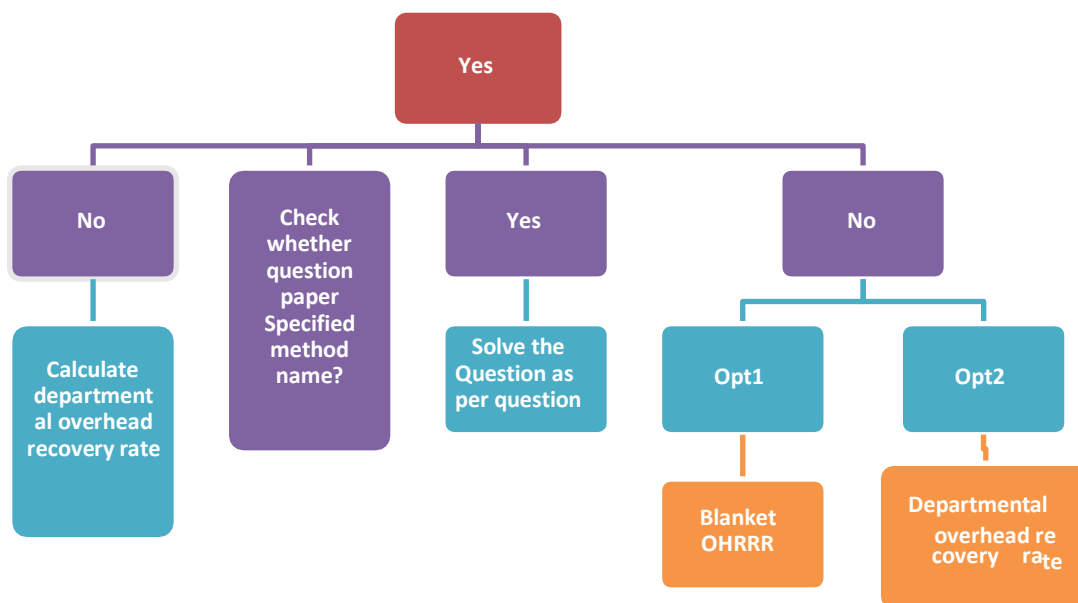
(i) Selection of MAM as shown below

Check whether inter service between once S.D to another S.D?



Step:-3 Calculation of overhead recovery rate/OHAR/OH applied rate OH charged rate

- Check whether organisation producing one type of product (or) single type of product?



Working Note: (1)

- (i) Calculation of departmental overhead recovery rate.

Particulars	P1	P2
1. Step :2 Answer	xxx	xxx
2. Base (as per specified in the question paper)	xxx	xxx
3. OHRR (P ₁ /P ₂)	xxx	xxx

- (ii) Calculation of Blanket overhead recovery rate.

$$\text{BOHRR} = \frac{\text{Step 2 Ans}}{\text{Common Base}}$$

Important points of Accounting of overhead:

- (1) Allocation means any expenditure which is change to a particular department is called 'allocation'
- (2) Apportion means any expenditure is distributed to greater than two departments (or) all departments is called apportion.

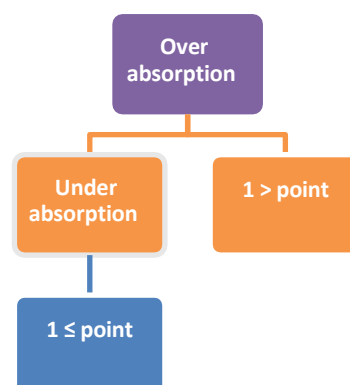
Concept of under (or) over absorption:-

- ★ Generally every organisation will calculate overhead recovery rate is based on estimated

- ★ Generally estimation may (or) may not match with actuals hence the concept of under (or) over absorption will arise
- ★ Calculation of under (or) Over absorption as shown below

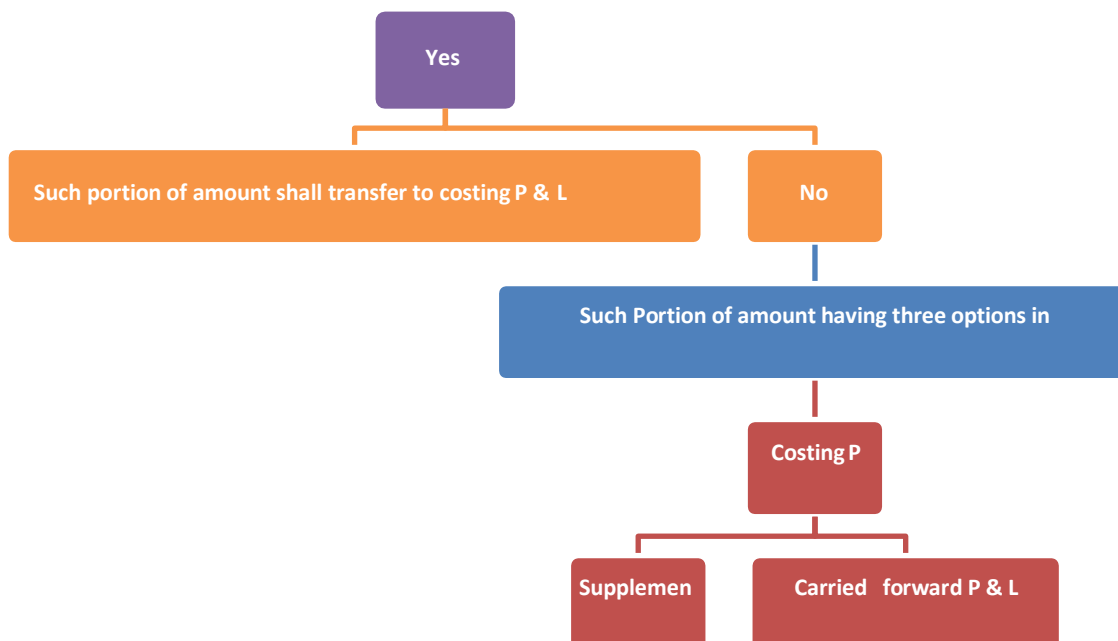
Overhead charged	xxx
(Actual base x overhead recovery rate)	
(-) overhead incurred	(xxx)
(as given in the question paper)	
Under (or) over absorption	<u>xxxx</u>

Under (or) over absorption



Cost Accounting treatment of under (or) over absorption:-

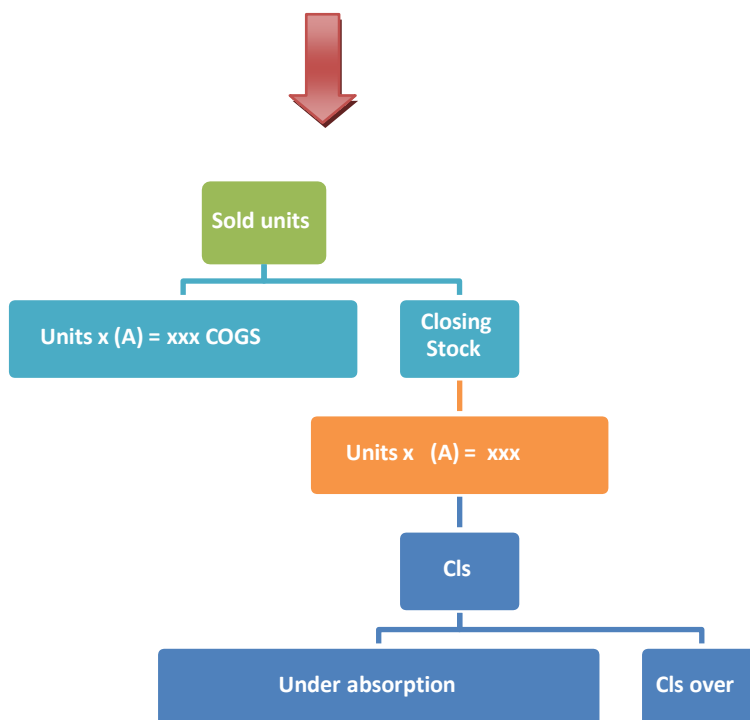
Check whether management failure is exists?



$$\frac{\text{under}}{\text{over}} \text{absorption of other than man failure portion}$$

No.of units completed manufacturing

$$= xxx (A)$$



General Note-1

Sometimes overhead can be classified on the basis of variability (such as fixed overhead, variable overhead, semi-variable overhead)

- If question paper specified overhead includes variable portion and fixed portion then accounting of overhead as shown below.

Step-1: Primary distribution table.

(a) Variable portion of overhead shall be apportioned to all departments on the basis of actual capacity

(b) Fixed portion of overhead shall be apportioned on the basis of budgeted capacity (or) estimated capacity.

Step-2: Reallocation of service department cost to production departments on most appropriate method.

"same as previous accounting of overhead".

Step-3: Overhead Recovery rate same as previous accounting of Overhead.

General Note-3

- ◆ Generally, overhead can be absorbed in two ways. Such as (i) departmental OHRR, (ii) Blanket OHRR.

- ◆ In case of departmental overhead recovery rate,

$$\text{OHRR} = \frac{\text{Departmental Overhead}}{\text{Base}}$$

- ◆ Base will be given in the question paper

- ◆ However, sometimes base will be

$$(a) \text{ As a percentage of D.M} = \text{OHRR} = \frac{\text{Departmental Overhead}}{\text{D.M}}$$

$$(b) \text{ As a percentage of D.L} = \text{OHRR} = \frac{\text{Departmental Overhead}}{\text{D.L}}$$

$$(c) \text{ As a percentage of Labour hours} = \text{OHRR} = \frac{\text{Departmental Overhead}}{\text{Labour hours}}$$

$$(d) \text{ As a percentage of Machine hours} = \text{OHRR} = \frac{\text{Departmental Overhead}}{\text{No. of Machine hours}}$$

Concept of Machine hour:-

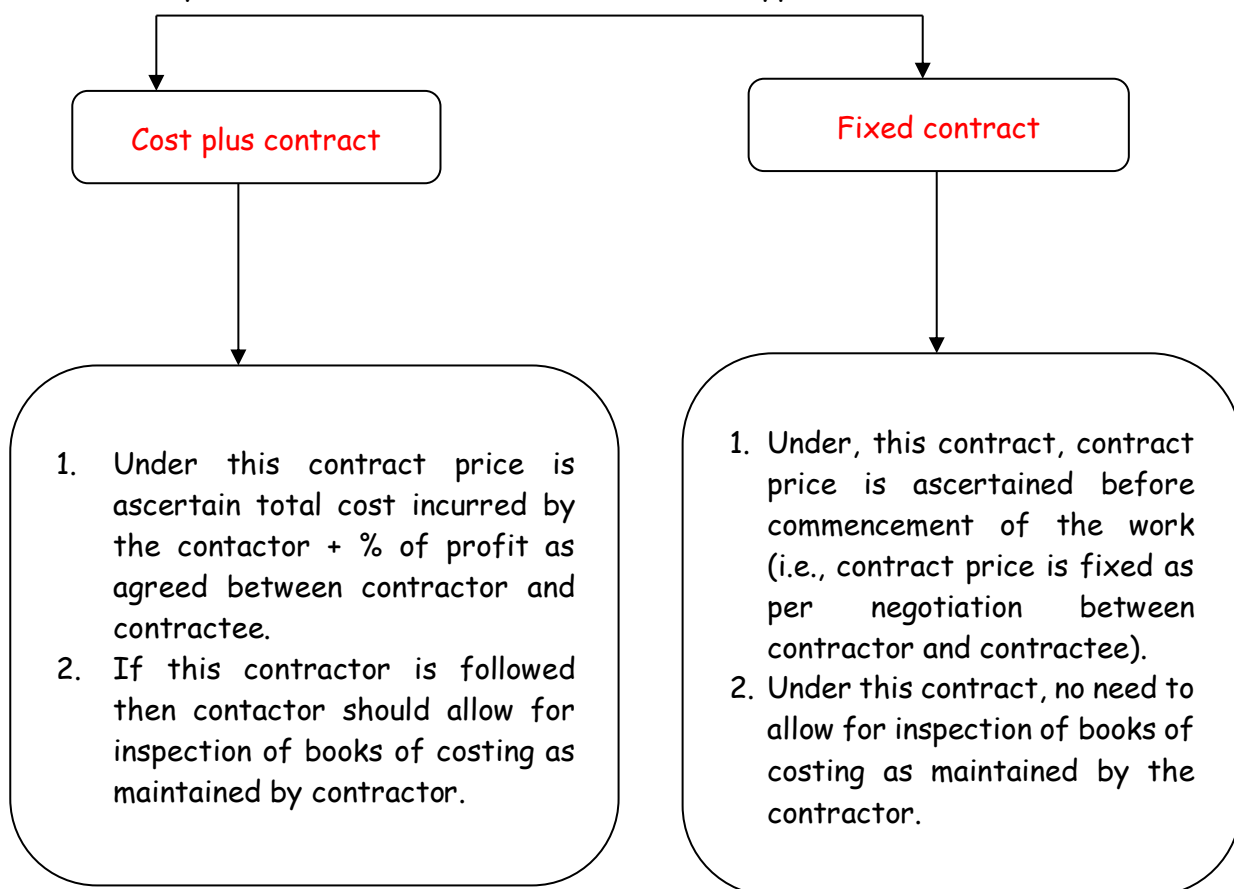
- Generally every organisation will calculate machine hours for the purpose of decision making.
- In the view of machine hour rate entire expenditures relating to machines are classified into standing expenses, machine expenses.
- Generally while calculating machine hours the following formula will be used

$$\text{Machine hour rate} = \frac{\text{Total standing charges} + \text{Total machine expenses}}{\text{effective no. of machine hrs}}$$

$$\text{MHRR} = \frac{\text{Total cost}}{\text{No. of effective machine hrs}}$$

CONTRACT COSTING

- The entire contract costing will be studied in the view of **contractor**
- As per GACAP constitution contract means it is a **long-term contract** to 'contract'.
- As per GACAP, contract **including** contract of destruction
- The **main theme** of this chapter to get knowledge on whether profit earned by the contractor or not.
- To achieve the above theme contractor should maintain '**books of costing**' (books of costing includes contract account ledger and balance sheet [extract]).
- Generally, contract can be **classified** into two types such as

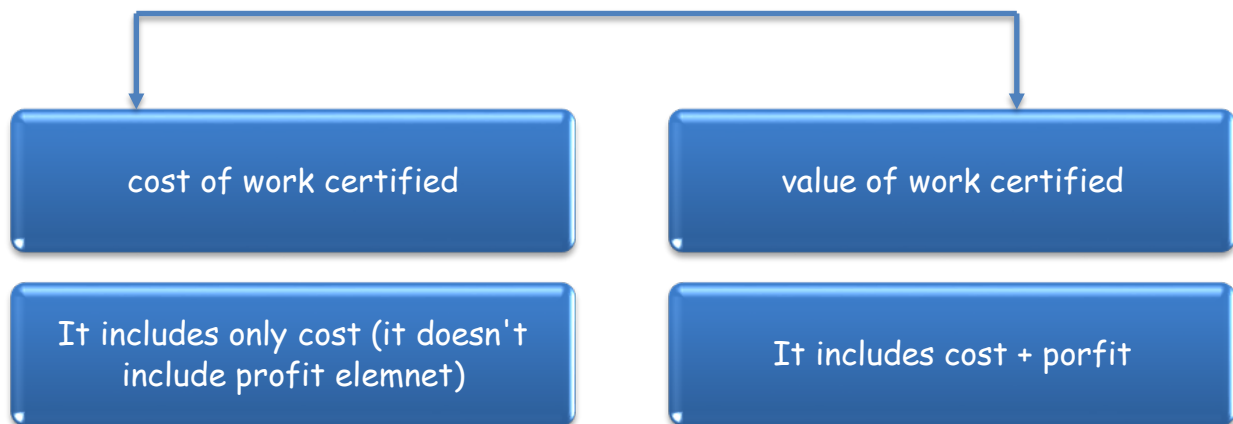


Important terminologies:

i. Work certified:

Work certified means work completed and certified by the architecture (or) 3rd party (or) engineer (or) expert is called work certified.

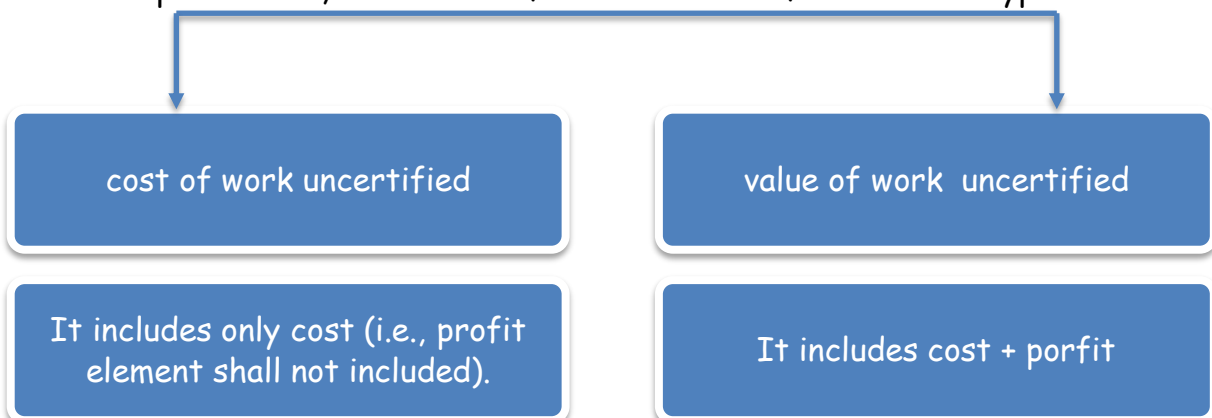
- As per GACAP, work certified can be classified into two types such as



- As per GACAP unless otherwise specified on the question paper in books of costing as maintained by contractor should disclose value of work certified.

ii. Work uncertified:

- Work uncertified means work completed but not certified by engineer (or) third party (or) expert is called "work certified".
- As per GACAP, work uncertified can be classified into two types



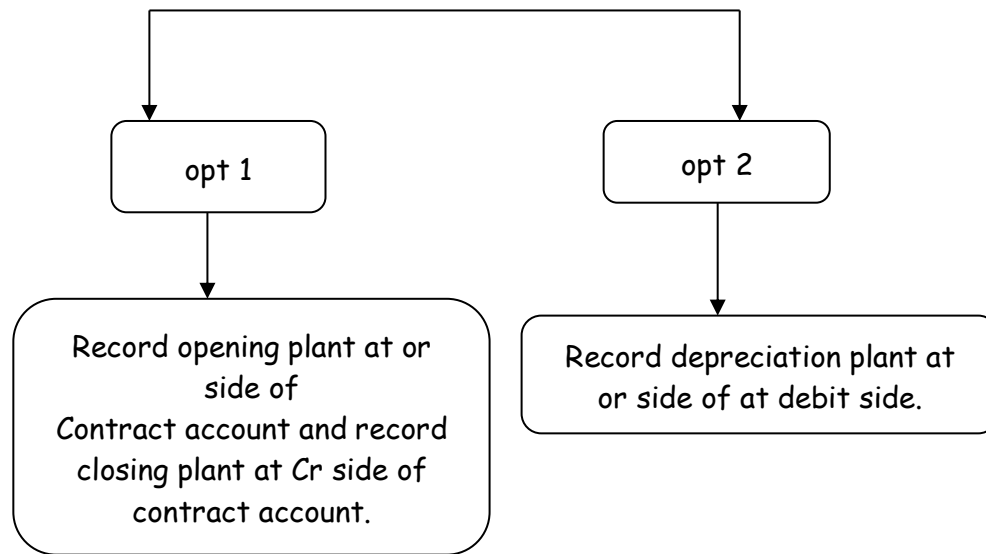
- As per GACAP, unless otherwise specified in the question paper in books of costing we should record only cost of work uncertified.

iii. Retained money:

- ✓ Retained money means the difference between work certified and cash received is called "retained money".
- ✓ Generally, retained money will act as safety & security for contractor towards work done by contractor.

iv. Treatment of plant & machinery:

- ✓ While solving exam problem every student will have two options such as



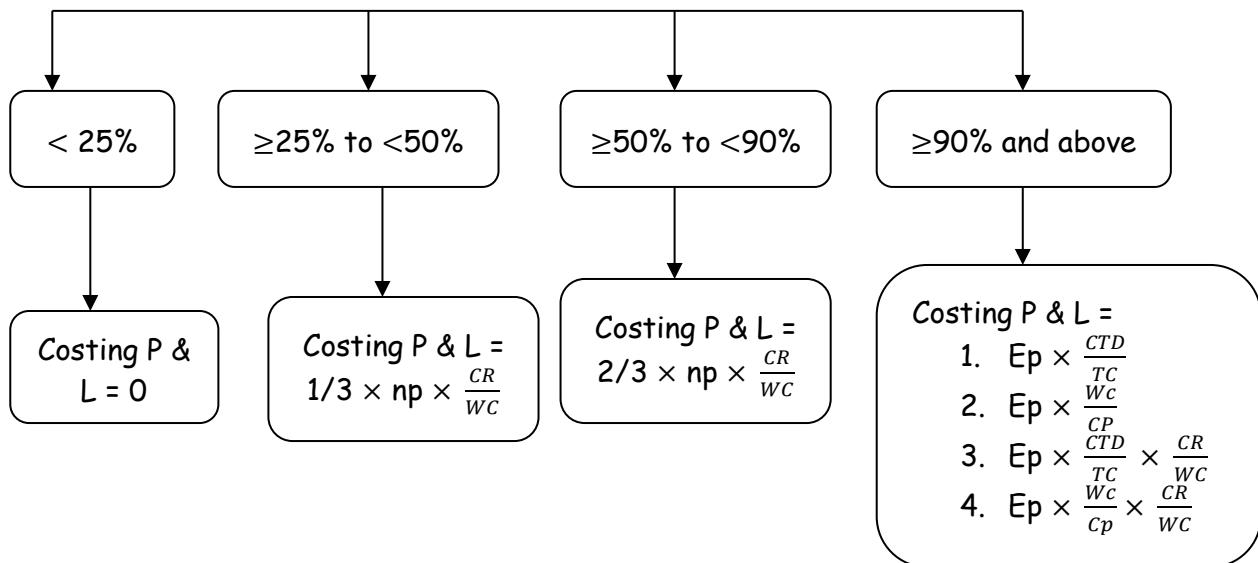
✓ **Contract account (first year)**

Dr		Cr	
Particulars	₹	Particulars	₹
To raw material	XX	By working certified	XX
To labour	XX	By working uncertified	XX
To direct expenses	XX	By closing plant	XX
To over heads	XX	By material at site	XX
To other expenses to contract	XX		
To opening plant	XX		
To national profit c/d	XX		
	XXX		XXX
To closing P & L (W.N.L)	XX	By national profit b/d	XX
To W/P reserve(B/T)	XX		
	XXX		XXX

W.N. 1 # 1 calculation of amount transfer to costing P & L

Amount transfer to costing P & L is based on percentage of work completed.

➤ If % of work completed



➤ Calculation of estimated profit:

$$\therefore Ep = Cp - TC$$

$$Tc = CTP - CTC$$

Where, CTD = cost till date

CTC = cost to complete.

➤ Generally, question paper will specify percentage of work completed however sometimes questions paper will not specify percentage of work completed, then

$$\% \text{ of work completed} = \frac{\text{work certified}}{\text{contract price}} \times 100$$

Balance sheet: [extract (first year)]

Liabilities	₹	Assets	₹
Costing P & L (profit)	Xxx	WIP	
Outstanding expenditure	xxx	WC	xx
		WVC	xx
			XXX
		(-) CB	(xx)
		(-) WIP reserve	(xx)
			Xxx
		Plant at site	xxx
		material at site	xxx
	Xxxx		Xxxx

Contract account (second year)

Dr		Cr	
Particulars	₹	Particulars	₹
To balance b/d		By balance b/d (w/p reserve)	Xxx
WC xx		By work certified	Xx
WVC xx	Xxx	By work uncertified	Xx
To raw material	Xx	By closing plant	Xx
To labour	Xx	By material site	Xx
To direct expenses	Xx		
To over head	Xx		
To other expenses	X		
To opening plant	Xx		
To national profit c/d (b/f)	Xx		
	xxx		xxx
To costing P&L account (W.N.I)	Xx	By national profit c/d	Xx
To WIP reserve (BH)	Xx		
	xxx		xxx

Contract account (first year [assume loss in obtained])

Dr		Cr	
Particulars	₹	Particulars	₹
To raw material	XX	By working certified	XX
To labour	XX	By working uncertified	XX
To direct expenses	XX	By closing plant	XX
To over heads	XX	By material at site	XX
To other expenses to contract	XX	By national loss c/d(b/f)	xx
To opening plant	XX		
	xxx		xxx
To national profit c/d	XX	By closing stock	Xx
	XXX		XXX

General note #2

Preparation of contract account in statement from

- Whenever contractor executes contract as greater than (>1) one is that situation contractor having two options such as

prepare contract account for each contract in ledger from

prepare contract statement in one document

- If contractor having intention to calculate (or) draft in a statement from then the following format shall be followed.

Particulars	C1(₹)	C2(₹)	C3(₹)
A. Expenditure			
i. Opening work certified	Xx	Xx	Xx
ii. Opening work uncertified	Xx	Xx	Xx
iii. Raw material	Xx	Xx	Xx
iv. Labour	Xx	Xx	Xx
v. Direct expenses	Xx	Xx	Xx
vi. Indirect expenses	Xx	Xx	Xx
vii. Any other expenses	Xx	Xx	Xx
Total	Xxx	Xxx	Xxx
B. Incomes			
i. Work certified	Xx	Xx	Xx
ii. Work uncertified	Xx	Xx	Xx
iii. Closing plant	Xx	Xx	Xx
iv. Material at site	Xx	Xx	Xx
Total	Xxx	Xxx	Xxx
C. National profit / loss (A-B)	Xxx	Xxx	Xxx
D. Costing P&L (W.N.I)	Xx	Xx	Xx
E. WIP reserve (c-D)	Xx	Xx	Xx

General note #3

Concept of onerous contract:

- If the following conditions are satisfied then such contract shall be referred as "onerous contract" such as

Condition 1:

Contractor doesn't have intention breach the contract

Condition 2:

After completion of contract contractor will get loss.

- As per GACAP, in case of onerous contracts future loss can be recorded as expenses

in the name of "provision for contingency".

General note # 4

Concept of escalation clause:

- ✓ Escalation clause means a clause between contractor and contractor regarding increasing of the prices.
- ✓ As per the agreement upto certain portion contractor has to bear and prices increased the beyond prescribed limit such portion is called "escalation clause".
- ✓ In the view of contractor escalation clause is an additional income, hence such amount shall be recorded at credit side of contract account.

General note# 5

Whenever question paper specified some of the raw material sold (or) some of the plant sold then irrespective of profit(or) loss on such transaction, in that situation sale value should be recorded at credit side of contract account.

General note#6:

- ✓ As per GACAP, unless otherwise specified in the question paper, value of work certified and cost of work uncertified should be recorded in contract account.
- ✓ Sometimes questions paper will specify value of work certified then in that situation the following procedure shall be followed to obtain cost of work uncertified.
 - ∴ cost of work uncertified = CTD - cost of work certified
 - CTD = total cost - total credit side except WC and WVC.
 - ∴ cost of work certified = total cost × % of WC
 - $T_c = CTD + CTC$

General note #7

- ✓ While calculating contract costing opening stock (or) closing stock should be disclosed as stock as per books, notes for physical stock.
- ✓ Material booked means materials used by the contractor during the year / period.
 - ∴ material booked = opening stock + purchases - closing stock.

Q.1: Kapur Engineering Company undertakes long term contract which involves the fabrication of prestressed concrete blocks and the erection of the same on consumer's site. The following information is supplied regarding the contract which is incomplete on 31st December, 2006.

Particulars	Rs.
COSTS INCURRED	
Fabrication costs to date	
Direct Materials	2,80,000
Direct Labour	90,000
Overheads	75,000
Subtotal	4,45,000
Erection costs to date	15,000
Total cost till date	4,60,000
Contract Price	8,49,000
Cash received on account	6,00,000

Technical estimate of work complete to date -

Fabrication - Direct Materials	80%
Direct Labour and overhead	75%
Erection	25%

You are required to prepare a statement for submission to the management indicating -

- The estimated profit on the completion of the contract.
- The estimated profit to date on the contract.

Q.2: A railway contractor makes up his accounts to 31st March. Contract No. SER/15 for construction of culvert between Bhilai and Raipur commenced on 1st July, 2005. The costing records yield the following information at 31st March 2006 -

Material charged out to site	Rs.31,540
Labour	Rs. 75,300
Foreman	Rs. 11,700

A machine costing Rs. 25,000 has been used on the site for 73 days. Its working life is estimated at five years and its final scrap value is Rs. 1,000. A supervisor, who is paid Rs. 18,000 p.a. has

spent approximately six months on the contract. All other expenses and administration amount to Rs. 17,000. Material in store at site at the end of the year costs Rs. 2,500.

The contract price is Rs. 3,00,000. At the end of the year 2/3 of the contract was completed for which amount, the Architect's Certificate has been issued and Rs. 1,60,000 has so far been received on account.

It was decided that the profit made up on the contract in the year should be arrived at by deducting the cost of work certified from the total value of the architect's certificate, that 1/3 of the profit so arrived at should be regarded as a provision against contingencies and that such provision should be increased by taking to the credit of Profit and Loss Account only such portion of the 2/3 profit as the cash received bears to the work certified. Prepare Contract Account showing profit or loss to be included in respect of this contract for the period ending on 31st March, 2006.

Q.3: S.V. Construction Ltd., have obtained a contract for construction of bridge. The value of the contract is Rs. 12 lakhs and the work commenced on 1st October, 2005. The following details are shown in their books for the year ended 30th September, 2006.

Particulars	Rs.
Plant purchased	60,000
Wages paid	3,40,000
Material issued to site	3,36,000
Direct expenses	8,000
General overhead apportioned	32,000
Wages accrued as on 30.09.2006	2,800
Material at site as on 30.09.2006	4,000
Direct exps. accrued as on 30.09.2006	1,200
Work not yet certified at cost	14,000
Cash received (80% of work certified)	6,00,000

Life of plant purchased is 5 years and scrap value is nil.

1. Prepare the Contract Account for the year ended 30th September, 2006.
2. Show the amount of profit which you consider might be fairly taken on the contract and how you are calculated it.
3. Prepare Extract Balance Sheet as on 30.09.2006.

Q.4: The following particulars are obtained from the books of Vinak Construction Ltd., on 31st March, 2006 -

Particulars	Contract Nos. (Rs. in Lakhs)		
	V.20	V.24	V.25
Estimated final sales value	8.00	5.60	16.00
Estimated final cost	6.40	7.00	12.00
Wages	2.40	2.00	1.20
Materials	1.00	1.10	0.44
Overheads (excluding depn.)	1.44	1.46	0.58
Total Cost to date	4.84	4.56	2.22
Value certified by the architects	7.20	4.20	2.40
Progress payment received	5.00	3.20	2.00

Other details of contract which remain incomplete as on 31.3.2006 are -

Plant and Equipment at cost	Rs. 4,90,000
Vehicles at cost	Rs. 2,00,000

Depreciation on Plant and Equipment and Vehicle should be charged at 20% to the three contracts in proportion to work certified. You are required to prepare statement to show contract wise and total -

- Profit/Loss to be taken to the Profit and Loss A/c for the year ended 31st March, 2006.
- Work-in-progress as would appear in the Balance Sheet as at 31st March, 2006.

Q.5: An expenditure of Rs. 1,94,000 has been incurred on a contract to the end of 31st December, 2006. The value of work certified is Rs. 2,20,000. The cost of work done but not yet certified is Rs. 6,000. It is estimated that the contract will be completed by 30th June, 2007 and additional expenditure of Rs. 40,000 will have to be incurred to complete the contract. The total estimated expenditure on the contract is to include a provision of 2.5 per cent for contingencies. The contract price is Rs. 2,80,000 and Rs. 2,00,000 has been realized in cash upto 31st December, 2006.

Calculate the proportions of profit to be taken to Profit and Loss Account for period ending on 31st December, 2006 under different methods.

Q.6: The following information relates to a contract for Rs. 75,00,000 (the Contractor paying 90% of the value of work done as certified by the architect).

Particulars	2004 Rs.	2005 Rs.	2006 Rs.
Materials	9,00,000	11,00,000	6,30,000
Wages	8,50,000	11,50,000	8,50,000
Direct Expenses	35,000	1,25,000	45,000
Indirect Expenses	15,000	20,000	---
Work Certified	17,50,000	56,50,000	75,00,000
Work uncertified	---	1,00,000	---
Plant issued	1,00,000	---	---

The value of plant at the end of 2004, 2005 and 2006 was respectively Rs. 80,000, Rs. 50,000 and Rs. 20,000. Prepare the Contract Account for all the three years and show the relevant figures in the Balance Sheet.

Q.7: Deluxe Limited undertook a contract for Rs. 5,00,000 on 1st July, 2005. On 30th June, 2006 when the accounts were to be closed, the following details about the contract were gathered -

Particulars	Rs.
Material Purchased	1,00,000
Wages paid	45,000
General Expenses	10,000
Material at site on 30.6.2006	25,000
Accrued wages on 30.6.2006	5,000
Plant purchased	50,000
Work certified	2,00,000
Cash received	1,50,000
Work uncertified	15,000
Depreciation on Plant	5,000

The above contract contained an escalation clause which read as - "In the event of prices of materials and rates of wages increase by more than 5% the contract price would be increased accordingly by 25% of the rise in the cost of materials and wages beyond 5% in each case".

It was found that since the date of signing the agreement the prices of materials and wage rates increased by 25%. The value of work certified does not take into account the effect of the above clause.

Prepare the Contract Account.

Q.8: A contractor, who prepares his account on 31st December each year, commenced a contract on 1st April, 2006. The costing records concerning the said contract reveal the following information on 31st December, 2006:

Particulars	Rs.
Materials charged to site	2,58,100
Labour engaged	5,60,500
Foremen's Salary	79,300

Plant costing Rs. 2,60,000 had been on site for 146 days. Their working life is estimated at 7 years and their final scrap value at Rs. 15,000. A supervisor, who is paid Rs. 4,000 p.m. has devoted approximately three-fourths of his time to this contract. The administrative and other expenses amount Rs. 1,40,000. Materials in hand at site on 31st December, 2006 cost Rs. 25,400. Some of the material costing Rs. 4,500 was found unsuitable and was sold for Rs. 4,000 and part of the plant costing Rs. 5,500 (on 31.12.06) unsuited to the contract was sold at a profit of Rs. 1,000. The contract price was Rs. 22,00,000 but it was accepted by the contractor for Rs. 20,00,000. On 31st December, 2006, two-third of the contract was completed. Architect's certificate had been issued covering 50% of the contract price and Rs. 7,50,000 had so far been paid on account. Prepare contract account and state how much profit or loss should be included in the financial accounts to 31st December, 2006. Also prepare the Contract's account. Depreciation is to be charged on time basis.

Q.9: A construction company undertaking a number of contracts, furnished the following data relating to its uncompleted contracts as on 31st March, 2006:

Particulars	Contract Nos. (Rs. In lacs)			
	723	726	729	731
Total Contract Price	23.20	14.40	10.08	28.80
Estimated Costs on completion of contract	20.50	11.52	12.60	21.60
Expenses for the year ended 31.3.2006:				
Direct Materials	5.22	1.80	1.98	0.80
Direct Wages	2.32	4.32	3.90	2.16
Overheads (Excluding Depreciation)	1.06	2.60	2.62	1.05
Profit Reserve as on 1.4.05	0.75	---	---	---
Plant issued at Cost	5.00	3.50	2.75	3.00
Materials at site on 1.4.05	0.75	---	---	---
Materials at Site on 31.3.06	0.45	0.20	0.08	0.05
Work Certified till 31.3.06	0.45	0.20	0.08	0.05
Work Certified till 31.03.05	4.65	---	---	---
Work Certified during the year 2005-2006	12.76	13.26	7.56	4.32
Work Uncertified as on 31.3.2006	0.84	0.24	0.14	0.18
Progress payments received during the year	9.57	9.00	5.75	3.60

Depreciation @ 20% per annum is to be charged on plant issued. While the Contract No. 723 was carried over from last year, the remaining contracts were started in the 1st Week of April, 2005.

Required:

- (i) Determine the profit/loss in respect of each contract for the year ended 31st March 2006.
- (ii) State the profit/loss to be carried to Profit & Loss A/c for the year ended 31st March, 2006.

Q.10: One of the building contracts currently engaged in by a construction company commenced 15 months ago and remain unfinished. The following information relating to the work on the contract has been prepared for the year just ended:

Particulars	Rs. '000
Contract Price	2,500
Value of work certified at the end of the year	2,200
Cost of work not yet certified at the end of the year	40
Cost incurred:	
Opening balance: Cost of work completed	300
Materials on site (physical stock)	10
During the year: Materials delivered to site	610
Wages	580
Hire of plant	110
Other expenses	90
Closing balance: Materials on site (physical stock)	20

As soon as materials are delivered to the site, they are charged to the contract account. A record is also kept of materials as they are actually used on the contract. Periodically a stock check is made and any discrepancy between book stock and physical stock is transferred to a general contract material discrepancy account. This is absorbed back to each contract, currently at the rate of 0.5% of materials booked. The stock check at the yearend revealed a stock shortage of Rs. 5,000.

In addition to the direct charges listed above, general overheads are charged to contract at 5% of the value of work certified. General overheads of Rs. 15,000 had been absorbed into the cost of work completed at the beginning of the year.

It has been estimated that further costs to complete the contract will be Rs. 2,20,000. The estimate includes the cost of materials on site at the end of the year just finished and also a provision for rectification. Required:

(a) Determine the profitability of the above contract and recommend how much profit (to the nearest Rs. '000) should be taken for the year just ended.

(b) State how your recommendation in (a) above would be affected if the contract price was Rs. 40,00,000 (rather than Rs. 25,00,000) and if no estimate has been made of costs to completion.

(If required, suitable assumption should be made by the candidate).

Q.11: Paramount Engineers are engaged in construction and erection of a bridge under a long-term contract. The cost incurred upto 31.3.2006 was as under:

Particulars	Rs. In Lakhs
Fabrication: Direct Material	560
Direct Labour	200
Overheads	120
Subtotal	880
Erection costs to date	220
Total Cost to date	1,100

The contract price is Rs. 22 crores and the cash received on account till 31.3.2006 was Rs. 12 crores. A technical estimate of the contract indicates the following degree of completion of work:

Fabrication - Direct Material - 70%

Direct Labour and Overheads 60%

Erection - 40%.

You are required to estimate the profit that could be taken to profit and Loss Account against this partly completed contract as at 31.03.2006.

Q.12. A contractor prepares his accounts for the year ending 31st March each year. He commenced a contract on 1st July 2021.

The following information relates to the contract as on 31st March, 2022:

Material issued	12,55,000
Wages	28,28,000
Salary to Foreman	4,06,500

A machine costing Rs. 13,00,000 has been on the site for 4.8 months, its working life is estimated at 7 years and its final scrap value at Rs. 75,000. A supervisor, who is paid Rs. 40,000 p.m. has devoted one-half of his time to this contract. All other expenses and administration charges amount to Rs. 6,82,500. Material in hand at site costs Rs. 1,77,000 on 31st March, 2022. The contract price is Rs. 1,00,00,000. On 31st March, 2022 2/3rd of the contract was completed. The architect issued certificates covering 50% of the contract price, and the

contractor had been paid Rs. 37,50,000 on account. PREPARE Contract A/c and show the notional profit or loss .

Q.13. XYZ Construction Company took a contract for construction of a stadium on 1st April, 2017 at a price of Rs.160 Lakhs. The relevant information for the year ended 31st March, 2018 are as under:

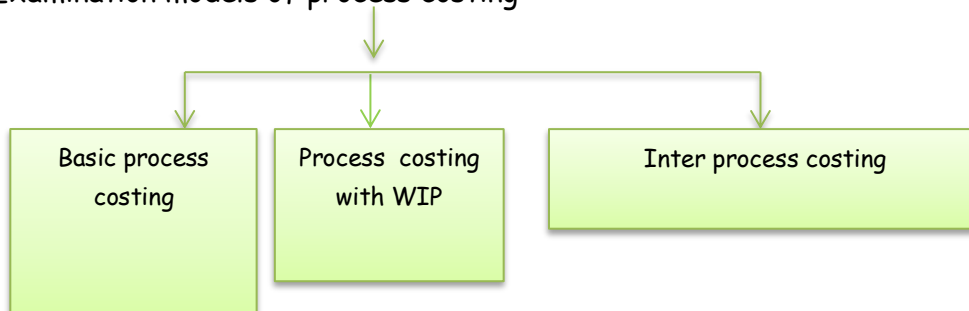
	Amount in 000
Material purchased for contract	6,800
Direct wages paid	3,450
Salaries	200
Direct wages prepaid at the end of the year	50
Salaries outstanding at the end of the year	100
Materials return to stores	150
Materials at site as on 31st March, 2018	175
Payment received from the contractee (80% of work certified)	9,440
Work done but not certified	500

A plant purchased for Rs.12,00,000 on 1st November, 2017 and was in use at the site upto 31st March, 2018. Depreciation is to be charged on plant @15% per annum on straight line basis. Material costing Rs.50,000 was stolen from the site. You are required to:

- Prepare Contract Account for the year ended 31st March, 2018 showing the profit to be taken to Profit & Loss Account.
- Prepare Balance Sheet showing the relevant items.

Topics to be covered:-

1. Introduction
2. Important terminologies and their cost accounting treatment
 - (a) Normal loss
 - (b) Abnormal loss
 - (c) Abnormal gain
3. Examination models of process costing



1) Introduction:-

Concept of process costing is applicable to those industry converting raw material into finished good by more than one process.

- The main objective of the process costing is
 - (a) To compute cost per unit (CPU) of each process for the purpose of decision making (Whether to process/buy).
 - (b) To know efficiency of each process.
- Unless otherwise, specified in the question paper, output of one process will become input for another process.

2) Important terminologies involved in process costing:-

(a) Normal loss:

- 1) Normal loss means it is an unavoidable loss due to inherent nature of raw material and it can be known previous experience in such business field is called ' Normal loss ' .
- 2) Generally Normal loss can be recovered from customer/ from effective units.

(b) Abnormal loss:

- 1) Abnormal loss means it is an actual loss over and above the normal loss is called ' abnormal loss ' .
- 2) As per GACAP, Abnormal loss shall be transfer to costing P & L A/c . (Debit side) after released income

(c) Abnormal gain:

- 1) Abnormal gain means it is an actual loss below the normal loss is called ' abnormal gain ' .
- 2) As per GACAP, Abnormal gain shall be transfer to costing P & L (Credit side) after certain adjustments.

3) (i) Normal basic process costing:-

- ❖ Unless otherwise, specified in the question paper output of one process will become input of another process.
- ❖ However sometimes question paper will specify some portion of output is sold and some portion of output is transferred to next process.
- ❖ Format of process account (Assume three process involved to get finished good)(Assume golden rule is applicable).

Dr			Process - I - A/c			Cr		
Particulars	Units	₹	Particulars	Units	₹			
To Raw materials	xx	xx	By normal loss	xx	xx			
To Additional RM		xx	By Abnormal loss	xx	xx			
To Labour		xx	By Com\$	xx	xx			
To direct exp		xx	Transfer to next process	xx	xx			
Relating to pro 1		xx						
To Abnormal gain (D)	xx	xx						
	<u>xxx</u>	<u>xxx</u>		<u>xxx</u>	<u>xxx</u>			

For computation of A,B,C,D Values in process costing, the following formulas shall be used -

- $A = \text{Units} \times \text{Salvage value per unit}$
- $B, C, D = \text{units} \times \text{cost per unit (C.P.U)}$
- $\text{CPU} = \frac{\text{Total Dr side (₹)} - \text{salvage value of normal loss (₹)(A)}}{\text{Input (Units)} - \text{Normal loss (units)}}$

Process - II

Particulars	Units	(₹)	Particulars	Units	(₹)
To input from p ₁	xx	(c) xx	By normal loss	xx	xx
To Raw material	xx	xx	By Abnormal loss	xx	xx
To a raw material		xx			
To labour		xx	By complete &	xx	Xx
To direct expanse		xx	Transfer to next process		
To overhead		xx			
To any other exp relating to process II		xx			
To abnormal gain	<u>xxx</u>	<u>xxx</u>		<u>xxx</u>	<u>xxxx</u>

Process - III

Dr

Cr

Particulars	Units	(₹)	Particulars	Units	(₹)
To input from p ₂	xx	xx	By normal loss	xx	xx
To raw material	xx	xx	By abnormal loss	xx	xx
To Additional RM		xx	By finished good	xx	xx
To labour		xx	By finished good	xx	xx
To direct exp		xx			
To overhead		xx			
To any other exp		xx			
To abnormal gain	xx	xx			
	<u>xxx</u>	<u>xxx</u>		<u>xxx</u>	<u>xxx</u>

- Format of process account. (assume some portion of output (or) sold and remaining portion of output transfer to next process).

(Assume two process).

Dr

Process - I

Cr

Particulars	Units	(₹)	Particulars	Units	(₹)	
To raw material	xx	xx	By normal loss	xx	xx	A
To Additional RM		xx	By abnormal loss	xxx	xx	B
To labour		xx				
To direct expenses		xx	By complete & transfer	xx	Xx	C
To overhead		xx	To next process			E
To any other exp		xx	BYCOGS	xx	xx	
Related to process I						
To abnormal gain (D)	xx	xx				
	<u>xxx</u>	<u>xxx</u>		<u>xxx</u>	<u>xxx</u>	

A = units x salvage value per unit

B,C,D,E = units x CPU

$$\therefore \text{CPU} = \frac{\text{Total debit side (₹)} - \text{salvage value normal loss (₹)(A)}}{\text{Input (₹)} - \text{Normal loss (units)}}$$

Dr

Process- II

Cr

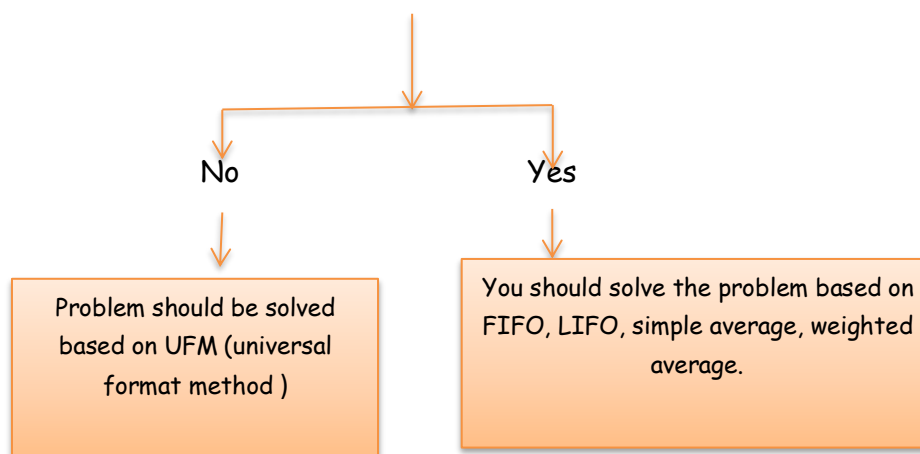
Particulars	units	(₹)	Particulars	Units	(₹)
To input from I	xx	(C) xx	By normal loss	xx	xx
To raw material	xx	xx	By abnormal loss	xx	xx
To Additional RM		xx	By finished good	xx	xx
To labour	xx				

To direct expenses	xx				
To overhead	xx				
To any other expenses	xx				
Related to process A/c II					
To abnormal gain	xx	xx			
	<u>xxx</u>	<u>xxx</u>		<u>xxx</u>	<u>xxx</u>

- Whenever solving exam problem you have to prepare input & output statement if golden rule is followed

(ii) Process costing with WIP models:-

- Sometimes, question paper will specify some of the units were completed and some of the units were uncompleted. In that situation process costing with WIP model is applicable
- The main objective of this model is to determine the value of closing WIP.
- Whenever this model the following steps involved such as
 - Step-1:- Statement of equivalent production units.
 - Step-2:- Statement of cost p equivalent production unit.
 - Step3:- valuation statements.
 - Step 4:- Based on Step-(3) prepare process A/c.
- While solving the exam problems
 - Check whether question paper specified information about opening WIP?



4) Universal format method:-

- ★ As per UFM the following steps are involved such as
 - Step-1: Statement of equivalent production units.

Inputs units	Outputs units	Equivalent production units					
		Material		LABOUR		OVERHEAD	
		%	Eq	%	Eq	%	Eq
Op WIP xx	NL xx	0%	-	0%	-	0%	-
Inputs xx	Abl xx						
Introduced xx	Abg (x)	Q%/100%	Xx(a)	Q % /100%	xx(b)	Q%/100%	xx(c)
	Completed xx	Q%/100%	(x)	Q % /100%	(x)	Q%/100%	(x)
	Cls WIP xx	100%	xx(d)	100%	xx(c)	100%	xx (f)
		Q%	xx(g)	Q%	xx(h)	Q%	xx(i)
<u>xxx</u>	<u>xxx</u>		<u>xxx</u>		<u>xxx</u>		<u>Xxx</u>
			<u>(J)</u>		<u>(k)</u>		<u>(l)</u>

Step-2:- Statement of cost per equivalent production units.

Material	₹ xxx		
Add RM	- ₹ xxx		
(-) Salvage value of NL	<u>- ₹ (xx)</u>	₹ xxx ÷ (J)	= x (M)
Labour		₹ xxx ÷ (K)	= x (N)
		₹ xxx ÷ (L)	= x (O)

Step-3:- Valuation statement ($S_1 \times S_2$)

Abnormal loss/ (Gain) completed cls WIP

Physical units	xx	xx	xx
Material	a x m	d x m	g x M
Labour	b x N	C x N	H x N
Overhead	C x D	F x D	I x O
	<u>₹ xxx</u>	<u>₹ xxx</u>	<u>₹ xxx</u>

Step-4:- Process A/c

Process costing with WIP (methods)

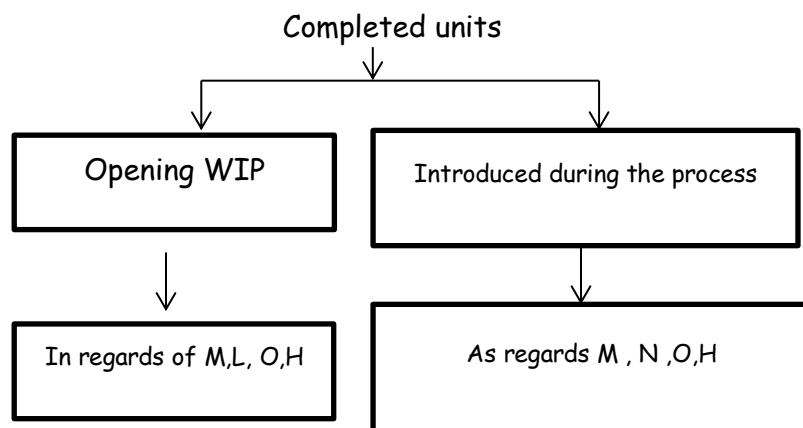
Whenever question paper specified the information relating to opening WIP, then you should solve the problem as per FIFO, UFO, simple average, weighted average.

First - in first out -

As compare to universal format method the following changes are identified such as -

Step-1:- Statement of equivalent production units -

(a) While solving step - (1) the entire calculation procedure is same as 'UFM' except completed units.



Step-2:- Statement of cost per equivalent production units same as UFM.

Step-3:- Valuation statement - $(S_1 \times S_2)$

Particulars	Abl	Completed		C/s WIP
		Op WIP	Introduced	
Physical units	<u>xx</u>	<u>xx</u>	<u>xx</u>	<u>xx</u>
M				
L				
OH				
(+) PPE	0	<u>xx</u>	<u>0</u>	0
(Previous process exp)	<u>xx</u>	<u>xx</u>	<u>xx</u>	<u>xx</u>

Step-4:- Process Ale (Same as UFM)

PROCESS COSTING BASIC/SIMPLE PROBLEMS

Q.1. Product X is obtained after it passes through three distinct processes. You are required to prepare Process Accounts from the following information -

Particulars	Total Rs.	PROCESS		
		I Rs.	II Rs.	III Rs.
Material	15,084	5,200	3,960	5,924
Direct Wages	18,000	4,000	6,000	8,000
Production Overheads	18,000			

1,000 units @ Rs. 6 per unit were introduced in Process - I. Production Overheads to be distributed as 100% on direct wages.

Particulars	Actual Output (units)	Normal Loss %	Value of Scrap per unit (Rs.)
Process-I	950	5%	4
Process-II	840	10%	8
Process-III	750	15%	10

Q.2. A product passes through three processes X, Y and Z. The normal wastage of each process is as follows - Process - X 3%; Process - Y 5%; Process - Z 8%.

Wastage of Process - X was sold at Rs. 2.50 per unit, that of Process - Y at Rs. 5 per unit and that of Process - Z at Rs. 8.50 per unit.

10,000 units were issued to Process-X in the beginning at July, 2004 at a cost of Re: 1.00 per unit. The other expenses were as follows -

Particulars	Process- X Rs.	Process - Y Rs.	Process - Z Rs.
Sundry Materials	10,000	15,000	5,000
Labour	50,000	80,000	65,000
Direct Expenses	10,450	15,895	20,090
Actual output	9,500 units	9,100 units	8,100 units

Prepare Process Accounts assuming that there were no opening or closing stocks. Also give Abnormal Loss and Abnormal Gain Account.

Q.3. Model Ltd., process a patent material used in buildings. The material is produced in three consecutive grades. Soft, Medium and Hard.

Process	I	II	III
Raw Materials used	1,000 tons		
Cost per ton	Rs. 200		
Manufacturing wages & expenses (Rs)	87,500	39,500	10,710
Weight Lost (% of input of the process)	5%	10%	20%
Scrap (sales price Rs. 50 per ton)	50 tons	30 tons	51 tons
Sale price per ton (Rs.)	350	500	800

Management expenses were Rs.17,500 and selling expenses were Rs. 10,000. Two third of the output of Process-I and One-half of the output of Process-II are passed on to the next process and the balances are sold. The entire output of Process-III is sold. Prepare the three Process Accounts and a Statement of Profit. Make suitable assumptions.

Q.4. A product passes through three processes - A, B and C. The details of expenses incurred on the three processes during the year 2004 were as under:-

Process	A	B	C
Units issued/introduced (cost per unit Rs. 100)	10,000		
	Rs.	Rs.	Rs.
Sundry Materials	10,000	15,000	5,000
Labour	30,000	80,000	65,000
Direct Expenses	6,000	18,150	27,200
Selling price/unit of output	120	165	250

Management expenses during the year were Rs. 18,000 and selling expenses were Rs. 15,000. There are not allocable to the processes.

Actual output of the three processes was: A - 9,300 units, B - 5,400 units and C - 2,100 units. Two-thirds of the output of Process A and one-half of the output of Process B was passed on to the next process and the balance was sold. The entire output of Process C was sold.

The normal loss of the three processes, calculated on the input of every process was: Process A - 5%; B - 15% and C - 20%. The scrap of Process A was sold at Rs. 2 per unit, that of B at Rs. 5 per unit and of Process C at Rs. 10 per unit. Prepare the Process Accounts and the Profit and Loss Account.

Q.5. The following details are extracted from the costing records of an oil refinery for the week ended September 30th, 2006.

Particulars	Crushing Plant Rs.	Refining Plant Rs.	Finishing Plant Rs.
Cost of labour	2,500	1,000	1,500
Electric Power	600	360	240
Sundry Materials	100	2,000	---
Repairs to Mach. & Plant	280	330	140
Steam	600	450	450
Factory Exps.	1,320	660	220
Cost of Casks	---	---	750

500 tons of copra was introduced in Crushing Process at a cost of Rs. 200,000 and 300 tons of crude oil was produced. 250 tons of oil was produced by Refining Process and 248 tons of refined oil was finished for delivery.

Copra sacks were sold for Rs. 400. 175 tons of copra residue sold for Rs. 11,000. Loss in weight in crushing process is 25 tons. 45 tons by-product was obtained from Refining Process valued at Rs. 6,750.

You are required to show the accounts in respect of each of the following stages of manufacture:

- A. Copra Crushing Process
- B. Refining Process
- C. Finishing Process

PROBLEMS ON EQUIVALENT PRODUCTION

Q.6. During January, 1,000 units costing Rs. 6,000 were introduced in Process-I. There was no works-in-process at the beginning. At the end of January, 600 units were transferred to Process-II, 250 units were uncompleted and 150 units had been scrapped. The normal process loss was 10% of input. It was estimated that the uncompleted units had reached the following stages -

Material	80%
Labour	60%
Overhead	60%
Direct materials	Rs. 2,700
Direct Wages	Rs. 3,200
Production Overhead	Rs. 1,600

Values of scrap is Rs. 2 each. The units scrapped had passed through the process and is 100% complete as regards Materials, Labour and Overhead.

You are required to -

- a. prepare a statement of equivalent production.
- b. evaluate the cost of abnormal loss, finished goods and closing stock.
- c. complete Process - I Account.

Q.7. The following data are available in respect of Process I for June, 2006.

Opening work-in-progress Degree of completion	900 units at Rs. 4,500 Material - 100% Labour - 60% Overhead - 60%
Input of Materials	9,100 units at Rs. 27,300
Direct Wages	Rs. 8,200
Production Overhead	Rs. 16,400
Units Scrapped Degree of Completion	1,200 units Material - 100% Labour - 70% Overhead - 70%
Closing work-in-progress Degree of completion	1,000 units Material - 100% Labour - 80% Overhead - 80%
Units transferred to next process	7,800 units

Normal process loss is 10% of total input (opening stock plus units put in). Scrap value is Rs.3 per unit.

You are required to -

- Compute equivalent production.
- Cost per equivalent unit for each element and cost of abnormal loss, closing work-in-progress and units transferred to next process.
- Prepare Process Accounts on FIFO basis & Abnormal loss A/c.

Q.8. A company within the food industry mixes powdered ingredients in two different processes to produce on product. The output of Process-1 becomes the input of Process-2 and the output of Process-2 is transferred to the packing department.

From the information given below, you are required to open account for Process-1, Process-2 and Abnormal Loss to record the transactions for the week ended 14th June, 2006.

Input:	Process-1
Material A	6000 Kilograms at 50 paise per kg.
Material B	4,000 Kilograms at Re. 1 per Kg.
Mixing Labour	430 hours at Rs. 2 per hour
Normal Loss	5% of weight input, disposed off at 16 paise per Kg.
Output	9,200 Kgs.

Input:	Process-2
Material C	6,600 Kilograms at Rs. 1.25 per kg.
Material D	4,200 Kilograms at Rs.0.75 per kg.
Flavoring Essence	Rs. 300
Mixing Labour	370 hours at Rs. 2 per hour
Normal Loss	5% of weight input, with no disposal value
Output	18,000 Kgs.

No work-in-progress at the beginning of the week but 1,000 Kilograms in Process -2 at the end of the week and estimated to be only 50% complete so far as labour and overhead were concerned. Overhead of Rs. 3,200 incurred by the two process to be absorbed on the basis of mixing labour hours.

Q.9. The following data pertains to Process-I for March 2006 of Beta Limited -

Opening Work-in-progress	1,500 units at Rs. 15,000
Degree of completion -	Material - 100% Labour and Overhead 33 1/3%
Input of Materials	18,500 units at Rs. 52,000
Direct Labour	Rs. 14,000
Overheads	Rs. 28,000
Closing Work-in-progress	5,000 units
Degree of completion	Material - 90% Labour and Overhead 30%
Normal Process Loss	10% of total input (opening work in progress + units put in)
Scrap value	Rs. 2 per unit
Units transferred to next process	15,000 units

You are required to -

- Compute equivalent units of production.
- Compute cost per equivalent unit for each cost element i.e. materials, labour and overhead
- Compute the cost of finished output and closing work-in-progress.
- Prepare the Process and other Accounts using FIFO method.

Q.10. From the following details, prepare statement of equivalent production, statement of cost and prepare process account. Solve by using FIFO, LIFO and Average Cost Method.

Opening work-in-progress	2,000 units
Materials (100% complete)	Rs. 7500
Labour (60% complete)	Rs. 3000
Overhead (60% complete)	Rs. 1500
Units introduced into the process	8,000 units

There are 2,000 units in process and the stage of completion is estimated to be -

Material	100%
Labour	50%
Overhead	50%

8,000 units are transferred to next process. The cost incurred is -

Material	Rs. 1,00,000
Labour	Rs. 78,000
Overhead	Rs. 39,000

Q.11. A company manufactures a product which involves two consecutive process viz. Processing and Polishing. For the month of September, 2006 the following information is available.

Particulars	Pressing	Polishing
Opening Stock	---	---
Input of units in process	1,200	1,000
Units completed	1,000	500
Units under process	200	500
Material costs (Rs.)	96,000	8,000
Conversion costs (rs.)	3,36,000	54,000

For incomplete units in process, charge material cost at 100%. Conversion cost at 60% in Pressing process and 50% in Polishing process. Prepare a statement of cost and calculate the selling price per unit which results in 25% profit on cost price.

Q.12. From the following data, prepare Process-I Account on LIFO & Average Cost basis.

i. Opening WIP - 10,000 units, 50% complete with regard to labour and overhead -

Material	Rs. 3,000
Labour	Rs. 4,000
Overhead	Rs. 4,000

ii. Units brought into process - 20,000 units. Cost incurred is -

Material	Rs. 15,000
Labour	Rs. 26,250
Overhead	Rs. 35,000

iii. Transferred to next process - 15,000 completed units

iv. Closing WIP - 15,000 units, 50% complete as to labour and overhead.

PROBLEMS ON INTER PROCESS PROFITS

Q.13. A certain product passes through three processes before it is transferred to finished stock. The following information is obtained for the month of August, 2006 -

Items	Process I (Rs.)	Process II (Rs.)	Process III (Rs.)	Finished Stock Rs.
Opening Stock	10,000	12,000	8,000	30,000
Direct Material	20,000	21,000	30,000	---
Direct Wages	15,000	15,000	16,000	---
Production Overhead	14,000	6,000	40,000	---
Closing Stock	5,000	6,000	4,000	15,000
Profit % on transfer price	25%	20%	20%	---
Inter-process profit on opening stock	---	2,000	2,000	11,000
Selling Overheads	---	---	---	3,500

Stock in process are valued at prime cost and finished stock has been valued at the price at which it was received from Process-III. Sales during the period were Rs. 3,50,000.

Prepare and compute -

- Process Cost Accounts showing profit element at each stage;
- Actual realized profit; and
- Stock valuation for Balance Sheet purposes.

Problem 1:

JK Ltd. Produces a product 'AZE', which passes through two processes, viz, process IU and process II. The output of each process is treated as the raw material of the next process to which it is transferred and output of the second process is transferred to finished stock. The following data related to December, 2009:

Particulars	Process I	Process II
25,000 units introduced at a cost of	Rs. 2,00,000	-
Material consumed	Rs. 1,92,000	Rs. 96,020
Direct labour	Rs. 2,24,000	Rs. 1,28,000
Manufacturing expenses	Rs. 1,40,000	Rs. 60,000
Normal wastage of input	10%	10%
Scrap value of normal wastage (per unit)	Rs. 9.9.	Rs. 8.60
Output in units	22,000	20,000

Required:

- (i) Prepare Process I and Process II account.
- (ii) Prepare Abnormal effective/wastage account as the case may be in each process.

Problem 2:

A company manufactures its sole product by passing the raw material through three distinct process in its factory. During the months of April, 2004 the company purchased 96,000 kg of raw material at Rs. 5 per kg and introduced the same in process I. Further particulars of manufacture for the month are given below:

	Process I	Process II	Process III
Material consumed	Rs. 33472	Rs. 27,483	Rs. 47,166
Direct labour	80,000	72,000	56,000
Overheads	1,20,000	1,08,000	84,000
Normal waste in process as % of input	3%	1%	1%
Sale value of waste (Rs. / kg)	2	3	5
Actual output during the month (kg)	93,000	92,200	91,500

Prepare the three process accounts and accounts relating to abnormal loss/gain, if any.

Problem 3:

A product passes through two processes A and B. Prepare the process accounts from the following:

		Process A	Process B
10,000 units introduced at cost	(Rs.)	20,000	-
Materials consumed	(Rs.)	24,000	12,000
Direct labour	(Rs.)	28,000	16,000
Manufacturing expenses	(Rs.)	8,000	8,566
Normal wastage on input		5%	10%
Scrap value of normal wastage	(Rs. Per 100	40	50
Output	units (units)	9,400	8,500

Also prepare the abnormal wastage/effective account, as the case may be, with each process account.

Problem 4:

A product passes through two processes. The output of Process I becomes the input of Process II and the output of Process II is transferred to warehouse. The quantity of raw materials introduced into Process I is 20,000 kgs. At Rs. 10 per kg. The cost and output data for the month under review are as under:

Particulars	Process I	Process II
Direct materials	Rs.60,000	Rs. 40,000
Direct labour	Rs. 40,000	Rs. 30,000
Production overheads	Rs. 39,000	Rs. 40,250
Normal loss	8%	5%
Output	18,000	17,400
Loss realization of Rs./unit	2.00	3.00

The company's policy is to fix the selling price of the end product in such a way as to yield a profit of 20% on selling price.

Required: (i) Prepare the Process Accounts, (ii) Determine the selling price per unit of the end product.

Problem 5:

Following are the details of process 1 for the month of April.

- Opening WIP: Nil
- Units introduced in the process: 84,000 units at a cost of Rs. 15,70,800.
- Normal loss: 5,000 units (scrap value Rs. 4,800)
- Actual output: 75,000 fully completed units.
- Closing WIP: 3,000 units (80% complete as regards materials and 70% as regards labour and overheads).
- Loss units were 90% complete as regards materials and 80% complete as regards labour and overheads (scrap value Re. 0.96 per unit).
- Labour and overheads for the period amounted to Rs. 7,79,000

Problem 6:

Following are the details of process 1 for the month of April, 2010.

- Opening WIP: Nil
- Units introduced in the process: 84,000 units at a cost of Rs. 11,80,800.
- Normal loss: 5,000 units (scrap value Rs. 4,800)
- Actual output: 80,000 fully completed units.
- Closing WIP: 3,000 units (80% complete as regards materials and 70% as regards labour and overheads).
- Loss units were 90% complete as regards materials and 80% complete as regards labour and overheads (scrap value Re. 0.96 per unit).
- Labour and overheads for the period amounted to Rs. 6,24,800

Problem 7:

Following data is given by Essem Ltd. In respect of process II

Opening WIP 1,000 units:	
Materials (80% completed)	Rs. 10,000
Labour (50% completed)	Rs. 5,000
Overheads (50% completed)	Rs. 3,000

During the current period 10,000 units were received from process I costing Rs. 1,91,000.

Cost incurred in current period:	
Materials	Rs. 90,000
Labour	Rs. 45,000
Overheads	Rs. 45,000

Closing WIP 2,000 units

65% completed in respect of materials

50% completed in respect of labour and overheads

Normal loss is 500 units and scrapped units can be sold @ Rs. 2 per unit. Scrapped units are fully processed. 8,000 units were transferred to process III.

Prepare process II account.

Problem 8:

Data relating to work done in Process 'A' of a company during the month of April, 2003 is given below:

Opening Work-in-Progress (1000 units)	(Rs.)
Materials	40,000
Labour	7,500
Overheads	22,500
	(Rs.)
Materials introduced in	
Process 'A' (19,000 units)	7,40,000
Direct labour	1,79,500
Overheads	5,38,500
Units scrapped	: 1500 units
Degree of completion	: Materials = 100%, Labour and overheads = 80%
Closing Work-in-Progress	: 1000 units

Degree of completion Materials = 100%, Labour and overheads = 80%

Units finished and transferred to Process 'B' = 17,500 units

Normal loss: 5% of total input including opening W.I.P. Scrapped units fetch Rs. 20 per piece.

Required: (a) Statement of Equivalent Production. (b) Statement of Cost. (c) Statement of distribution of Cost. (d) Process 'A' Account and Other Accounts.

Problem 9:

The following information is given in respect of Process No. 3 for the month of January, 2003.

Opening Stock - 2,000 units made-up of:	(Rs.)
Direct Materials-I	12,350
Direct Materials-II	13,200
Direct Labour	17,500
Overheads	11,000

Transferred from Process No. 2: 20,000 units @ Rs. 600 per unit.

Transferred to Process No. 4: 17,000 units

Expenditure incurred in Process No. 3:	(Rs.)
Direct Materials	30,000
Direct Labour	60,000
Overheads	60,000

Scrap: 1,000 units - Direct Materials 100%, Direct Labour 60%, Overheads 40% Normal Loss 10% of production.

Scrapped units realized Rs. 4 per unit.

Closing Stock: 4,000 units - Degree of completion: Direct Materials 80%, Direct Labour 60% and overheads 40%.

Prepare Process No. 3 Account using average price method, alongwith necessary supporting statements.

Problem 10:

A Ltd. Produces product 'AXE' which passes through two processes before it is completed and transferred to finished stock. The following data relate to October 1981.

Particulars	Process		Finished stock
	I Rs.	II Rs.	Rs.
Opening stock	7,500	9,000	22,500
Direct materials	15,000	15,750	
Direct wages	11,200	11,250	
Factory overheads	10,500	4,500	
Closing stock	3,700	4,500	11,250
Inter-process profit			
Included in opening stock		1,500	8,250

Output of process I is transferred to process II at 25% profit on the transfer price.

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

Required:

Process cost accounts and finished goods account showing the profit element at each stage.

Problem 11:

Inter Process Profits - With Mark-up on Opening Stock - Stock Valuation at Prime Cost

KMR Ltd produces product AY, which passes through three processes 'XM', 'YM' and 'ZM'. The Output of Process 'XM' and 'YM' is transferred to next process at Cost + 20% each on Transfer Price and the Output of Process 'ZM' is transferred to Finished Stock at a Profit of 25% on Transfer Price. Following information are available in respect of the year ending 31st March: (in Rs.)

	Process- XM	Process- YM	Process- ZM	Finished Stock
Opening Stock	30,000	54,000	80,000	90,000
Material	1,60,000	1,30,000	1,00,000	-
Wages	2,50,000	2,16,000	1,84,000	-
Manufacturing Overheads	1,92,000	1,44,000	1,33,000	-
Closing Stock	40,000	64,000	78,000	1,00,000
Inter Process Profit included in Opening Stock	Nil	8,000	20,000	40,000

Stock in Process is valued at Prime Cost. The Finished Stock is valued at the Price at which it is received from Process 'ZM'. Sales of the Finished Stock during the Period was Rs. 28,00,000. You are required to prepare:

1. All Process Accounts, and
2. Finished Stock Account showing profit element at each stage.

Problem 12:

Equivalent Production - FIFO - First Process - Abnormal Gain

The following data pertains to Process I of Beta Limited -

Opening Work-in-Progress	1,500 units at Rs. 15,000, Degree of Completion is Materials 10%, Labour & OH 33-1/3 rd %
Input of Materials	18,500 units at Rs. 52,000
Other Costs	Direct Labour Rs. 14,000 and Overheads Rs. 28,000
Closing Work-in-Progress	5,000 units, Degree of Completion is Materials 90%, Labour & OH 30%
Normal Process Loss	10% of total input (Opening WIP plus units put in). (Scrap Value Rs. 2 p.u.)
Units transferred to next process	15,000 units.

Assume - (a) The Company uses FIFO Method, (b) Cost of Opening WIP is fully transferred to the next process.

Prepare Process and other accounts from the above information.

Problem 13:

Equivalent Production - FIFO - Subsequent Process - Abnormal Loss

XP Ltd furnishes you the following information relating to Process II. Prepare:

- Statement of Equivalent Production.
- Statement showing the Cost of Finished Goods, Abnormal Loss and Closing Work-in-Progress.
- Process II Account and Abnormal Loss Account.

• Opening Work-in-Progress-NIL • Units introduced 42,000 units at Rs. 12 • Expenses debited to the Process: Direct Material Rs. 61,530, Labour Rs. 88,820, Overheads Rs. 1,76,400 • Finished Output = 39,500 units • Normal Loss in the process = 2% of input.	• Closing Work-in-Progress = 1,200 units, Degree of Completion is Materials 100%, Labour 50%, Overhead 40%. • Degree of Completion of Abnormal Loss is Materials 100%, Labour 80%, Overhead 60%. • Units scrapped as Normal Loss were sold at Rs. 4.50 per unit. • All the units of Abnormal Loss were sold at Rs. 9 per unit.
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Problem 14

Equivalent Production - FIFO - Subsequent Process - Abnormal Gain

From the following information for the month ending October, prepare Process Cost Accounts for Process III. Use First-in-First-out (FIFO) Method to value Equivalent Production.

Direct Materials added in Process III (Opening WIP)	2,000 units at Rs. 25,750 (Materials 80%, Labour and OH 60%)
Transfer from Process II	53,000 units at Rs. 4,11,500
Transfer to Process IV	48,000 units
Closing Stock of Process III	5,000 units (Materials 70%, Labour and OH 50%)
Units scrapped	2,000 units (Materials 100%, Labour and OH 70%)
Direct Material added in Process III	Rs. 1,97,600
Other Costs:	Direct Wages Rs. 97,600, and Production OH Rs. 48,000

Normal Loss in the process was 5% of production and scrap was sold at Rs. 3 per unit.

Problem 15

Equivalent Production - WAC Method - First Process - Basics

From the following details, prepare the statement of Equivalent Production and Statement of Cost, and find the value of: (a) Output transferred, and (b) Closing Work in Progress.

1. Opening Work in Progress: 2,000 units [Cost: Materials Rs. 7,500 + Labour Rs. 3,000 + OH Rs. 1,500]
2. Units introduced into the process - 8,000 units
3. There are 2,000 units in progress and the stage of their completion is estimated to be - Materials - 100%, Labour - 50%, Overheads - 50%
4. 8,000 units are transferred to the next process.
5. Processes Costs for the period are: Materials - Rs. 1,00,000, Labour - Rs. 78,000, Overheads - Rs. 39,000.

Problem 16

Equivalent Production - WAC Method - Subsequent Process - Abnormal Loss

The following data relate to Process Q -

1. Opening WIP - 4,000 units. The degree of completion and costs are as under -

Materials	Process P	Rs. 17,100
Materials	Process Q	Rs. 6,900
Labour		Rs. 14,400
Overheads		Rs. 7,200
2. Received during April from Process P: 40,000 units at a cost of Rs. 1,71,000
3. Expenses incurred in Process Q during the month -

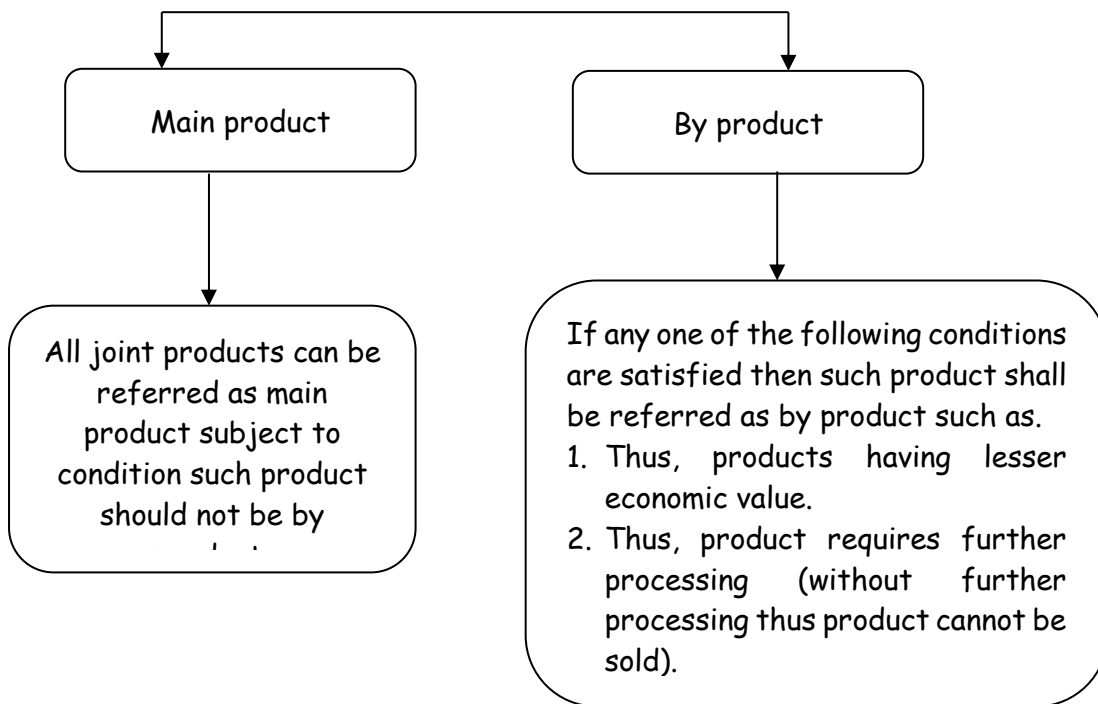
Materials	Rs. 79,000
Labour	Rs. 1,38,230
Overheads	Rs. 69,120
4. Closing WIP - 3,000 units, whose degree of completion was Materials - 100%, Labour & OH - 50%
5. Units scrapped - 4,000 units, whose degree of completion was Materials - 100%, Labour & OH - 80%
6. Normal Loss - 5% of current input.
7. Spoiled goods realised Rs. 1.50 each on sale.
8. Completed units are transferred to Warehouse - 37,000 units.

Prepare -

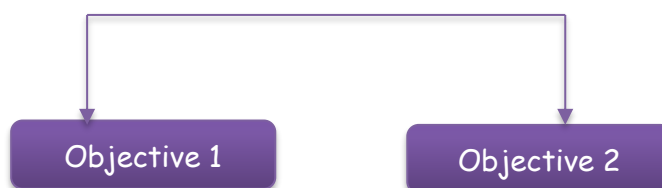
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| (1) Equivalent Units Statement, Total Costs. | (2) Statement of Cost per Equivalent Unit and |
| (3) Process Q Account, and | (4) Any other account that may be necessary. |

JOINT AND BY PRODUCT

- ✚ If any organisation using single type of raw material and processing and obtaining more than one of product then in that situation for those industry the concept of joint and by product shall apply.
- ✚ Generally joint product can be classified into 2 types



- ✚ The main objective of the chapter will be



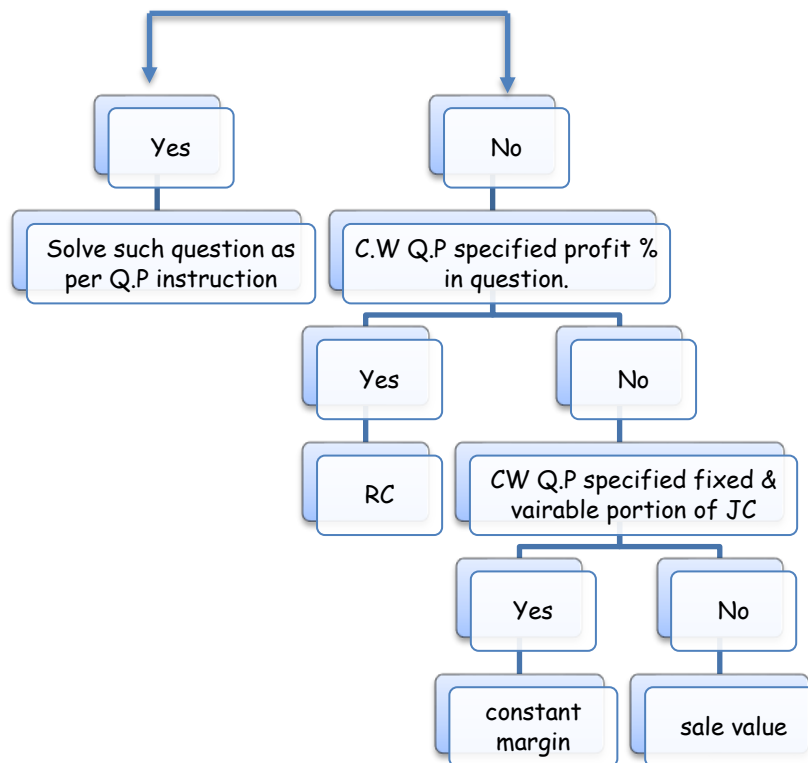
Objective 1:

Appropriation the joint cost to all products on most suitable method.

There are 5 methods to apparition joint cost all the products such as.,

1. Physical units' method.
2. Sale value method. (or) market value method.
3. Reverse cost method.
4. Contribution margin method
5. NRV method.

❖ Check whether Q.P specified any method name?



Physical units' method:

- ✓ Under this method joint cost will be apportioned on the basis of physical units (or) quantity irrespective of sale value(or) selling price per unit.
- ✓ Generally, this method will not be preferable.

Sale value method

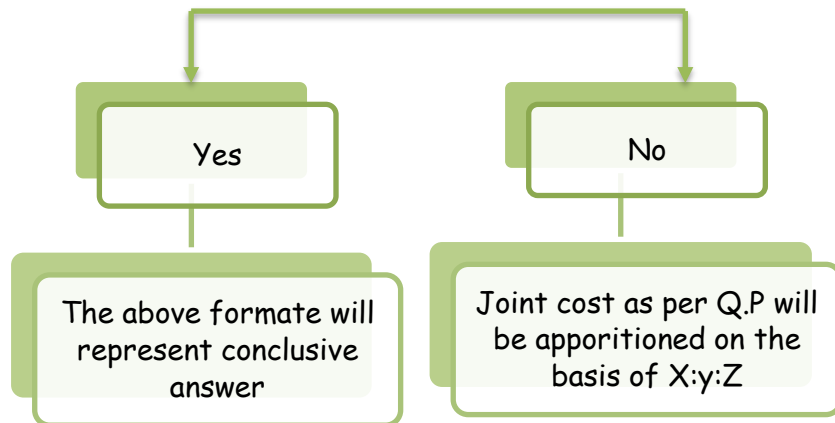
- ✓ Under this method joint cost will be apportioned on the basis of sale value.
- ✓ $\text{Sale value} = \text{physical units} \times \text{SP per unit}$.

Reverse cost method:

- ✓ Generally, this method is preferable when Q.P specifies profits.
- ✓ According to this method entire calculations will be based on reverse order as shown below.

Particulars	P1	P2	P3
Sales	Xx	Xx	Xx
(-) profit	(xx)	(xx)	(xx)
SE	(Xx)	(xx)	(xx)
FPC(further process cost)	(xx)	(xx)	(xx)
J.C (Estd)	xx(a)	Xx(b)	Xx(c)

Check whether joint cost as per Q.P = $A+B+C$?



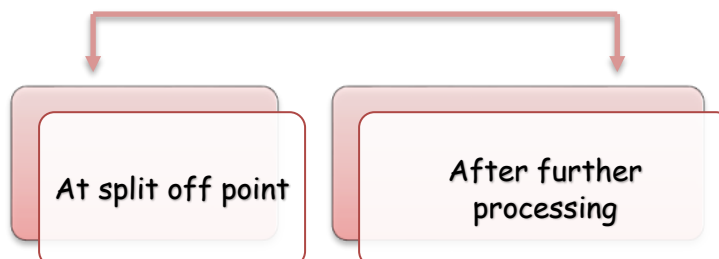
Contribution margin method:

- Generally, this method will be applicable when Q.P specified that fixed portion of JC and variable portion of JC
- According to this on the basis of physical units' ratio.
- Fixed portion of JC will be apporportioned on the basis of contribution ratio.

Contribution = sales - VC

OBJECTIVE 2

For the purpose of decision making we are required to compute profit.



Gross approach (before further process)

Particulars	P1	P2	P3
1. Sales	Xx	Xx	Xx
2. Less-apportionment of JC profit	(xx)	(xx)	(xx)
Profit	xx	xx	xx

Computation of profit (after further process)

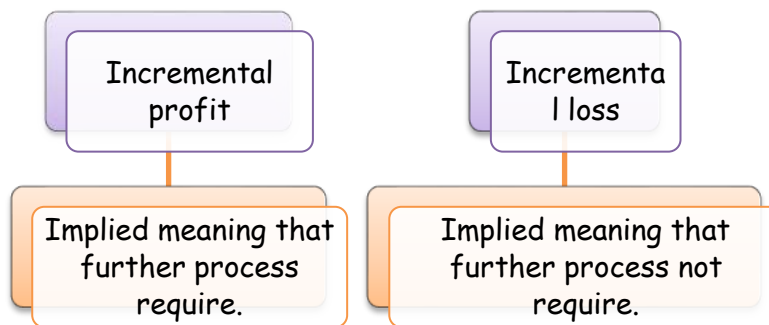
Particulars	P1	P2	P3
1. Sales	Xx	Xx	Xx
2. Less-apportionment of JC	(xx)	(xx)	(xx)
Further cost	(xx)	(xx)	(xx)
Profit	xx	xx	xx

After computation of the above profits we have compare profits before separation and profits after separation and take appropriate decision making.

Incremental approach:

1. While solving exam problem we should make assumption that all products are further process.

Particulars	P1	P2	P3
1. Incremental sales	Xx	Xx	Xx
(-) incremental cost (further process cost)	(xx)	(xx)	(xx)
Incremental profit/loss	xxx	xxx	xxx

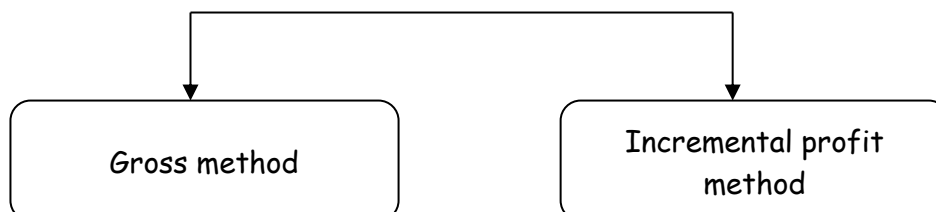


- Generally, while solving exam problem student having 2 options either to solve under gross (or) incremental approach.
- However, in the following cases incremental approach is mandatory such as
 - a. Q.P specified that question should be solved as per incremental approach.
 - b. Q.P specified that for the purpose of decision-making joint cost is relevant.

Objective 2:

Decision making regarding whether further process is required or not.

1. For the purpose of decision-making further process is required or not required can be based on 2 approaches such as



Selection criteria for apportionment of JC

JOINT AND BY- PRODUCTS

1. The joint cost of making 50 units of product A, 100 units of product B and 150 units of product C is Rs.900. The selling price of product A, B and C are Rs.2, Rs.3 and Rs.4 per unit respectively. The product do not require any further processing after split-off point. You are required to apportion the joint cost on states value basis.
2. X Co. Ltd. manufactures two joint products A and B and sells them at Rs. 8 and Rs.10 per unit respectively. During a particular period 300 units of A and 200 units of B were produced and sold. The joint cost incurred was Rs.3,520 and no record has been kept of further processing costs. Apportion joint cost on market value after further processing.
3. From the following information apportion marginal cost and fixed cost on suitable basis and obtain profit / loss under each of the joint products- Sales A - 100 Kg. @ Rs.60 per kg. and B - 120 kg. @ Rs.30 per kg Total cost: Marginal cost Rs.4,400 and Fixed Cost Rs. 3,900.
4. A factory produces three products A, B and C which originate from a joint process. Costs are-

Particulars	Joint Cost Rs.	Subsequent Processing Cost		
		A (Rs.)	B (Rs.)	C (Rs.)
Material	10,000	700	650	290
Labour	1,800	210	200	190
Overheads	800	90	50	120
Total Cost	12,600	1,000	900	600
Total sales values		10,000	7,000	6,000
Estimated profit on sales values		20%	30%	40%

Prepare a statement showing apportionment on joint costs of manufacture. Find the total cost for each product.

5. X Ltd., manufactures product A which yields two by-products B and C. In a period the amount spend upto the point of separation was Rs.20,600. Subsequent expenses were:-

Particulars	A Rs.	B Rs.	C Rs.
Materials	300	200	150
Direct Wages	400	300	200
Overheads	300	270	280
Total Cost	1,000	770	630

Gross sales value of products A, B and C was Rs. 15,000, Rs. 10,000 and Rs. 5,000 respectively It. was estimated that the net profit as a percentage of safes in case of B and C would be 25% and 20% respectively. Ascertain the profit earned on A.

6. In manufacturing the main product X, company processes the incidental waste into two by-products A and B. From the following data relating to the products, you are required to prepare a Comparative Profit and Loss Statement showing the individual cost and other details The total cost up to separation period was Rs.3,10,400. Reverse cost method to be followed for separation of Joint Cost.

Particulars	Main Product Rs.	By-Product A Rs.	By-Product B Rs.
Sales	8,00,000	64,000	96,000
Costs after separation	80,000	12,800	14,400
Estimated Net Profit % to sales value	-	20%	30%
Estimated Selling Exp. As % of sales value	20%	10%	15%

7. From the following particulars make out a weekly cost sheet showing profit on main product of Mini Petroleum Company. Also show the percentage of each product to the weight of Crude Oil used.

Crude Oil used 5,00,000 Liters @ Rs.0.50 Petrol produced (Main product) 1,50,000Liters By Products:

1. Lubricating Oil Produced	50,000 Liters @ Rs.2.00
2. Fuel Oil Produced	2,50,000 Liters @ Rs.1.00
3. Kerosene Oil Produced	30,000 Liters @ Rs.0.80

Joint Cost incurred	Rs.
Raw Materials consumed	48,000
Wages paid	1,20,000
Repairs and Renewals	86,000
Salaries and General Charges	50,000

8. In an oil mill four products emerge from a refining process. The total cost of input during the quarter ending March, 2006 is Rs.1,48,000. The output, sales and additional processing costs are as under: -

Product	Output in Liters	Additional processing costs after split - off point Rs.	Sales Value Rs.
AOXE	8,000	43,000	1,72,500
BOXE	4,000	9,000	15,000
COXE	2,000	-	6,000
DOXE	4,000	1,500	45,000

In case these products were disposed off at the split - off point that is before further processing the selling price would have been-

AOXE = Rs. 15.00 BOXE = Rs. 6.00

COXE = Rs. 3.00 DOXE = Rs. 7.50

Prepare a statement of profitability based on -

- If the products are sold after further processing is carried out in the mills.
- If they are sold at the split -off point.
- Comment upon the results.

9. Three joint products are produced by passing chemical through two consecutive processes. Output from process 1 is transferred to process 2 from which three joint products are produced and immediately sold. The data regarding the processes for April 2006 is given below-

Particulars	Process-1	Process-2
Direct materials 2500 kilos @ Rs.4 per kilo	Rs. 10,000	
Direct labour	R.6,250	Rs.6,900
Overheads	Rs.4,500	Rs.6,900
Normal Loss	10% of inrst	Nil
Scrap value of loss	Rs.2 per kilo	-
Output	2,300 kilo	Joint Products
		A-900 Kilos
		B-800 Kilos
		C-600 Kilos

There were no opening or closing stocks in either process and the selling price of the output from process 2 were : Joint Product A Rs. 24 per kilo

Joint Product B Rs. 18 per kilo

Joint Product C Rs. 12 per kilo

Required:

- Prepare an account for process 1 together with any Loss necessary to record the moth's activities.
 - Calculate the profit attributable to each of the joint products method:-
 - According to weight of output.
 - By the market value of production.
10. Inorganic Chemicals purchases salt and processes it into more refined products such as Caustic Soda, Chlorine and PVC. In the month of July, Inorganic Chemicals purchased Salt for Rs.40,000. Conversion of Rs. 60,000 were incurred up to the silt off point, at which time two seatable products were produced. Chlorine can be further processed into PVC. The July production and sales information is as follows.

Product	Production (tons)	Sales quantity (tons)	Selling price (per ton)
Caustic Soda	1,200	1,2200	Rs.50
Chlorine	800	-	-
PVC	500	500	Rs.200

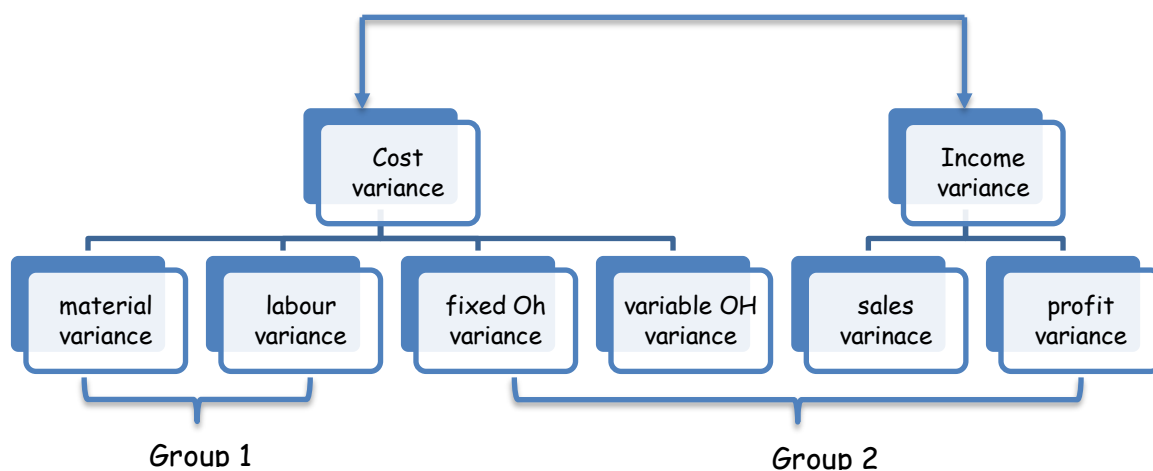
All 800 tons of Chlorine was further processed, at an incremental cost of Rs.20,000 to yield 500 tons of PVC. There was no beginning or ending inventories of Caustic Soda, Chlorine of PC in July. There is active market for Chlorine. Inorganic Chemicals could have sold all its July production of Chlorine at Rs.75 per ton.

Required:

- 1) To calculate how joint cost of Rs. 1,00,000 would be apportioned between Caustic Soda and Chlorine under each of following methods:
 - a) Sales value at split off,
 - b) Physical measure, and
 - c) Estimated net realizable value.
- 2) Lifetime Swimming Pool products offers to purchase 800 tons of Chlorine in August at Rs.75 per ton. This sale of Chlorine would mean that no PVC would be produced in August. How the acceptance of this offer for the month of August would affect operating income?

STANDARD COSTING

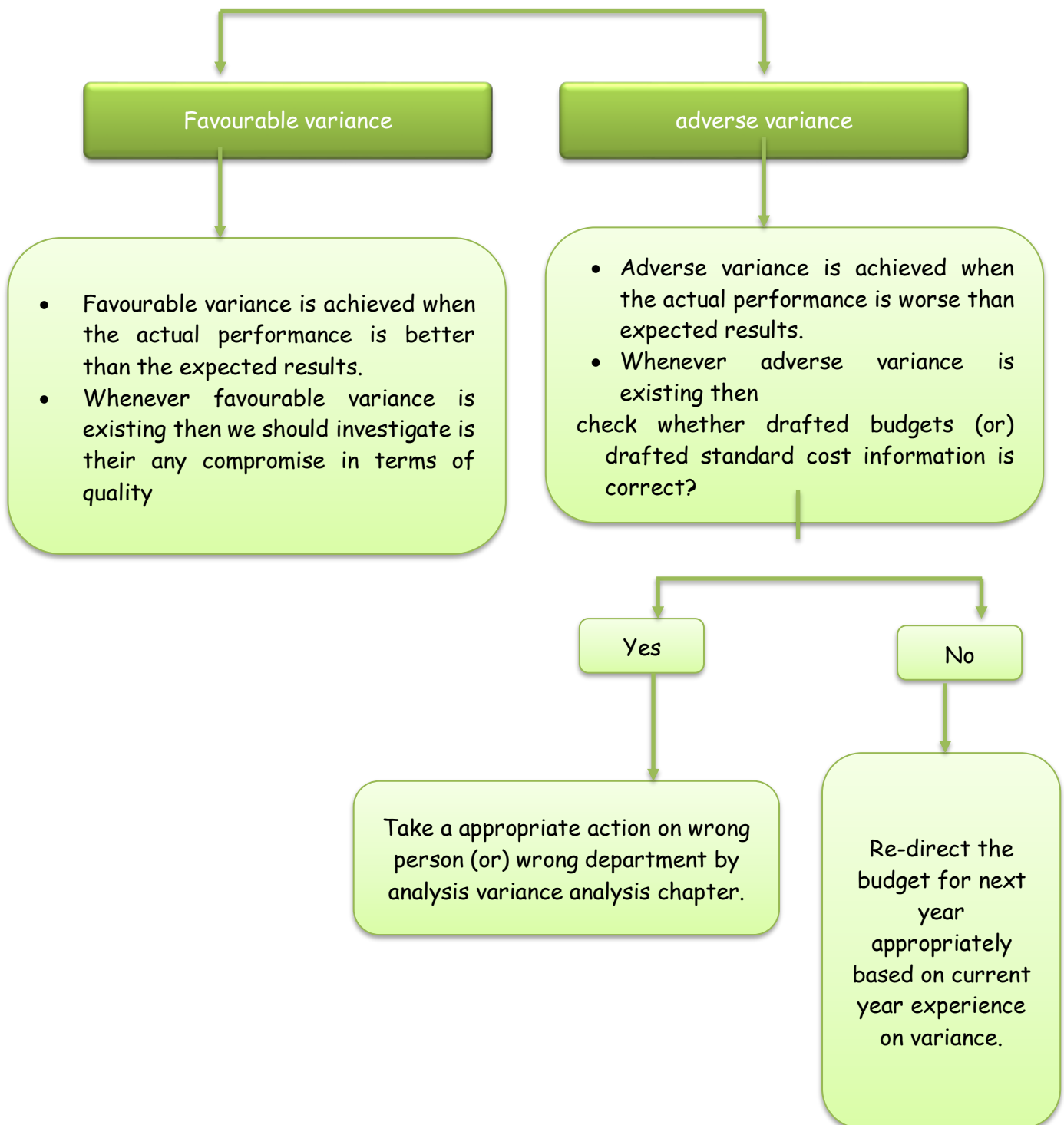
- Every organisation having intention cost control (or) cost reduction, in that situation organisation should use techniques of costing.
- Techniques of costing means standard costing, marginal costing, uniform costing, relevant costing, Kisan costing, though put costing historical costing.
- Standard costing is also known as variance analysis.
- Generally, variance means the difference between standard and actual.
- Variance can be classified into two types, such as



- The main advantages of standard costing are
 - Carefully planned standards based on budget.
 - Standard cost provides a yardstick against actual cost can be measured.
 - Target of efficiency is set for employees.
 - Variances can be calculated which can be planned for the future purpose.
- Generally, standard means an instruction given be management for the purpose of manufacturing of finished goods.
- Generally, standard can be classified into two types such as



Generally, variance can be classified into two types, such as



❖ Material cost variance:

Generally, material cost variance is based on how many types of raw material used during the manufacturing of a finished goods.

If organisation using single type raw material.

1	2	3
$SQ \times SP$	$AQ \times SP$	$AQ \times AP$
xx	xx	xx

1 - 2 → material usage variance (MUV)

2-3 → material price variance (MPV)

1-3 → material cost variance (MCV)

Whenever organisation using more than one type of raw material, then calculation of MCV is as follows.

1	2	3	4
$SQ \times SP$	$RSQ \times SP$	$AQ \times SP$	$AQ \times AP$
xx	xx	xx	xx

1-2 → material yield variance (MYV)

2-3 → material mix variance (MMV)

1-3 → material usage variance (MUV)

3-4 → material price variance (MPV)

1-4 → Material cost variance (MCV)

Where, SQ = standard quantity

→ SQ means standard quantity based on actual production

SP = standard price

AP= actual price

RSQ = revised standard quantity

→ RSQ means AQ total in SQ ratio.

❖ Labour variance:

Generally, labour cost variance is based on how many types of workers worked during the manufacturing of finished goods.

If organisation has worked single type of workers.

1	2	3	4
SH x SR	AHW x SR	APH x SR	AHP x AR
xx	xx	xx	xx

1-2 → labour efficiency variance

2-3 → labour idle variance

3-4 → labour rate variance

1-4 → labour cost variance

Where,

SH = standard hour

SR = standard rate

AHW = actual hours worked

AHP = actual hours paid

AR = actual rate

→ RSH means revised standard hours.

 where, organisation using more than one type of workers, then calculation of LCV as follows.

1	2	3	4	5
SH x SR	RSH x SR	AHW x SR	AHP x AR	AHP X AR
xx	xx	xx	xx	xx

1-2 → Labour yield variance

2-3 → Labour grant variance

1-3 → Labour efficiency variance

3-4 → Labour idle variance

4-5 → Labour rate variance

1-5 → Labour cost variance

Q1. ASC LTD provides you the following information:

	Standard		Actual	
	Quantity	Unit Price	Quantity	Unit Price
Material 'A'	30 Kg.	Rs. 20	44 Kg.	Rs. 25
Material 'B'	20 Kg.	Rs. 10	66 Kg.	Rs. 5
Output	45 Kg.		90 Kg.	

Required: Calculate (a) Standard Quantity for Actual Output (b) Standard Cost of Standard Quantity for Act* Output (c) Standard Cost of Actual Quantity for Actual Output (d) Revised Quantity (e) Standard Cost J Revised Quantity (f) Standard Yield (g) Average Standard Price.

Q2. Calculate Material Cost Variance from the following information:

	Standard	Actual
Output	100 units	200 units
Quantity of Material required per unit of output kg per unit	3 kg per unit	
Price	Rs 4 per kg	Rs 3 per kg

Q.3. Calculate Material Mix Variance from the following information:

	Standard		Actual	
	Qty	Price per kg.	Qty	Price per kg.
Material 'A'	40 kg	Rs. 12	1,250 kg	Rs. 10
Material 'B'	60 kg	Rs. 9	850 kg	Rs. 12
Output	85 kg		1,700 kg	

Q4. Calculate all the Material Cost Variances from the following information provided by Tulasi an Ltd.

	Standard		Actual	
	Qty.	Unit Price	Qty.	Unit Price
Material 'A'	30 kg-	Rs 20	44 kg	Rs 25
Material 'B'	20 kg. -	Rs. 10	66 kg	Rs 5
Output	45 kg		90 kg.	

Q.5. The Standard material cost for a normal mix of one tonne of chemical X is based on

Chemical	Usage (kg.)	Price per kg.
A	240	6
B	400	12
C	640	10

During a month, 6.25 tonnes of X were produced from:

Chemical	Consumption Tonnes	Cost Rs.
A	1.6	11,200
B	2.4	30,000
C	4.5	47,250

Required: Analyse the Variances.

Q.6 S.V. Ltd., manufactures BXE by mixing three raw materials. For every batch of 100 kgs. of BXE, 125 kgs. of raw materials are used. In April 20X1, 60 batches were prepared to produce an output of 5,600 kgs. of BXE. The standard and actual particulars for April 20X1 are as under:

Raw material	Standard		Actual		Quantity of Raw Materials Purchased kg-
	Mix	Price Per kg Rs.	Mix	Price	
	%		%	Per kg Rs.	
A	50	20	60	21	5,000
B	30	10	20	8	2,000
C	20	5	20	6	1,200

Required: Calculate all Material variances.

Q.7. AZK Ltd. manufactures Ordinary Portland Cement (OPC). The standard data for the raw materials that are used to manufacture OPC are as follows:

Raw Material	Composition (%)	Rate per Metric Ton (Rs.)
Limestone	65	565
Silica	20	4,800
Alumina	5	32,100
Iron ore	5	1,800
Others	5	2,400

During the month of February 2023, A Ltd. produced 500 MT OPC. Actual data related with the consumption and costs are as follows:

Raw Material	Quantity (MT)	Total Cost (Rs.)
Limestone	340	1,90,400
Silica	105	5,09,250
Alumina	25	8,12,500
Iron ore	30	53,400
Others	23	51,750

Compute the following variances related with the production of OPC for the month of February 2023:

- i. Material Price Variance
- ii. Material Mix Variance
- iii. Material Yield Variance
- iv. Material Cost Variance
- v. Material Usage Variance

Q.8 XYZ Private Limited produces an article and uses a mixture of material X and Y. The standard quantity and price of materials for one unit of output is as under:

Material	Quantity	Price (Rs.)
X	2000 kg	1 per kg.
Y	800 kg	1 per kg.

During a period, 1500 units were produced. The actual consumption of material and prices are given below:

Material	Quantity	Price (Rs.)
X	31,00,000 kg	1 per kg.
Y	12,50,000 kg	1 per kg.

Calculate:

- (i) Standard cost for actual output
- (ii) Material cost variance
- (iii) Material Price variance
- (iv) Material usage variance

Q9. Tulsian Ltd. (1) provides you the following information:

	Standard		Actual	
	Hours	Rate/Hour	Hours	Rate/Hour
Labour 'A'	30	Rs. 20	44	Rs. 25
Labour 'B'	20	Rs. 10	66	Rs. 5
Output	45 kg.		90 Kg.	

Required: Calculate (a) Standard Hours for Actual Output (b) Standard Cost of Standard Hours for Actual Output (c) Standard Cost of Actual Hours for Actual Output (d) Revised Hours (e) Standard Cost of Revised Hours (f) Standard Yield (g) Average Standard Rate

Q10. Calculate Labour Cost Variance from the following information:

	Standard	Actual
Output	100 units	200 units
Labour hours required per unit of output	2 hours per unit	3 hours per unit
Rate	Rs 4 per hour	Rs.3 per hour

Q11. Calculate Labour Cost Variance from the following information:

Standard: Labour hours for 100 units	300 hours
Cost of Labour	Rs.1500
Actual: Labour hours for 800 units	2500 hours
Cost of Labour	Rs.15,000

Q12. Calculate Labour Mix Variance from the following information:

	Standard		Actual	
	Hours	Rate per hour	Hours	Rate per hour
Labour 'A'	40	Rs 12	1250	Rs.10
Labour 'B'	60	Rs 9	850 hours	Rs. 12
	Standard Output 85 kg		Actual Output 1700 kg	

Q.13. Calculate all the Labour Cost Variances from the following information provided by TZK Ltd.

	Standard		Actual	
	Hours	Rate Per	Hours	Rate Per
		Hour (Rs.)		Hour (Rs.)
Skilled	90	20	44	25
Semi-skilled	60	10	66	5
	Output 135 kg		Output 90 kg	

Q14 A gang of workers normally consists of 30 skilled workers, 15 semi-skilled workers and 10 unskilled workers. They are paid at standard rate per hour as under:

Skilled = RS70

Semi-skilled= RS 65

Unskilled = RS 50

In a normal working week of 40 hours, the gang is expected to produce 2,000 units of output. During the week ended 31st March, 2019, the gang consisted of 40 skilled, 10 semi-skilled and 5 unskilled workers. The actual wages paid were at the rate of Rs.75, Rs.60 and Rs.52 per hour respectively. Four hours were lost due to machine breakdown and 1,600 units were produced.

Calculate the following variances showing clearly adverse (A) or favorable (F)

- | | |
|----------------------------------|----------------------------|
| (i) Labour Cost Variance | (ii) Labour Rate Variance |
| (iii) Labour Efficiency Variance | (iv) Labour Mix Variance |
| (v) Labour Idle Time Variance | (vi) Labour Yield Variance |

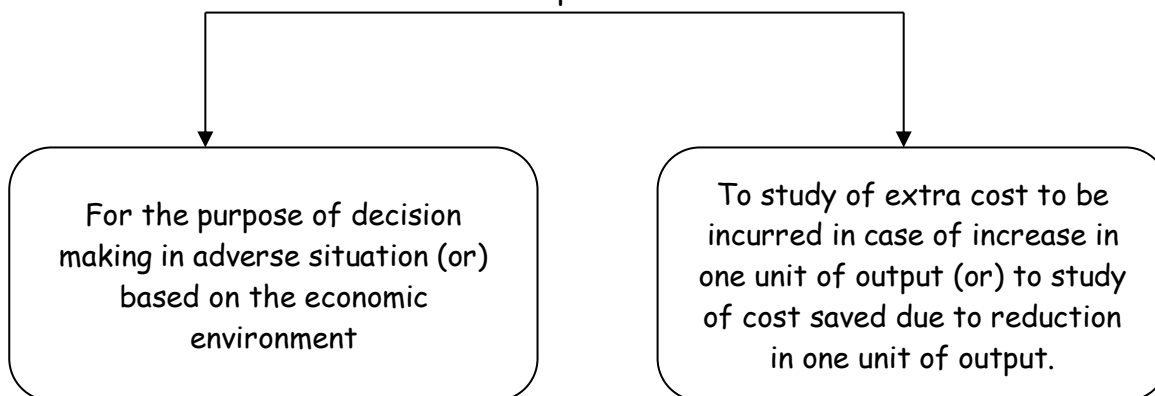
Q15 The standard labour component and the actual labour component engaged in a week for a job are as follows:

Particulars	Skilled workers	Semi-skilled workers	Unskilled workers
Standard no. of workers in the gang	32	12	6
Actual no. of workers employed	28	18	4
Standard wage rate per hour	30	20	10
Actual wage rate per hour	34	23	12

During the 40 hours working week, the gang produced 1,800 standard labour hours of work. Calculate:

- | | |
|--------------------------------|--------------------------|
| (a) Labour Cost Variance | (b) Labour Rate Variance |
| (c) Labour Efficiency Variance | (d) Labour Mix Variance |
| (e) Labour Yield Variance | |

- Marginal costing is purely studied in the view of variable cost
- Generally, marginal costing will be referred as techniques of costing and it will be helpful for the purpose of decision making.
- As per CIMA London marginal cost refers to study the change in the total cost due to change in the volume of production by one unit.
- Hence the main theme of this chapter is



- every manager (or) concerned decisions on profit.
- Hence decision manager makes basically above volume of sales, pricing, incurring of cost.
- Therefore, every manager should conduct CVP analysis
- Generally, CVP analysis will include
 - a. Contribution analysis
 - b. Margin of safety analysis
 - c. Break even point analysis
 - d. Variable cost ratio analysis
 - e. Sales to achieve desired profit
 - f. Profit to achieve desired sales
 - g. Angle of incidence.

a. Contribution analysis: -

- It is the fundamental point for CVP analysis.
- Generally, the following are the income statement under marginal costing such as,

Sales	Xxx
(-) <u>variable cost</u>	<u>(xx)</u>
Contribution	Xxx
(-) <u>fixed cost</u>	<u>(xx)</u>
<u>Profit (or) loss</u>	<u>xxx</u>

- By observing the above statement calculation of contribution as shown below.

Method: 1 sale - variable cost

Method: 2 profit / loss + fixed cost

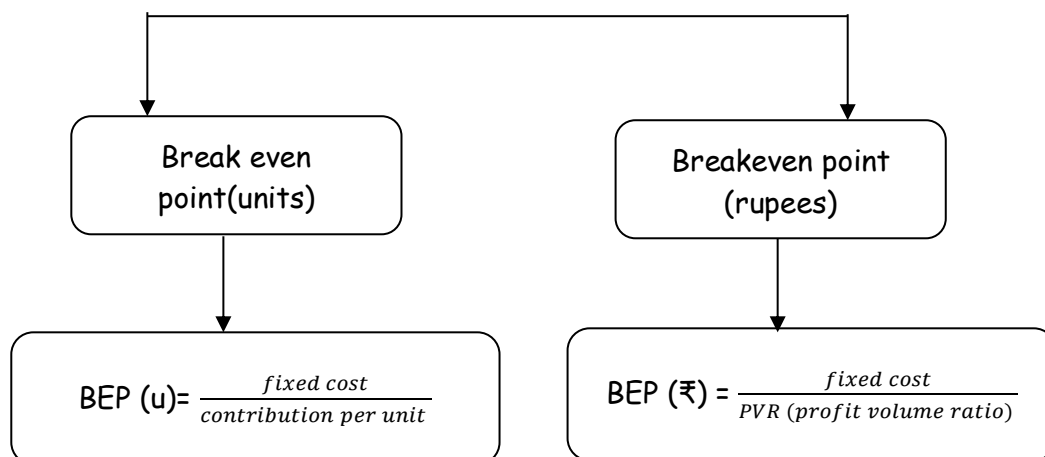
- Sometimes contribution per unit required to calculate then contribution per unit = sales per unit - variable cost per unit. Based on the above equation contribution in rupees can be calculated as shown below.
Contribution (₹) = contribution (per unit) × no. of units sold.
- Based on the contribution calculation every organisation having intention to know how much contribution earned out of sales such point will be referred PR ratio.

$$\therefore \text{PVR} = \frac{\text{contribution}}{\text{sales}} \quad (\text{or}) \quad \frac{\text{sales} - \text{variable cost}}{\text{sales}} \quad (\text{or}) \quad \text{PVR} = \frac{\text{profit (or) loss} + \text{fixed cost}}{\text{sales}}$$
- Sometimes PVR will be calculated for comparison purpose (or) sometimes question paper specified current year data and last year data then,

$$\text{PVR} = \frac{\text{change in profit}}{\text{change in sales}}$$
- Generally, PV ratio indicate how much contribution can earn by the organisation to much match with its organisation fixed cost.
- PVR will be helpful for the purpose of decision making.
- Generally, higher PV ratio indicates higher profits and it will be useful to interrupt decision making (or) comparison as intra and inter compassion [intra comparison means we are comparing current year data with last year data of our organisation) and (inter comparison means comparing current year data our organisation data with competitor current year data)]
- In practicality if PV ratio is higher as compared to competitor you should focus on quality focus on quality of the product.
- If PV ratio is higher organisation has tried to capture as much as possibility of market share.

b. Breakeven point analysis: - (BEP)

- ✓ Generally, BEP analysis will be helpful for those organisations having adverse situation in the market (or) for the purpose of start-up companies.
- ✓ At BEP there is no profit and no loss
- ✓ Generally, "BEP" can be achieved only when organisation achieving their contribution, where contribution, where contribution is equal to find cost.
- ✓ For the controlling the situation generally every organisation will use "BEP".
- ✓ Generally, "BEP" can be calculated in two ways such as



- Whenever organisation trying to achieve more than BEP, in that situation contribution = profit because after break even point fixed cost never exist.
- Whenever, organisation try to achieve more than BEP then such point will be referred as marginal of safety.

c. Margin of safety analysis:(MOS)

- Generally, every organisation will think to achieve BEP as much as lesser possible time then only organisation can achieve.

Margin of safety:

- If any organisation making larger (or) higher MOS indicate high profits earned by the organisation.
- Sometimes, organisation having intention to give products at discount price, then margin of safety will be helpful for the purpose of decision making whether to give discount (or) not.
- Calculation of margin of safety = total sales - BEP sales.
- Sometimes questions paper will be required to calculate MOS ratio then,

$$\text{MOS ratio} = \frac{\text{MOS sales}}{\text{Total sales}} \times 100$$

- MOS can be calculated in alternative way is

$$\text{MOS ratio} = 1 - \text{BEP ratio}$$

$$\text{BEP ratio} = \frac{\text{BEP sales}}{\text{Total sales}} \times 100 \quad (\text{or}) \quad 1 - \text{MOS ratio}$$

- Sometimes MOS can also be used as one way (or) route to calculate profit.

$$\therefore \text{profit} = \text{MOS (units)} \times \text{contribution per unit.}$$

[Reason being fixed cost is full recovered]

(or)

$$\text{Profit} = \text{MOS sales} \times \text{PVR}$$

(or)

Profit = MOS ratio × contribution at 1% capacity.

❖ Cash breakeven point: -

- ✓ Sometimes organisation requires more accurate decision in that situation for the purpose of decision-making non- cash elements shall not be considered such as depreciation for the purpose of calculating BEP, such point will be referred as "cash breakeven point".

$$\therefore \text{Cash BEP (₹)} = \frac{\text{Total cash fixed cost}}{\text{PVR}}$$

$$\text{Cash BEP (units)} = \frac{\text{cash fixed cost}}{\text{contribution per unit}}$$

d. Variable cost ratio analysis: (VCR)

✚ The main objective of VCR is to consider cost that may be subject to variation with the changes in the production level.

✚ In simple terms VCR is the cost accounting tool to express company's variable production cost as percentage of net sales such point will be referred as "variable cost ratio".

✚ Calculation of VCR is

$$\text{VC ratio} = \frac{\text{variable cost}}{\text{net sales}} \times 100$$

(or)

$$\text{VC ratio} = 1 - \text{contribution per margin}$$

(Or)

$$\text{VC ratio} = 1 - \text{PVR (profit volume ratio)}$$

e/f. Desired sales to achieve target profits:

- ✓ Sometimes, organisation having intention to calculate to know desired sales with the objective to re-collect current year sacrificing cost relating to last years.
- ✓ Desired sales will be helpful to fix the target to recover all the losses.

$$\therefore \text{desired sales(units)} = \frac{\text{fixed cost+desired profit}}{\text{contribution per unit}}$$

$$\therefore \text{desired sales (₹)} = \frac{\text{fixed cost+desired profit}}{\text{PVR}}$$

❖ Shutdown cost:

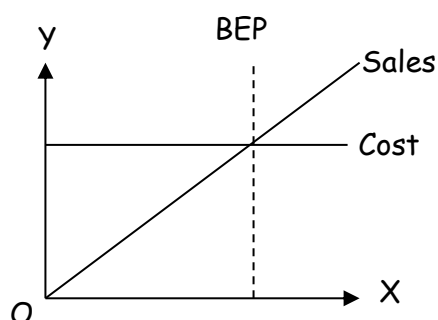
- The concept of shutdown cost will be helpful for determination of whether to continue the business (or) shutdown the business.
- Shutdown point is a point at which loss if you continue is equals to loss(or) temporary shutdown.
- Generally, the concept of shutdown point will be helpful
 - a. Newly start-up organisation.
 - b. Existing organisation having adverse impact in the environment
 - c. Seasonal based industries
- Generally, shutdown point will be helpful for avoiding losses.

- Formula for shutdown point is

$$\text{Shutdown point [units (or) ₹]} = \frac{\text{fixed cost (if continue)} - \text{fixed cost (if shutdown)}}{\text{PVR or (contribution per unit)}}$$

g. angle of incidence: -

- Angle of incidence is formed by intersection of sales line and total cost line.
- Angle of incidence is an alternative analysis for calculation of profits (or) losses.
- The main objective to set out the organisation having larger angle of incidence indicates high profits.
- The graphical representation of angle of incidence is as shown below:



❖ **Application of marginal costing:**

- Marginal costing is every useful techniques of costing which is used in various marginal task and decision-making process.
- If any organisation can achieve
 - a. Cost control.
 - b. Profit making.
 - c. Key factors analysis.
 - d. Decision making in pricing strategy (or) accept/ reject quotation's (or) by or make decisions (or) shutdown decisions (or) retain (or) replace a machine (or) whether to sell with in the country (or) outside the country (or) expand the business (or) product mix decision like selection of optimal products (or) product substitution of discontinuous products.

❖ **Limiting factors:**

- Limiting factors means scarcity of resources, in that situation organisation need to try to get maximum benefits.

❖ Marginal costing Vs absorption costing:

S. No	Marginal costing	Absorption costing
1	According to marginal cost, cost should be valued at product cost as per marginal cost product cost means material, labour, VPOH, VAOH, VSOH.	According to absorption costing product cost means material, labour, VPOH, FPOH.
2	According to marginal costing, period cost means fixed POH, AOH & SOH.	According to absorption costing period, cost means variable & fixed AOH & SOH.
3	While calculating profit under marginal costing there is no concept of under (or) over absorption.	While calculating income statement under absorption costing we should consider under (or) over absorption.
4	Under marginal costing generally marginal decisions should be based on contribution.	Under absorption costing generally major decision should be based on profit rather than contribution.

- 1) Following particulars relate to a manufacturing factory for the month of March, 2017

Variable cost per unit	Rs. 14
Fixed factory overhead	Rs. 5,40,000
Fixed selling overhead	Rs. 2,52,000
Sales price per unit	Rs. 20

- (i) What is the break - even point expressed in rupee sales?
 (ii) How many units be sold to earn a target net income of Rs. 60,000 per month?
 (iii) How many units must be sold to earn a net income of 25% on cost?
 (iv) What should be the selling price per unit if break -even point is to be brought down to 120000 units?
- 2) ANKIT LTD. a manufacturing Company which produces three products furnishes the following information for the year 2016-17:

Particulars	Products		
	A	B	C
Selling Price (per unit)	Rs. 200	Rs. 150	Rs. 100
Profit Volume Ratio	10%	20%	40%
Raw Material content as a % of Variable Cost	50%	50%	50%
Maximum Sales Potential (units)	40,000	25,000	10,000

Fixed costs are estimated at Rs. 12 lakhs. The firm uses same raw material in all the three products. Raw material is in 'Short Supply'. The firm has a quota for the supply of raw materials of the value of Rs. 36 lakhs for the year 2016-17 for the production of three products to meet sales demand.

Required:

Determine the optimal product mix and ascertain the maximum profit therefrom.

- 3) The following figures are obtained from the records of P. Ltd.:

	2015-16 (Rs.)	2016-17 (Rs.)
Sales	80,000	1,00,000
Net Profit	10,000	16,000

Required:

Calculate the following:

- (i) Profit Volume Ratio
 (ii) Break Even Point
 (iii) Profit or loss at sales of Rs. 40,000
 (iv) Sales required to earn a profit of Rs. 22,000
 (v) Margin of Safety if sales is Rs. 55,000

- 4) A company budgets for a production of 5 lakh units at a variable cost of Rs.20 each. The fixed costs are Rs.20 lakh. The selling price is fixed to yield a profit of 25% on cost.

You are required to calculate

- (i) P/V Ratio and Break- even point.
- (ii) If the selling price is reduced by 20%, Ascertain:

- (A) The effect of price reduction on the P/V Ratio and BEP.
- (B) The number of units required to be sold at the reduced selling price to obtain an increase of 20% over the budgeted profit.

- 5) AVONA LTD., a toy factory presents the following information for the year ended 31st March, 2018:

	Rs.
Material cost	1,20,000
Labour cost	2,40,000
Fixed overheads	1,20,000
Variable overheads	60,000
Units produced	12,000
Selling Price per Unit	50

The available capacity is a production of 20000 units per year. The firm has an offer for the purchase of 5000 additional units at a price of Rs.40 per unit. It is expected that by accepting this offer there will be a saving of rupee one per unit in material cost on all units manufactured, the fixed overhead will increase by Rs.35,000 and the overall efficiency will drop by 2% on all production.

State whether offer is acceptable or not.

- 6) QUALITY PRODUCTS LTD., manufactures and markets a single product. The following data are available:

	₹/Unit
Materials	16
Conversion Costs (Variable)	12
Dealer's Margin (10% of Sales)	4
Selling Price	40
Fixed Cost: ₹ 5 Lakhs	
Present Sales : 90,000 units	
Capacity Utilization : 60%	

There is acute competition. Extra efforts are necessary to sell. Suggestions have been made for increasing sales:

- 9) The table below shows the Costs and Profits of three different products — X, Y & Z, manufactured by Jerbera Co. Ltd.

	X	Y	Z	Total
	₹	₹	₹	₹
Sales	3,00,000	1,80,000	1,20,000	6,00,000
Variable Cost	2,40,000	1,26,000	72,000	4,38,000
Contribution	60,000	54,000	48,000	1,62,000
Fixed Cost				81,000
Profit				81,000

Can the profits of the company be increased by changing the sales mix of the products? Use Marginal Costing technique to arrive at your answer.

- 10) TRITONI LTD. produces 3 products A, B and C from the same manufacturing facilities. The cost and other details of the 3 products are as follows:

Particulars	A	B	C	Total
Selling Price/unit (₹)	200	160	100	
Variable Cost/unit (₹)	120	120	40	
Fixed Expenses/month (₹)				2,76,000
Maximum Production/month (units)	5000	8000	6000	
Total Hours available for the month				200
Maximum demand/month (units)	2000	4000	2400	

The processing hours cannot be increased beyond 200 hours/month.

You are required to:

- Compute the most profitable mix.
 - Compute the overall break-even sales of the company for the month based on the mix calculated in (i) above.
- 11) The sports material manufacturing company budgeted the following data for the coming year.

	Amount (₹)
Sales (1,00,000 units)	1,00,000
Variable cost	40,000
Fixed cost	50,000

Find out

- (a) P/V Ratio, B.E.P and Margin of Safety
- (b) Evaluate the effect of
 - (i) 20% increase in physical sales volume
 - (ii) 20% decrease in physical sales volume
 - (iii) 5% increase in variable costs
 - (iv) 5% decrease in variable costs
 - (v) 10% increase in fixed costs
 - (vi) 10% decrease in fixed costs
 - (vii) 10% decreases in selling price and 10% increase in sales volume
 - (viii) 10% increase in selling price and 10% decrease in sales volume
- 5,000 variable cost decrease accompanied by 15,000 increase in fixed costs.

12) Two businesses AB Ltd and CD Ltd sell the same type of product in the same market. Their budgeted profits and loss accounts for the year ending 30th June, 2016 are as follows:

Amount (₹)				
	AB Ltd		CD Ltd	
Sales		1,50,000		1,50,000
Less: Variable costs	1,20,000		1,00,000	
Fixed Cost	15,000	1,35,000	35,000	1,35,000
Profit		15,000		15,000

You are required to calculate the B.E.P of each business and state which business is likely to earn greater profits in conditions.

- (a) Heavy demand for the product
- (b) Low demand for the product.

13) The sales turnover and profit during two periods were as follows:

Amount (₹)

Period	Sales	Profit
1	2,00,000	20,000
2	3,00,000	40,000

What would be probable trading results with sales of ₹ 1,80,000? What amount of sales will yield a profit of ₹ 50,000?

14) The following results of a company for the last two years are as follows:

Amount (₹)

Year	Sales	Profit
2014	1,50,000	20,000
2015	1,70,000	25,000

You are required to calculate:

- (i) P/V Ratio
- (ii) B.E.P
- (iii) The sales required to earn a profit of ₹ 40,000
- (iv) Profit when sales are ₹ 2,50,000
- (v) Margin of safety at a profit of ₹ 50,000 and
- (vi) Variable costs of the two periods.

15) SV Ltd a multi product company furnishes you the following data relating to the year 2015:

Amount (₹)

	First Half of the year	Second Half of the year
Sales	45,000	50,000
Totalcost	40,000	43,000

Assuming that there is no change in prices and variable cost and that the fixed expenses are incurred equally in the two half year period, calculate for the year, 2015

- (i) The P/V Ratio, (iii) Break-even sales
- (ii) Fixed Expenses (iv) Percentage of Margin of safety.

16) S Ltd. furnishes you the following information relating to the half year ended 30th June, 2015.

Fixed expenses ₹ 45,000
Sales value 1,50,000
Profit 30,000

During the second half the year the company has projected a loss of ₹ 10,000.

Calculate:

- (1) The B.E.P and M/S for six months ending 30th June, 2015.
- (2) Expected sales volume for the second half of the year assuming that the P/V Ratio and Fixed expenses remain constant in the second half year also.

The B.E.P and M/S for the whole year for 2015.

BUDGETARY CONTROL

Illustration 1

From the following figures prepare the raw material purchase budget for January, 2015:

	Materials					
	A	B	C	d	e	F
estimated Stock on Jan 1	16,000	6,000	24,000	2,000	14,000	28,000
estimated Stock on Jan	20,000	8,000	28,000	4,000	16,000	32,000
estimated Consumption	1,20,000	44,000	1,32,000	36,000	88,000	1,72,000
Standard Price per unit	25 p.	5 P-	15 p.	10 p.	20 p.	30 p.

Illustration No.2

A company manufactures product - A and product -B during the year ending 31st December 2015, it is expected to sell 15,000 kg. of product A and 75,000 kg. of product B at Rs.30 and Rs.16 per kg. respectively. The direct materials P, Q and R are mixed in the proportion of 3:5:2 in the manufacture of product A, Materials Q and R are mixed in the proportion of 1:2 in the manufacture of product B. The actual and budget inventories for the year are given below:

	Opening	Expected Closing stock	Anticipated cost per Kg.
	Kg.	Kg.	Rs.
Material - P	4,000	3,000	12
Material -Q	3,000	6,000	10
Material - R	30,000	9,000	8
Product - A	3,000	1,500	—
B	4,000	4,500	—

Prepare the Production Budget and Materials Budget showing the expenditure on purchase of materials for the year ending 31-12-2015.

Illustration 3:

The following details apply to an annual budget for a manufacturing company.

Quarter				
Working days	65	60	55	60
Production (units per working day]	100	110	120	105
Raw material purchases (% by weight of	30%	50%	20%	—
Budgeted purchase price/Kg.(Rs.)	1	1.05	1.125	—

Quantity of raw material per unit of production 2 kg. Budgeted closing stock of raw material 2,000 kg. Budgeted opening stock of raw material 4,000 Kg. (Cost Rs. 4,000)

Issues are priced on FIFO Basis. Calculate the following budgeted figures.

(a) Quarterly and annual purchase of raw material by weight and value.

(b) Closing quarterly stocks by weight and value.

Illustration 4:

You are required to prepare a Selling overhead Budget from the estimates given below:

P	(Rs.)
Advertisement	1,000
Salaries of the Sales dept.	1,000
Expenses of the Sales dept.(Fixed)	750
Salesmen's remuneration	3,000

Salesmen's and dearness Allowance - Commission @ 1% on sales affected

Carriage outwards: estimated @ 5% on sales

Agents Commission: 7' /2% on sales

The sales during the period were estimated as follows:

- (a) "80,000 including Agent's Sales 78,000
- (b) 790,000 including Agent's Sales 710,000
- (c) 1.00,000 including Agent's Sales 10,500

Illustration 5:

ABC Ltd. a newly started company wishes to prepare Cash Budget from January. Prepare a cash budget for the first six months from the following estimated revenue and expenses

Month	Total sales (Rs.)	Materials (Rs.)	wages (Rs.)	Overheads	
				Production (Rs.)	Selling & Distribution (Rs.)
January	20,000	20,000	4,000	3,200	800
February	22,000	14,000	4,400	3,300	900
March	28,000	14,000	4,600	3,400	900
April	36,000	22,000	4,600	3,500	1,000
May	30,000	20,000	4,000	3,200	900
June	40,000	25,000	5,000	3,600	1,200

Cash balance on 1st January was Rs.10,000, A new machinery is to be installed at Rs.20,000 on credit, to be repaid by two equal instalments in March and April, sales commission @5% on total sales is to be paid within a month following **actual** sales.

Rs.10,000 being the amount of 2nd call may be received in March. Share premium amounting to Rs.2,000 is also obtained with the 2nd call. Period of credit allowed by suppliers — 2months; period of credit allowed to customers — 1 month, delay in payment of overheads 1 month, delay in payment of wages 1/2 month. Assume cash sales to be 50% of total sales.

Illustration 6:

Prepare a Cash Budget for the three months ending 30th June, 2016 from the information given below:

(a)

MONTH	SALES	MATERIAL	WAGES (?)	OVERHEAD
February	14,000	9,600	3,000	1,700
March	15,000	9,000	3,000	1,900
April	16,000	9,200	3,200	2,000
May	17,000	10,000	3,600	2,200
June	18,000	10,400	4,000	2,300

(b) Credit terms are:

Sales/debtors: 10% sales are on cash, 50% of the credit sales are collected next month and the balance in the following month.

Creditors: Materials 2 months

Wages 1 /4 month

Overheads 1/2 month.

(c) Cash and bank balance on 1st April, 2016 is expected to be Rs. 6,000.

(d) other relevant information are:

- (i) Plant and machinery will be installed in February 2016 at a cost of Rs.96,000. The monthly instalment ot Rs.2,000 is payable from April onwards.
- (ii) Dividend @ 5% on preference share capital of Rs.2,00,000 will be-paid on 1st June.
- (iii) Advance to be received for sale of vehicles Rs.9,000 in June.
- (iv) Dividends from investments amounting to Rs. 1,000 are expected to be received in June.

Illustration 7:

Draw up a flexible budget for overhead expenses on the basis of the following data and determine the overhead rates at70%, 80% and 90%

Plant Capacity	At 80% capacity (Rs.)
Variable Overheads:	
Indirect labor	12,000
Stores including spares	4,000
Semi Variable:	
Power (30% - Fixed: 70% -Variable)	20,000
Repairs (60%- Fixed: 40% -	2,000
Fixed Overheads:	
depreciation	11,000
Insurance	3,000
Salaries	10,000
Total overheads	62,000
Estimated Direct Labor Hours	1,24,000

Illustration No.8

Aroma industries manufactures two types of hand tools - Centurion and Sherman. An estimate of the number of units expected to be sold in the first seven months of 2006 is given below:-

Months	Centurion	Sherman
January	5,000	14,000
February	6,000	14,000
March	8,000	12,000
April	10,000	10,000
May	12,000	8,000
June	12,000	8,000
July	10,000	8,000

It is estimated that finished units equal to 50% of the estimated sales for the next month will be in stock at the end of the each month and his would apply for December, 2005 as well. The figures of production and cost, extracted from the budget for the year ending 31st December, 2005 are follows:-

Particulars	CENTURION	SHERMAN
-------------	-----------	---------

Production (in units)	1,10,000	1,20,000
Cost per unit-	Rs.	Rs.
Direct Materials	12	19
Direct Labor	5	7
Variable Manufacturing Expenses	3,30,000	4,80,000

You are required to draw up-

- A production budget showing the number of units to be manufactured every month during the first half of 2006 and
- Production cost budget, in a summarized form, for the first months of 2006.

Illustration No.9

Soio products Ltd., manufactures and sells a single product and has estimated a sales revenue of Rs.126 lakhs this year based on 20% profit on selling price. Each unit of the product requires 3 lbs of material P and 1.5 lbs of material Q for manufacture as well a processing time of 7 hours in the Machine Shop and 2 ¹/₂ hours in the Assembly Section. Overheads are absorbed at a blanket rate of 33 ¹/₃% on Direct Labor. The factory works 5 days of 8 hours a day in a normal 52 weeks a year On an average statutory holidays, leave and absenteeism and idle time amount to 96 hours, 80 hours and 64 hours respectively in a year. The other details are as under-

Purchase Price	Material P	Rs.6 per lb	
	Material Q	Rs.4 per lb	
Comprehensive Labor Rate	Machine Shop	Rs.4 per	
	Assembly	Rs.3.20 per hour	
No. of employees	Machine Shop	600	
	Assembly	180	
Stocks	Finished Goods	Material P.	Material Q
Opening Stock	20,000 units	54,000 lbs	33,000 lbs
Closing stock (estimated)-	25,000 units	30,000 lbs	66,000 lbs

You are required to calculate:-

- The number of units of the product proposed to be sold.
- Purchase to be made of materials P and Q during the year in Rupees.
- Capacity utilization of Machine Shop and Assembly Section, along with your comments.

Illustration 10

Lookahead Ltd., produces and sells a single product. Sales budget for the calendar year, 2006 by quarter is as under

Quarter	No. of units to be sold
I	12,000
II	15,000
III	16,500
IV	18,000

The year 2006 is expected to open with an inventory of 4,000 units of finished product and close with an inventory of 6,500 units. Production is customarily scheduled to provide for two-thirds of the current quarter's sales demand plus one third of the following quarter's demand. Thus production anticipates sales volume by about one month. The standard cost details for one unit of the product is as follows:-

Direct Materials 10lbs. @50 paise per lb.

- Direct Labor 1 hour 30 minutes @ Rs.4 per hour.
Variable Overheads 1 hour 30 minutes @ Rs.1 per hour.
Fixed overheads 1 hour 30 minutes @ Rs.2 per hour based on a budgeted production volume of 90,000 direct labor hours of the year.
- i) Prepare a production budget for 2006 by quarters, showing the number of units to be produced, and the total cost of direct materials, direct labor, variable overheads and fixed overheads.
 - ii) If the budgeted selling price per unit is Rs. 17, what would be the budgeted profit for the year's a whole?

Illustration No. 11

The direct labor requirements of three of the products manufactured in a factory, each involving more than one labor operation, are estimated as follows:-

	Direct Labor Time per unit (in minutes)		
OPERATIONS	PRODUCTS		
	1	2	3
Operation 1	18	42	30
Operation 2	-	12	24
Operation 3	9	6	-

The factory works 8 hours per day, six days in a week. The budget quarter is taken as 13 weeks and during a quarter lost hours due to leave and holiday and other causes are estimated to be 124 hours.

The budgeted hourly rates for the workers managing the operation 1, 2 and 3 are Rs.2.00, Rs.2.50 and Rs.3.00 respectively. The budgeted sales of the products during the quarter are-

Products	Units
1	9,000
2	15,000
3	12,000

There is a carry over of 5,000 units of Product 2 and 4,000 units of Product 3 and it is proposed to build up a stock at the end of the budget quarter as follows:-

Product 1	1,000 units
Product 3	2,000 units

Illustration No. 12

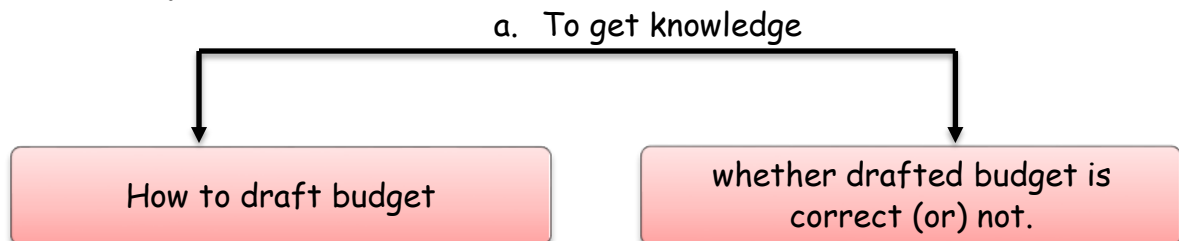
The Barker Company manufactures two models of adding machines, A and B. The following production and sales data for the month of June 2022 are given below :

Particulars	A	B
Estimated inventory (units) June 1	4500	2250
Desired inventory (units) June 30	4000	2500
Expected Sales Volume (units)	7500	5000
Unit sale price (`)	75	120

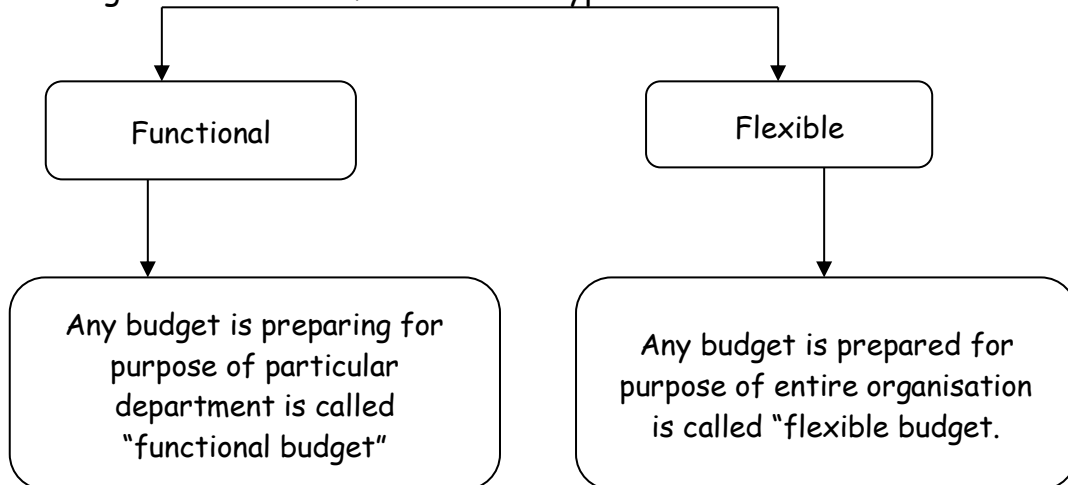
Prepare a sales budget and a production budget for June 2022.

BUDGETARY CONTROL

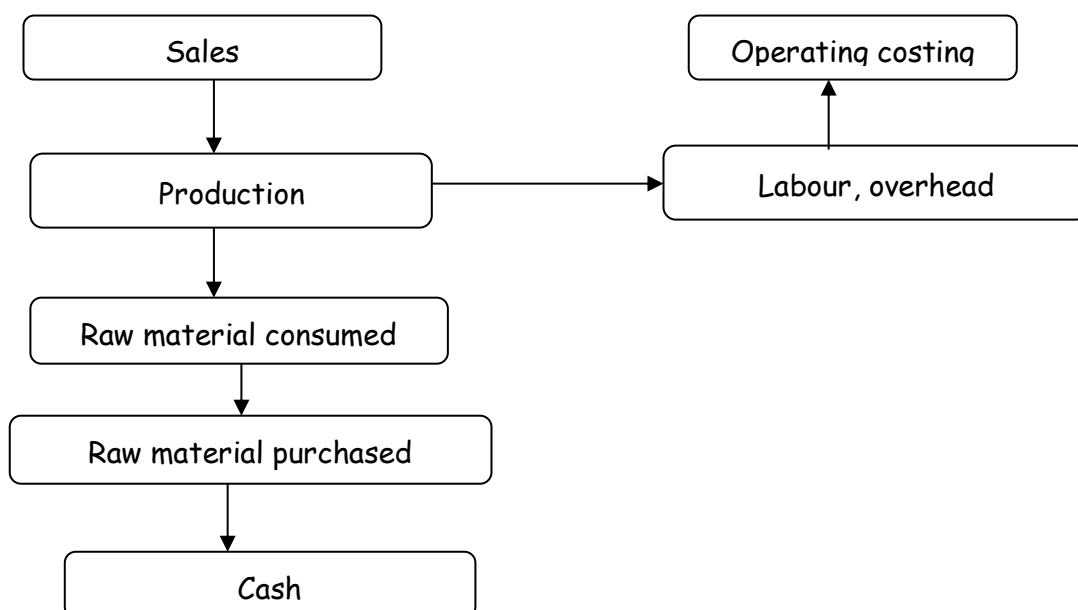
- ❖ Budget is prepared by the organisation for purpose of future based on present capacity is called "budget".
- ❖ Main them / objective of the chapter:



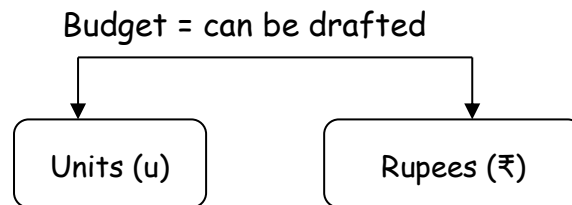
- ❖ Budget can be classified into two types:



Ex: sales, production, raw material budget etc. labour, overhead, cash, RMC budget.



G.N#1



G.N # 2

1. production budget = sales + closing finished goods - opening finished goods.

Production budget(₹) = production budget(u) answer × CPU

Particulars	April	July	June
1. Sales	xx	xx	Xx
2. C/s FG	Xx	xx	Xx
3. O/p FG	xx	xx	Xx
	(Q)		
4. Production budget(u) 1+2-3	xxx	xxx	xx

2. RMC(U) = op RM + purchases of RM - C/s RM

RMC (U) = RMC(U) × CPU

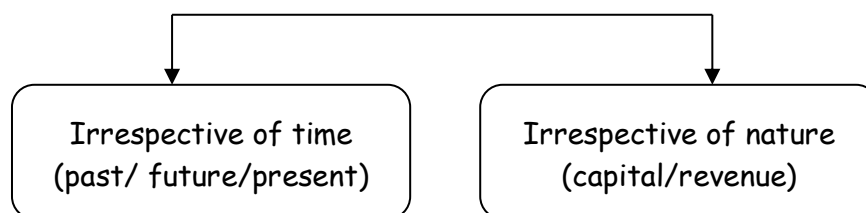
3. RMP (u) = RMC (U) + C/s RM - OP RM

4. Cash budget:

i. Cash budget is same as receipts and payments account in NPO.

ii. While preparing cash budget

a. Transaction shall be recorded.



b. O/s elements shall not be considered.

c. Non-cash element shall not be considered

iii. Format of cash budget:

Particulars	June	July	August
1. Opening balance of cash	xx	xx	Xx
2. Receipts			
a.	X	X	x
b.	x	x	x
3. Payments			
a.	X	X	X

b.	x	x	X
4. Closing balance of cash (1+2-3)	xxx	xxx	xxx

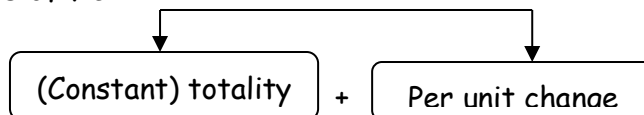
❖ Flexible budget: -

G.N #1

Meaning of FC, VC, SVC.

→ Fixed cost: Fc means cost which is fixed irrespective of level of output is called "FC".

→ Nature of FC



→ Semi - variable cost:

SVC means cost which neither FC nor VC is called "SVC".

- $SVC = TFC + TVC$
- SVC is also known as TC (total cost).

Segregation of SVC

Step 1:

Calculation of variable cost per unit.

$$VCPU = \frac{\Delta \text{ change in cost}}{\Delta \text{ change in units}}$$

Step 2:

Calculation of variable cost

$$VC = \text{units} \times \text{step 1 answer.}$$

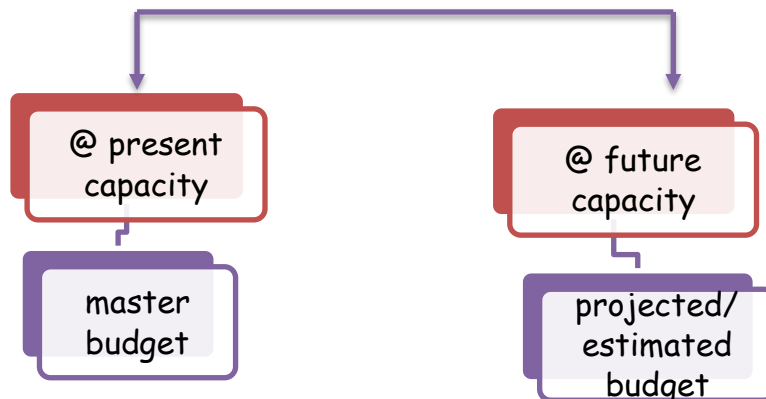
Step 3:

Calculation of fixed cost

$$FC = \text{total cost} - \text{step 2 answer.}$$

❖ Flexible budget:

1. Flexible budget is prepared



2. The following rules should follow while preparing flexible budget.

- ✚ While preparation flexible budget first discloses MB & then cost budget
- ✚ Unless, otherwise question paper specified, all costs will be referred as VC

3. Format of flexible budget:

Particulars	PC	FC1	FC2	FC3
1. Variable cost				
a.	X			
	xx	xx	xx	Xx
2. Fixed cost				
a.	x	x	x	X
TFC	xx	xx	xx	Xx
3. TC(1+2)	xx	xx	xx	xx

Operation costing (or) labour budget: -

- According to operation costing it will give the knowledge how much labour required to each task.
- In other words, every organisation should maintain optimum no. of labour
- If any organisation maintaining higher no. of labours their organisation will incur abnormal labour cost.
- Hence every organisation should try to maintain optimum no. of labours.

Q.1: On 31st March, 2006 the following balances were extracted from the books of SUPREME MANUFACTURING COMPANY:

Particulars	Debit Rs.	Credit Rs.
Store Ledger Control A/c	35,000	
Work-in-progress Control A/c	38,000	
Finished Goods Control A/c	25,000	
Cost Ledger Control A/c		98,000
Total	98,000	98,000

The following transactions took place in April, 2006 -

Particulars	Rs.
Raw materials:	
Purchased	95,000
Returned to suppliers	3,000
Issued to Production	98,000
Returned to Stores	3,000
Productive Wages	40,000
Indirect Labour	25,000
Factory overhead expenses incurred	50,000
Selling and Administration expenses	40,000
Cost of finished goods transferred to warehouse	2,13,000
Cost of goods sold	2,10,000
Sales	3,00,000

Factory overheads are applied to production at 150% of direct wages, any under/over absorbed overhead being carried forward for adjustment in the subsequent months. All administrative and selling expenses are treated as period costs and charged off to the Profit and Loss Account of the month in which they are incurred.

Show the following accounts -

- Cost Ledger Control Account
- Store Ledger Control Account
- Work-in-progress Control Account
- Finished Goods Stock Control Account
- Factory Overhead Control Account
- Costing Profit and Loss Account and
- Trial Balance as at 30th April, 2006.

Q.2: The cost ledger of Alpha Ltd., showed the following balances as at 1st April, 2005

Particulars	Rs.	Rs.
Stores Ledger Account	1,05,000	
Work in progress Account	78,400	
Finished Goods Account	55,800	
Work on cost Account		1,000
Administration on cost	600	
Cost Ledger Control A/c		2,38,000
Total	2,39,800	2,39,800

Further balances resulting from the operations for the year ended 31st March, 2006 were -

Particulars	Rs.
Stores purchases	3,60,000
Stores issued to production order	3,93,000
Stores issued to works and repair order	15,000
Wages	6,15,000
Productive labour	5,90,000
Unproductive labour	25,000
Carriage Inwards	6,000
Works on cost Allocated to production order	1,79,000
Works Expenses	1,40,000
Administration expenses	18,000
Administration on cost allocation to production	18,400
Goods finished during the year	11,72,000
Finished goods sold - cost	12,00,000
Sales expenses	13,400
Sales during the Year	15,00,000

Prepare the necessary accounts in the cost ledger and a schedule of balances for the year ended 31st March, 2006.

Q.3: From the following details show the necessary accounts in the Cost Ledger.

Particulars	Materials Rs.	Work-in- progress Rs.	Finished Stock Rs.
Opening Balance	8,000	5,000	10,000
Closing Balance	11,000	9,000	12,000
Transactions during the period:			Rs.
Material purchased			25,000
Wages paid (including Rs. 2,000 indirect)			10,000
Overheads incurred			8,000
Overheads absorbed			9,000
Sales			50,000

Q.4: A fire destroyed some accounting records of a company. You have been able to collect the following from the spoiled papers and as a result of consultation with accounting staff in respect of January, 2006:

(i) Incomplete Ledger Entries:

Raw - Material A/c

Particulars	Rs.	Particulars	Rs.
Beginning Inventory	32,000		

Work-in-progress A/c

Particulars	Rs.	Particulars	Rs.
Beginning Inventory	9,200	Finished Stock	1,51,000

Creditors A/c

Particulars	Rs.	Particulars	Rs.
Closing Balance	19,200	Opening Balance	16,400

Manufacturing Overheads A/c

Particulars	Rs.	Particulars	Rs.
Amount Spent	29,600		

Finished Goods A/c

Particulars	Rs.	Particulars	Rs.
Opening Inventory	24,000	Closing Inventory	30,000

ii) Additional Information:

1. The cash book showed that Rs. 89,200 have been paid to creditors for raw material.
2. Ending inventory of work in progress included material Rs. 5,000 on which 300 direct labour hours have been booked against wages and overheads.
3. The job card showed that workers have worked for 7,000 hours. The wage rate is Rs. 10 per labour hour.
4. Overhead recovery rate was Rs. 4 per direct hour.

You are required to complete the above accounts in the cost ledger of the company.

Q5 The following are the balances existed in the books of SWAROOP Ltd. for the year ended, 31st March, 2019:

Particulars	Debit (Rs.)	Credit (Rs.)
Stores Ledger Control A/c	30,00,000	
WIP Control A/c	15,00,000	
Finished Goods Control A/c	25,00,000	
Manufacturing Overheads Control A/c		1,50,000
Cost Ledger Control A/c		68,50,000

During the year 2019-20, the following transactions took place:

Particulars	Amount (Rs.)
Finished product (at cost)	22,50,000
Manufacturing Overhead incurred	8,50,000
Raw material purchased	12,50,000
Factory wages	4,00,000
Indirect labour	2,00,000
Cost of sales	17,50,000
Materials issued to production	13,50,000
Sales returned (at cost)	90,000
Material returned to suppliers	1,30,000
Manufacturing overhead charged to production	8,50,000

Required: Prepare the following control accounts and Trial balance at the end of the year: Cost Ledger, Stores Ledger, Work-in-process, Finished Stock, Manufacturing Overhead, Wages and Cost of Sales.

INTEGRAL SYSTEM

Q.1: From the following information you are requested to pass journal entries under the system of integral accounts.

Particulars	Rs.
Material purchased on credit	1,48,000
Wages paid	1,68,000
Wages productive	1,48,000
Wages unproductive	20,000
Material issued to production	1,28,000
Works expenses incurred	65,000
Works expenses charged to production	86,000
Office and administration expenses paid	44,000
Office and administration expenses charged to production	43,500
Selling overheads paid	45,000
Selling overheads charged to sales	45,000
Sales Credit	4,90,000

Q2 Pass journal entries in the cost books, maintained on non-integrated system, for the following:

(i) Issue of materials	Direct Rs.5,50,000; Indirect Rs.1,50,000.
(ii) Allocation of wages	Direct Rs.2,00,000; Indirect Rs.40,000.
(iii) Under/over absorbed overheads	Factory (over) Rs.20,000; Administration (under) Rs.10,000.

Q3 Journalise the following transactions, in cost books under Non- Integrated system of Accounting. And integral system

- (i) Credit Purchase of Material = Rs.27,000
- (ii) Manufacturing overhead charged to Production = Rs.6,000
- (iii) Selling and Distribution overheads recovered from Sales = Rs.4,000
- (iv) Indirect wages incurred = Rs.8,000
- (v) Material returned from production to stores = Rs.9,000

Q4 Journalize the following transactions assuming cost and financial accounts are integrated:

Sl. No.	Particulars	Amount (Rs.)
(i)	Materials issued:	
	- Direct	3,25,000
	- Indirect	1,15,000
(ii)	Allocation of wages (25% indirect)	6,50,000
(iii)	Under/Over absorbed overheads:	
	- Factory (Over-absorbed)	2,50,000
	- Administration (Under-absorbed)	1,75,000
(iv)	Payment to Sundry Creditors	1,50,000
(v)	Collection from Sundry Debtors	2,00,000

RECONCILIATION OF ACCOUNTS

Q.1: The following figures have been extracted from the Financial Accounts of a Manufacturing Firm for the first year of its operation:-

Particulars	Rs.
Direct Material Consumption	50,00,000
Direct Wages	30,00,000
Factory overheads	16,00,000
Administrative overheads	7,00,000
Selling overheads	9,60,000
Bad debts	80,000
Preliminary expenses (written off)	40,000
Legal Charges	10,000
Dividend Received	1,00,000
Interest on deposit received	20,000
Sales - 1,20,000 units	1,20,00,000
Closing Stock:	
Finished Goods 4,000 units	3,20,000
Work in progress	2,40,000

The cost accounts for the same period reveal that the material consumption was Rs. 56,00,000. Factory overheads recovered @ 20% on prime cost, Administration overheads is recovered at Rs. 6 per unit of production. Selling and Distribution overheads are recovered at Rs. 8 per unit sold.

Prepare the Profit and Loss Accounts both as per financial records and as per cost records. Reconcile the profits as per the two records.

Q.2: Modern Company Limited furnished the summary of Trading and Profit and Loss Account for the year ended 31st March, 2006 -

Particulars	Rs.	Particulars	Rs.
To Raw Material	1,39,600	By Sales (12,000 Units)	4,80,000
To Direct Wages	76,200	By Finished Stock (200 units)	8,000
To Production OHs	42,600	By Work in progress:	

To Administration OH	39,100	Materials 28,200	
To Selling & Dist. overheads	42,700	Wages 11,796	
To Goodwill w/off	2,501	Production OH 7,999	47,995
To Preliminary exp. written off	2,200		
To Dividend (Net)	3,000		
To Income Tax	4,100	By Interest on securities	6,000
To Net Profit	1,89,994		
Total	5,41,995	Total	5,41,995

The company manufactures a Standard Unit. Scrutiny of cost records for the same period show that -

- Production overheads have been allocated to the production at 20% on Prime Cost.
 - Administration overheads have been charged at Rs. 3 per unit on units produced.
 - Selling and Distribution expenses have been charged at Rs. 4 per unit on units sold.
- You are required to prepare a statement of cost to work out profit as per Cost Accounts and to reconcile the same with that shown in the financial accounts.

Q.3: S.V.Ltd., has furnished you the following information from the financial books for the year ended 31st March, 2006 -

Particulars	Rs.	Particulars	Rs.
Opening Stock -		Sales - 10,250 units	7,17,500
500 units at Rs. 35 each	17,500	Closing Stock - 250 units	12,500
Materials consumed	2,60,000		
Wages	1,50,00		
Gross Profit	3,02,500		
Total	7,30,000	Total	7,30,000
Factory overheads	94,750	Gross Profit	3,02,500
Admn. Overhead	1,06,000	Interest received	250
Selling expenses	55,000	Rent received	10,000
Bad Debts	4,000		

Preliminary expenses	5,000		
Net Profit	48,000		
Total	3,12,750	Total	3,12,750

The cost sheet shows the cost of materials as Rs. 26 per unit and the labour cost as Rs. 15 per unit. The factory overheads are absorbed at 60% of labour cost and administration overheads at 20% of factory cost. Selling expenses are charged at Rs. 6 per unit. The opening stock of finished goods is valued at Rs. 45 per unit. You are required to prepare -

- A Statement showing profit as per cost accounts for the year ended 31st March, 2006.
- Statement showing the reconciliation of profit disclosed in cost accounts with the profits shown in the financial accounts.

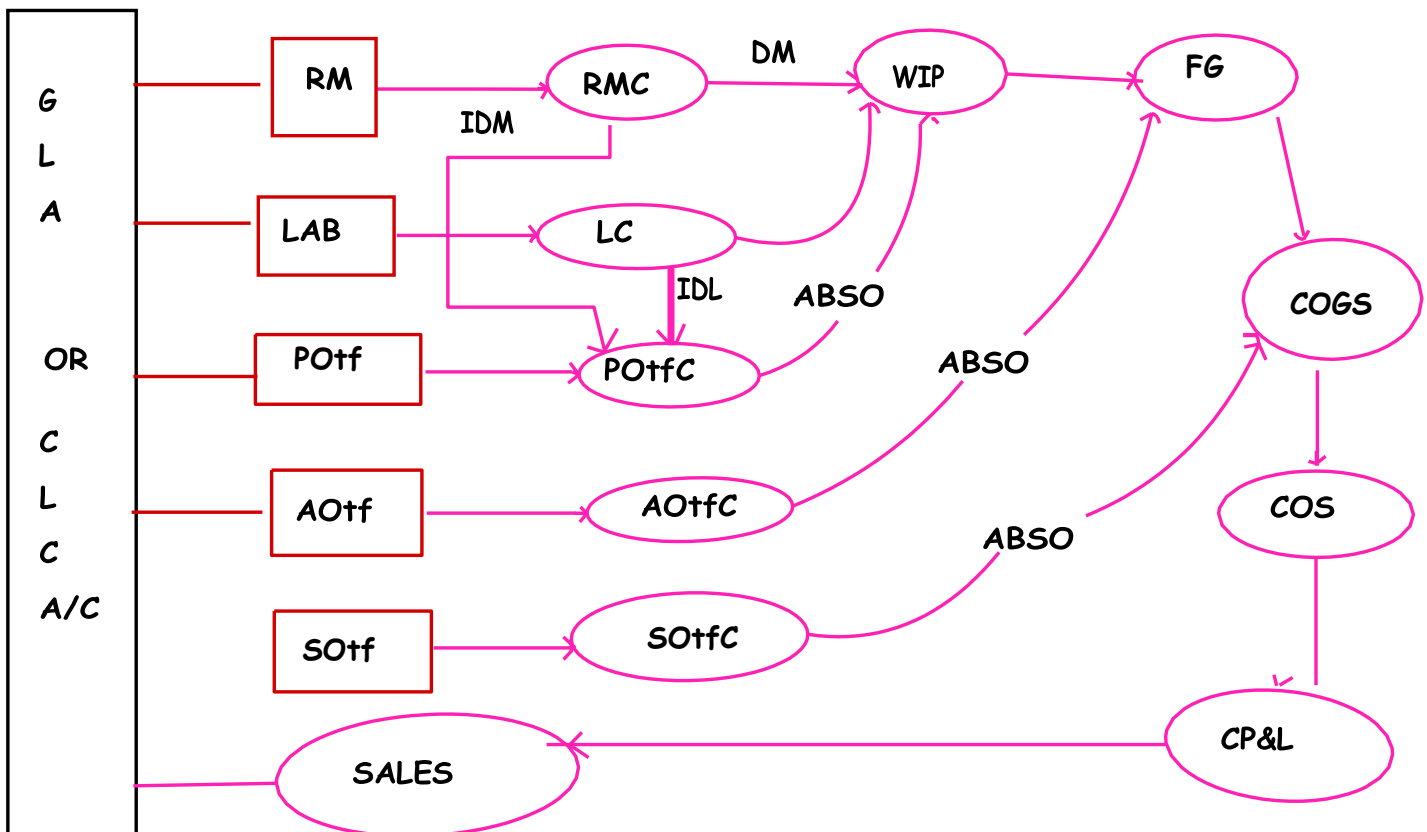
Q.4: M/s H.K.Paino Company showed a net loss of Rs. 4,16,000 as per their financial accounts for the year ended 31st March, 2006. The cost accounts, however, disclosed a net loss of Rs. 3,28,000 for the same period. The following information was received as a result of scrutiny of the figures of both the sets of books.

Particulars	Rs.
Factory overheads under recovered	6,000
Administration overheads over recovered	4,000
Depreciation charged in financial accounts	1,20,000
Depreciation recovered in costs	1,30,000
Interest on investment not included in costs	20,000
Income tax provided	1,20,000
Transfer fees (credit in financial books)	2,000
Stores adjustment (credit in financial books)	2,000

Prepare a memorandum reconciliation account.

NON- INTEGRAL, INTEGRAL AND RECONCILIATION

- ❖ The concept of non- integral means the organisation maintaining separate set of books for costing & accounting related transaction.
- ❖ Integral system means organisation maintains single book for costing & accounting transactions.
- ❖ Reconciliation means the way to find out the reasons for difference in net profit as per costing and net profit as per accounts.
- ❖ Generally, the concept of reconciliation is applicable to those industry following non- integral system.
- ❖ Generally, all items in the costing (i.e., cost sheet) reflected in accounts. However, all accounting items may or may not reflect costing.
- ❖ Generally, costing profit is determined with the help of cost sheet however net profit as per accounts will be determined with the help of profit as per accounts will be determined with the help of profit & loss account. (for the purpose of costing subject P & L account means P & L include trading account).
- ❖ Non- integral system (or) integral system means it is a art of languages to record and maintaining costing records.
- ❖ The following entries are recorded under non- integral system.



G.N #1 Expenses incurred:

Expenses control A/C	Dr
To GLA A/C	Dr

G.N # 2 Transfer:

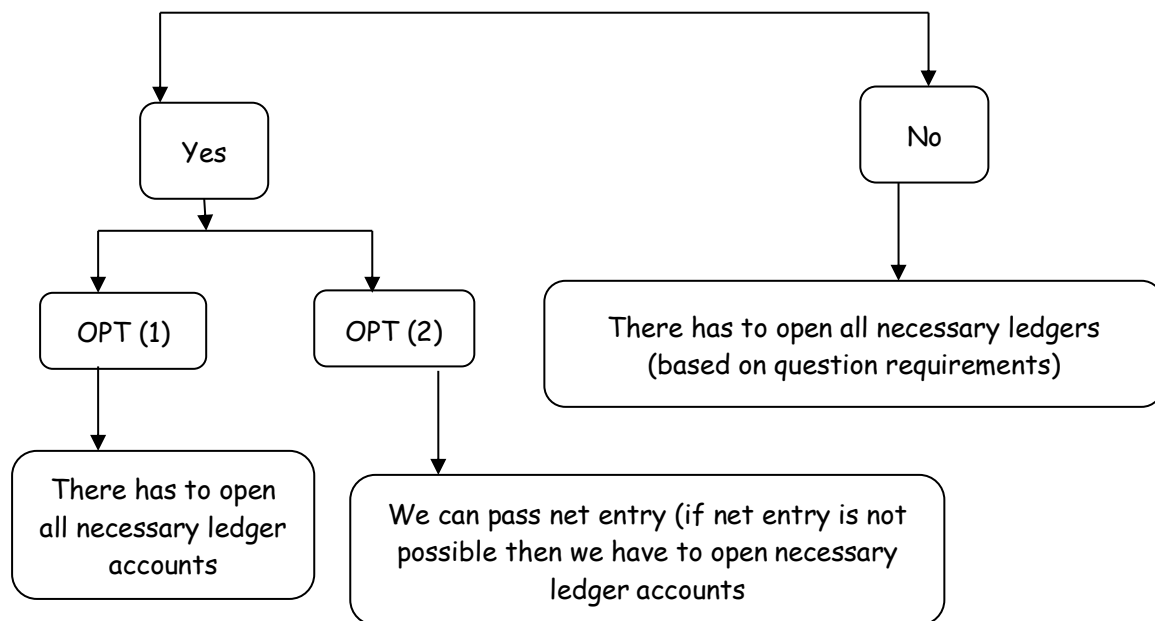
Destination A/C	Dr
To source A/C	Dr

G.N # 3 Income (sales):

GLA A/C	Dr
To sales A/C	Dr

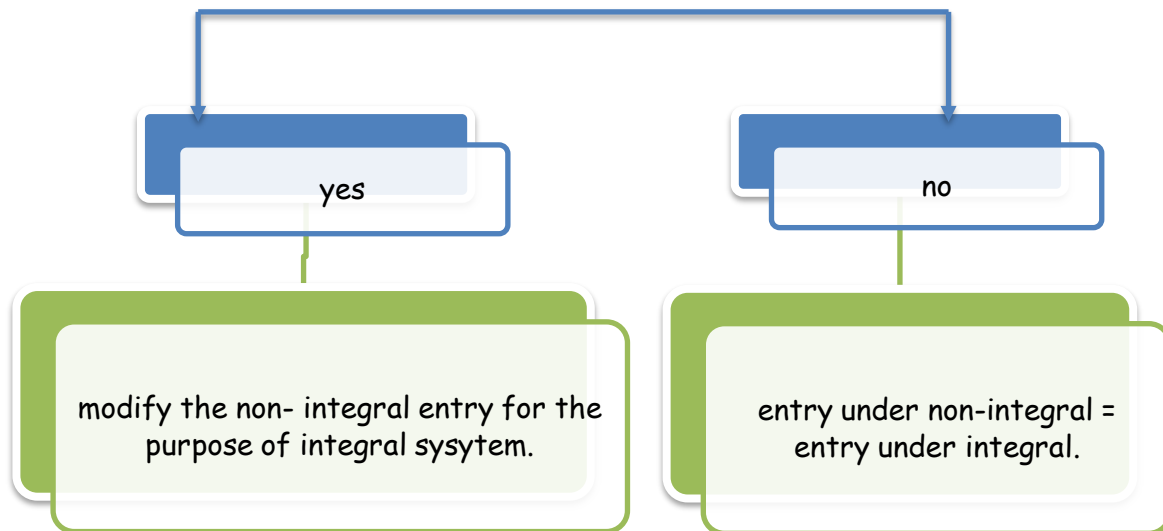
Guidelines for solving exam problem's for non- integral system:

- ❖ Check whether question paper asked to prepare certain (or) specific Account's?



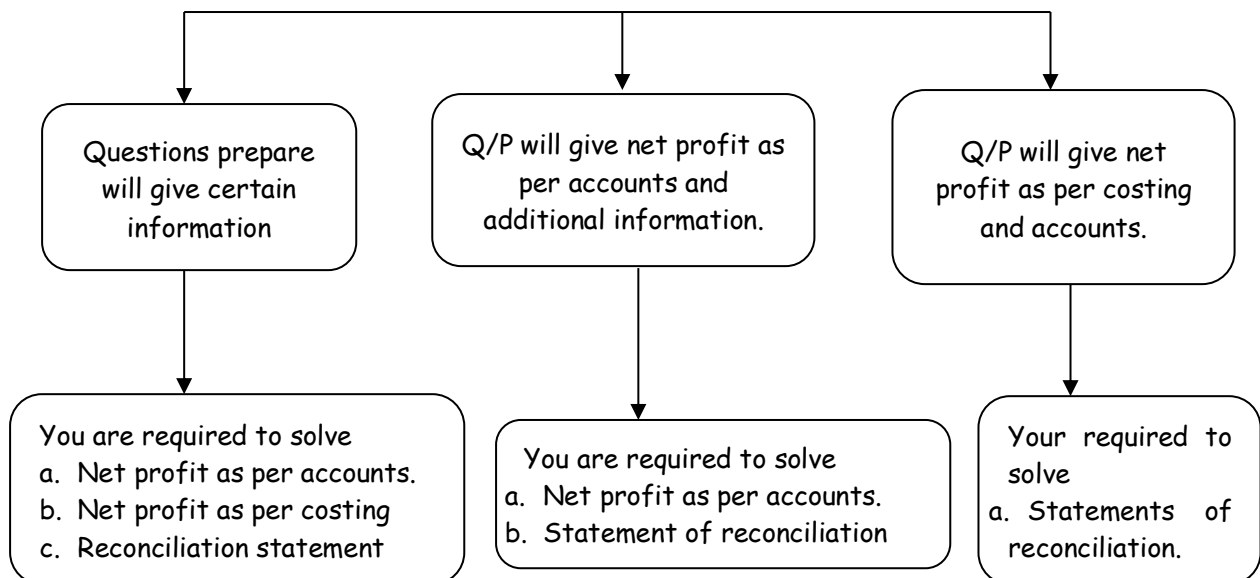
Integral system:

- If any organisation maintains single book for recording both costing and accounting transactions, in that situation integral costing is applicable.
- Entries under integral system = entries under non- integral system account.
- In other words, under integral system the concept of GLA shall not be used, instead of GLA we should use cash, bank account, creditor account, and debtor account.
- While framing journal entry under integral costing we should frame the entry under non-integral and we should absorb whether GLA is reflected either debit aspect (or) credit side?



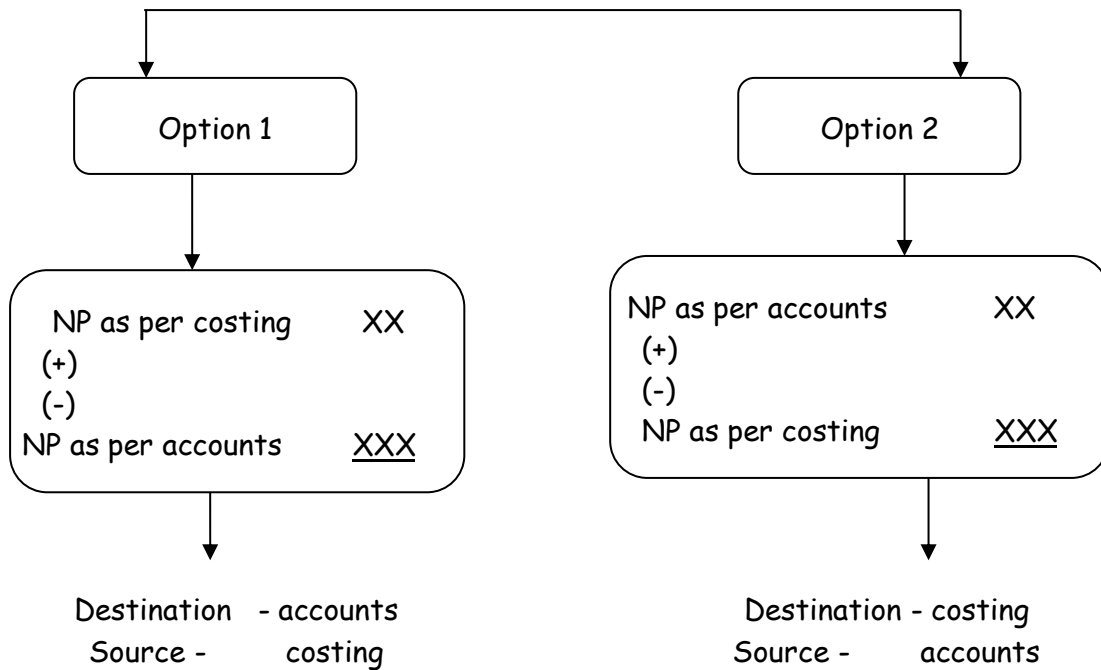
Reconciliation:

- ✓ Reconciliation means it is the way to find out the reasons for difference between net profit as per accounts & costing.
- ✓ Generally, net profit as per costing is derived through cost sheet. However net profit as per accounts is derived through P & L account. (P & L account means P & L account which includes trading account).
- ✓ Examination models of reconciliation



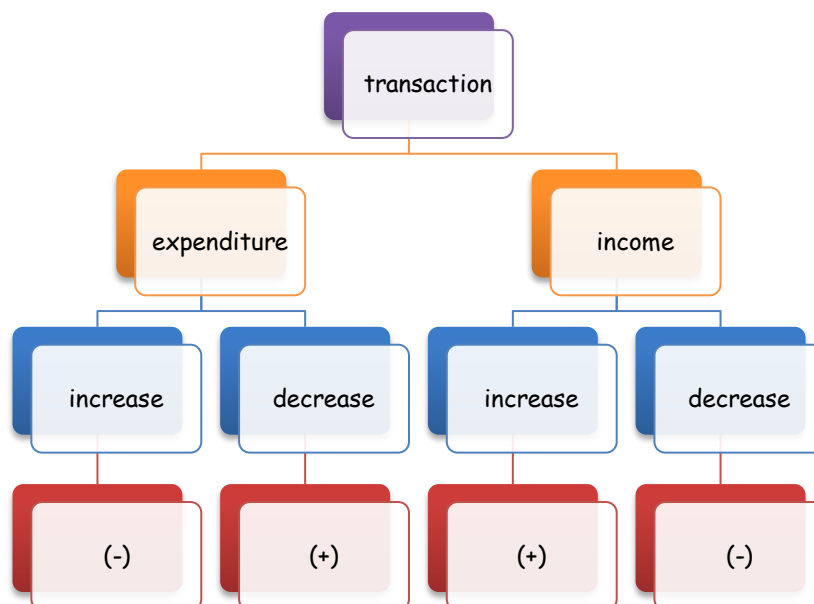
- ✓ Examination problem solving problems:

G.N # 1 - if question paper giving net profit as per costing and accounts and question paper not specified starting point then while solving the exam problem we have two options such as



G.N # 2 while solving exam problem we should think transaction in the view of source to destination point.

G.N # 3



G.N # 4 whenever questions paper specified under lower absorption then start with NP as per costing is preferable.

- COA
- AOL
- COUL
- AUA