# CA - IPCC
# COURSE MATERIAL

**Quality Education**
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## FAST TRACK MATERIAL
## COSTING & FINANCIAL MANAGEMENT (PROBLEMS) _36e

(NEW EDITION THOROUGHLY REVISED & UPDATED UPTO JULY 2016. APPLICABLE FOR MAY 2017 IPCC EXAMINATIONS. THIS MATERIAL IS SYNCHRONISED WITH APRIL 2016 EDITION OF ICAI SM AND PM)


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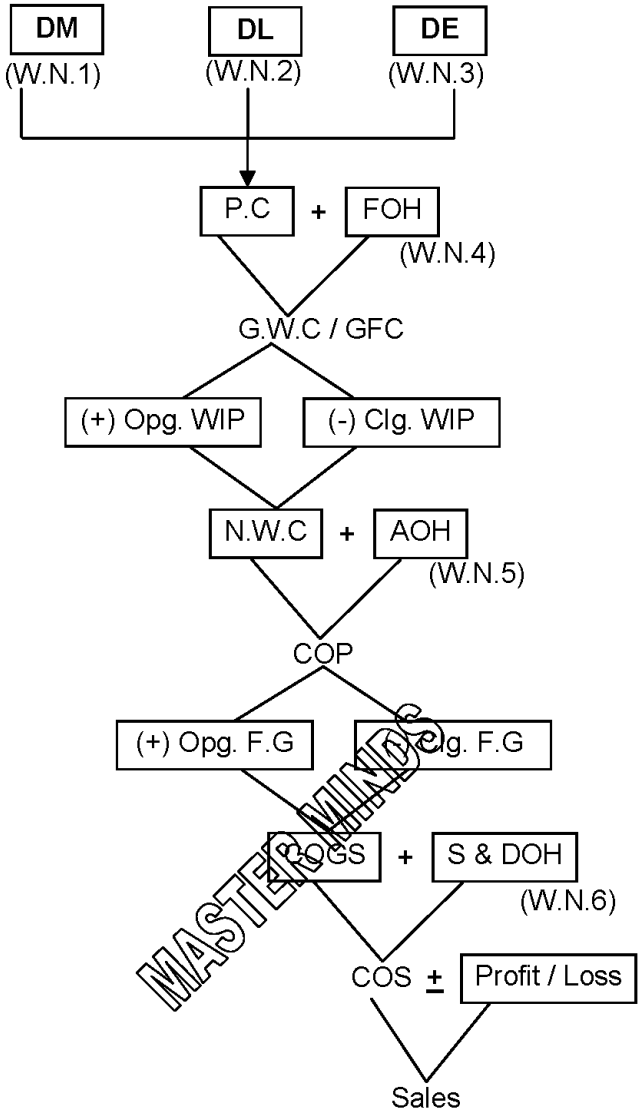
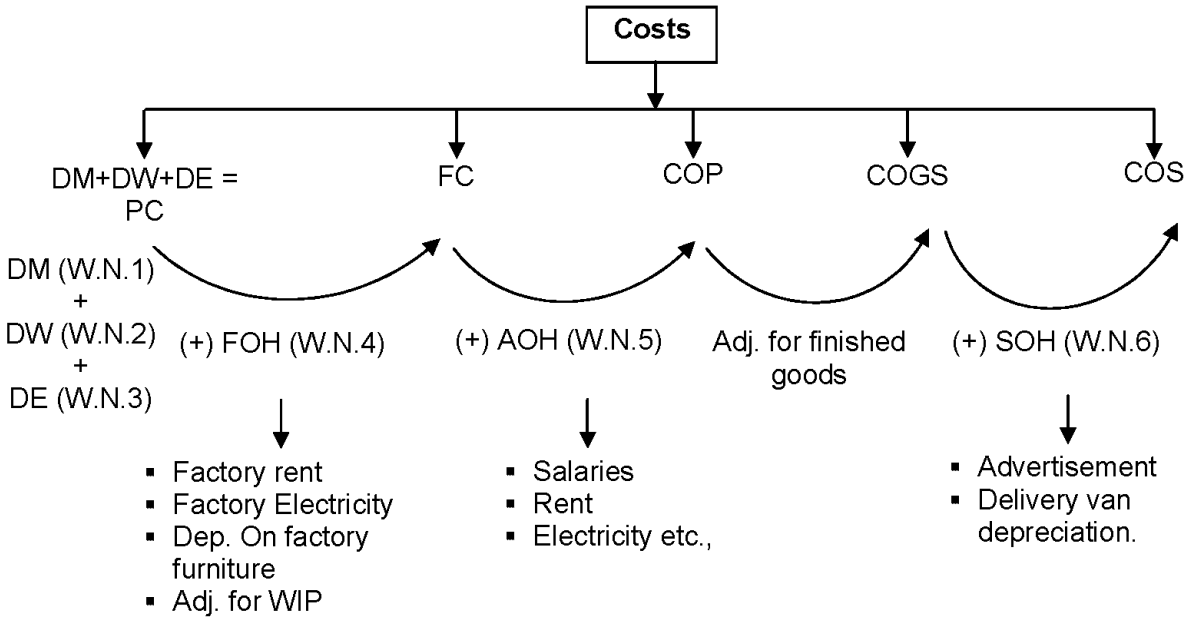
# 1. COST SHEET

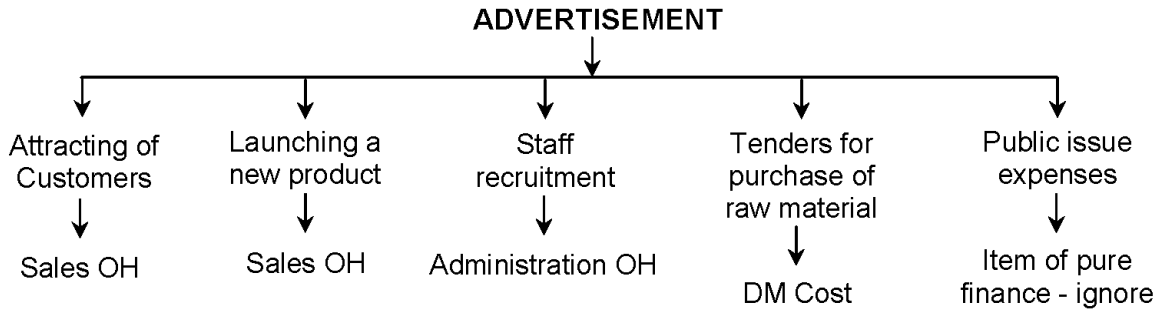


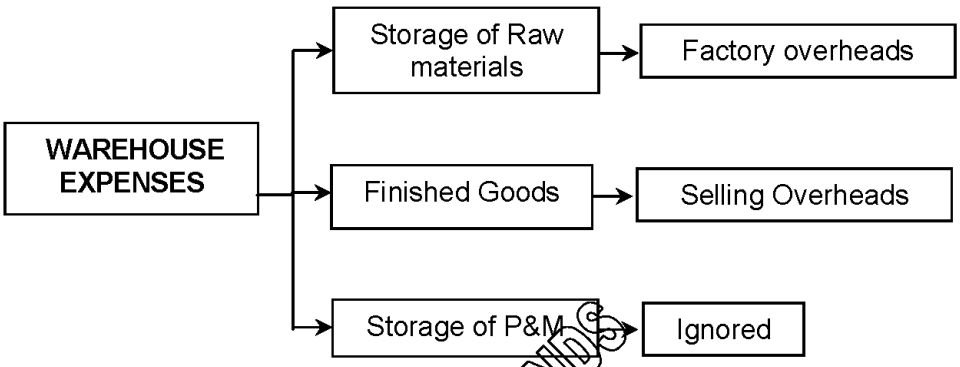


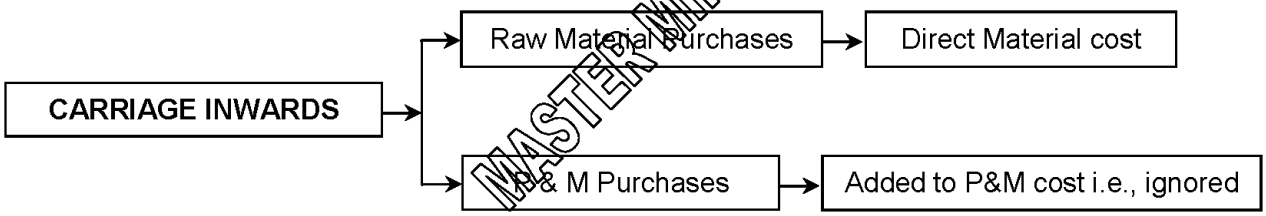




AOH may or may not be added to cost of production.

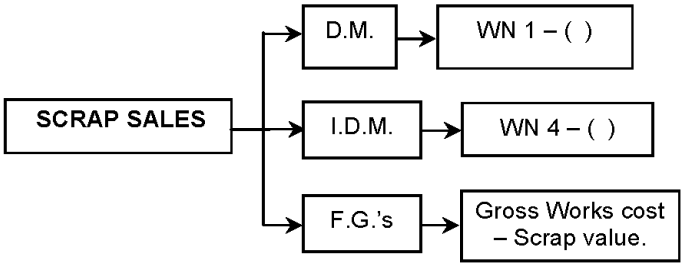
## TREATMENT OF VARIOUS EXPENSES

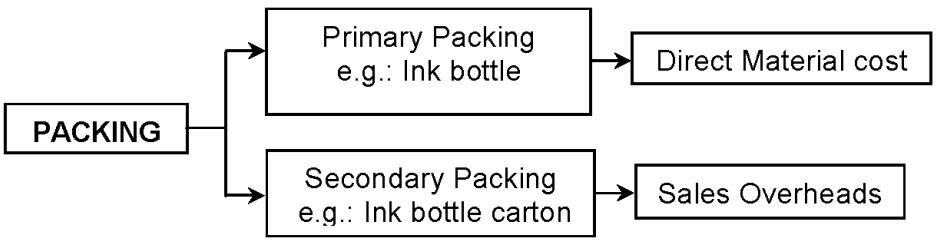


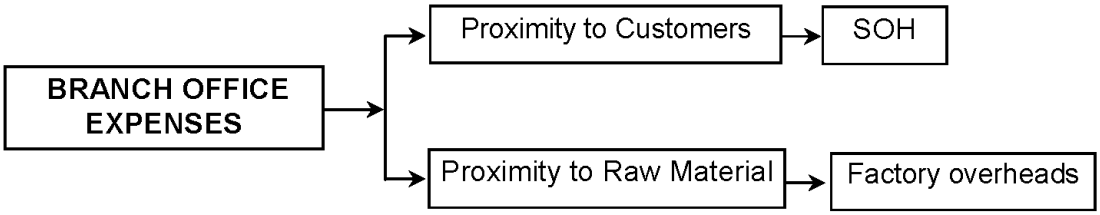



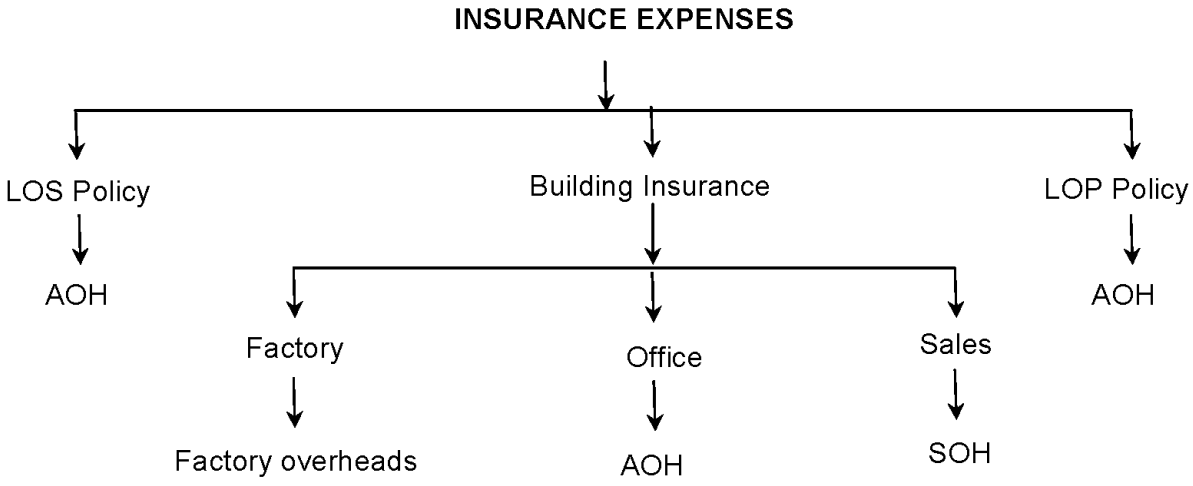



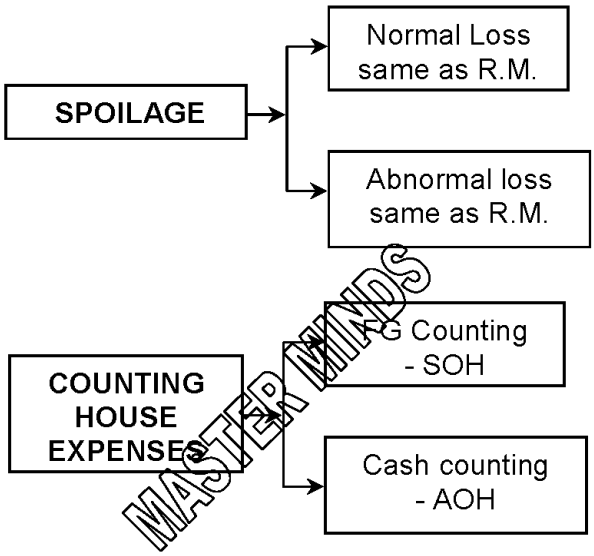


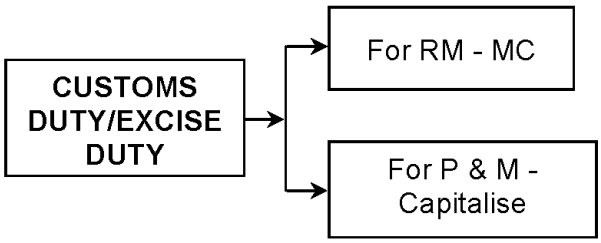


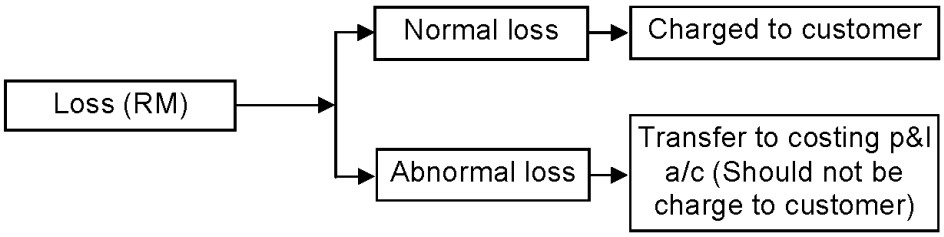



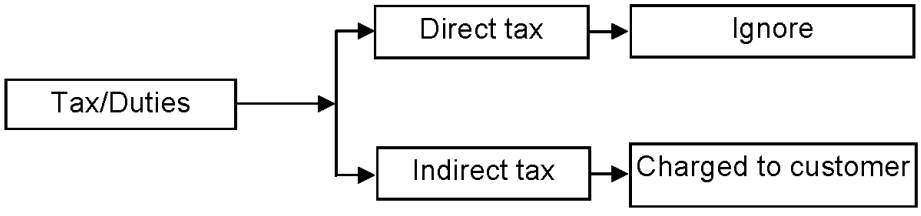


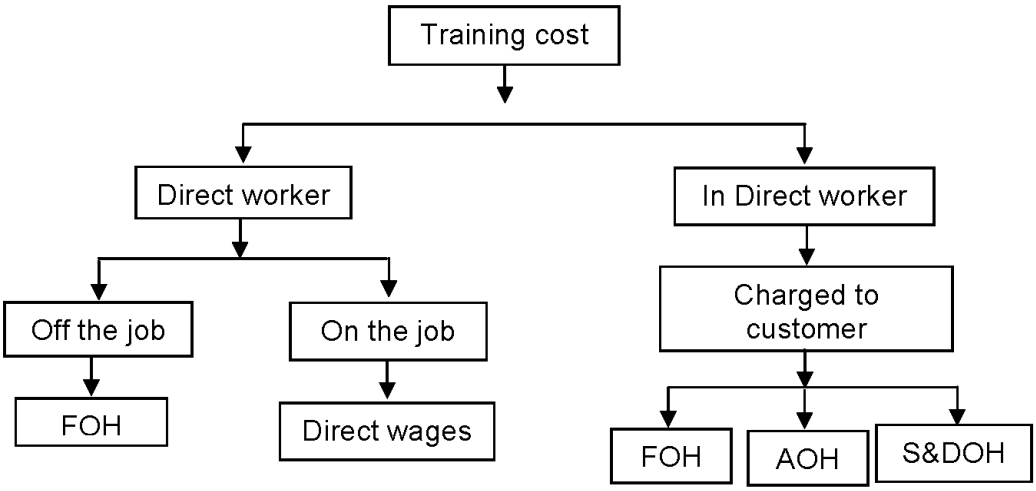






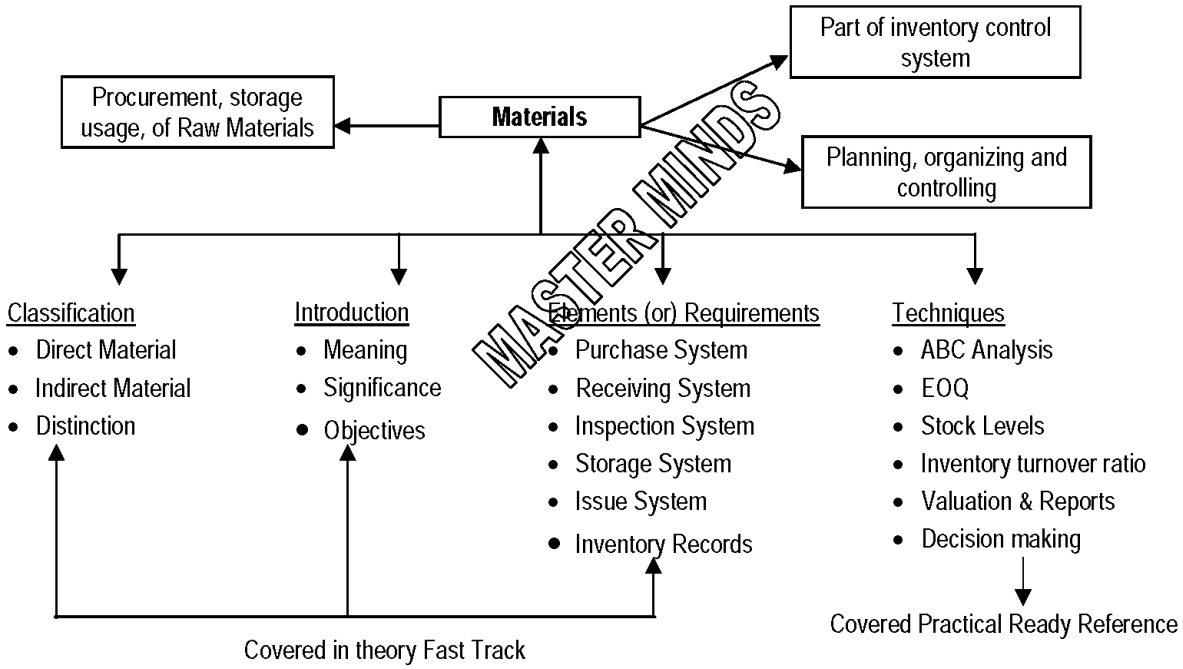



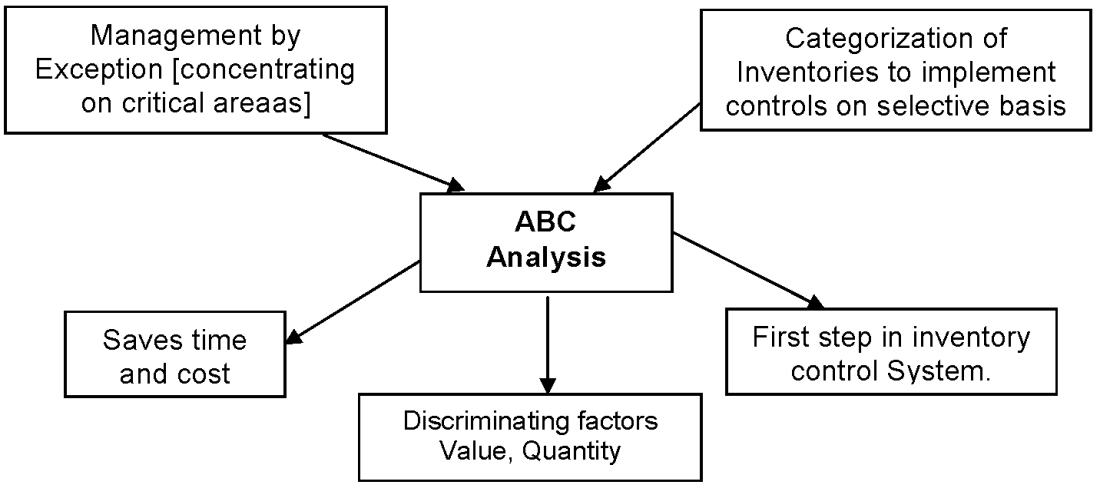



# 2. MATERIALS

## INTRODUCTION:

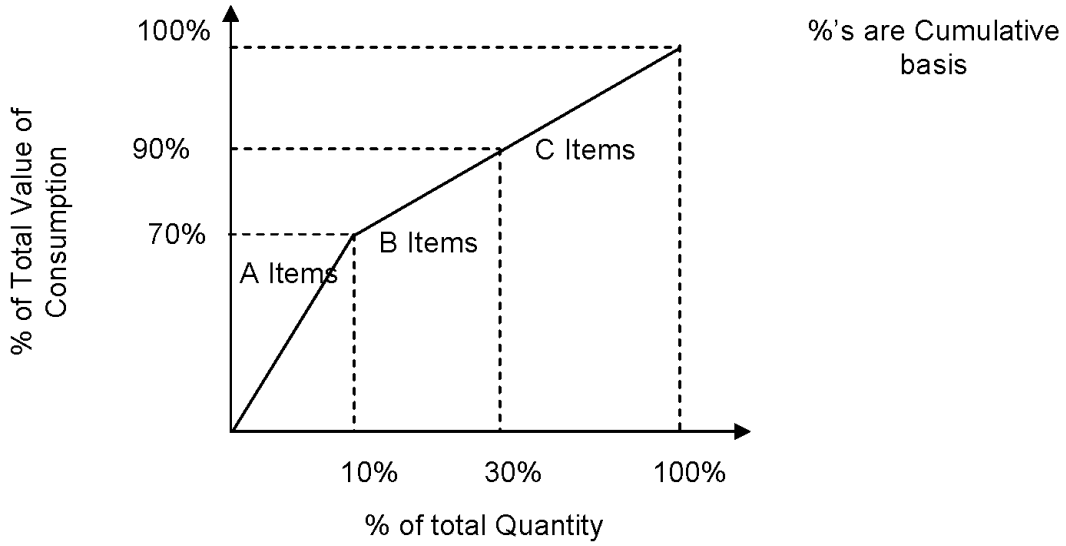



## ABC ANALYSIS



| Category | % of Total Value | % of Total Items | Control |
|---|---|---|---|
| A | 70 % | 10% | Perpetual inventory Control System |
| B | 20 % | 20 % | Periodical inventory Control System |
| C | 10 % | 70 % | No inventory Control System |

**GRAPHICAL PRESENTATION:**




**Practical Steps:**

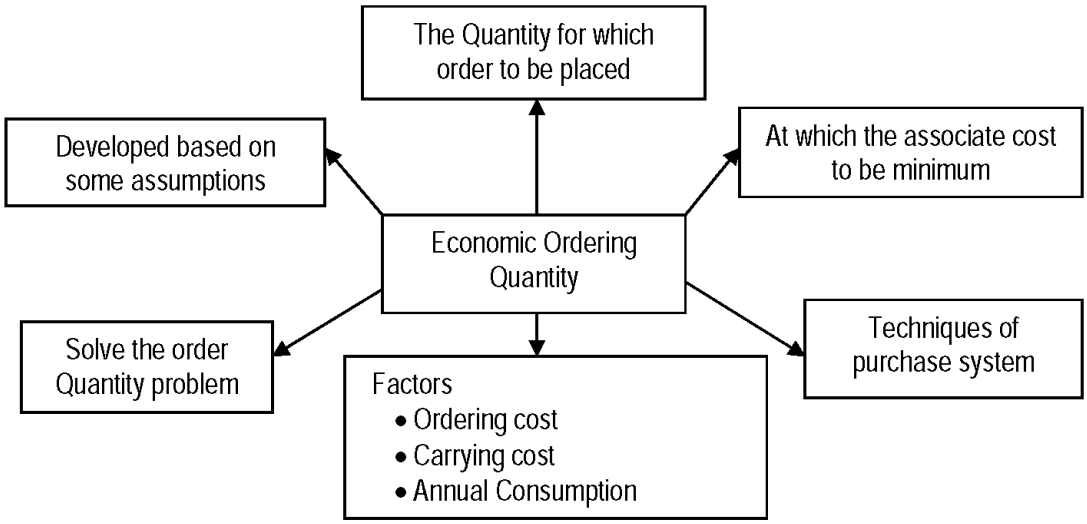
1. Arrange the items in descending order based on cost per unit.
2. Calculate the percentage of consumption of each item in relation to total consumption.
3. Categories based on cumulative percentage of consumption up to 70% [category – A], 70-90% [category – B], 90-100% [category – C].
4. Calculate the percentage – upto 10% [category A], 10-30% [category – B], 30-100% [category – C].



**Notes:**

1. Categories either of one basis [consumption or Quantity], fist & then apply second basis subsequently.
2. Categorization as merely as possible.

**Materials: [EOQ]**



**Calculations of EOQ:**

**Trail & Error Method (or) Tabular Method:**

**EOQ:** Where total cost is minimum

| | Particulars | Different Order Sizes | |
|---|---|---|---|
| | | Order Size – I | Order Size – II |
| A) | Annual Consumption (Units) | - | - |
| B) | Order Size | - | - |
| C) | No. of Orders (A/B) | - | - |
| D) | Cost per order | - | - |
| E) | Total ordering Cost (CxD) | - | - |
| F) | Average Inventory (Units) (Order Size / 2) | - | |
| G) | Carrying cost per unit | - | - |
| H) | Total carrying cost (F X G) | - | - |
| I) | Total Cost (E + H) | - | - |

**Formulae:**

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

Where OC = CC

Total ordering cost (OC) = $\frac{A}{Q} X O$

Total Carrying Cost (CC) = $\frac{Q}{2} X C$

A = Annual Consumption;
O = Ordering Cost per order;
C = Carrying cost per unit per annum.



**Assumptions:-**

**a)** No Safety Stock.

**b)** No lead time

**c)** No Quantity Discounts.

**d)** Consumption evenly accrued through out the year.

**e)** All factors known in Advance.

**Other Important Formulae:**

Total Associated Cost at EOQ = $\sqrt{2AOC}$ (or) Ordering Cost + Carrying Cost.

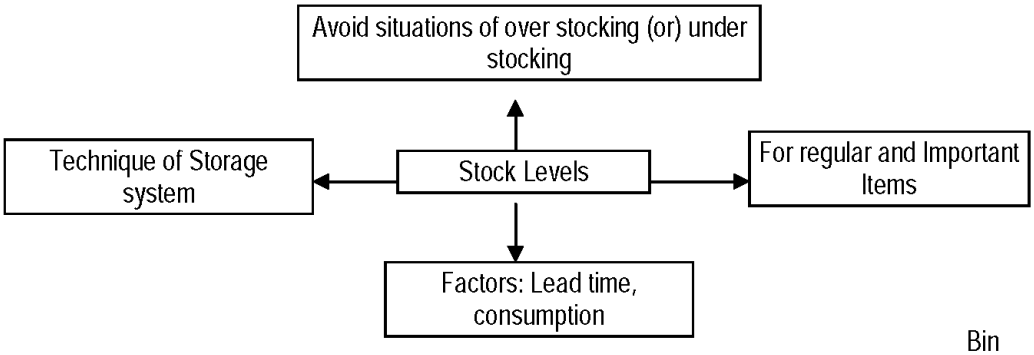
No. of orders per year = $\frac{A}{Q}$, Average Stock = $\frac{Q}{2}$

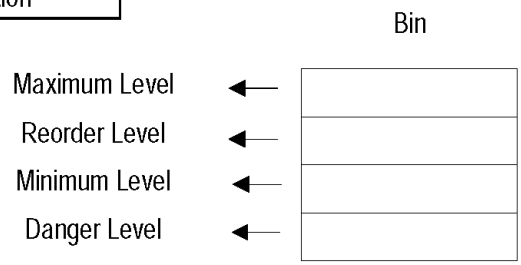
Frequency of order = $\frac{365}{\text{No.of orders per year}}$

**Notes:**

1. Carrying cost tends proportionately with order size, where as ordering cost doesn't (tends invariably or disproportionately).
2. If Quantity Discounts offered decision to be taken after considering total cost for each alternative (raw material cost + ordering cost + carrying cost).
3. Consumption of raw material to be considered but not production or demand of finished goods.
4. Consider input output ratio where ever required.
5. Carrying cost may be expressed as a percentage of Raw material cost. Which includes warehouse rent, cost of working capital, insurance. Etc.,
6. Ordering cost per order is fixed & includes cost of making order, receiving, inspection charges, time devoted, transportation etc.,

## STOCK LEVELS




### Formulas:

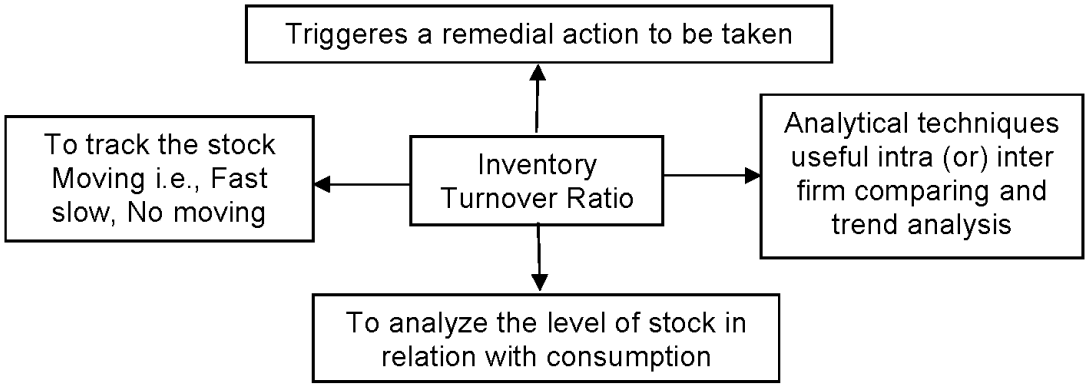
| Level | With Safety Stock | Without Safety Stock |
|---|---|---|
| Re Order Level (ROL) | Safety Stock (or) Minimum Stock + Lead time consumption | Maximum Consumption x Maximum Lead time |
| Maximum Stock | ROL+ROQ – Minimum consumption x Minimum Lead time | EOQ + Safety Stock |
| Minimum Stock | Safety Stock (or) (Maximum Lead time – Normal Lead time) x $\frac{\text{Annual consumption}}{365 \text{ days}}$ | ROL – Normal Lead time x Normal Consumption |
| Average Level = | $\frac{\text{Minimum} + \text{Maximum}}{2}$ (or) | Safety stock+ $\frac{1}{2}$ ROQ |
| Danger Level = | Emergency Delivery period x Minimum usage | Emergency Delivery period x Normal |



### Notes:

1. Usage and lead time must be taken for the same period.
2. The selection of Approach depend upon information provided in the problem
3. The Formulas are objectively determined but not subjectively.
4. The approach followed zero stock risk approach i.e., at any point of time production cannot be interrupted.

### Inventory Turnover Ratio



**Formulas:**

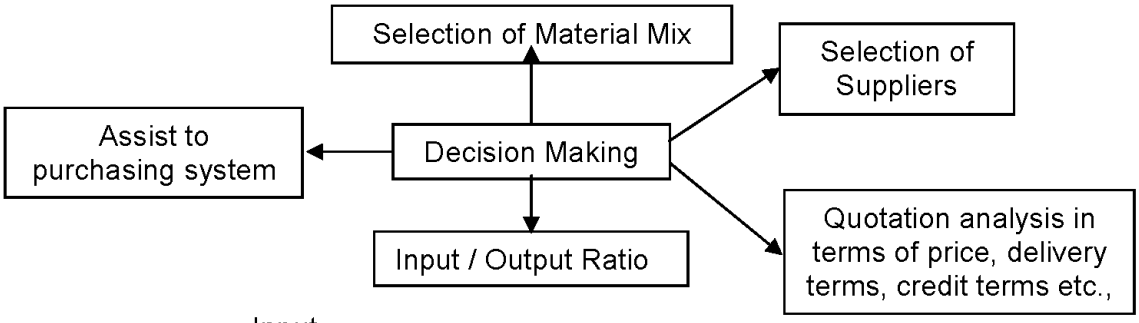
$$\text{Days} = \frac{365}{\text{Inventory turnover ratio (Intimes)}}$$

$$\text{Time} = \frac{\text{Cost of Material consumption}}{\text{Cost of Average Stock}}$$

Consumption = Opening Stock + Purchases – Closing Stock

$$\text{Average} = \frac{\text{Opening Stock} + \text{Closing Stock}}{2}$$

**Decision Making**




$$\text{Input / Output Ratio} = \frac{\text{Input}}{\text{Output}} \times 100$$ (i.e., input required for every unit of out put)

$$\text{Yield Ratio} = \frac{\text{Output}}{\text{Input}} \times 100$$ (i.e., out put can be achieve for every unit of input)

**While Selecting Suppliers:** Quantitative as well as Qualitative factors to be considered. Such as delivery terms, Relation, defectives, assistance after sales, service quality of material etc.



**Chapter: Materials: [Valuation & Reporting]**

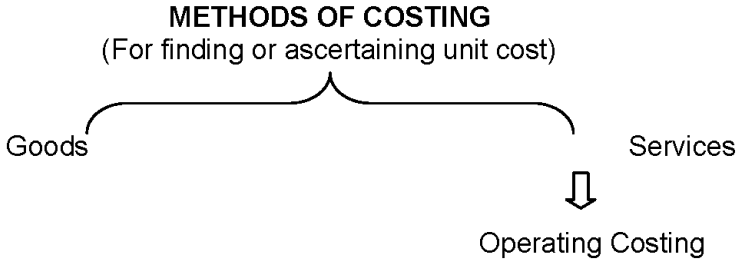
**Cost of Purchases of Raw Material:**

1. Whatever the costs incurred upto stores.
2. Trade discounts, Quantity discounts, Considered, but not cash discount.
3. Excise duty, Customs duty, Sales tax, VAT, Packing (Non Returnable) to be added.
4. Duties not be added if CENVAT credit availed.
5. Normal loss during transportation, handling has to be deducted from quantity but not from cost.
6. However abnormal loss to be transferred to costing P & L A/c. after deducting from quantity as well as cost.
7. Customs duty to be levied on landed cost [ Cost, insurance, freight ]

**Stores Ledger, Bin Card, Stock Control Card etc.,**

1. Records to be maintained for each item of stores. [Stores ledger] depend upon inventory control system i.e., perpetual (or) periodical.
2. Opening stock, purchases, issues and closing stock to be recorded.
3. Verify closing stock physically with books and treatment of shortage [Normal (or) Abnormal] if any.
4. Purchases to be recorded at cost per unit.
5. Issues to be recorded based on pricing method selected by Cost Accounting Department.
6. Inter departmental transfers not to be recorded.
7. Transfer to suppliers, returns from departments to be recorded at their respective prices, irrespective of pricing method followed.

# 3. OPERATING COSTING




**Basic Features:**

1. Services are standardized.
2. Investment in fixed assets is high and working capital is low.
3. Major portion of the total cost is fixed. Cost per unit decrease if cost driver increases.

**Applicability**: to standardize services like .....***Hospitals, Hotels, Passenger Transport, Cargo transport, Canteen, Electricity supply, Cinema Houses etc.***

| INDUSTRY | COST UNIT |
|---|---|
| Hospitals | Patient/bed Days |
| Hotels | Guest Days, Room Days. |
| Passenger Transport | Passenger Kilometers. |
| Cargo Transport | Tonne Kilometers. |
| Canteens | Number of Meals served, Number of tea cups sold etc. |
| Electricity Supply | Kilowatt Hours Or units |
| Boiler Houses | Quantity of Steam raised (therms) |
| Cinema Houses | Number of Tickets, Number of Shows. |



**i)** Accumulated operating cost or collection of Cost for the period includes:

| | | |
|---|---|---|
| Fixed cost | or | Standing charges |
| Variable cost | or | Running charges |
| Semi-Variable cost | or | Maintenance charges |

**ii)** No. of units or cost driver : either

**a)** Simple Cost unit(only one cost driver in use) :Per Km, Per Passenger, Per Patient

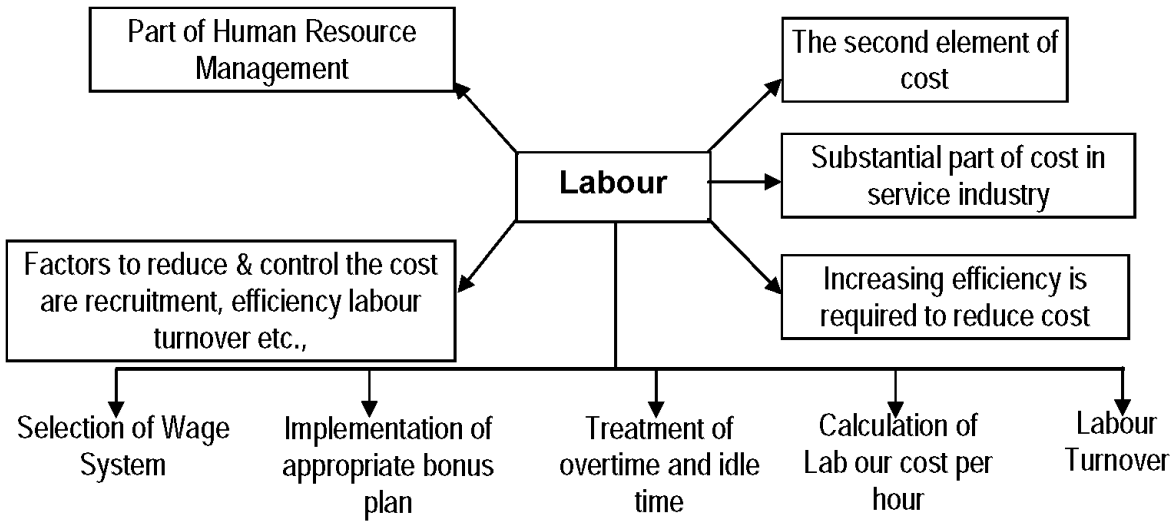
**b)** Composite Cost unit (Two cost drivers in use & mixed with one): Per Tonne Km, Per Passenger Km, Per Patient Day etc.

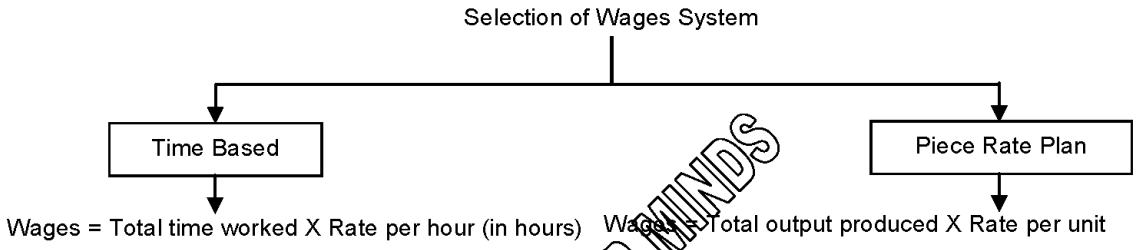
Composite cost driver is more accurate.

**Absolute Tonne Kilometres**: This is the sum total of tonne - Kilometres, arrived at by multiplying various distances by respective load quantities carried.

**Commercial Tonne Kilometres**: It is derived by multiplying total Distance (Kms) by average load quantity.

# 4 & 5. LABOUR - I & II






**Points to be considered to select plan:**

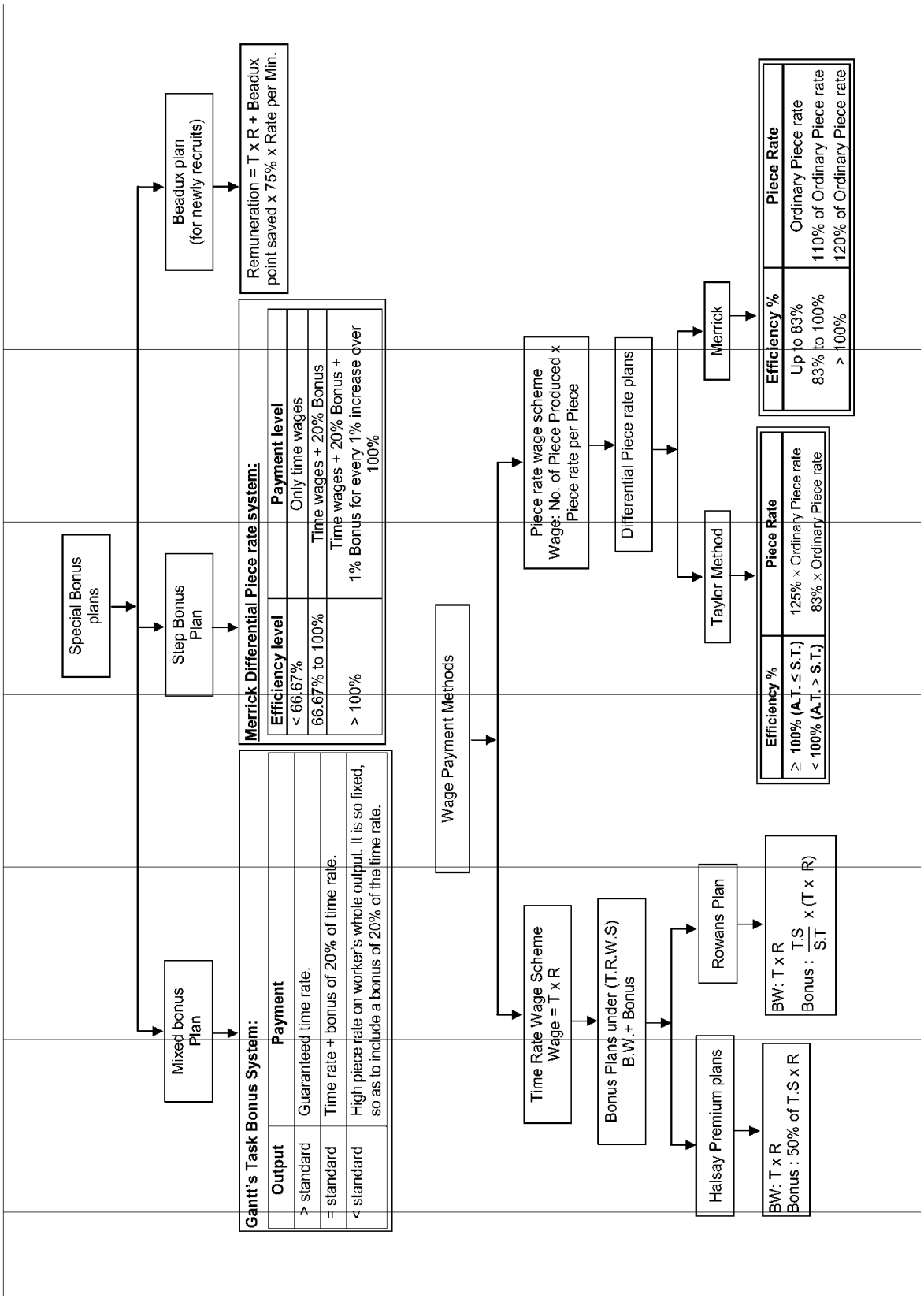
**a)** Supervision Facility

**b)** Quantity or Quality which is important

**c)** Measurement of Output

**d)** Standardized Product

**e)** Production Process i.e., mechanized (or)manual




**Points to be noted:**

**a) Efficiency Ratio.**

$$\text{Based on time} = \frac{\text{ST( for actual out put)}}{\text{AT(or actual out put)}} X100$$

$$\text{Based on Output} = \frac{AO(\text{ for actual time})}{SO(\text{for actual time})} X100$$

$$\text{Activity Ratio} = \frac{ST}{BT} X100$$

$$\text{Capacity Ratio} = \frac{AT}{BT} X100$$

Standard time = Standard time for actual production.

Standard Production = Standard production for Actual time.

**Points to be noted for Bonus calculation:**

**a)** Find out whether plan is standard (or) Non standard.

**b)** Whether it is time based (or) Piece rate based (or) fixed.

**c)** Calculate efficiency (or) Time saved depend upon plan.

Time Saved = Standard time for Actual Output – Actual time taken.

$$\text{Efficiency} = \frac{S.T \text{ for Actual Output}}{AT} \quad (\text{or}) \quad \frac{\text{Actual Output}}{S.O \text{ for Actual Time}}$$

**d)** Apply the formulas if the plan is standard.

**e)** Calculate Basic Wages based on time (or) Output and add the Bonus as per plan.

**Over Time:**

- If any worker works
- Per day more than 9 hours (or) } Whichever is higher
- Per week more than 48 hours

It is considered as over time.



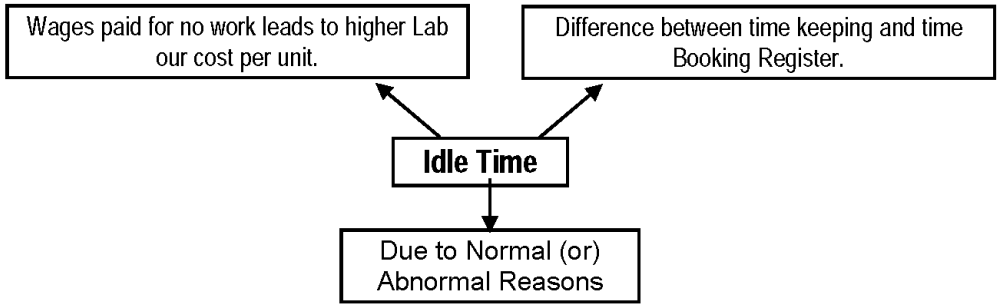
**a)** Unless & Other wise specified as per Factories Act for over time hour over time premium is to be paid which is equal to normal wages.

**b)** It is extra cost to be incurred by the organization.

**Treatment of over time Premium:**

| Reason | Treatment |
|---|---|
| **1.** At the request of customer. | **1.** Added to direct labour cost for that job. |
| **2.** To cope with demand. | **2.** Add to factory over head. |
| **3.** Due to abnormal conditions (or) Inefficiency of management | **3.** Charged to costing Profit & Loss A/c. |
| **4.** It is regular in nature. | **4.** Charged to Direct Lab our cost by calculating inflated wages. |

**Idle Time:**



**Treatment of Idle time wages:**

| Reason | Treatment |
|---|---|
| **1.** Due to normal reasons such as rest period, Lunch, Switching over jobs, Teas, Snacks break, etc., | **1.** Hours has to be deducted but not cost. i.e., normal idle time to be absorbed by good hours worked |
| **2.** Due to abnormal reasons such as Power failure, Raw material shortage, Strikes & lock outs etc., | **2.** The wage paid for the idle time has to be borne by the management i.e., charged to costing P&L A/c Hours & Cost has to be deducted. |

**Calculation of comprehensive Labour Cost per Hour:**

**a)** To charge Labour costs to job it is required to calculate cost pr hour for each type of labour worker and no. of hours worked for each job.

**b)** Which calculating cost per hour these points are worth noted.

**i)** Add dearness allowance to basic wages.

**ii)** Add employee's contribution to P.F & ESI if any to calculate total wages.

**iii)** Calculate No. of actual hours worked by the worker.

i.e., Total hours – normal idle time – Abnormal idle time if any.

**iv)** Comprehensive Rate per hour = $\frac{\text{Total cost to employer}}{\text{Actual hours worked}}$

**c)** While changing labour cost to jobs

First determine total hours worked for each job which will be calculate from job cards (or) time cards

No. of Hour charged to Job = Total Hour – Abnormal idle time.



**Labour Turnover**

| Rapidity of work force in an organization changes. | Cost associated with Lab our turnover preventive costs (or) Replacement costs. |
|---|---|

**Calculation of Labour Turnover:**

**1.** Separation Method = $\frac{\text{No. of Separations}}{\text{Average No. of workers}}$

**2.** Replacement Method = $\frac{\text{No. of Replacements}}{\text{Average No. of workers}}$

**3.** Recruitment Method = $\frac{\text{Recruitments other than Replacements}}{\text{Average No. of workers}}$

**4.** Accessions Method = $\frac{\text{Total recruitments}}{\text{Average No. of workers}}$

**5.** Flux Method:

Alternative – I = $\frac{\text{Seperations} + \text{Replacements}}{\text{Average No. of workers}}$

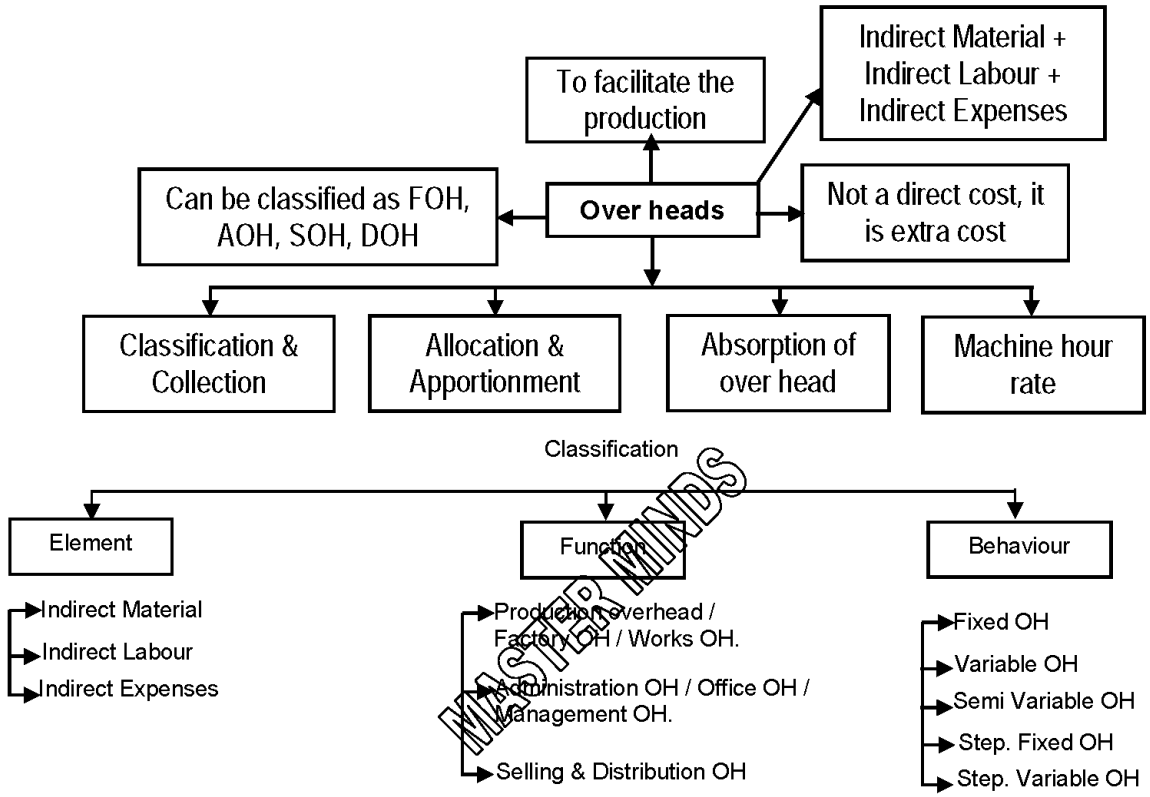
Alternative – II = $\frac{\text{Seperations} + \text{Replacements} + \text{New Recruitments}}{\text{Average No. of workers}}$

Average No. of workers = $\frac{\text{Opening} + \text{Closing}}{2}$

**Notes:**

1. To take decision whether to avoid Labour turnover (or) not is depend upon cost of preventing Labour turnover (or) cost of Replacing Labour left.
2. For calculation of cost of Replacing Labour i.e., Training & Recruitment, loss of contribution due to delay in recruitment etc.,
3. The Profit with out Labour turnover & the profit with Labour turnover has to be compared for calculation or cost of Labour turnover.

# 6 & 7. OVERHEADS – I & II

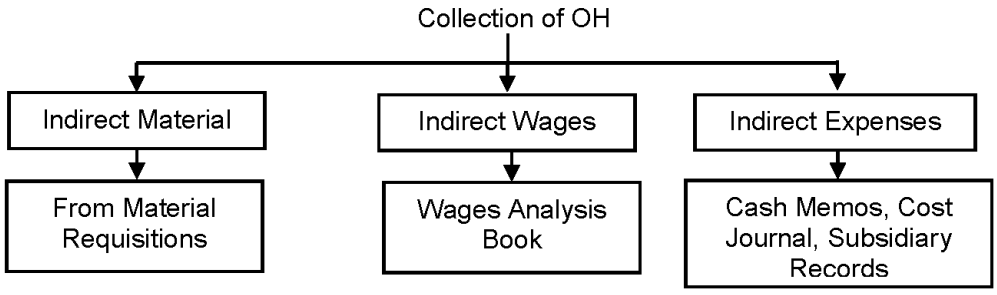




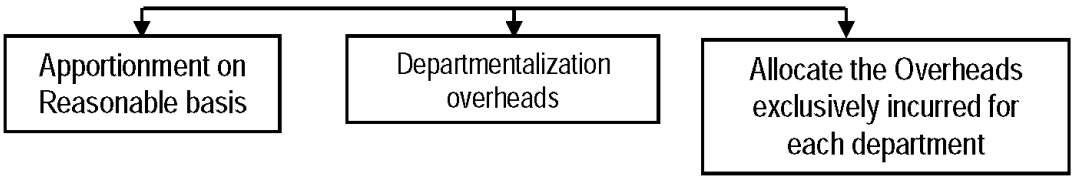

Segregation of Semi Variable OH in to fixed & variable.

$$\text{Variable OH. Rate} = \frac{\text{Difference in total OH}}{\text{Difference in Activity}}$$

Fixed Cost = Total Semi Variable Cost – Variable element.




Allocation and apportionment of overheads



1. If expenses incurred for each department known separately we can allocate the overheads to the respective department.
2. In case Expenses incurred are not known for each department, we have to apportion the overheads in between the departments on Reasonable basis as follows.

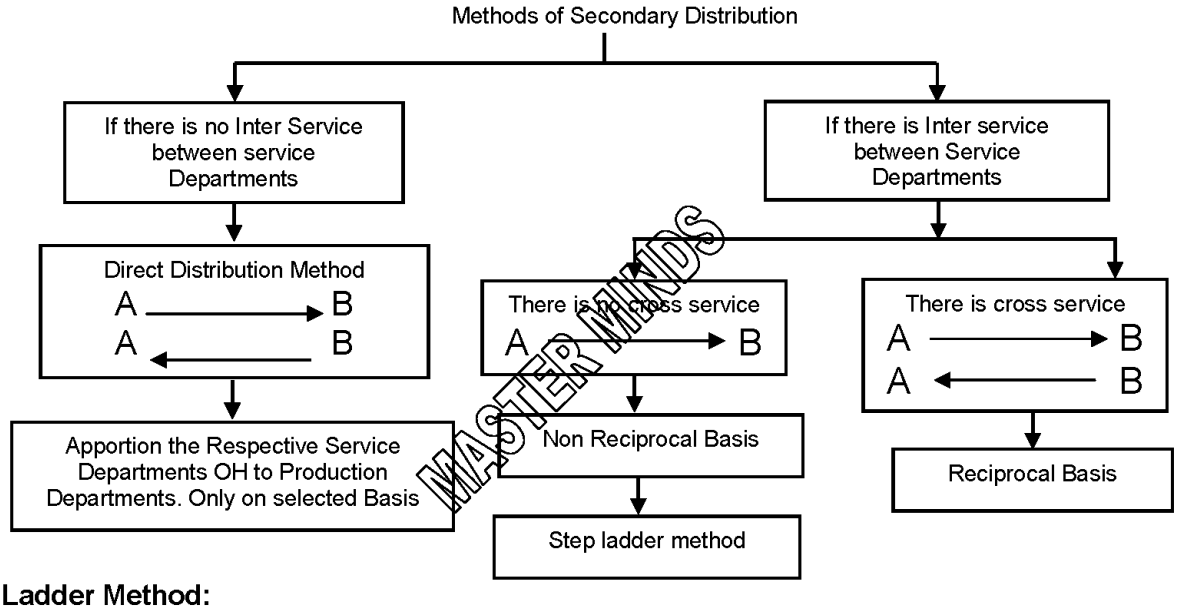
| Item | Basis |
|---|---|
| **1. Common Items of Production Overheads** | |
| **a)** Factory Rent, Rates & Taxes | Floor area Occupied |
| **b)** Repairs & Maintenance of Factory Building | Floor area Occupied |
| **c)** Insurance of factory building | Floor area Occupied |
| **d)** Depreciation of factory building | Floor area Occupied |
| **2.** | |
| **a)** Repairs & Maintenance of plant & Machinery | Capital cost of plant & machinery |
| **b)** Insurance of plant & machinery | Capital cost of plant & machinery |
| **c)** Depreciation of plant & machinery | Capital cost of plant & machinery |
| **3. Insurance of Stock** | Insured Value of Stock |
| **4.** | |
| **a)** Supervision | No. of Workers |
| **b)** Canteen, Staff welfare expenses | No. of Workers |
| **c)** Time keeping & Personnel office expenses | No. of Workers |
| **5.** | |
| **a)** Compensation to workers | Wages |
| **b)** Employees State Insurance Contribution | Wages |
| **c)** Provident Fund Constribution | Wages |
| **6.** Stores overhead / Stores keeping Expenses | Value of direct materials |
| **7.** Material handling charges | Weight of direct material |
| **8.** Lighting & Heating | No. of light points / area |
| **9.** Power / Steam consumption | Horse Power of machines (or) machine hours |



1. Departmentalization of overheads i.e., apportionment & Allocation of overheads can be presented as primary distribution table.
2. After completion of primary distribution the service department overhead has to be reapportioned to production department is called secondary overhead distribution table.
3. Finally we have to charge whatever the overhead incurred to the production for that first we have to identify the cost centers such as departments either production (or) service departments & apportion and allocate the overhead to find out the overheads for each department.
4. However output produced only at production departments, service departments provides assistance to production departments so that service department overheads has to be Reapportioned to production departments on some reasonable basis as follows.

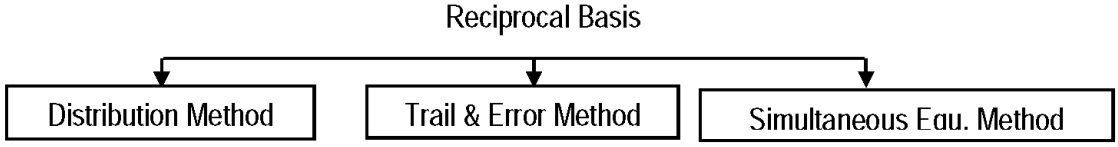
| Service Department | Basis |
|---|---|
| **1.** Purchase Department | Number of purchase orders or Number of purchase Requisitions or Value of materials purchased. |
| **2.** Stores Department | Number of material Requisitions or value of materials issued. |
| **3.** Time-keeping Department, Pay-roll Department | No. of employees or Total Lab our Hours or machine hours. |

| | |
|---|---|
| **4.** Personnel Department, Canteen, Welfare, Medical, Recreation Department | No. of Employees or Total wages |
| **5.** Repairs and Maintenance | No.of Hours worked in each department |
| **6.** Power House | Meter reading (or) H.P Hour for powers, meter reading or floor space of lighting, heat consumed. |
| **7.** Inspection | Inspection Hours or value of Items inspected |
| **8.** Drawing Office | No. of drawings made or man-hours worked. |
| **9.** Accounts Department | No. of workers in each department or time devoted. |
| **10.** Tool Room | Direct Lab our Hours or machine hours or Wages |




**Step Ladder Method:**

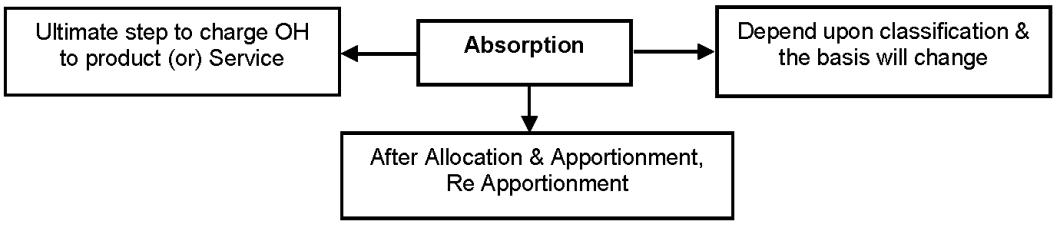
1. First identify the Service Department which provides service to maximum no. of Departments (Production + Service) and apportion that department over head to the rest of Departments.
2. Next the Second Service Department which provides service to maximum no.of departments after first one & apportion that Department OH to rest of departments (But not to the First Service Department).
3. Continue the procedure for all Departments.
   - **a)** Selection of Sequence of Service Departments to be apportioned is important in case of Step Ladder Method.
   - **b)** If it is given in the problem follow the given sequence.



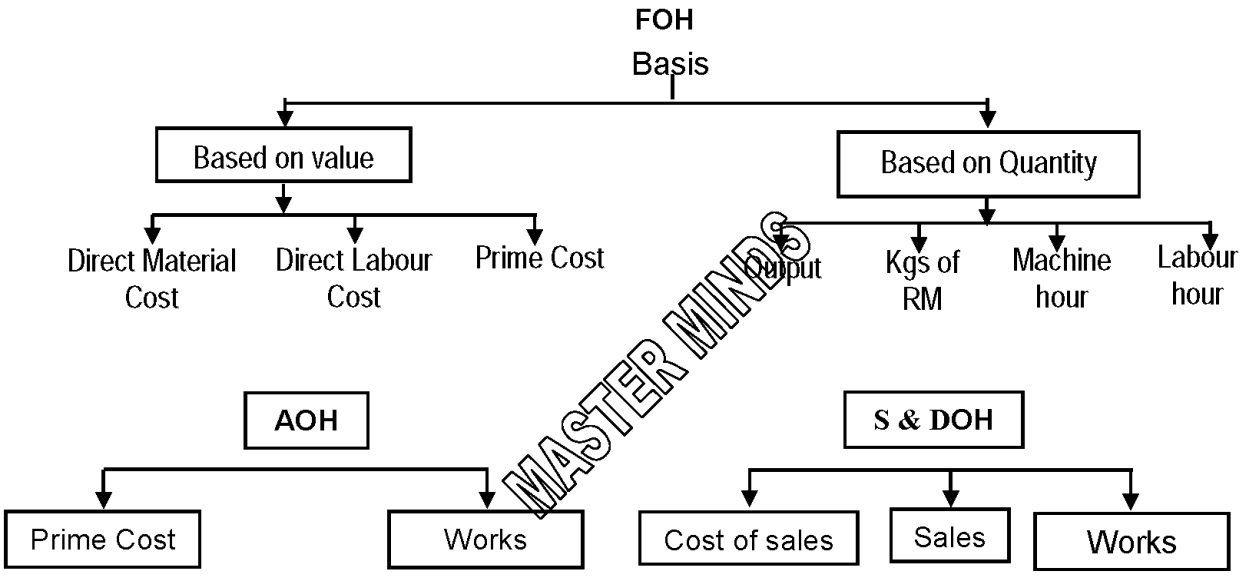

1. Any one of the three methods above can be selected to apportion the Service Departments OH to other Departments [Production + Service]
2. Distribution is cyclic in nature until all Service department OH is exhausted.
3. In case of two Service Departments having large amount of OH then select. Simultaneous equation method, otherwise other methods are suitable.

4. What ever the cost incurred at Service Departments treated as OH even though the costs are termed as Direct cost in relation to Service Departments.

   **For Ex:** In a Cement manufacturing company, the Diesel cost incurred to produce power in power house (Service Department) can be termed as direct material cost for power house. But with respect to production (cement). It is Indirect material treated as OH to be reappointed to production Departments.




Different OH's Can be absorbed on Different basis as follows:



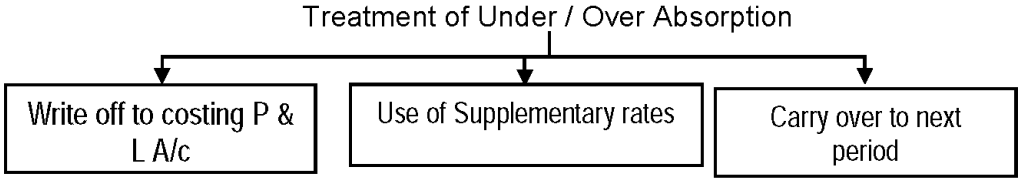

1. While selecting basis we have to consider Various Factors such as the dominant element of cost, production procedure, availability of information, Industrial Norms, connection with overheads etc.

$$\text{Over head Recovery Rate} = \frac{\text{Estimated OH}}{\text{Estimated basis}}$$

**Under / Over Absorption:**

a) If Actual OH > Absorbed OH => Under Absorption

   Actual OH < Absorbed OH => Over Absorption.




b) Depend upon cause for difference, the treatment is different.

**Blanket V/S Departmental.**

a) If a single O.H.R.R, is calculated for all Departments it is known as Blanket Recovery Rate.

b) A Separate OHRR is calculated for each department Separately on distinct basis it is known as Departmental Recovery Rate.

**c)** In case Department wise information is available it is better to, calculate Departmental Recovery Rate, rather than applying Blanket Recovery Rate.

**Machine Hour Rate:**

1. **In case of mechanized Production:** To calculate the cost of production. We have to calculate the number of hours the machine is used for each type of job (or) product and the Rate per hour for machine.

   Cost to be charged = No. of hours machine used X Rate per hour

   To calculate rate per hour for each type of machine the following points has to be considered

2. Estimate the capacity of machine either it is practical capacity (or) operating capacity, Normal capacity (or) Capacity based on sales expectances.

3. Estimate the cost to be incurred to operate the machine for a given period

$$\text{Machine Hour Rate} = \frac{\text{Estimated Cost}}{\text{No. of hours worked}}$$

   While calculating No. of hours due regard to be given for Normal Idle time and Abnormal Idle time.

**Comprehensive View of Overheads Chapter:**

1. Overheads = Indirect material + Indirect Lab our + Indirect expenses
2. The costs cannot be identified with cost object.
3. some of them incurred periodically irrespective of production.
4. Ultimately we have to establish correlation in between overheads incurred & output produced.
5. For that we have to identify the place where Expenses incurred, How it can be collected & grouped as per the requirement and Departmentalize by that charging the overheads to production finally.
6. After Absorbing overheads to products. At the end of the period we can compare it with actual overhead's incurred to calculate under or over absorption of overheads.
7. Depends upon the reason for under / over absorption we can dispose off.



# 8 & 10. BOOK KEEPING & RECONCILIATION

1. Usually in the business there are two types of transactions occurs, ***i.e. financial transactions & Cost transactions.***

2. **Cost Control Accounts:** These are accounts maintained for the purpose of exercising control over the costing ledgers and also to complete the double entry in cost accounts

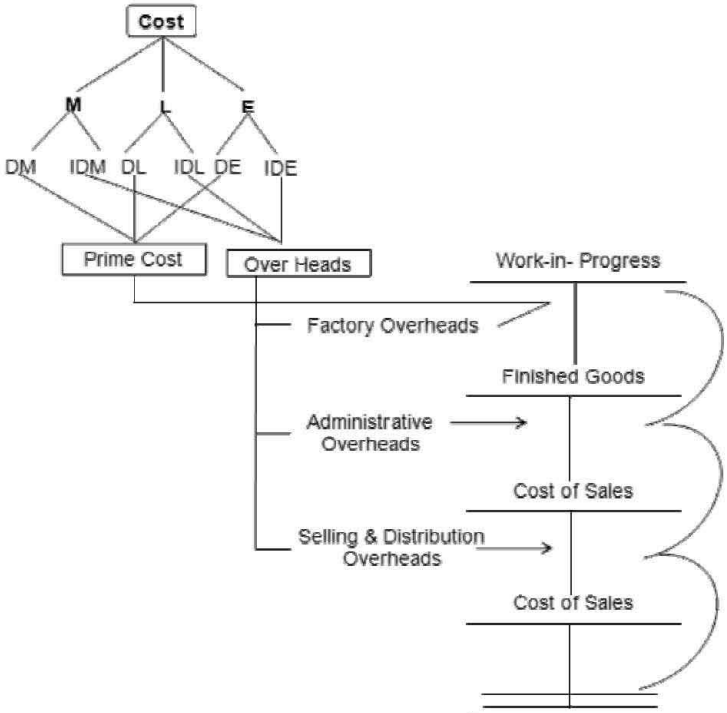
   There are Two systems of maintain cost accounts as:

| | |
|---|---|
| **Non – Integral System:** Financial & Cost books are maintained separately. | **Integral System:** Both financial & cost transactions are recorded in same set of books. |

3. **Reconciliation:** In the Non-Integral System of Accounting, since the cost and financial accounts are kept separately, it is imperative that those should be reconciled; otherwise the cost accounts would not be reliable.

   The reason for profit differences in the cost & financial accounts can be of purely financial nature (Income and expenses ignores cost books) and notional nature (Opportunity cost etc. ignores Financial books).

**Non Integral System:** A system of accounting where both costing and Financial transaction are recorded in the same set of books.




**Ledgers in cost books:**

1. Cost Ledger /General Ledger adjustments or control (Cr)
2. Stores Ledger (raw material components) (Dr)
3. WIP Ledger (Dr)
4. Finished Goods Ledger(Dr)



**Important Control Accounts in cost system: (refer above chart):**

1. Stored Ledger Control Account
2. Wage Control Account
3. Factory Overhead Account(under /over applied, Dr/Cr)
4. W-I-P Control Account
5. Finished Goods Control Accounts
6. Administration Overhead Account(under /over applied, Dr/Cr)
7. Selling and Distribution Overhead Account(under /over applied, Dr/Cr)
8. Cost of Sales Account
9. Overhead Adjustment Account
10. Costing Profit & Loss Account
11. Cost Ledger(G/L) Adjustment Account

**Profit Reconciliation:** Two of profits based on cost and financial records are reported. There is a need for reconciling the differences between these figures of profits.

**List of items causing differences between Cost & Finance Books that affects profit:**

1. Differences in Stock Valuation
2. Difference in absorption (OH)
3. Items included in the Financial but not in Cost Accounts, Vice versa.

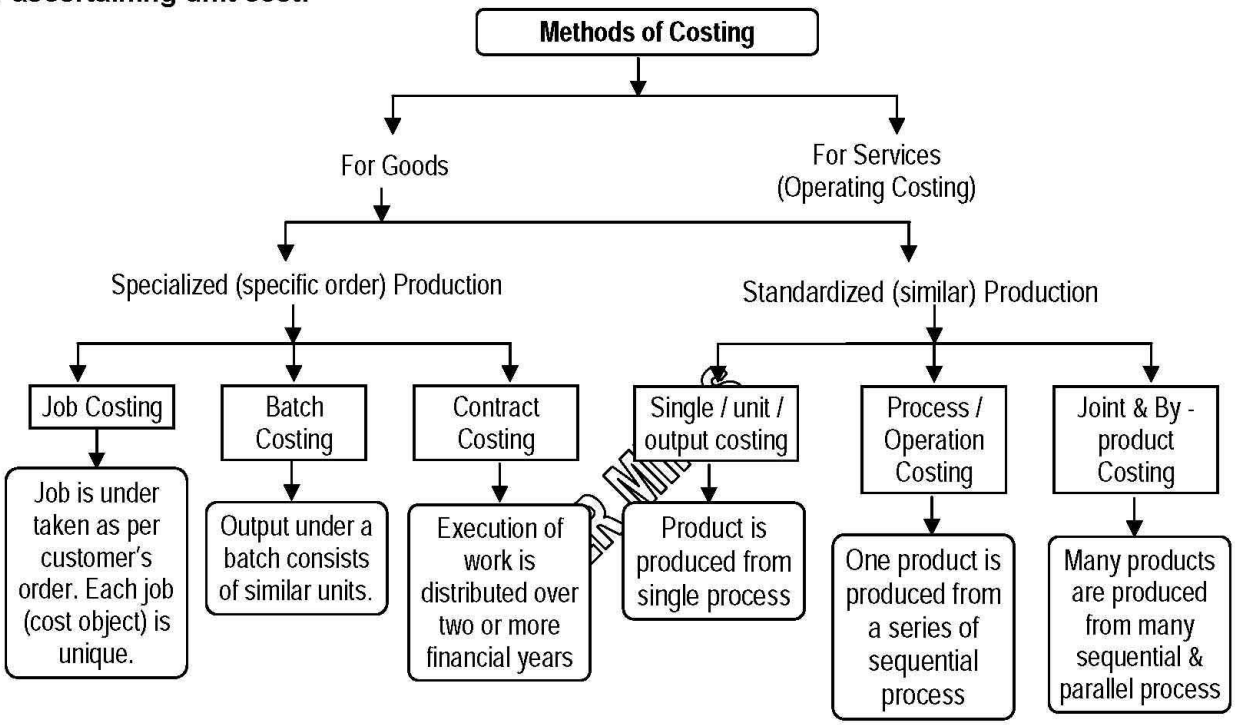
**Integral System:** Is the name given to a system of accounting, whereby cost and financial accounts are kept in the same set of books. It provides relevant information which is necessary for preparing financial statements as per requirement of law.

**Advantages:**

1. No need for reconciliation
2. Less efforts ( due to one set of books)
3. Less time consuming
4. Economical process ( centralization of accounting function)

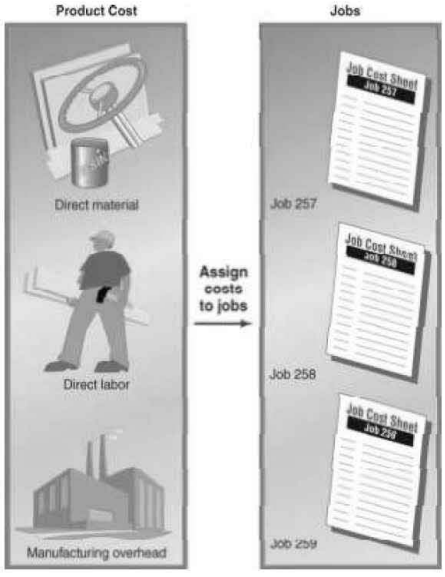
# 9. JOB & BATCH COSTING

**For ascertaining unit cost:**

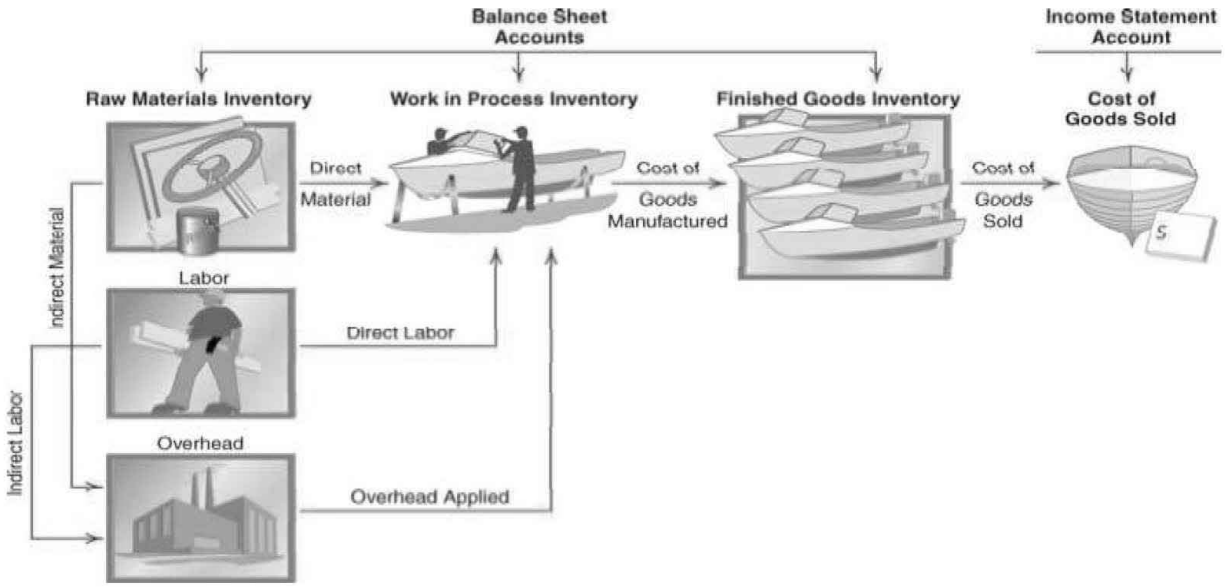



- A separate job cost sheet or Job card is used for each job or cost object.

**Relating Product Costs to Jobs (Each Cost Object)**



## Flow of Product Costs in Job Order System



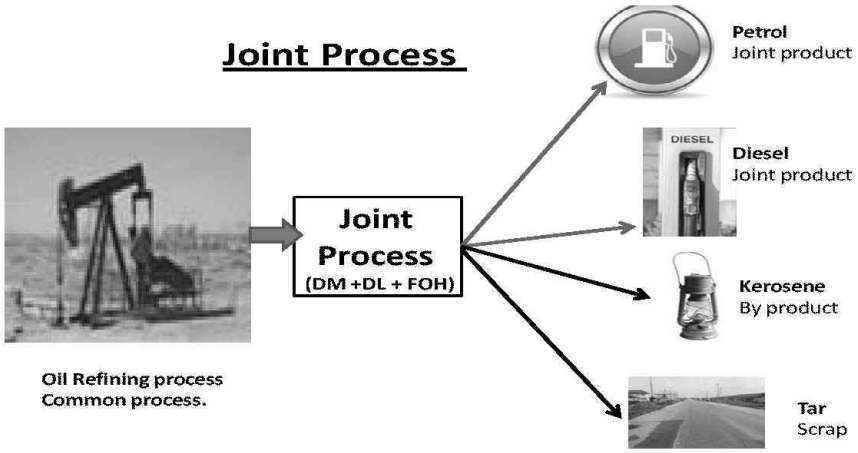

**Advantages:**

1. To ascertains units cost & profit or loss by each job
2. To control the cost (through efficiency)
3. To know detailed analysis of costs, I.e. Materials, Labour, Overheads etc.



# 11. JOINT & BY - PRODUCTS

**Joint process** - Single process in which one product cannot be manufactured without producing others.




A joint process produces;

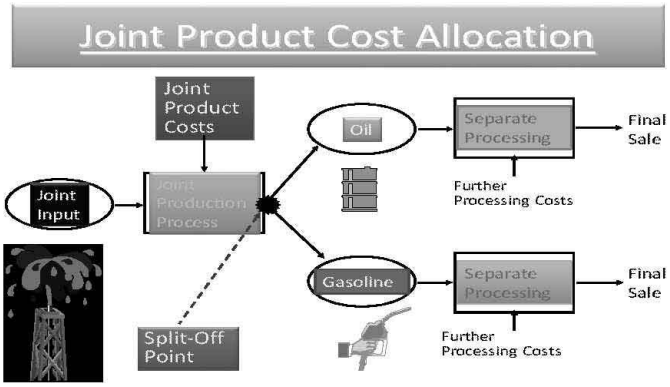
**Joint products** - Primary outputs of a joint process; substantial revenue-generating ability

**By-products –** Incidental output of a joint process with a higher sales value than scrap but less than joint products.

**Scrap** –Incidental output of a joint process with a low sales value

**Waste** - Residual output with no sales value

## JOINT PRODUCT COST




- The ***split- off point*** is the stage of production process where one or more products in a joint-cost setting become separately identifiable.
- **Joint costs** – material, labor, and overhead incurred during a joint process
- ***Separable costs*** are all costs (manufacturing, marketing, distribution, etc.) incurred beyond the split off point that are assignable to one or more individual products.

### Why we Allocate Joint Costs?

- To compute inventory cost &measurement of income
- To determine cost reimbursement under contracts
- For Decision making (i.e. Process further or not)



### METHOD OF APPORTIONING JOINT COST:

1. **Physical-Units Method:** Allocation based on a physical measure of the joint products at the Split-off point.
2. **Average unit Method:**
3. **Contribution Margin Method:**
4. **Technical Evaluation Method:**
5. **Market Value at split off point method:**
6. **Market value after split off point Method:**
7. **NRV method:**
8. **Relative-Sales-Value Method:** Allocation based on the relative values of the products at the Split-off point.
9. **Net-Realizable-Value Method**: Allocation based on final sales values less separable processing costs.

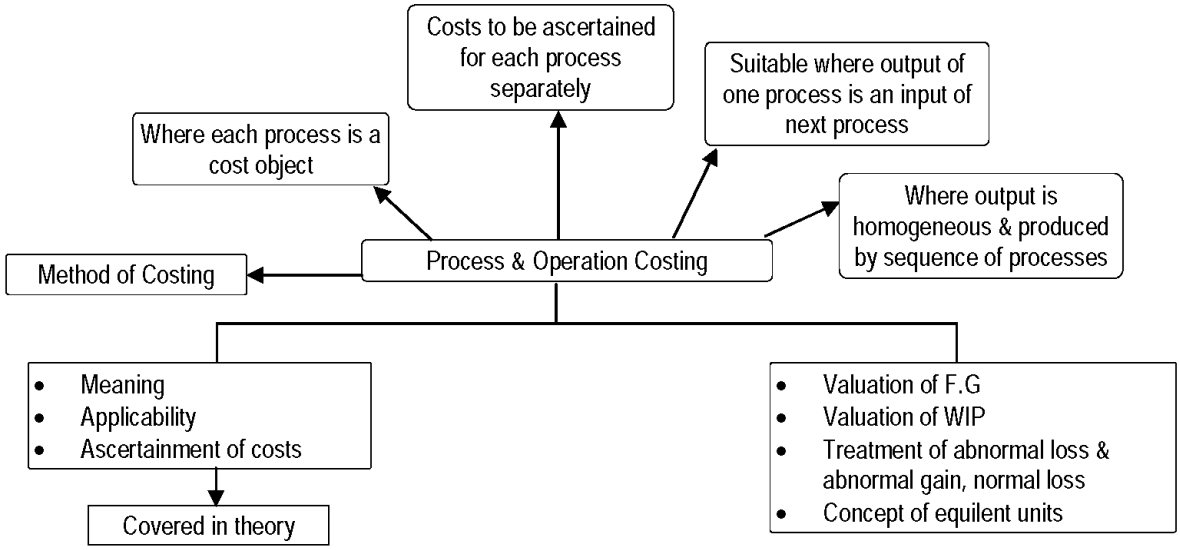
### BY-PRODUCT COST

1. By-product costs are not individually identifiable until manufacturing reaches a split-off point.
2. By-product costs have a relatively insignificant sales value in comparison with other products emerging at split-off.

### COST ACCOUNTING TREATMENT:

1. When By-Product are of small total value: Credited P/L A/c or Deduct from the total cost of main product.
2. When By-Product are of considerable total value: They may be regarded as Joint product rather than By-Product.
3. When the By-Product require further processing: The NRV of the By-product at the split-off point may be arrived at by subtracting the further processing cost from the realisable value of By-product.

# 12 . PROCESS COSTING




## Process A/c & Valuation of Factory overheads

$$\text{Cost per good unit} = \frac{\text{Total cost} - \text{Scrap Value of Normal Loss}}{\text{Total input} - \text{Normal Loss Units}}$$

Abnormal units = Total input – Normal Loss – Total Actual Output

Input – Normal Loss = Expected or Normal Production

Normal Loss = Input x Percentage of Normal Loss

Abnormal Loss = Expected Production – Actual Production

Abnormal Gain Units = Total Actual Output – Normal Loss Units – Total input

Abnormal Gain = Actual Production – Expected Production

Actual production = Input – Actual Loss

Actual Loss = Input – Actual Output



**Important Points:**

1. If there is no opening & closing WIP then we can apply above formulas.
2. Unless & otherwise specified we can assume abnormal loss. Occurrence is at the end of process i.e. the Abnormal Loss to be calculated equal to finished goods value.
3. Abnormal gain is always 100% complete in all respects.

**Value of WIP:**

1. Selection of method is important to value WIP. i.e. FIFO (or) LIFO (or) weightage average.
2. Equivalent units statement to be prepare to value the WIP depend upon selected method
3. Normal Loss units not to be added to equivalent units.
4. Abnormal gain 100%, Complete with respect to all elements i.e. material, labour, overhead, etc.

## Specimen format of Equivalent units statements

| Input | Particular | Output | Material | | Labour | | Overhead | |
|---|---|---|---|---|---|---|---|---|
| | | | % of completion | Equivalent units | % of completion | Equivalent units | % of completion | Equivalent units |
| | | | | | | | | |

## Treatment of Normal Loss, Abnormal Loss, Abnormal Gain

**Normal Loss:**

1. Expressed as a percentage of either on total input (or) output (or) throughput (or) production etc..
2. Normal loss units to be included for match the input & output
3. Cost not to be apportion to normal loss if any from cost of process.

**Abnormal Loss:**

1. Abnormal loss occurs when actual output is lower than expected output.
2. Unless & otherwise specified we value the abnormal loss equal to finished goods assumed 100% complete with respect to all elements
3. If completion stages are given in the problem. We have to value according to that
4. While preparing Abnormal Loss A/c

   Debit with process A/c with cost of Abnormal Loss & Credit with costing P&L Account.

**Abnormal Gain:**

1. Abnormal Gain arises when the actual output (Finished Goods = Closing Working Progress)
2. Always values equivalent to finished goods i.e. 100% complete irrespective of completion stages given in the problem.
3. While preparing Abnormal Gain Account

   Credit with Process A/c &

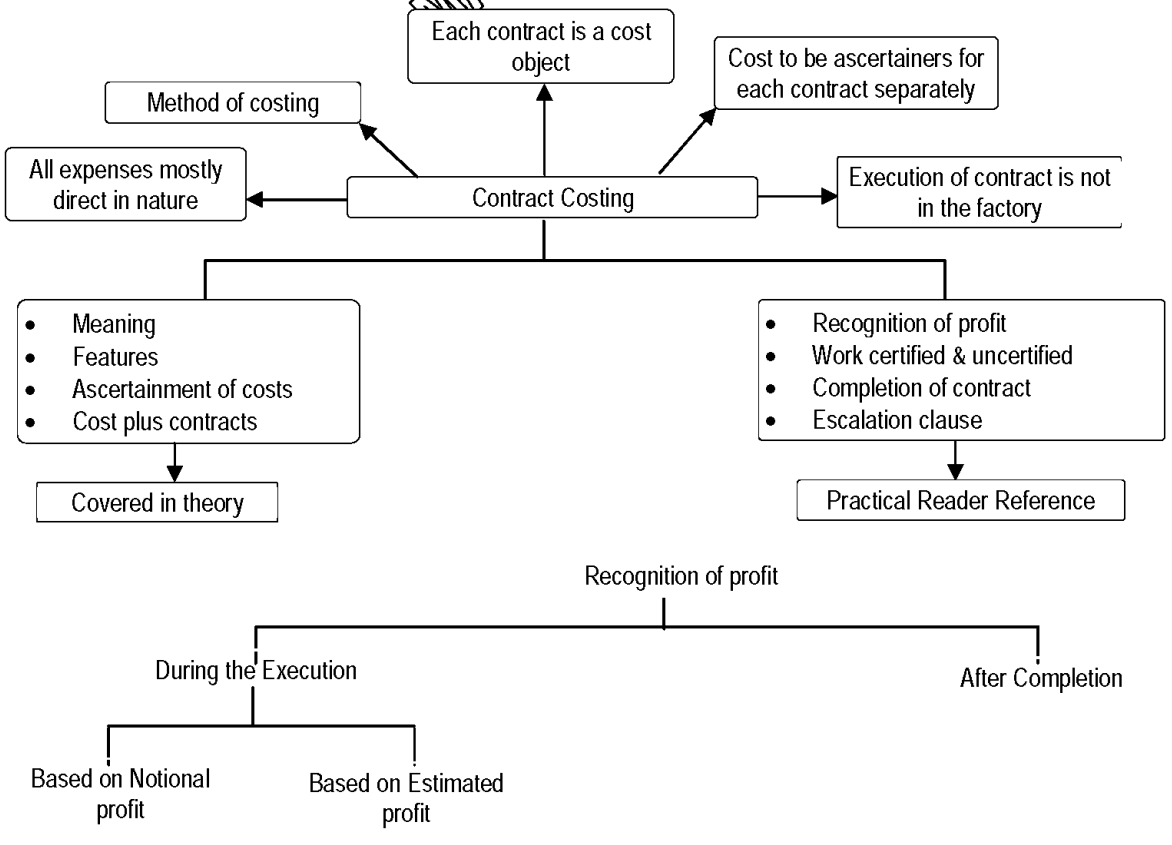
   Debit with Normal Loss A/c & costing P&L A/c

**Concept of Equivalent Units**

While preparing process a/c it is then any opening (or) closing WIP which completed at different stages for different elements then to value the WIP & F.G etc. We have to prepare a statement is called Equivalent units statement.



## 13. CONTRACT COSTING



Based on Notional Profit we can recognize the profit out of notional profit depend upon % of completion of contract

1. If % of completion of contract is below 25% - NIL
2. If % of completion of contract is 25% to $< 50\% - 1/3$ x Notional Profit x $\frac{\text{Cash received}}{\text{Work certified}}$
3. If % of completion of contract is $\geq 50\%$ to $< 90\% - 2/3$ x Notional Profit x $\frac{\text{Cash received}}{\text{Work certified}}$
4. If % of completion of contract is ≥ 90% and above – based on estimated profit

$$\%\text{ of completion of contract} = \frac{\text{Work certified}}{\text{Contract Price}} \times 100$$

**Based on Estimated Profit:** If contract is completed 90% & above then

1) Estimated Profit x $\frac{\text{Work Certified}}{\text{Contract Price}}$

2) Estimated Profit x $\frac{\text{Work Certified}}{\text{Contract Price}} \times \frac{\text{Cash Received}}{\text{Work Certified}}$

3) Estimated Profit x $\frac{\text{Cost to date}}{\text{Total cost of contract}}$

4) Estimated Profit x $\frac{\text{Cost to date}}{\text{Total cost of contract}} \times \frac{\text{Cash Received}}{\text{Work Certified}}$

When estimated profit is unable to calculate then

$$\text{Notional Profit} \times \frac{\text{Work Certified}}{\text{Contract Price}}$$



Estimated Profit = Contract Price – Total cost of contract

Total cost of contract = cost to date + Further cost to be incurred to complete the contract

Notional profit = Work Certified + Work Uncertified – Total cost of contract

Notional Profit = Work Certified – Cost of Work Certified

Cost work Certified = Cost incurred up-to-date – Work uncertified

Work Certified = Notional Profit + Cost of work Certified.

## Work Certified & Work Uncertified

**Work Certified:** Total cost of contract + Notional Profit – Cost of work uncertified.

1. Work certified if the value certified by the contractee or the work done by contractor. It includes profit element & cost of work certified.
2. Work certified is treated as periodical sales to calculate the notional profit.
3. Upon completion of contract the work certified if 100% of contract price until completion of contract work certified to be shown in Balance sheet as a CWIP.

**Work Uncertified:** Total cost of contract – cost of work certified.

Work certified is that portion of cost which is incurred by the contractor but not certified by contractee. It should be carried at cost only.

Until completion of contract work uncertified to be carried to Balance Sheet.

**Escalation Clause**

To compensate the contractor from the loss occurred due to unusual increases in prices, the contract deed can contain Escalation Clause.

To calculate the escalation claim amount we have to consider only increase in prices beyond anticipated level but not increases (or) decreases in quantity.

Entry for Escalation Claim Amount:

Contractee A/c - Dr

To Contract A/c

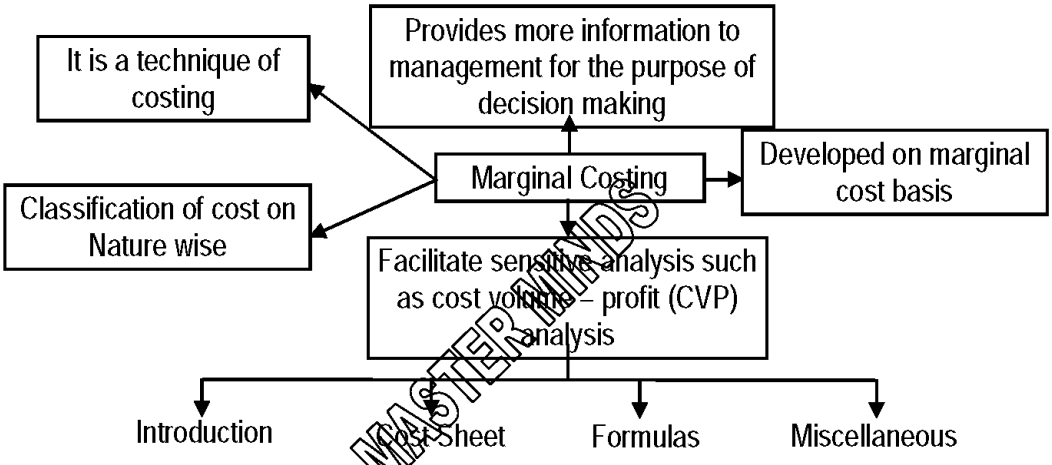
**Completion of contract**

Upon completion of contract we have to pay

Contractee A/C – Dr.

To contract A/C.

# 14. MARGINAL COSTING




**Proforma of Cost sheet – As per Absorption Costing**

| Particulars | Amount (Rs.) | Amount (Rs.) |
|---|---|---|
| Direct Materials (consumed) | XXXX | |
| Direct Lab our | XXXX | |
| Direct Expenses<br>Prime cost | XXXX | XXXX |
| Add: Factory overheads | | XXXX |
| Gross works cost / Factory cost | | XXXX |
| Add: Opening work in progress | XXX | |
| Less: Closing work in progress | (XXX) | XXX |
| Net works cost | | XXXX |
| Add: Administration overhead | | XXXX |
| Cost of goods produced | | XXXX |
| Add: Opening finished goods | XXXX | |
| Less: Closing finished goods | (XXX) | XXX |
| Cost of goods sold | | XXXX |
| Add: Selling & Distribution overhead | | XXXX |
| Cost of sales | | XXXX |
| Profit / Loss (B/f) | | XXX |
| Sales (Net off Sales returns) | | XXXX |

**Cost sheet Proforma Under Marginal Costing**

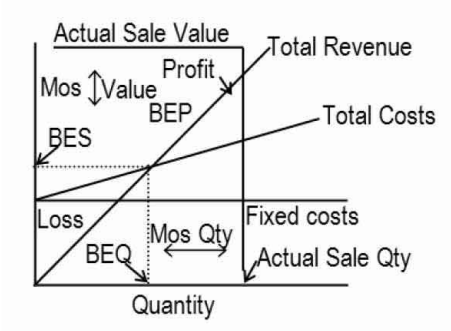
| Particulars | Amount (Rs.) |
|---|---|
| **A.** Sales | XX |
| **B.** Variable Cost: | |
| Direct Material | XX |
| Direct Lab our | XX |
| Direct Expenses | XX |
| Prime Cost | XXX |
| (+) Variable FOH | XX |
| Variable Gross Works Cost | XXX |
| (+) Opening WIP | XX |
| (-) C/S WIP | (XX) |
| Variable net works cost | XXX |
| (+) Variable AOH. | XX |
| Variable Cost of Goods Produced | XXX |
| (+) Opening stock of FG | XX |
| (-) Closing stock of FG | (XX) |
| Variable cost of goods sold | XXX |
| (+) Variable selling & Distribution OH | XX |
| Total Variable Cost | XXX |
| **C.** Contribution [(A) (-) (B)] | XXX |
| **D.** Fixed Cost: Fixed Factory OH | XX |
| Fixed AOH | XX |
| Fixed S & DOH | XX |
| Total Fixed Cost | XX |
| **E.** Profit: (C) – (D) | XXX |



**Notes:**

1. As per absorption costing costs are classified function wise, element wise, and traceability wise.
2. Where as for applying marginal costing techniques costs are further classified into Nature wise to provide more information & facilitate decision making.
3. As per absorption costing Direct material, Direct labour, Direct expenses, factory overhead treated as production cost and charged to production.
4. As per marginal costing Direct material, Direct Labour, Direct expenses, variable factory overhead treated as production cost & charged to production.
5. The profit will vary as per two methods due to different inventory valuations.
6. Marginal costing is developed based on the assumption that Marginal cost = Variable cost
7. It is helpful to fix the price on variable cost basis for special circumstances.

**Graphical Representation of Marginal Costing:**




Marginal cost Basic equation = 'Sales' – ' Variable Cost' = ' Fixed cost' + 'Profit' = ' Contribution

**Break Even Point (BEP):**

The point at which no Profit (or) no loss situation.

**Formulae:**

$$BEP = \frac{Fixed\ Cost}{P/V\ Ratio}$$

$$BEP\ in\ units = \frac{Fixed\ Cost}{Contribution\ P.U.} = Sales - Margin\ of\ Safety = Sales\ (1 - MOS\ Ratio)$$

$$Cash\ BEP = \frac{Cash\ Fixed\ Cost}{Contribution\ Per\ Unit}$$

$$Shut\ down\ BEP = \frac{Avoidable\ Fixed\ Cost}{Contribution\ Per\ Unit}$$

$$BEP\ Ratio = 1 - MOS\ Ratio$$

$$Variable\ Cost\ Ratio = \frac{Variable\ Cost}{Sales} X100\ (or)\ \frac{Variable\ Cost\ Per\ Unit}{Selling\ Price\ Per\ Unit} X100$$

**P/V Ratio:**

$$PV\ Ratio = \frac{Contribution}{Sales} X100 = \frac{Contribution\ Per\ Unit}{Selling\ Price\ Per\ Unit} X100 = \frac{Change\ in\ Profit}{Change\ in\ Sales} X100$$

$$= \frac{Profit}{MOS} = \frac{Fixed\ Cost}{BEP} = \frac{Fixed\ Cost + Profit}{Sales}$$

$$= \frac{Selling\ price\ per\ unit - Variable\ Cost\ per\ unit}{Selling\ price\ per\ unit} X100$$

$$= 1 - Variable\ Cost\ Ratio$$



1. Margin of Safety = Sales – Breakeven point (RS) = Profit / PV ratio = Sales units – BEP units
2. MOS ratio = 1 – BEP ratio
3. MOS units $= \frac{Profit}{Contribution\ per\ unit}$
4. MOS $= \frac{Contribution - Fixed\ cost}{P/V\ Ratio}$

$$Sales = Variable\ cost + Fixed\ Cost + Profit = BEP + MOS = \frac{Fixed\ cost + Profit}{P/V\ Ratio}$$

$$Sales\ in\ units = \frac{Fixed\ cost + Profit}{Contribution\ per\ unit} = BEP\ Units + MOS\ Units = \frac{Contibution + Variable\ Cost}{Selling\ Price\ Per\ Unit}$$

$$= \frac{Contribution}{P/V\ Ratio}$$

Fixed Cost = BEP X P/V Ratio = Contribution – Profit = Sales X P/V ratio – Profit
= Total Cost – Variable Cost

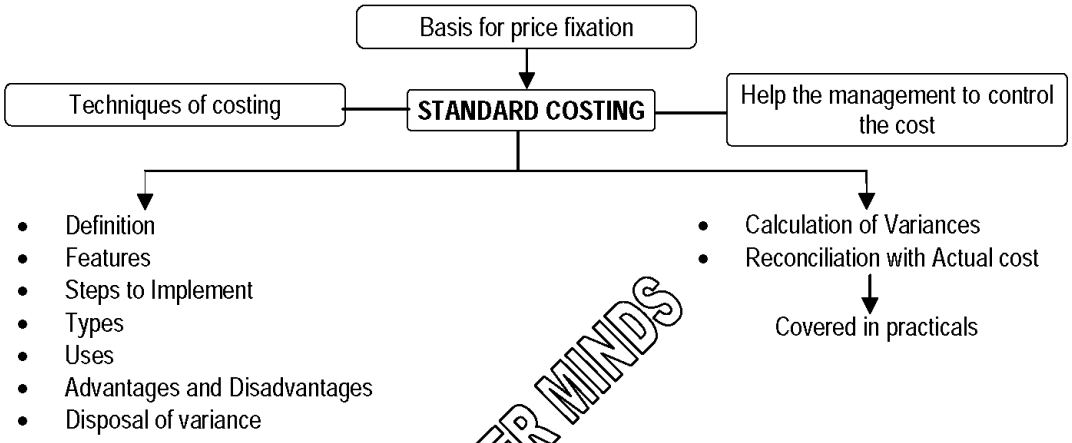
Variable Cost = Total cost – Fixed cost = Sales – Contribution = (1 – P/V Ratio) X Sales
= No. of Units X Variable Cost Per Unit

Contribution = Sales – Variable cost = Sales X P/V Ratio= Sales (1 – V.C Ratio)
= Fixed cost + Profit

**Important Points:**

1. For key factor based decision contribution per key factor has to calculate and Rank accordingly.
2. To maximize the profit we have to frame optimum product mix based on the ranking subject to market constraints.
3. In case of recession (or) slack period the prices can be quoted by applying marginal costing technique i.e., based on variable cost
4. For fixing price at special cases we can use differential costing technique also the difference of total cost in between two scenarios.

# 15. STANDARD COSTING





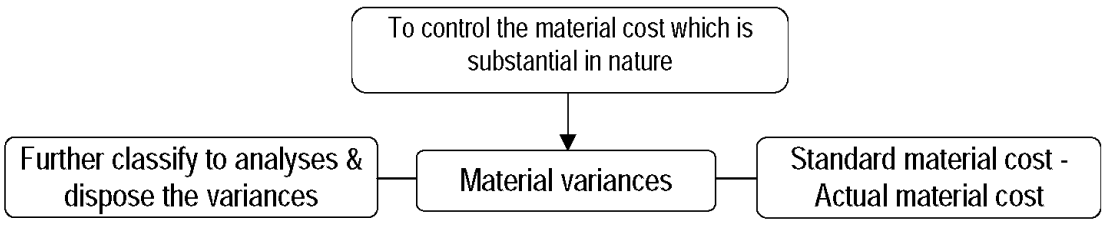

**Steps of Standard Costing:**

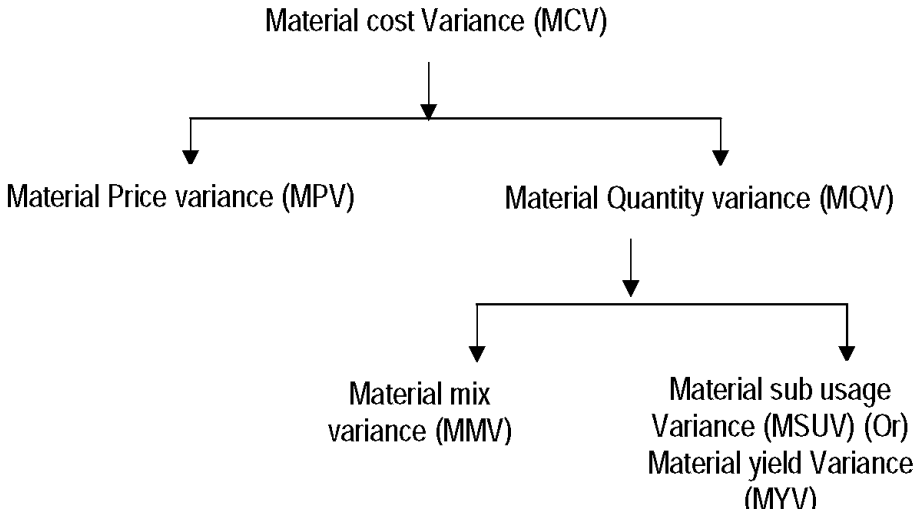
- Setting up standards (in consultation experts for each Element of cost need to control.
- Record the Actual
- Variance Analysis.
- Disposal of variance & Revision of standards if necessary

Variance = Standard Cost - Actual Cost

**Types of Variances:**

1. Material Variance
2. Labor variance
3. Over variance.
   - **a)** Fixed overhead Variance
   - **b)** Variable overhead Variance






MCV = SP x SQ – AP x AQ = 1 - 4

MPV = (SP - AP) x AQ = SP x AQ – AP x AQ = 3 - 4

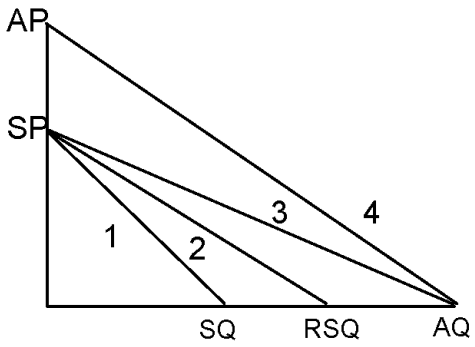
MQV = (SQ - AQ) x SP = SP x SQ – SP x AQ = 1 - 3

MMV = (RSQ – AQ) x SP = SP x RSQ – SP x AQ = 2 - 3

MSUV = (SQ-RSQ) X SP = SP x SQ – SP x RSQ = 1 - 2

(or)

MYV = (AY - RSY) x A.S.C.P.U






Where SP = Standard Price

SQ = standard quantity for Actual output

AP = Actual Price

AQ = Actual quantity of material consumed

RSQ = Revised standard quantity

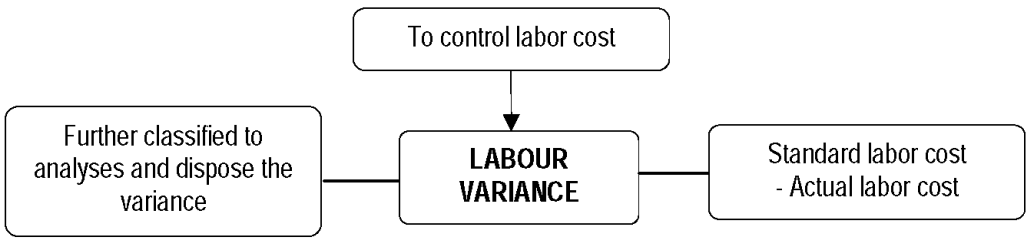
AY = Actual out put

RSY = standard output for Actual input

A.S.C.P.U = Average standard cost per unit of out put

**Note:**

- Standard can be expressed either for one unit of out put (or) on any basis. But standard Quantity has to be calculated for actual out put only.
- Always Assure that total input of RSQ & AQ are same.
- Material mix variance & material subs usage variance is required to calculate only when more than one type of material is used.



## LABOUR COST VARIANCE (LCV)

- Labour Efficiency variance[LEV]
  - Labour Mix variance [LMV]
  - Labour sub Efficiency variance [LSEV] (or) Labour yield variance [LYV]
- Labor Idle time Variance [LITV]
- Labour Rate Variance [LRV]

LCV = SR+SH –AR x $AH_{(P)}$ = 1 - 5

LRV = (SR –AR) x $AH_{(P)}$ = SR x $AH_{(P)}$ – AR x $AH_{(P)}$ = 4 - 5

LEV = (SH-$AH_{(W)}$) x SR = SR x SH – SR x $AH_{(W)}$ = 1 - 3

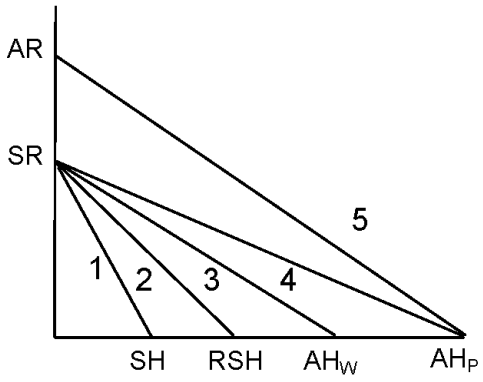
LITV = ($AH_{(w)}$ –$AH_{(P)}$) x SR – SR X RSH –SR x $AH_{(W)}$ = 3 - 4

LMV = (RSH-$AH_{(W)}$) x SR = SR x RSH – SR x $AH_{(W)}$ = 2 - 3

LSEV = (SH – RSH) x SR = SR x SH – SR x RSH = 1 – 2

(or)

LYV = (AY – RSY) x A.S.C.P.U




Where SR = Standard Rate per hour

AR = Actual Rate per hour

SH = Standard hours for actual output

$AH_{(P)}$ = Actual hours paid

$AH_{(W)}$ = Actual hours worked

RSH = Revised Standard Hours [Actual hours Re-written in standard mix]

A.Y = Actual output

R.S.Y = Revised standard output for Actual Hours

A.S.C.P.C = Average standard cost per unit of output



**Note:** If more than one type of labour is used then mix variance and sub-usage variance to be calculated.

Recovered .O.H COST / Actual V.O.H COST — VARIABLE OVERHEAD VARIANCE — Controls the V.O.H

## V.O.H Cost variance (V.O.H.C.V)

- V.O.H Expenditure
- V.O.H Efficiency
- V.O.H Idle Time variance

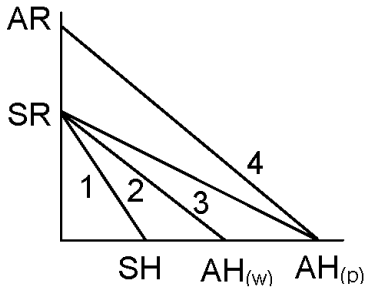
**If V.O.H is recovered based on labour Hours**

V.O.H.C.V = SR + SH – AR x $AH_{(P)}$ = 1 - 4

V.O.H Expenditure variance = (SR - AR) x $AH_{(P)}$ = SR x $AH_{(P)}$ - AR x $AH_{(P)}$ = 3 - 4

V.O.H Efficiency variance = (SH - $AH_{(W)}$) x SR = SR x SH – SR x $AH_{(W)}$ = 1 - 2

V.O.H Idle time variance = ($AH_{(W)}$ = $AH_{(P)}$) x SR = SR x $AH_{(W)}$ – SR x $AH_{(P)}$ = 2 - 3



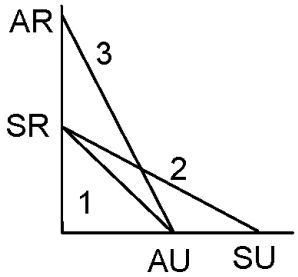
**If V.O.H is recovered based on units**

V.O.H COST Variance = SR x AU – AR x AU = 1 - 3

V.O.H Expenditure Variance = SR x BU – AR x AU = 2 - 3

V.O.H Efficiency variance = SR x AU – SR x BU = 1 - 2

NO Idle time variance

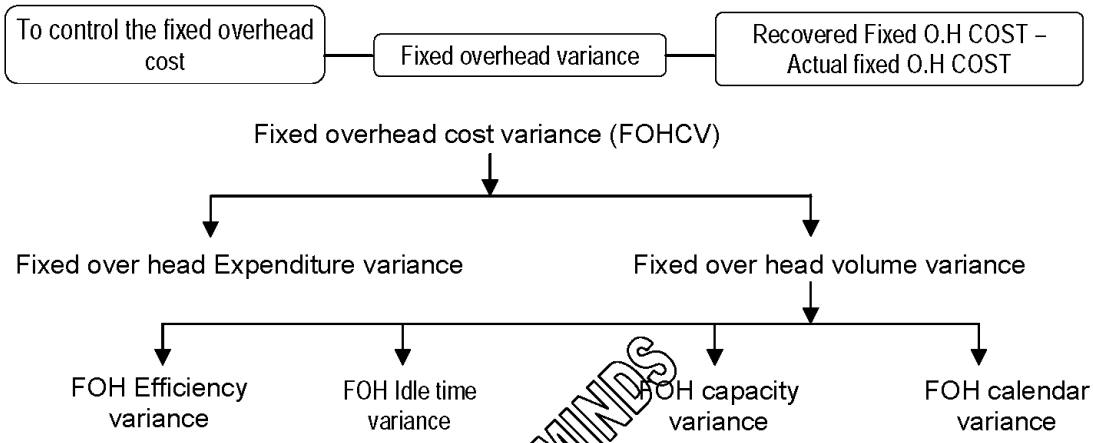



Where SR = Standard Rate per Hour

AR = Actual Rate per Hour

SU = Standard output for Actual Hours

AU = Actual out put






**If Fixed over head is recovered based on Labour Hours:**

F.O.H.C.V. = SR x SH – AR x $AH_{(P)}$ = 1 - 6

F.O.H Expenditure = SR x BH – AR x $AH_{(P)}$ = 5 – 6

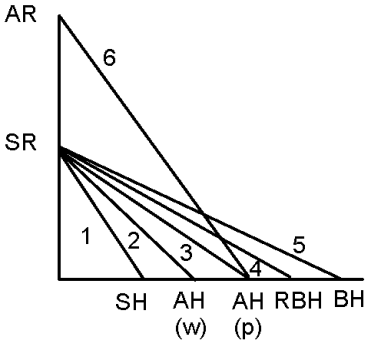
F.O.H VOL Variance = SR x SH – SR x BH = 1 - 5

F.O.H Efficiency variance = SR x SH – SR x $AH_{(W)}$ = 1 - 2

F.O.H Idle time variance = SR x $AH_{(W)}$ - SR x $AH_{(P)}$ = 2 - 3

F.O.H Capacity variance = SR x $AH_{(P)}$ - SR x RBH = 3 - 4

F.O.H Cal ender variance = SR x RBH – SR x BH = 4 - 5




Where BH = Budgeted Hours

RBH = Revised Budgeted Hour for Actual days

**If Fixed over Head is recovered Based on Units:**

F.O.H Cost variance = SR x AU – AR x AU = 1-5

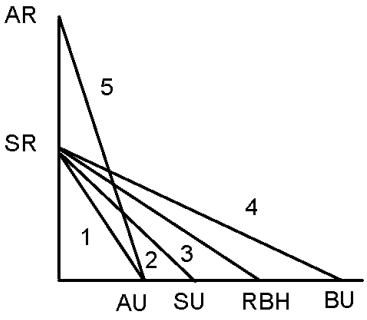
F.O.H Exp variance = SR x BU – AR x AU = 4-5

F.O.H Vol. Variance = SR x AU – SR x BU = 1-4

F.O.H Eff. variance = SR x AU – SR x SU = 1-2

F.O.H Cap Variance = SR x SU – SR x RBU = 2-3

F.O.H Cal variance = SR x RBU - SR x BU = 3-4




NO addle time variance

Where AU = Actual output

BU = Budgeted output

RBU = Revised Budgeted output for actual days

Variance for Revenue but not for cost — **SALES VARIANCE** — Helps to analyses the reason for profit variance

Sales value variance (or) Total sales variance

- Sales Quantity Variance
  - Sales Mix Variance
  - Sales sub-value Variance
- Sales Rate Variance

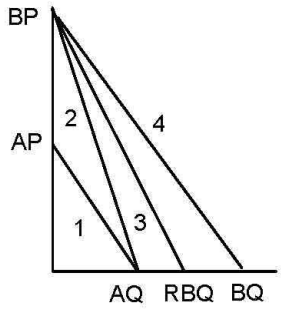
Sales value variance = AP x AQ – BP x BQ = 1-4

Sales Quantity Variance = BP x AQ – BP x BQ = 2-4

Sales Rate Variance = AP x AQ – BP x AQ = 1-2

Sales Mix Variance = BP x AQ – BP x RBQ = 2-3

Sales sub-value variance = BP x RBQ – BP x BQ =3-4




# 16. BUDGETARY CONTROL



**Meaning:** "A financial and/or quantitative statement prepared and approved prior to a defined Period of time of the policy to be pursued during that period for the purpose of attaining a given objective. It may include income, expenditure and employment of capital".

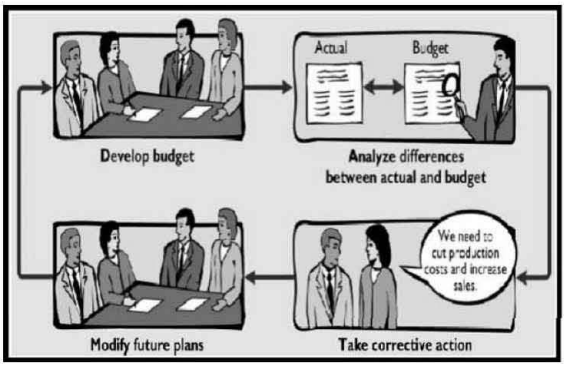
**Characteristics:**

- Prepared in advance
- Relates to future period
- Expressed in quantitative/ financial terms.

**Objectives:** To achieve firm's objectives efficiently (minimal resource) & effectively.

- Planning
- Directing and Motivating
- Controlling (Investigation, Management by Exception)

**Budgetary Control**




- Budgets are useful in controlling operations
- Compare actual results with planned objectives.(variance analysis)
- Management by Exception.

## Benefits of Budgeting

| Thinking Ahead | Communication | Motivation |
|---|---|---|
| Forcing managers to look ahead and state their goals for the future | Communicating management's expectations and priorities | Providing motivation for employee s to work toward organizational objectives |
| Providing lead time to solve potential problems | Promoting cooperation and coordination between functional area s of the organization | Providing a benchmark for evaluating performance |

**Disadvantages:**

1. Based on estimation
2. Time factor
3. Co-operation required
4. Expensive
5. It is only managerial tool (not substitute my management)
6. Rigid document

**Types of Budgets**

- According to Period
  1. Long term budget
  2. Short term budget
  3. Current budget
- According to Function
  2. Sales budget
  3. Production budget
  4. Cost of Production budget
  5. Purchase budget
  6. R & D budget
  7. Capital Expenditure budget
  8. Cash budget
- Master Budget
- According to Capacity
  1. Fixed budget
  2. Flexible



**Fixed Budget:** it is remain unchanged irrespective of the level of activity actually achieved.

**Flexible Budget:** it changes according the level of activity actually achieved.

## Budgeting – Master Budget

Components of the Master Budget

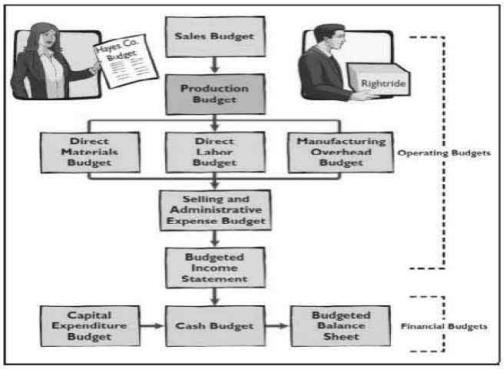
Production = no of units to be sold + Closing Stock of Finished goods – Opening stock of Finished Goods.

Raw Material consumption = Opening stock of Raw Material + Purchases – Closing stock of Raw Material

(Or)

= Production x Consumption per unit

Raw Material purchase = Raw Material Consumption + Closing Stock – Opening Stock




**THE END**

# 1. TIME VALUE OF MONEY

**IMPORTANT POINTS TO BE REMEMBERED:**

**a)** Money value (or) Nominal Value:

If you have 1000/-, it is always have equal worth.

**b)** Real Value: It is nothing but the purchasing power of money. It will vary from time to time, because of inflation.

Time value of money doesn't deal with Real value.

So, If time is Increasing : Money value will Increase, because of Interest.

If time is Increasing : Real value will decrease, because of Inflation.

**c)** Why interest is considered:

**i)** Inflation

**ii)** Loss of opportunity Income

**iii)** Sacrifice of personal Interest.

**1.** Simple Interest $I = PNR/100$

**2.** Compound Interest $I = P \times (1+r)^n$

**3.** Future value of a single Amount:

It explains the value of Re.1 invested today, after n number of years.

$FV = PV.\ FVF_{(r, n)}$

FV = Future Value R = Rate of interest

PV = Present Value N = Number of years

FVF = Future Value Factor



**Observations:**

**a)** It is assumed that present value = Re.1

**b)** So FVF is always greater than Re.1

**c)** As the Rate of Interest (or) No. of years increases FVF is also increases (Vice-Versa)

**d)** FVF = $(1+r)^n$ i.e., compounding

**e)** As the number of compounding (P.A) increases the amount of interest increases.

**4.** Present Value of a Single Amount:-

It explains that, if the investor wants certain sum of money in Future, then how much he has to invest now?

This is Reverse calculation of FVF (i.e., Discounting)

$PV = FV.\ PVF\ (r, n)$

PV = Present Value R = Discounting Rate

FV = Future Value N = No. of years

PVF = Present Value Factor (or) Discounting Factor

**Observations:**

**a)** PV Factor is always lower than Re.1

**b)** PV Factor = $\frac{1}{(1+r)^n}$ i.e., Discounting.

**c)** As the discounting rate (or) No. of years increases present value factor decreases (Vice-Versa)

**d)** PVF & FVF are Reciprocal to each other. i.e., PVF X FVF = 1

**e)** PV = FV – Interest.

**5.** **Annuity:** A series of equal and regular payments of a fixed sum of money made at equal intervals of time is called Annuity.

**a)** Future value of ordinary Annuity:

**i)** It is the sum of Future Values of each individual payment.

**ii)** It is assumed that each periodic payment is made at the end of each period

**iii)** Last payment will not earn any interest.

FV of Annuity = PP X FVAF (r,n)

**Ordinary Annuity**: Cash flows occur at the end of each period.

PP = Periodic Payment

FVAF = Future Value of Annuity Factor

r = Rate of Interest

n = Term of Annuity

Analysis: FVAF ≠ Sum of FVF

**b)** PV of ordinary Annuity:

It is the sum of Present Value of all payments.

PV of Annuity = PP X PVAF (r, n)

PP = Periodic Payment

PVAF = Present Value of Annuity Factor

r = Discounting Rate

n = Term of Annuity

Analysis: PVAF = Sum of PVF



**Observations:**

**a)** If implicit rate of interest is greater than opportunity cost, it is advisable to accept the contract.

**b)** Cash down price = Down payment + PV of Annuity

**6.** **Perpetuity**: An Annuity which is payable forever is called perpetuity. i.e., An infinite series of equal cash flows occurring at regular intervals.

**a)** PV of perpetuity = $\frac{\text{Annual CF}}{r}$

**b)** PV of Growing perpetuity = $\frac{\text{Cash Flow}}{r-g}$



CF = Cash Flow at the end of First year

r = Rate of Interest, g = Growth Rate (Inflation)

**Observations:**

As growth rate increases

**a)** The Value of Investment will increase

**b)** i.e., Money value will decrease

**c)** But it seems to be growth is in increasing trend. (but Not Actual Growth)

**SOME IMPORTANT FORMULAS:**

1. Simple Interest :(SI) : PNR
2. Compound Interest

   If Compounded Annually : I = $P(1+r)^n$

   If Compounded Semi Annually : I = $P(1+\frac{r}{2})^2$

   If compounded quarterly I = $P(1+\frac{r}{4})^4$

   If compounded Monthly I = $P(1+\frac{r}{12})^{12}$

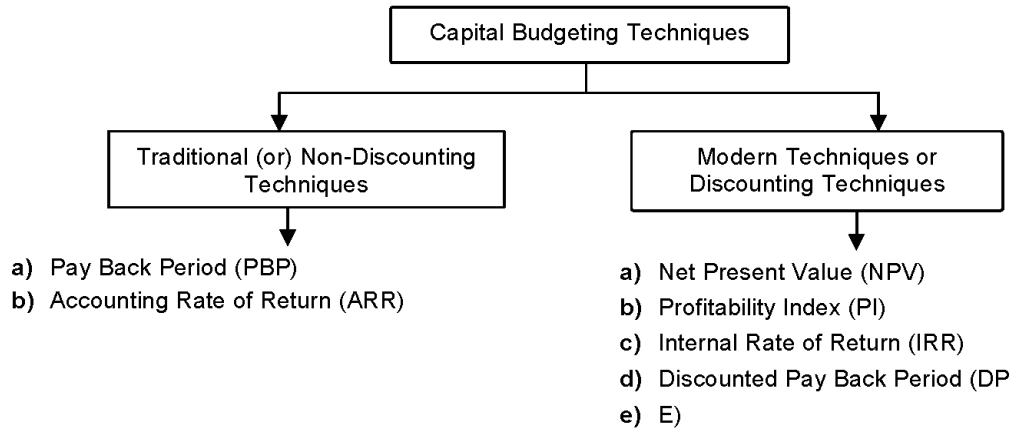
3. Effective rate of Interest = $(1+\frac{r}{n})^n-1$
4. Present value (PV) : = $P_0 = \frac{FV_n}{(1+i)^n}$ or $P_0 = FV_n(1+i)^{-n}$
5. Present value of Annuity : $PVA_n = R(PVIFA_{i,n})$
6. Future value of Annuity : $FVA_n = R(FVIFA_{i,n})$ or $FVAn = R\frac{(1+i)^n-1}{i}$
7. Present value of perpetuity : $\frac{Annual Cash\ \ flow}{r\%}$
8. Equated Annual installment of loan payable : $\frac{\text{Loan Amount}}{PVAF\ (r\%\ n\ yrs)}$
9. Present value of Annuity if steady growth rate is 'g': $\left[\frac{A}{r-g}\right]\left[1-\frac{(1+g)}{(1+r)}\right]$
10. Present value of perpetuity of steady growth rate is 'g' : $\Rightarrow \frac{A}{(r-g)\%}$



# 2. INVESTMENT DECISIONS

Capital Budgeting is the process of evaluating and selecting long – term investments that are in line with the goal of investors' wealth maximization.

It is the process of Decision Making regarding to investment in fixed assets or capital projects.




1. **Traditional Techniques:**

   a) **Payback period:** Payback period represents the length of time period required for, complete recovery of the initial investment in the project.

$$\text{PBP (Even cash flows)} = \frac{\text{Initial Investment}}{\text{CFAT (P.A)}}$$

**i)** $\text{Pay Back Period (Un-Even cash flows)} = \text{Recovered Year} + \frac{\text{Un recovered Amount}}{\text{CFAT for next year}}$

**Limitations:**

**i)** It ignores the time value of money

**ii)** It failures to consider an investments total profitability i.e. it ignores cash flows after the payback period.

**iii)** Organizations to place too much emphasis on short term pay back period.

Ignoring the need to invest in long term projects that would enhance its competitive position.

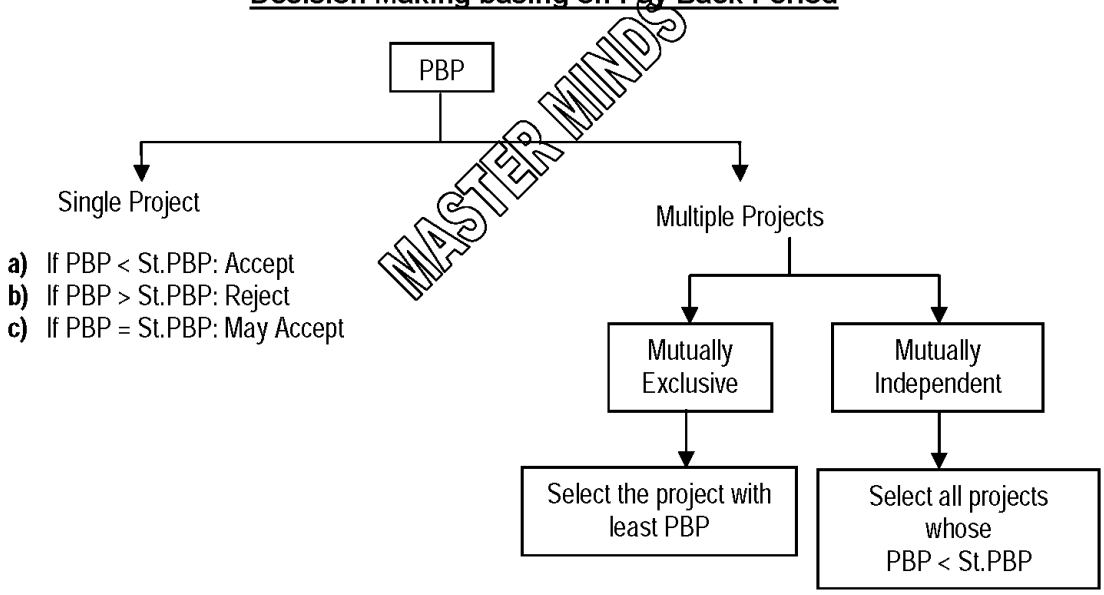
Note: while calculation of cash flows for PBP, we need to reduce interest cost.

**Pay Back Reciprocal:**

It is a helpful tool for quickly estimating the "Rate of Return" of a project, provided its life is at least twice the payback period and the project generates equal amount of the annual cash inflows..

$$\text{Pay Back Reciprocal} = \frac{\text{Avg Annual cash inflow}}{\text{Initial Investment}}$$

**Decision Making basing on Pay Back Period**




**a)** If PBP < St.PBP: Accept
**b)** If PBP > St.PBP: Reject
**c)** If PBP = St.PBP: May Accept



**b)** Accounting Rate of Return (ARR):

Accounting or Average Rate of Return means the average annual yield on the project. In this method, PAT (instead of CFAT) is used for project evaluation.

**i)** Accounting Rate of Return (Even profits):

$$\text{ARR} = \frac{\text{Annual Profits after Tax}}{\text{Avg. Investment in project}} \times 100$$

**ii)** Accounting Rate of Return (Un –even profits):

$$\text{ARR} = \frac{\text{Avg. Annual net Income (PAT)}}{\text{Avg. Investment}} \times 100$$



Avg. Investment = ½ (Initial cost – salvage value) + Salvage value + Additional working capital

**Limitations:**

**i)** It ignores the time value of money and considers the value of all cash flows to be equal. i.e. depreciation is considered as cash out flow expense.

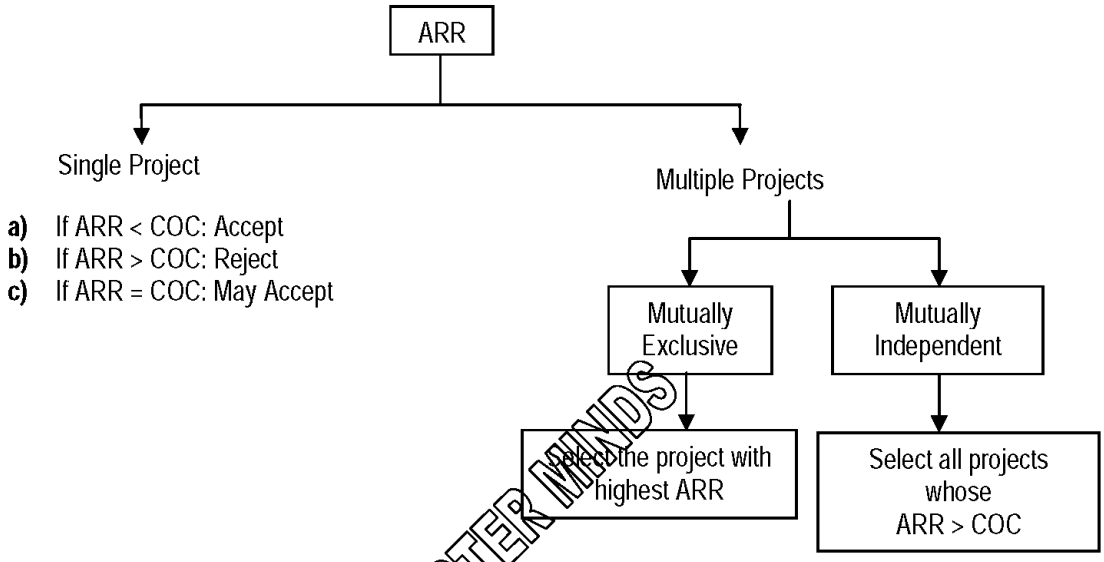
**ii)** This technique depends upon the method of accounting procedures that are adopted. i.e. stock valuation, method of depreciation etc....

**iii)** This technique uses "Net Income" rather than "Cash flows".

Net income is useful measure of profitability.

Cash flows is better useful measure of investments performance.

**Decision Making basing on ARR**






## 2. Modern Techniques or Discounting Techniques

**a) Net Present Value (NPV)**: The Net Present Value of an investment proposal is defined as the sum of the present values of all future cash inflows less the sum of present values of all cash outflows associated with the proposal.

Thus: NPV = Total PV of cash inflows – PV of cash out flows

**i)** Steps to Estimation of NPV

Step 1: PV of cash out flows

- Investment in fixed assets
- Investment in current assets eg.: working capital

Step 2: PV of operating cash inflows

Step 3: PV of Terminal cash inflows

- NSP – Net sale proceeds on sale of fixed assets
- Recovery of working capital

Step 4: NPV



**ii)** Imp. Points:

- Tax saving on capital loss shall be considered as deemed inflow.
- Cash flows are assumed to be occurred at the end of the each year.
- The important thing to be observed is as the cost of capital increases NPV decreases & vice versa.
- Interest shall not be reduced while calculation of CFAT.

**Note:**

1. Common cost: it is a cost which cannot be attribute directly to the project. Since common cost exist even if we under take the project or not. So it is ignore for decision.

   Eg.: over heads allocated, sunk cost etc.....

   "Over heads allocated" which was given in the problem are only because of difference in allocation.

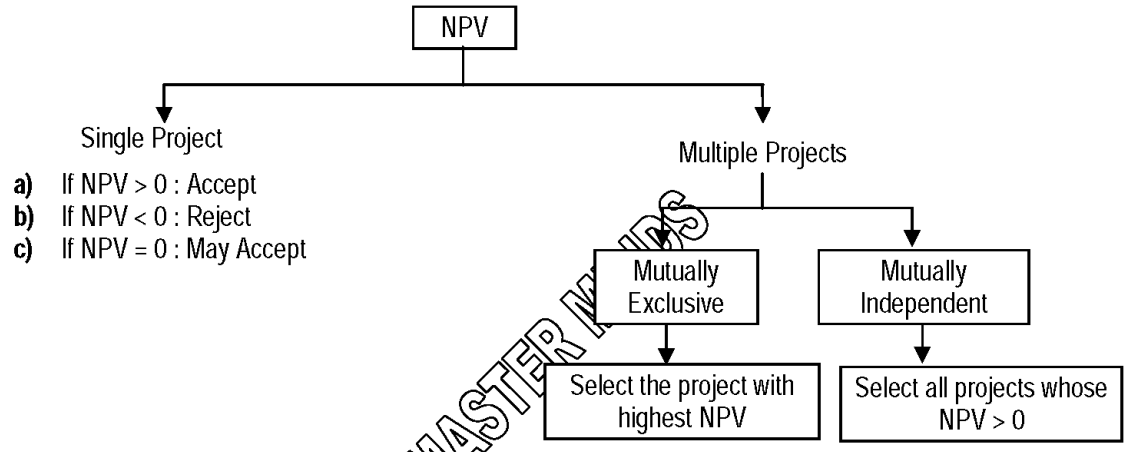
   "Sunk cost": Money already spent and permanently lost. It is totally irretrievable and therefore, should be considered irrelevant to future decision

2. Loss of opportunity income: any income forgone due to new investment proposal shall be considered as part of operating expenditure.

3. Subsidy: Tax free subsidy from the government is for the sake of establishing the industry in a backward area. Therefore it is not necessary to consider the same for calculating depreciation.

4. Cost of Research: It is a sunk cost, so it is irrelevant for decision making.

**Decision making basing on NPV:**






If the projects are mutually exclusive & in case of life disparity, size disparity & cash flow disparity:

**a)** Annualised NPV = $\frac{NPV}{PVAF(r, n)}$

**b)** Equated Annual Cost = $\frac{\text{PV of cash out flows}}{PVAF(r, n)}$

**c)** Terminal value method (or) modified NPV:

Under this method cash flows generated every year are Re-invested in another project at a pre-determined rate of interest.

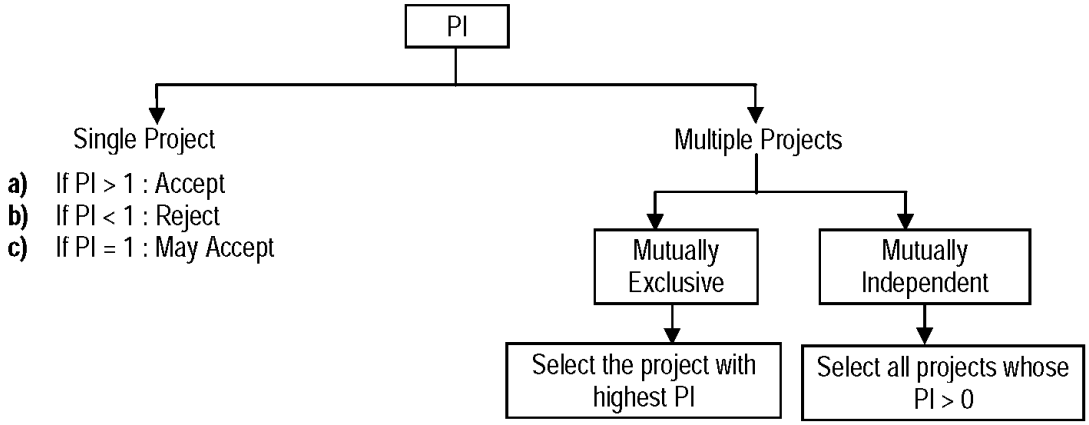
It is also assumed that each cash inflows are re-invested else where immediately until the termination of the project.

**b) Profitability Index (PI) (or) Benefit – cost Ratio (or) Present value Index**: Profitability index will describes "the value of return against each one rupee of investment"

Reason to calculate PI is if there is a Scarcity of funds, (i.e. Capital Rationing) PI will give order of preference of investment in projects. (i.e in case of projects are mutually exclusive)

$$PI = \frac{\text{PV of cash Inflows}}{\text{PV of cash out flows}}$$

**Decision making under Profitability Index.**




**Relationship between NPV, IRR & PI:**

| NPV | IRR | PI |
|---|---|---|
| **a)** NPV > 0 | IRR > COC | PI > 1 Accept |
| **b)** NPV < 0 | IRR < COC | PI < 1 Reject |
| **c)** NPV = 0 | IRR = COC | PI = 1 May Accept |

**c) Internal Rate of Return (IRR)**: Internal Rate of Return refers to the rate, which equates the present value of all cash inflows with the present value of all cash outflows associated with the project.

The Discounting rate at which NPV is zero is called IRR.

At Internal Rate of Return NPV is Zero. (i.e. Total PV of cash inflows = PV of cash out flows)

Two methods for calculation of IRR:

**i)** Trail & Error Method

Calculation of NPV at guess rates till NPV = 0

**ii)** Interpolation:

$$IRR = L_1 + \frac{NPV@L_1}{NPV@L_1 - NPV@L_2}(L_2 - L_1)$$

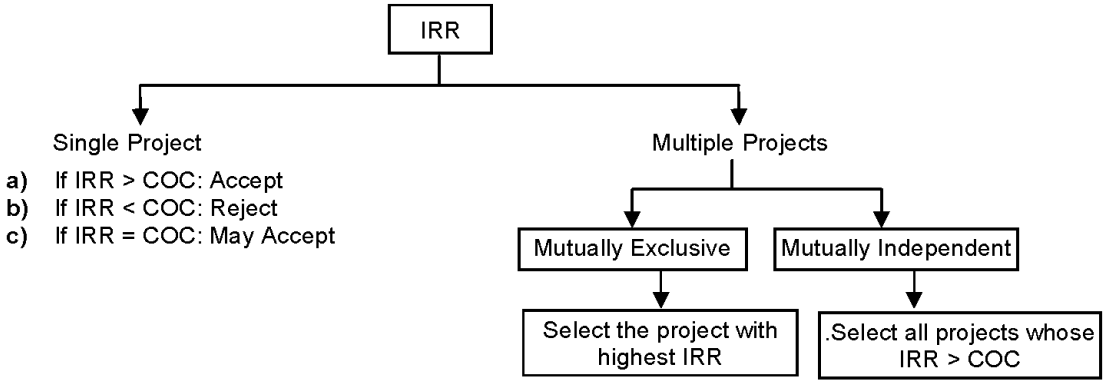
$L_1$ = Lower guess rate

$L_2$ = Higher guess rate

It is preferable to take $L_2$ in such a way that NPV is negative.



Decision making basing on IRR




**Financial evaluation of the Project:**

1. **Total Fund Prospective**: Interest is considered as financing cost either it may long term (or) short term it must be ignored in calculation of CFAT.

2. **Long Term Fund Prospective**: only long term funds interest must be ignored. Where as short term interest should be considered in calculation of CFAT. i.e. treated as operating cost.

**Some important formulae:**

1. **ARR**

**VERSION 1: ANNUAL BASIS**

$$ARR = \frac{\text{Profit after Depreciation}}{\text{Investment in the begining of the year}} x100$$

**VERSION 2: TOTAL INVESTMENT BASIS**

$$ARR = \frac{\text{Average Annual Profit}}{\text{Investment in the begining}} \times 100$$

**VERSION 3: AVERAGE INVESTMENT BASIS**

$$ARR = \frac{\text{Average Annual Profit (after tax)}}{\text{Average investment in the project}} \times 100$$

Where, Average investment = ½ (Initial Cost + Installation Expenses – Salvage value) + Salvage value + Additional Working Capital.

2. **Pay Back period**

**a)** In care of Equal annual each inflows:

$$= \frac{\text{Initial Investment}}{\text{Annual cash inflow}}$$

**b)** Incase of unequal cash inflows = (year up to which cumulative CFAT is < Total cash outflow)

$$= \frac{\text{Total cash outflow - cumulative CFAT of the year in which cumulative CFAT < Total cash outflow}}{\text{CFAT in next year following the year for which cumulative CFAT has been considered in numbers}}$$



3. **Discounted pay Back Period**

(Same as above, except Time value is considered here)

4. **Net present value**:

NPV: Present value of cash Inflow - Present value of cash outflow

5. Annualized Equivalent present value: $= \frac{\text{Total present value}}{\text{PVAF(r\%, n years)}}$

6. Internal Rate of Ration (IRR) $= LR + \frac{\text{NPV at LR}}{\text{NPV at LR} - \text{NPV at HR}} X (HR - LR)$

7. Profitability Index (PI) : $\frac{\text{Total Present Value of cash inflows}}{\text{Total Present Value of cash outflows}}$

8. Payback reciprocal : $\frac{\text{Average Annual Cash Inflow}}{\text{Initial investment}}$

9. Present value Index : $\frac{\text{Net Present value}}{\text{Initial cash outflow}}$

10. Rate of Return (K) : $\frac{(p_1 - p_0) + D1}{p_0}$

1. **Conflicts of NPV Vs. IRR:**

   **a)** Having mutually exclusive relationship between the projects.

   **b)** Having disparity of two projects.

   They are:

   **a)** Size disparity – difference in investment

   **b)** Life disparity – difference in life of project

   **c)** Cash flow disparity – difference in cash inflows.



   **Resolving the conflict:** With the help of Incremental IRR

   **Decision:** if incremental IRR > COC accept the project

   **Imp. Points:**

   **a)** The objective of financial management is to maximize the shareholders wealth.

   **b)** NPV ranks the proposals in accordance with this objective.

   **c)** Therefore it is beneficial to select the project being preferred by NPV

2. **Replacement Decisions: 2 approaches**

   **a)** Total approach: consider total cost of cash out flows and total value of operating & terminal cash in flows

   **b)** Incremental approach: considering incremental cash flows.

   **Step: 1** NSP of existing asset as on today (working)

   **Step: 2** PV of incremental cash out flows

   **Step: 3** Incremental depreciation (working)

   **Step: 4** PV of incremental operating cash inflows

   **Step: 5** NSP of existing & new asset if sold at the end of project life (working)

   **Step: 6** Incremental NPV = (step:4 + step:5) – step: 2

   Conclusion: if the incremental NPV is positive, it is beneficial to replace the existing machine with new machine.



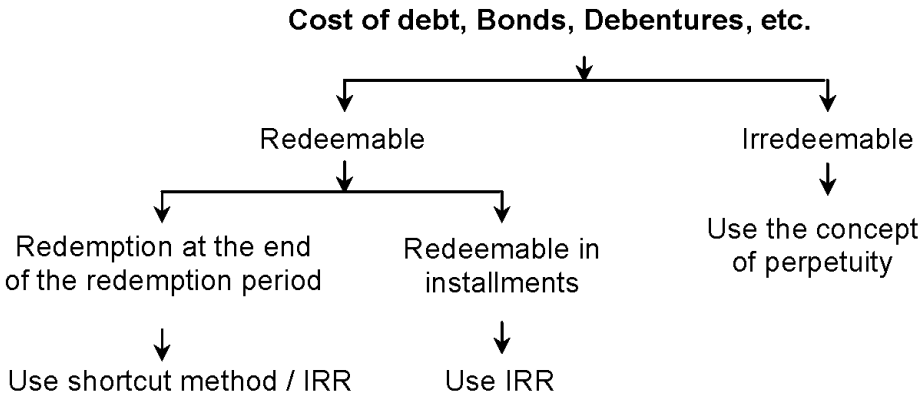
# 4. COST OF CAPITAL

1. **Cost of Capital:** The minimum rate of return that the organization must earn in order to satisfy the overall rate of return required by its investors. It is also called as Discounting Rate cut-off rate, hurdle rate, minimum rate of return etc.
2. Cost of each Source of capital is called Specific cost of capital.

   When these specific costs are combined for all the source of capital, then we arrive at " overall cost of capital " for a business.
3. The organization should earn in excess of cost of capital to increase its market value.
4. Interest is charge against profit.

   Dividends are appropriation of profits.
5. Any payment towards interest will reduce the profit and ultimately the companies tax liability would decrease. This phenomenon is called "Tax Shield"

**1. Cost of Debt:**




**a)** Cost of Irredeemable

**i)** $Kd\ (Post\ tax) = \frac{I(1-Tax)}{NP/MP_0}$

Where, I = Annual Interest

NP = Net proceeds

$MP_0$ = Market price as on today

**ii)** $K_d\ (Pre\ tax) = \frac{I}{NP/MP_0}$

**b)** Cost of Redeemable Debt: (when redemption made at the end of the period with Lump sum)

**i)** Short cut method $Kd = \frac{I(1-Tax) + \left[\frac{RV - NP}{N}\right]}{\frac{RV + NP}{2}}$



$K_d$ = Cost of debt after tax

I = annual Interest

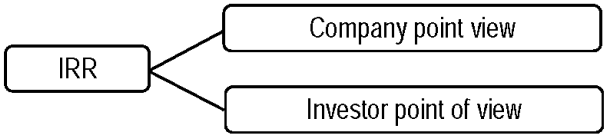
RV = Redemption Value

NP = Net Proceeds

N = Life of debentures

**c)** Cost of Redeemable Debt: (when redemption on installment basis)

Cost of Redeemable debt = IRR




**Note:** When flotation cost exists advisable to calculate IRR from investor point view only.

**i) Net Proceeds:**

| Particulars | Amt. |
|---|---|
| a) Face Value | XXX |
| b) (-) Discount/+ Premium | XX |
| c) **Issue Price** | XXX |
| d) (-) Floatation Cost | XX |
| **e) Net Proceeds** | XXX |

ii) **Floatation Cost:** It is to be calculated as per the direction given in the problem.

If there is no specific direction given in the problem then Floatation Cost is to be calculated on "Face Value" or " Issue Price" which ever is higher.

iii) **Cost of Debt:**

| Situation | Cost Increase / Decrease |
|---|---|
| **a.** If issue at premium | ↓ |
| **b.** If issue at Discount | ↑ |
| **c.** If redeemed at premium | ↑ |
| **d.** It redeemed at discount | ↓ |
| **e.** Because of Tax Rate | ↓ |
| **f.** Because of Flotation Cost | ↑ |

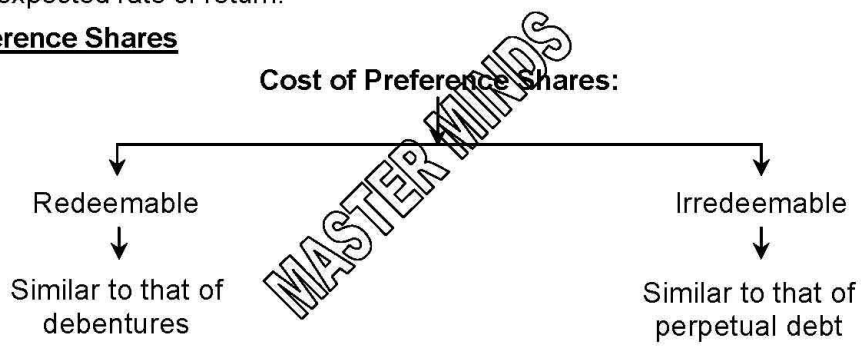
iv) **Redeemable Debentures:** Unless otherwise stated Debentures will be redeemed at face value.

v) **Theoretical Market Price (or) equilibrium Return:** It is the sum of PV of Future economic benefits discounted at investor expected rate of return.

**Note:**

1. If theoretical Market price is lower than current Market Price, it means that the values of debentures are over valued in the open market. Therefore it is advisable to sell the debentures.
2. If Investors expected rate of return increases fair price of an asset will get decreases and vice versa.
3. **Issue Price / Market Price:** It is the sum of present value of all Future cash inflows discounted at investors expected rate of return.

## 2. Cost of Preference Shares




**a)** Cost of Irredeemable preference shares $Kp = \frac{PD}{NP}$

Kp = Cost of Preference Share Capital

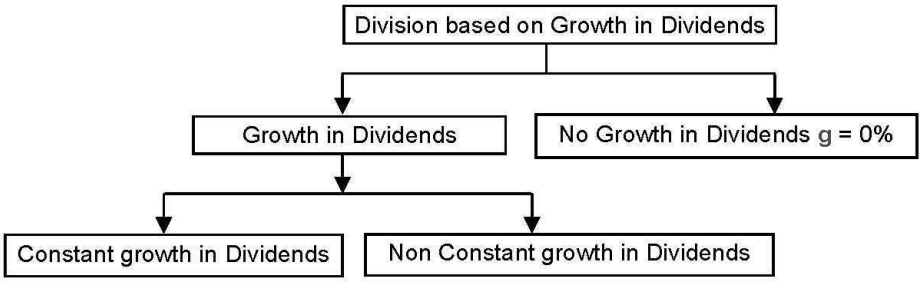
PD = Annual Preference Dividend

NP = Net Proceeds (i.e., Market Price – Flotation Cost)

**b)** Cost of Redeemable Preference Shares: $Kp = \frac{PD + \frac{RV - NP}{N}}{\frac{RV + NP}{2}}$

## 3. Cost of Equity Share Capital

### a) Cost of Equity Share Capital: ($K_e$)



| | |
|---|---|
| $Y_0 = D_0 = 2$ | $Y_0 = D_0 = 2$ |
| $Y_1$ g = 10% $D_1 = 2.20$ | $Y_1 = D_1 = 2.2$ g = 10% |
| $Y_2$ g = 10% $D_2 = 2.42$ | $Y_2 = D_2 = 2.31$ g = 5% |
| $Y_3$ g = 10% $D_3 = 2.662$ | $Y_3 = D_3 = 2.49$ g = 8% |

**b) Estimation of E.P.S:**

| Particulars | Amount |
|---|---|
| **a)** EBIT | XXXX |
| **b)** Less: Interest | XXX |
| **c) EBT** | XXXX |
| **d)** Less: Tax | XXX |
| **e) EAT/EASH.** | XXX |
| **f)** Less: Preference Dividend: | xxx |
| **g)** EA Eq. Sh. | XX |
| **h)** No. of Shares | XXX |
| **i) EPS=EAESH/No. of Equity shatters** | Xxx |

**i)** Dividend pay out Ratio = EPS (1-Retained Earnings Ratio)

**ii)** No Growth in Dividends: i.e., EPS = DPS

**iii)** In case of Growth in Dividends: $Ke = \frac{DPS_1}{MP_0} + g$ $[DPS_1 = DPS_0 (1+g)]$

Ke = Cost of equity

$DPS_1$ = Expected Dividend at the end of year

$MP_0$ = Current Market price

$\therefore MP = \frac{DPS_1}{Ke - g}$



**iv)** Return on Investment in Equity Shares:

$$Ke = \frac{DPS_1 + (P_1 - P_0)}{P_0} \times 100$$

i.e., Return = Dividend Yield % + Capital Gain Yield %

**c) <u>Capital Asset Pricing Model (CAPM):</u>**

$$Ke = R_f + \beta(R_m - R_f)$$

Ke = Cost of equity under CAPM

$R_f$ = Risk free Rate of Return

$R_m$ = Return on market portfolio

$\beta$ = Risk is measured with $\beta$

$(R_m - R_f)$ = Risk Premium

**<u>Note:</u>** Always Market Risk is 1. $\beta_{MKT} = 1$



Market Price under CAPM

$$MP = \frac{DPS_1}{Ke - g}$$

**d) Cost of Retained earnings:** Cost of Retaining Earning is the opportunity cost of dividends foregone by Shareholders. Cost of Reserves or Retained Earnings may be measured using – (a) Dividend Price + Growth Approach, or (b) Capital Asset Pricing Model (CAPM) Approach.

**i)** According to growth model: $K_r = K_e = \frac{DPS_1}{MP} + g$

**ii)** According to CAPM: $K_e = R_f + \beta(R_m - R_f)$

**Note:**

1. Cost of retained earnings may be considered equivalent to the return forgone by the equity shareholders and it is the opportunity cost of funds not available for reinvestment by the individual shareholders.
2. If the cost of retained earnings is not possible to find out in company point of view directly. The investors rate of return has to be calculated and it has to be considered as cost of Retained earnings.

   ∴ Kr = r (1- brokerage fee) X (1 – Tax Rate)

**e) Realized Yield approach:** Investor is interested in Current Dividend & Capital Appreciation (increase in share price) over a specified time – frame.

$$K_e = \frac{DPS_1 + (MPS_t - MPS_{t-1})}{MPS_{t-1}}$$

Numerator = Current Yr Dividend + Increase in MPS in one year. Denominator = Last Year MPS.

**4. Weighted Average cost of capital: (WACC)**

It is defined as the Overall Cost of Capital computed by reference to the proportion of each component of capital as weights. It is denoted by $K_o$.

**i) Weighted Average Cost of Capital (using book value weights):**

$$= \left(\frac{ESC}{TC} x\ K_e\right) + \left(\frac{RE}{TC} x\ K_r\right) + \left(\frac{PSC}{TC} x\ K_P\right) + \left(\frac{Debt}{TC} x K_d\right)$$

Where, TC = ESC + Retained earnings (RE) +PSC+ Debt (as per Balance sheet)

**ii) Weighted Average cost of capital (using Market Value weights):**

$$= \left(\frac{ESC}{TC} x\ K_e\right) + \left(\frac{PSC}{TC} x\ K_P\right) + \left(\frac{Debt}{TC} x K_d\right)$$

Where, TC = ESC + PSC + Debt (as per Market Quotations)

**SOME IMPORTANT FORMULAS**

**1.** Cost of Debt ($k_a$)

**a)** Cost of perpetual debt: $K_i = \frac{I}{NP}$

I: Interest Rate x Face Value.

**b)** Cost of debt Redeemable $K_d = \frac{I(1-t) + (RV - NP)/N}{(RV + NP)/2}$

**2. Cost of Preference Share Capital**

**a)** Cost of preference shares

$K_p$: $\frac{Div_1(1+DDT)}{NP}$

**b)** Cost of pref. shares Redeemable in lump sum

**i)** Under Approximation Method

$$K_p : \frac{PD(1+DDT)+\left(\frac{RV-NP}{N}\right)}{\frac{RV+NP}{2}}$$

**ii)** Under Present value Method

$K_p$: (PD (1+DDT)+Principal Redemption) x PVAF (r%, n yrs)

**3.** Cost of Equity ($K_e$)

**a)** If there is no growth ($k_e$) = $\frac{DPS_1}{MP_0}$

**b)** In case of Earnings ($k_e$) $\frac{EPS_1}{MP_0}$

**i)** If there is constant growth in dividends perpetually ($k_e$) : $\frac{DPS_1}{MP_0}+g$

**c)** Realized yield Approal ($k_e$) : $\frac{DPS_1+(P_1-P_0)}{P_0}X100$

**d)** Capital Asset Pricing Model CAPM)($k_e$) $K_e = R_f+b\ (R_m-R_f)$

**e)** Cost of Retained Earrings $K_s = \frac{D_1}{P_0}+G$

**4.** WACC : WACC = $K_e.W_1 + k_d.W_2 + k_p.W_3$

WACC = Weighted average cost of capital
$K_e$ = Cost of equity capital
$K_d$ = After tax cost of debt
$K_p$ = Cost of preference shares
$W_1$ = Proportion of equity capital in capital structure
$W_2$ = Proportion of debit in capital structure
$W_3$ = Proportion of preference capital in capital in capital structure



# 5. CAPITAL STRUCTURE

Capital structure refers to the mix of source from where the long – term funds required in a business may be raised. It refers to the proportion of Debt, Preference Capital and Equity Capital.

**a) Estimation of EPS & Market Price:**

| Particulars | Amount |
|---|---|
| a) EBIT | xxxx |
| b) Less: Interest | xxx |
| c) **EBT** | xxxx |
| d) Less: Tax | xxx |
| e) **EAT/EASH.** | xxx |
| f) Less: Preference Dividend: | xxx |
| g) EA Eq. Sh. | xx |
| h) No. of Shares | xxx |
| i) **EPS=EAESH/No. of Equity shatters** | xxx |
| j) P/E Ratio | xxx |
| k) Market price = EPS x P/E Ratio | xxx |

**Note:**

**a)** EBIT is independent of Capital Structure

**b)** Optimum Capital Structure:

**i)** Where cost is minimum

**ii)** Where the EPS, MP is maximum

**c)** EPS is maximum in case of funds raised through debt.

**1.** EBIT = EBT + Interest

**2.** Return on Capital Employed = $\frac{\text{EBIT}}{\text{Capital Employed}} X100$

**3.** Capital Employed after expansion = Capital Employed before expansion + Amount Required for expansion.

**4. Financial Indifference Point:**

It is the level of EBIT at which EPS will be same under both the plans or options.

$$\text{Indifferent point} = \frac{[(X - \text{Interest})(1-\text{tax})]-\text{Pre.Div.}}{\text{no. of Equity shares}} = \frac{[(X - \text{Interest})(1-\text{tax})]-\text{Pre.Div.}}{\text{no. of Equity shares}}$$

**5. Financial Break even Point:**

It is the level of EBIT at which EPS = 0, EA Eq.Sh = 0

i.e., EBIT = Fixed Financial Commitment

**Financial Break even Point:**

**a)** In case of Firm having Equity Shares: EBIT = 0

**b)** In case of Firm having Debt : EBIT = Interest

**c)** It firm having Preference share: EBIT = $\frac{\text{Preference Dividend}}{(1-\text{Tax})}$



**A.** $K_e = \frac{DPS}{MP}$

**B.** $K_e = \frac{EPS}{MP}$ ( In case of 100% Pay out Ratio)

**C.** $MP = \frac{EPS}{K_e}$

**D.** MV of Eq. = $\frac{\text{EA Eq. Sh.}}{K_e}$

**E.** $K_e = \frac{\text{EA Eq. Sh.}}{\text{MV of Eq.}}$ ( MV of Equity $\propto \frac{1}{K_e}$ )

**Relationship:**

If $K_e \uparrow$, MV of Equity $\downarrow$

If $K_e \downarrow$, MV of Equity $\uparrow$

**F.** MV of Debt = $\frac{\text{Interest}}{K_i}$ ( MV of debt $\propto \frac{1}{K_i}$ )

**Relationship:**

If $K_i \uparrow$, MV of debt $\downarrow$

If $K_i \downarrow$, MV of debt $\uparrow$

**G.** MV of Firm = MV of Equity + MV of Debt

MV of Firm = $\frac{EBIT}{K_\varphi}$ (MV of Firm $\propto \frac{1}{K_\varphi}$ )

**Relationship:**

If $K_\varphi \downarrow$, MV of Firm $\uparrow$

If $K_\varphi \uparrow$, MV of Firm $\downarrow$

**H.** MV of Levered Firm = MV of un-levered Firm + Tax shield on Debt

**I.** Cost of Equity in a Levered firm $= K_e = Ko + \frac{D}{E}(Ko - K_d)$

**Some Important Formulas:**

**1.** WACC ($K_0$) Under NI approach

$K_0$: $\frac{\text{E.B.I.T.}}{\text{Value of the firm}}$

**2.** Equity capitalization Rate

$K_e$ = $\frac{EBIT}{\text{Market value of Equity}}$



**3.** WACC ($K_0$) under traditional approach $K_o = K_e X \frac{S}{V} + K_d X \frac{D}{V}$

**4.** MM-Approach for unlevered from

| | No Tax | Tax |
|---|---|---|
| Market value ($v_0$)<br>Overall capitalization Rate ($k_0$) | $V_u = \frac{NOI}{K_e}$<br>: $k_e$ as them is no debt | $V_u = \frac{NOI(1-T)}{K_e}$<br>=k as there is no debt |

**5.** MM Approach for levered firm

| | No taxes Exist | Taxes exist |
|---|---|---|
| Market value ($v_o$)<br>Equity capitalization Rate ($K_e$)<br>Overall capitalization Rate ($K_o$) | $V_i = v_u$<br>$K_e = \frac{NOI - I}{V_i - D}$<br>$K_o$ = $K_o$ of unlevered firm<br>$K_o$ =$K_e$ x S/V + $K_d$ x D/V | $V_i = v_u$ + tax shield on debt<br>$K_e = \frac{NOI - I - Tax}{V_i - D}$<br>$K_o = \frac{NOI - I(1-tax) + I}{V_i}$<br>$K_o$ =$K_e$ x S/V + $K_d$ x D/V |

# 6. LEVERAGES

The term Leverage in general refers to a relationship between two interrelated variables. In financial analysis it represents the influence of one financial variable over some other related financial variable. These financial variables may be costs, output, sales revenue, Earnings before Interest and Tax (EBIT), Earnings per share (EPS) etc.

**1. a)** Operating Leverage = $\frac{\text{Contribution}}{\text{EBIT}}$

Points to be Remember:

**i)** The risk arises due to Operating fixed costs is measured by using Operating Leverage.

**ii)** Operating Leverage is also known as operating risk.

**iii)** Operating Leverage depends upon fixed costs in our Cost Structure.

**b)** Degree of Operating Leverage = $\frac{\%\ \text{Change in EBIT}}{\%\ \text{Change in sales}}$ (or) $\frac{\frac{\text{Increase in EBIT}}{\text{EBIT}}}{\frac{\text{Increase in sales}}{\text{Sales}}}$

**i)** For every 1% change in sales, EBIT will change by operating Leverage times

**ii)** If there are no fixed costs in our cost structure operating leverage is one.

**iii)** If fixed costs are high operating leverage will also be high and vice versa.

**iv)** Operating profit is independent of changes in Capital Structure.

**2. a)** Financial Leverage = $\frac{\text{EBIT}}{\text{EBT}}$ or $\frac{\text{EBIT}}{\text{EBIT - Interest}}$

**b)** Degree of Operating Leverage = $\frac{\%\ \text{Change in EPS}}{\%\ \text{Change in EBIT}}$ (or) $\frac{\frac{\text{Increase in EPS}}{\text{EPS}}}{\frac{\text{Increase in EBIT}}{\text{EBIT}}}$



**Points to be Remember:**

**i)** The risk arises due to fixed financial commitments is measured by using Financial Leverage.

**ii)** Financial Leverage is also known as Financial Risk.

**iii)** Financial Leverage depends upon Fixed financial commitments in our Capital Structure.

**iv)** For every 1% change in EBIT, EPS changes by Financial Leverage times.

**v)** If there are no fixed financial commitments in our capital structure then Financial Leverage = 1

**vi)** If fixed financial commitments are high, financial leverage will also be high and Vice Versa.

**3.** a) Combined Leverage = Operating Leverage X Financial Leverage.

(or) $\frac{\text{Contribution}}{\text{EBT}}$

b) Degree of Combined Leverage = $\frac{\%\ \text{Change in EPS}}{\%\ \text{Change in Sales}}$

Points to be Remember:

**i)** The risk arises due to both Operating Fixed cost and Fixed financial commitments is measured by using Combined Leverage.

**ii)** Combined Leverage is also known as combined risk / total risk / Business risk.

iii) Combined leverage depends upon both Operating fixed cost and Fixed financial commitments in our Capital Structure .

iv) For every 1% change in sales, EPS changes by more than 1%.

v) If there are no fixed financial commitments and Fixed Operating costs in our capital structure and cost structure then combined leverage will be 1.

vi) If fixed costs and fixed financial commitments are high, combined leverage will also be high and Vice Versa.

**Some important formulas**

**1. Operating Leverages:**

**a.** Operative leverage $= \frac{\%\text{ change in EBIT}}{\%\text{ change in sales}}$

**b.** Degree of Operative leverage $= \frac{\text{Contribution}}{\text{E.B.I.T}}$



**2. Financial leverage:**

**a.** Financial Leverage $= \frac{\%\text{ Change in E.P.S}}{\%\text{ Change in E.B.I.T.}} = \frac{\text{Increase in E.P.S./E.P.S}}{\text{Increase in E.B.I.T./E.B.I.T.}}$

**b.** $DLF = \frac{EBIT}{EBT}$

(If there is no pref. dividend)

**c.** $DLF = \frac{EBIT}{EBT - \left(\frac{\text{Pref. dividend}}{1-\text{Tax}}\right)}$

If there is preference dividend



**3. Combined Leverage:**

**a.** $DLF = \frac{\%\text{ change in EPS}}{\%\text{ change in Sales}}$

**b.** DCL = Degree of Operating leverage X Degree of Financial leverage

$$= \frac{\text{Contribution}}{\text{E.B.I.T}} X \frac{\text{E.B.I.T}}{\text{EBT}} = \frac{\text{Contribution}}{\text{EBT}}$$

**4. Indifference point:**

$$\frac{(EBIT - I_1)(1-T) - PD}{ES_1} = \frac{(EBIT - I_2)(1-T) - PD}{ES_2}$$

**5.** Indifferent point under uncommitted $EP_S$ approach

$$\frac{(EBIT - I_1)(1-T) - PD - S_1}{ES_1} = \frac{(EBIT - I_2)(1-T) - PD - S_2}{ES_2}$$

**6. Financial Breakeven point:**

$$FBEP = \text{Int.} + \frac{PD}{(1-T)}$$

**7. ROE without using ROI rate:**

$$ROE = \frac{EAESH}{\text{Equity shareholders funds}} \times 100$$

# 7. WORKING CAPITAL MANGEMENT

1. **Meaning:** Working capital is the amount of funds needed by an enterprise to finance its day to day operation. It is the part of capital employed in short-term operation such as raw materials, semi finished products, sundry debtors.

   **a)** Current Assets are called as Gross Working Capital

   **b)** CA – CL = Net working capital

   **c)** Working capital requirement is based on level of activity

2. **Estimation of working capital**

   **a)** Ratio of sales **b)** Ratio of fixed assets/investment

   **c)** Operating cycle

   **Operating cycle /** Working Capital Cycle **:** Working Capital Cycle or Cash Cycle or Operating Cycle indicates the length of time between a company's paying for materials, entering into stock and receiving the cash from sales of finished goods. It can be determined by adding the number of days required for each stage in the cycle.

   **Operating cycle (or) cash cycle:**

   Operating Cycle = R + W + F + D - C

   Where, R = Raw Material storage Period,

   W = Work-in-progress holding period

   F = Finished goods storage period,

   D = Debtors collection period

   C = Credit period availed



   **a)** Accounts receivables are analyzed by the average no. of days it takes to collect.

   **b)** Inventory is analyzed by the average no. of days it takes to turn over the sale of a product (i.e. from the point it comes in the store to the point it is converted into cash)

   **c)** **Accounts payable** are analyzed by the average no. of days of credit period allowed by suppler of raw material, time lag in payment of wages and over heads

   **d)** **RM HP (or) RMCP: Raw material holding period**: It is the time gap between Date of purchase of RM to Date of Issue for production

   **e)** **WIP HP (or) WIPCP: WIP conversion period**: It is the time gap between Date of commencement/Issue for production to Date of completion into Finished goods

   **Note:**

   **i)** Assuming that production is in continuous process

   **ii)** Depreciation is excluded

   Cost = Raw Material + wages + O.H (Factory)

   **f)** **FGHP: Finished goods holding period**: It is the time gap between Date of completion of production to Date of sale of finished goods

   **g)** **DCP: Debtors collection period**: It is the time gap between Date of sale of finished goods to Date of realization of cash from debtors

   **∴Total operating cycle = RMPH +WIPCP + FGHP +DCP**

   **h)** **CPP: Creditors payment period:** It is the time lag in payments to suppliers of raw materials and average time lag for payment of wages & O.H

3. **Estimation of Current Assets:**

a) **Raw material Inventory**:

$$\frac{\text{Budgeted production (in units)} \times \text{R.M. Cost per unit} \times \text{Avg. Inventory Holding Period}}{\text{12 months (365 days)}}$$

b) **Work – in progress inventory:**

$$\frac{\text{Budgetedproduction(in units)} \times \text{Cost per unit of WIP} \times \text{Avg.time span of WIP inventory(months/days)}}{\text{12 months(365 days)}}$$

**Note:**

i) Administrative overheads are ignored

ii) Depreciation is excluded

iii) It is assumed that raw material is completely issued at the start of production and labour, overheads are assumed to be incurred to the extent of 50%

c) **Finished goods:**

$$\frac{\text{Budgeted Prod. (in units)} \times \text{Manf. Cost p.u. (Excl. Dep.)} \times \text{Finished Goods Holding Period (Months/days)}}{\text{12 months (365 days)}}$$

**Note:**

Cost of production (or) Cost of Goods sold means = Raw material + labour + Factors OH

i.e. Excluding depreciation & profit margin

i) Production Cost = RM + DL + F.O.H

ii) Cost of goods sold = Production cost

iii) Cost of sales = production cost + Admin cost + Selling cost

iv) Gross profit = Sales – Production cost

v) Net Profit = Sales – Cost of slaes

d) **Debtors:**

$$\frac{\text{Budgeted Credit Sales (in units)} \times \text{Cost of Sales p.u. (Excl. Dep.)} \times \text{Avg. Debt. Coll. Period (months/days)}}{\text{12 months (365 days)}}$$



e) **Cash/Bank balance:**

Minimum desired cash and bank balances to be maintained by the firm has to be added in the current assets for the computation of working capital

4. **Estimation of Current Liabilities:**

a) Trade creditors =

$$\frac{\text{Budgeted Prod (in units)} \times \text{Raw Material cost p.u.} \times \text{Credit Period allowed by Creditors (months/days)}}{\text{12 months (365 days)}}$$

b) Direct wages =

$$\frac{\text{Budgeted yearly Prod. (in units)} \times \text{Direct Labour cost p.u.} \times \text{Avg. time – lag in payment of wages (months/days)}}{\text{12 months (365 days)}}$$

c) Over heads =

$$\frac{\text{Budgeted yearly Prod. (in units)} \times \text{Overhead cost p.u.} \times \text{Finished Goods holding period (months/days)}}{\text{12 months (365 days)}}$$

**Note:**

i) The amount of over heads may be separately calculated for different types of overheads

ii) In case of selling O.H, the relevant item would be sales volume instead of production volume.

iii) If the wages & O.H paid on 1st day of each month for the expenditure related to the previous month.

Thus on the 1st day of each month outstanding wages will be zero. Last day of the month 30 days of wages will be out standing. So it is required to an average.

**Assumptions:**

1. There is no change in level of activity
2. There is no change in cost structure
3. There is no change in various components of operating cycle.
4. Year we assumed that 52 weeks/360 days/ 12 months
5. 100% sales are on credit basis unless specified.
6. 100% purchases are on credit basis unless specified
7. It is assumed that raw material is completely issued at the start of production and labour, O.H are assumed to be incurred to the extent of 50%
8. WIP, FG, Debtors are valued at cash cost basis
9. Finished goods are valued on the basis of cash cost of production
10. Debtors valued at cash cost of sales

**Debtors Valuation:**

1. **Full cost basis:** valued at cost of sales (Including Depreciation)
2. **Cash cost basis:** Excluding Depreciation
3. **Full value basis:** Selling price

Valued at cash cost basis is preferable.

**Imp. Points:**

1. RM consumption = opening + purchases – closing
   If the organization is newly formed, there was no opening stock
   ∴ RM Consumed = RM issued for production
   RM issued for production = RM involved in W.I.P + RM required for production of F.G
2. The quantity of material in process (W.I.P) will not change due to double shift working.
   Since the work start in the first shift will be completed in the second shift
3. Some time W.I.P can be valued at prime cost as per the company policy.
   Prime cost = RM cost + Wages (Fixed + Variable)

**Formulas:**

1. **Rate of return on total assets** = $\frac{\text{EBIT}}{\text{Total Asset}}$
2. **Net working capital** = current assets – Current Liabilities
3. **Current assets to fixed assets ratio** = $\frac{\text{Current Assets}}{\text{Fixed Assets}}$
4. Risk – Return trade off:
   a) Net working capital (or) current ratio is a measure of Risk
   b) Rate of return on total assets is a measure of Return.





**MPBF:**

Method – I = 0.75 x (CA-CL)

Method – II = (0.75 x CA) – CL

Method – III = [0.75 x (CA-CCA)] – CL

CCA = Core current assets (i.e. permanent current assets)

**Operating cycle:**

1. Net operating cycle (NOC) = RMCP + WIP CP + FGCP + RCP – DP

   **a)** RMCP = $\frac{\text{Avg. RM Inventory}}{\text{RM consumed during the year}}$ x 365 days

   **b)** WIP CP = $\frac{\text{Avg. W.I.P Inventory}}{\text{Total cost of production}}$ x 365 days

   **c)** FGCP = $\frac{\text{Avg. FG Inventory}}{\text{Total cost of production}}$ x 365 days

   **d)** DCP (or) RCP = $\frac{\text{Avg. Debtors}}{\text{Total Credit sales}}$ x 365 days

   **e)** DP = $\frac{\text{Avg. Creditors}}{\text{Total credit Purchases}}$ x 365 days

   DCP = Debtors collection period

   RCP = Receivables conversion period

   DP = Deferral period

   (or) cash turnover



2. No. of operating cycles in a year = $\frac{\text{365 days}}{\text{Net operating cycle period}}$

3. Amount of working capital required = $\frac{\text{Annual operating cost}}{\text{No. of operating cycles}}$

4. Optimum cash balance:

   **Baumol's Model** $c = \sqrt{\frac{2FT}{r}}$

   C = optimum cash balance

   F = Annual funds requirement

   T = Transaction cost

   R = Rate of interest per rupee per annum

   **Miller- ORR Model:** $Z = \sqrt[3]{\frac{3TV}{4i}}$ or $Z = [3TV/4i]^{1/3}$

   Where, T = Transaction cost of conversion

   V = Variance of daily cash flows,

   © = Daily % interest rate on investments.

   L = lower limit

   R = Return Level = L + Z

   H = Upper limit = 3Z + L

   Spread = H – L

   Average Cash Balance = (4R – L)/3

5. **Cost of not awaiting cash discount** = $\frac{d}{1-d} x \frac{365}{n-p}$

d = cash discount

n = Net period in days

p = Discount period in days

**Some Important Formulae**

1. Working capital = Current Assets – Current Liabilities
2. Gross operating cycle = R + W + F + D
3. Net operating cycle = R + W + F + D – C
4. Average raw material storage period = $\frac{\text{Average stock of raw material}}{\text{Average cost of raw material consumption per day}}$
5. Average WIP holiday period = $\frac{\text{Average stock of WIP}}{\text{Average cost of WIP per day}}$
6. Average finished goods storage period = $\frac{\text{Average stock of FG's}}{\text{Average cost of goods produced per day}}$
7. Average debtor's collection period = $\frac{\text{Average trade debtors}}{\text{Average cost of credit sale per day}}$
8. Average creditor's payment period = $\frac{\text{Average trade creditors}}{\text{Average cost of credit sales per day}}$
9. Average time log in payment of expenses = $\frac{\text{Average creditors for expenses}}{\text{Average expenses per day}}$
10. No. of operating cycles in a year = $\frac{\text{No. of days in a year}}{\text{Net operating cycle}}$
11. Annual integer saved in case of concentration bankers = (Average collection per day x Reduction in mailing and processing time ) x Rate of integer p.a
12. Economic lot size under Boumals model = $\sqrt{\frac{2AT}{H}}$
13. No. of lots per year = $\frac{\text{Total annual cash requirement}}{\text{Economic lot size}}$
14. Economic lot frequency = $\frac{\text{365 days}}{\text{No. of lots per year}}$
15. Total annual transaction and holding costs at economics lot size = $\sqrt{2ATH}$
16. Value of 'z' under Miller – Orr-model

    i. $Z = \frac{\sqrt[3]{3 \times TV \times \text{daily cash flow variance}}}{\text{Holding cost (i.e. daily int. rate)}}$

    ii. Upper limit = 3Z + L
    Return point = L + Z
    Average cash balance = $\frac{(4R-L)}{3}$

# 8. FINANCIAL RATIO ANALYSIS

## Financial Analysis:

### Entities interested in Financial Statements Analysis:

Financial statements consist of

1. Profit and Loss Account
2. Balance sheet and
3. Cash flow statement, wherever applicable.

Financial statement Analysis is a meaningful interpretation of Financial Statements, in order to meet the information requirements of the parties who use such financial information.

The users of financial information include:

1. **Management:** For day to day decision making and also for performance evaluation.
2. **Proprietor / shareholders:** For analyzing performance, profitability and financial position, prospective investors require track record of performance.
3. **Lenders:** Bank & financial Institutions – for determining financial position of the company, Debt service coverage, etc.
4. **Suppliers:** to determine the credit worthiness of the company in order to grant credit.
5. **Customers:** to know the general business viability before entering into long-term contracts and arrangements.
6. **Government:** to ensure prompt collection of direct and indirect tax revenues, to evaluate performance and contribution to social objectives.
7. **Research Scholars:** for study, research and analysis purposes.



### Types of Financial Statements Analysis:

Financial Statements Analysis may be of following types:

1. **Internal and External Analysis:**

| | Internal Analysis | External Analysis |
|---|---|---|
| **a)** | It is done within the company, i.e. by the corporate finance Department | It is done by outside parties<br>Eg: Bankers, Investors etc. |
| **b)** | It is more extensive & detailed. It looks into all aspects of functioning and performance, viz. Profitability, Liquidity, Solvency, Coverage, Leverage, Turnover, and overall Return | It is restricted according to the requirements of the user. For example, a trade creditor may be interested in the general profitability and financial standing. A lender may be interested in Debt service coverage, Interest coverage, etc. |

2. **Inter-Firm and Intra-Firm analysis:**

| Inter-Firm analysis | Intra-Firm analysis |
|---|---|
| It involves comparison of Financial Statements of one Firm, with other firms in the same industry. | It involves comparison of Financial Statements of one firm for different time periods or different divisions of the firm for the same year. |

3. **Horizontal and Vertical Analysis:**

| | Horizontal Analysis | Vertical Analysis |
|---|---|---|
| **a)** | It involves comparison of financial statements of one year with other years. | It involves analysis of relationship between various items in the financial statements of one year. |
| **b)** | Items are compared on a one-to-one basis, e.g. sales increase, comparative net profit for 2 years, etc. | Relationship between items i.e. ratios (or) percentages are considered under this analysis |

**Techniques of Financial Statement Analysis:**

Some techniques of financial statement analysis. are-

1. Ratio analysis.
2. Cash flow statements. } Covered in Inter (IPC) Syllabus.
3. Funds flow statements.
4. Common size statements.
5. Trend Analysis. } Not covered in Inter (IPC) Syllabus.
6. Value Added Statements.

## RATIO ANALYSIS

**Importance of Ratio Analysis:**

Ratio Analysis is a useful tool in the following aspects –

1. **Evaluation of Liquidity:** The ability of a Firm to meet its short-term payment commitments is called liquidity. Current Ratio and Quick Ratio help to assess the short-term solvency (liquidity) of the Firm.
2. **Evaluation of Profitability:** Profitability Ratios, i.e. Gross Profit Ratio, Operating Profit Ratio, Net Profit Ratio are basic indicators of the profitability of the firm. In addition, various profitability indicators like Return on Capital Employed (ROCE), Earnings Per Share (EPS), Return on Assets (ROA), etc., are used to assess the financial performance.
3. **Evaluation of Operating Efficiency:** Ratios throw light on the degree of efficiency in the management and utilization of assets and resources. These are indicated by Activity (or) Performance (or) Turnover Ratios, Eg. Stock Turnover Ratio, Debtors Turnover Ratio, Fixed Assets Turnover Ratio, etc. These indicate the ability of the firm to generate revenue (sales) per rupee of investment in its assets.
4. **Evaluation of Financial Strength:** Long term solvency (or) financial strength is indicated by capital structure ratios like Debt-Equity Ratio, Gearing Ratio, Leverage Ratios, etc. These ratios signify the effect of various sources of finance, e.g. Debt, preference and Equity. They also show whether the firm is exposed to serious financial strain (or) is justified in the use of debt funds.
5. **Inter-Firm & Intra-Firm comparison:** Comparison of the Firm's ratios with the industry average will help evaluate the Firm's position vis-à-vis the industry. It will help in analyzing the Firm's strengths and weaknesses and take corrective action. Trend Analysis of ratios over a period of years will indicate the direction of the firm's financial policies.
6. **Budgeting:** Ratios are not mere post-mortem of operations. They help in depicting future financial positions. Ratios have predictory value and are helpful in planning and forecasting the business activities of a firm for future periods, e.g. estimation of working capital requirements.

**Limitations of Ratio Analysis:**

Ratios are useful tools for financial analysis. However the following are the limitations –

1. **Window Dressing:** Ratios depict the picture of performance at a particular point of time. Sometimes, a business can make year-end adjustments in order to result in favourable ratios. (Eg. Current Ratio, Operating Profit Ratio, etc.)
2. **Impact of Inflation:** Financial statements and Ratios are affected by inflation. For example, Fixed Assets are accounted at historical cost, while profits are measured in current rupee terms. In inflationary situations, ROA (or) ROCE may be very high due to less investment in Fixed Assets. Ratios may not indicate the true position in such situations.
3. **Product Line diversification:** Detailed ratios for different divisions, products and market segments, etc. may not be available to the users in order to make an informed judgment. For example, loss in one product may be set-off by substantial profits in another product line. But, the overall NP ratio may be favourable.

4. **Impact of Seasonal Factors:** When the operations do not follow a uniform pattern during the financial period, ratios may not indicate the correct situation. For example, if the peak supply season of a business is between February to June, it will hold substantial stocks on the Balance sheet date in 31st March. This will lead to a very high Current Ratio on that date. But the position for the rest of the year may be entirely different.

5. **Differences in Accounting Policies:** Difference Firms follow different accounting policies, e.g. rate and methods of depreciation. Straight-jacked comparison of ratios may lead to misleading results.

6. **Lack of Standards:** Even though some norms can be set for ratios, there is no uniformity as to what an "ideal "ratio is. Generally it is said that current Ratio should be 2:1. But if a firm supplies mainly to Government Departments where debt collection period is high, a Current Ratio of 4:1 (or) 5:1, may also be considered normal.

7. **High (or) Low:** A number by itself cannot become "good "(or) "bad". The line of difference between "good ratio" and "bad ratio" is very thin.

8. **Interdependence:** Financial Ratios cannot be considered in isolation. Decision taken on the basis of one ratio may be incorrect when a set of ratios are analyzed. Ratios are inter-related and not independent.

**Use of Ratios in Cash flow statements:**

Cash flow statements can be prepared by reference to the Direct Iand Indirect Methods, as prescribed by the Accounting Standard-3 issued by the ICAI. The ratios used in cash flow statement Analysis are –

1. Cash Generating Efficiency Ratios:

   **a)** Cash flow yield = $\frac{\text{Net cash flow from operating Activites}}{\text{Net income}}$

   **b)** Cash flow to sales = $\frac{\text{Net cash flow from operating Activites}}{\text{Net sales}}$

   **c)** Cash flow to Assets = $\frac{\text{Net cash flow from operating Activites}}{\text{Average Total Assets}}$



**Note:** Cash Generating Efficiency is the ability of the Firm to generate cash from its current (or) continuing operations. This may be measured by any of the ratios given here.

2. Free Cash Flow Ratios:

   **a)** Price to Free cash flow = $\frac{\text{Market price per share}}{\text{Free cash flow per share}}$

   **b)** Operating cash flow to profit = $\frac{\text{Operating cash flow}}{\text{Operating Profit}}$

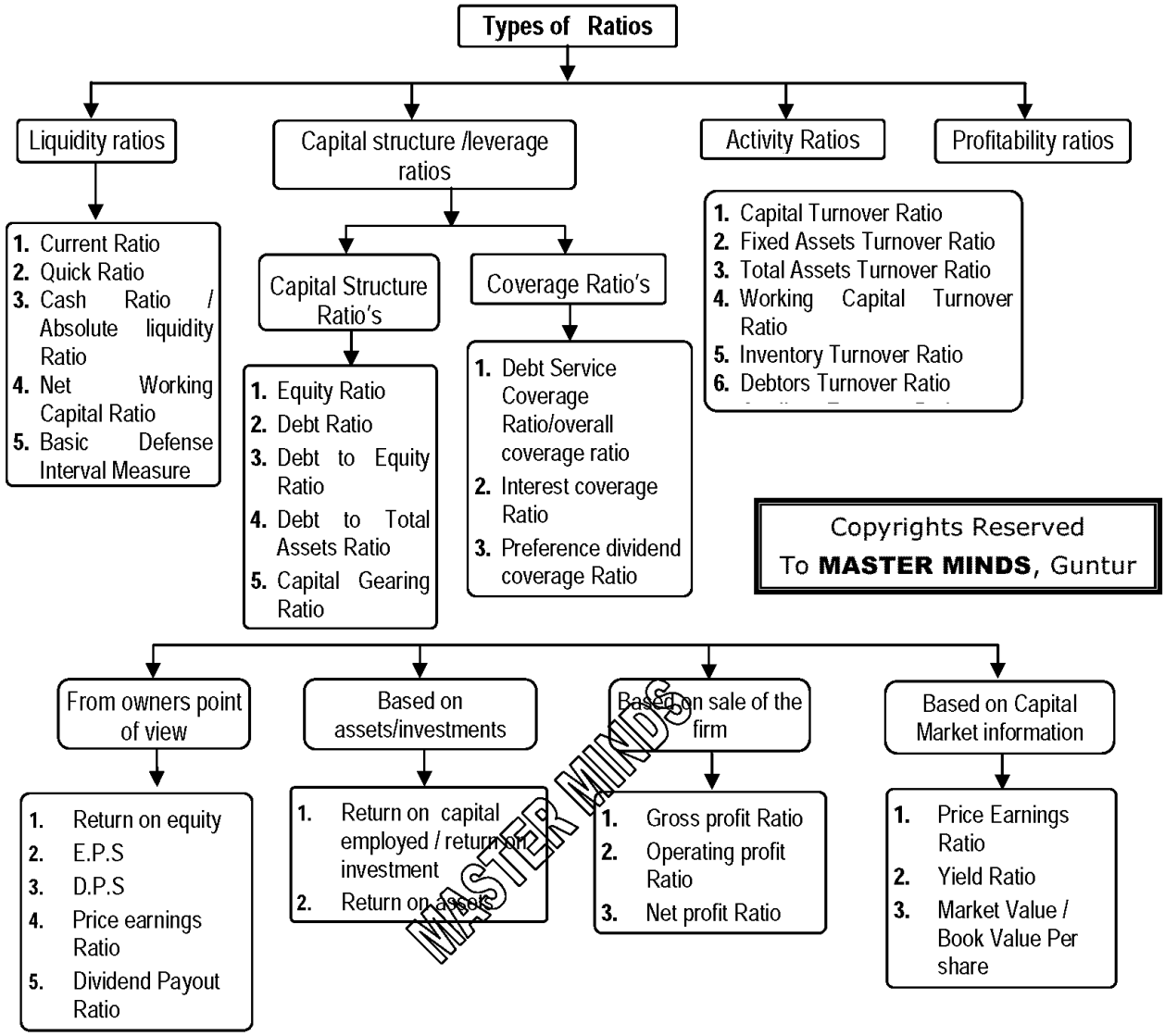
   **c)** Self-Financing Investment Ratio = $\frac{\text{Internal funding}}{\text{Net Investment}}$

**Note:** Free cash flow represents the amount of cash that remains after deducting current commitments and outflows, i.e., after paying out Operating Expenses, Interest, Loan Installments (if any), Income-Tax, Dividends and Net capital expenditure.

A positive free cash flow will indicate that surplus funds are available for investments (or) repayment of debt.

A negative free cash flow will require sale of investments (or) raising of finance through loans (or) equity.

## SUMMARY OF RATIOS




### A. Liquidity Ratios – Short Term Solvency

| | Ratio | Formula | Numerator | Denominator | Significance |
|---|---|---|---|---|---|
| 1. | Current Ratio | $\frac{\text{Current Assets}}{\text{Current Liabilities}}$ | Inventories / stocks +Debtors& B/R +Cash&Bank +Receivables + Accruals + Short Term loans + Marketable Investments / Short Term securities | Sundry Creditors + Outstanding expenses + Short term Loans & Advances + Bank over draft / cash credit + Provision for taxation + proposed dividend + unclaimed dividend | Ability to repay short - term liabilities promptly. Ideal Ratio is 2:1 very high ratio indicates existence on idle current assets. |
| 2. | Quick Ratio | $\frac{\text{Quick Assets}}{\text{Current Liabilities}}$ (also called Liquid Ratio (or) Acid Test Ratio) | Current Assets (-)Inventories (-) Prepaid Expenses | Current Liabilities | Ability to meet immediate liabilities .Ideal Ratio is 1:1 |

| | | | | | |
|---|---|---|---|---|---|
| **3.** | Absolute Cash Ratio (or) Absolute Liquidity Ratio | $\frac{\text{Cash} + \text{Marketable securites}}{\text{Current Liabilities}}$ | Cash in Hand + Cash at bank (Dr.) + Marketable Investments / Short Term securities | As per Item 1 above | Availability of cash to meet short-term commitments. No ideal ratio as such. If Ratio > 1, it indicates very liquid resources, which are low in profitability |
| **4.** | Basic Defence Interval measure (in days) | $\frac{\text{Quick Assets}}{\text{Cash expenses per day}}$ | Current Assets (-) Inventories (-) Prepaid Expenses | $\frac{\text{Annual Cash Expenses}}{365}$ Cash expenses = Total exps (-) Depreciation & write – offs. | Ability to meet regular cash expenses. |

**B.**

**Capital Structure Ratios**
**Indicator of Financing Techniques & Long-Term solvency.**

**Note:** For the capital structure Ratios, the following terms are used with the respective meanings assigned

| | Term | Alternative Term | Formula for computation |
|---|---|---|---|
| **a)** | Debt | Borrowed Funds (or) Loan funds | Debentures + Long Term Loans from Banks, Financial Institutions, etc. |
| **b)** | Equity | Net worth (or) Share holders Funds (or) Proprietor's funds (or) Owner's Funds (or) Own funds. | Equity share capital + Preference share capital + Reserves & Surplus less: Miscellaneous Expenditure (as per B/sheet) and Accumulated losses. |
| **c)** | Equity shareholders Funds | - | Equity as above Less preference share capital, i.e.,<br>= Equity share capital + Reserves & Surplus<br>Less: Miscellaneous Expenditure (as per B/sheet) & Accumulated losses. |
| **d)** | Total funds | Long Term funds (or) Capital Employed (or) Investment | = Debt + Equity [i.e. (a) + (b) above] .... Liability Route.<br>= Fixed Assets + Net working capital.. ..Assets Route. |



| | Ratio | Formula | Numerator | Denominator | Significance |
|---|---|---|---|---|---|
| **1.** | Debt to Total Funds Ratio (or) Debt ratio | $\frac{\text{Debt}}{\text{Total funds}}$ | See (a) above | See (d) above | Indicator of use of external funds. Ideal Ratio is 67% |
| **2.** | Equity to Total Funds Ratio (or) Equity Ratio | $\frac{\text{Equity}}{\text{Total funds}}$ | See (b) above | See (d) above | Indicates Long Term solvency, mode of financing and extent of own funds used in operations<br>Ideal Ratio is 33% |

| | | | | | |
|---|---|---|---|---|---|
| **3.** | Debt – Equity Ratio | $\frac{\text{Debt}}{\text{Equity}}$ | See (a) above | See (b) above | Indicates the relationship between Debt & Equity. Ideal Ratio is 2:1 |
| **4.** | Capital Gearing Ratio | $\frac{\text{Preference capital} + \text{Debt}}{\text{Equity shareholders funds}}$ | Preference share capital + Debt as per (a) above | See (c) above | Shown proportion of fixed charge (Dividend (or) Interest) Bearing capital to Equity Funds, and the extent of advantage (or) leverage enjoyed by Equity share holders. |

| | | | | | |
|---|---|---|---|---|---|
| **1.** | Proprietary Ratio | $\frac{\text{Proprietary Funds}}{\text{Total Assets}}$ | See (b) above | Net tangible Fixed Assets +Total current Assets | Shows extent of owner's funds, i.e., shareholder's funds utilized in financing the assets of the business. |
| **2.** | Debt to Total Assets Ratio | $\frac{\text{Debt Funds}}{\text{Total Assets}}$ | See (a) above | Same as above | Shows proportion of Total Assets financed with Debt, and hence, extent of Financial Leverage |
| **3.** | Fixed Asset to Long term fund ratio | $\frac{\text{Fixed Assets}}{\text{Long Term Funds}}$ | Net Fixed Assets, i.e., Gross block (-) Depreciation | See (d) above | Shown proportion of Fixed Assets (Long Term Assets) financed by long term funds. Indicates the financing approach followed by the firm, i.e., conservative, Matching (or) Aggressive.<br>Ideal Ratio is less than one. |



**C. Profitability Ratios Based on Sales**

| | Ratio | Formula | Numerator | Denominator | Significance |
|---|---|---|---|---|---|
| **1.** | Gross profit Ratio | $\frac{\text{Gross Profit}}{\text{Sales}}$ | Gross profit as per trading Account | Sales net of returns | Indicator of basic profitability |
| **2.** | Operating Profit Ratio | $\frac{\text{Operating Profit}}{\text{Sales}}$ | Sales Less cost of sales<br>(or)<br>Net profit as per P&L Account<br>(+) Non-operating Expenses (e.g. Loss on sale of assets, Preliminary Expenses written off, etc.) [see Note 2].<br>(-) Non operating Incomes (e.g. Rent, Interest & Dividends received. | Sales net of returns | Indicator of operating performance of business |
| **3.** | Net Profit Ratio | $\frac{\text{Net Profit}}{\text{Sales}}$ | Net profit as per P & L A/c (either before tax (or) after tax, depending upon data) | Sales net of returns | Indicator of overall Profitability |

| | | | | | |
|---|---|---|---|---|---|
| 4. | Contribution sales Ratio (or) Profit Volume Ratio. | $\frac{\text{Contribution}}{\text{Sales}}$ | Sales Less variable costs | Sales net of returns | Indicator of Profitability in Marginal Costing. |

**Notes:**

1. All the above ratios are expressed in percentage. The higher the ratio, the better it is for the business.
2. Depreciation is generally considered as an operating expense (Note: Operating, but Non-cash expenditure)
3. Operating Ratio (or) Operating Cost Ratio = $\frac{\text{Operating Cost}}{\text{Sales}}$
   = 100% - Operating Profit Ratio.

For this purpose, Operating costs = Materials + Labour + POH + AOH + SOH + Depreciation.

**D. Coverage Ratios – Ability to Serve Fixed Liabilities.**

| | Ratio | Formula | Numerator | Denominator | Significance |
|---|---|---|---|---|---|
| 1. | Debt Service Coverage Ratio | $\frac{\text{Earnings for Debt Service}}{\text{Interest} + \text{Installment}}$ | Net profit after Taxation + Interest on Debt Funds. +Non-cash Operating Exps. (Eg. depreciation & amortizations) + Non-Operating items / Adjustments (e.g. loss on sale of fixed assets, etc.) | Interest + Principal, i.e., Interest on Debt (+)Installment of Loan Principal. | Indicates extent of current earnings available for meeting commitments of Interest and Installment Ideal Ratio must be between 2 to 3 times. |
| 2. | Interest Coverage Ratio | $\frac{\text{EBIT}}{\text{Interest}}$ | Earnings before Interest and Tax | Interest on Debt | Indicates ability to meet interest obligations of the current year should be greater than 1. |
| 3. | Preference Dividend coverage Ratio | $\frac{\text{EAT}}{\text{Preference Dividend}}$ | Earnings after tax | Dividend on Preference Capital | Indicates ability to pay dividend on Preference capital should be greater than 1. |



**E. Turnover / Activity / Performance Ratios**

| | Ratio | Formula | Numerator & Denominator | Significance |
|---|---|---|---|---|
| 1. | Raw Material Turnover Ratio | $\frac{\text{Cost of RM Consumed}}{\text{Average stock of RM}}$ | Nr: Opening stock of RM (+) Purchases of RM (-) Closing Stock of RM Dr: $\frac{\text{Opening RM stock} + \text{Closing RM stock}}{2}$ | Indicates how fast / regularly Raw materials are used in production. |
| 2. | WIP Turnover Ratio | $\frac{\text{Factory cost}}{\text{Avg. Stock of WIP}}$ | Nr: Materials consumed + wages + OH. Dr: $\frac{\text{Opening WIP} + \text{Closing WIP}}{2}$ | Indicates the WIP movement / Production cycle. |

| | | | | |
|---|---|---|---|---|
| **3.** | Finished Goods (or) Stock Turnover Ratio | $\frac{\text{Cost of Goods sold}}{\text{Avg. stock of finished Goods}}$ | Nr:<br>a) For Manufacturers: Opg stock of FG + Cost of Production (-) Clg Stock of FG<br>b) For Traders: Opg Stock of FG + Cost of Goods purchased (-) Clg stock of FG.<br>Dr:<br>$\frac{\text{Opening FG Stock} + \text{Closing FG Stock}}{2}$ | Indicates how fast inventory is used / sold. High T/O shows fast moving FG. Low T/O may mean dead (or) excessive stock |
| **4.** | Debtors Turnover Ratio | $\frac{\text{Credit sales}}{\text{Avg. Accounts Receivable}}$ | Nr: Credit sales net of returns<br>Dr: Avg. Accounts Receivable (i.e. Debtors + B/R)<br>$\frac{\text{Opening DRS \& B/R} + \text{Closing DRS \& B/R}}{2}$ | Indicates the speed of collection of credit sales / Debtors. |
| **5.** | Creditors Turnover Ratio | $\frac{\text{Credit Purchases}}{\text{Avg. Accounts Payable}}$ | Nr: Credit purchases net of returns.<br>Dr: Avg. Accounts payable (i.e. Creditors + B/P)<br>$\frac{\text{Opening crs \& B/P} + \text{Closing crs \& B/P}}{2}$ | Indicates speed/ velocity of payment of creditors. |
| **6.** | Working capital Turnover Ratio | $\frac{\text{Turnover}}{\text{Net working capital}}$<br>[also called operating Turnover (or) cash Turnover Ratio] | Nr: Sales net of returns<br>Dr: Current Assets<br>Less: Current Liabilities.<br>(Avg. of Opening and Closing balances may be taken) | Ability to generate sales per rupee of working capital |
| **7.** | Fixed Assets Turnover Ratio | $\frac{\text{Turnover}}{\text{Net Fixed Assets}}$ | Nr: Sales net of returns<br>Dr: Net Fixed Assets (Avg. of Opening and Closing balances may be taken) | Ability to generate sales per rupee of Fixed Assets |
| **8.** | Capital Turnover Ratio | $\frac{\text{Turnover}}{\text{Capital Employed}}$ | Nr: Sales net of returns<br>Dr: Total funds [Long term funds (or) capital employed (or) Investment = Debt + Equity (i.e. (a+b) above.... Liability Route = Fixed Assets + Net working capital..... Assets Route] | Ability to generate sales per rupee of long term investment |



**Note:**

1. All the above T/O Ratios are expressed in times. Generally, the higher the T/O Ratio, the better it is.
2. In respect of RM, WIP and FG Stocks, Average Stock can also be calculated as $\frac{\text{Max. Stock} + \text{Min. Stock}}{2}$
3. Working capital related T/O Ratios, i.e. Items 1 t 6 above, can also be expressed in terms of days as $\frac{365}{\text{T/O Ratio}}$

| Item | Computation |
|---|---|
| **a)** Number of days Average stock of Raw Materials held | $\frac{365}{\text{Raw Material T/O Ratio}}$ |

| | |
|---|---|
| **b)** Number of days Average stock of WIP held | $\frac{365}{\text{WIP T/O Ratio}}$ |
| **c)** Number of days Average stock of Finished Goods held (or) Number of days sales in inventory (or) Average stock velocity. | $\frac{365}{\text{Finished Goods T/o Ratio}}$ |
| **d)** Average collection period (of Debtors) (or) Number of days sales in receivables. | $\frac{365}{\text{Debtors T/O Ratio}}$ |
| **e)** Average payment period (of creditors) (or) Average payment velocity. | $\frac{365}{\text{Creditors T/O Ratio}}$ |
| **f)** Number of days working capital held [also called operating cycle (or) cash cycle (or) Working capital cycle] | $\frac{365}{\text{Working Capital T/O Ratio}}$ |

Generally, the shorter / lesser the number of days (as computed above), the better it is.

**F. Overall Return Ratios – Owner's view point**

| | Ratio | Formula | Numerator | Denominator | Significance |
|---|---|---|---|---|---|
| **1.** | Return on Investment (ROI) [or] Return on capital employed (ROCE) | **Pre tax ROCE:** $\frac{\text{EBIT}}{\text{Equity - Debt}}$ **Post-tax ROCE:** $\frac{\text{EAT + Interest}}{\text{Equity + Debt}}$ | • Either pre-tax (or) post-tax ROCE may be computed.<br>• Pre-tax ROCE is generally preferred for analysis purposes. | Capital Employed = Investment = Equity + Debt | Overall profitability of the business on the total funds employed. |
| **2.** | Return on Equity (ROE) (or) Return on Net worth (RONW) | **Pre tax ROE:** $\frac{\text{EBT}}{\text{Equity}}$ **Post-tax ROE:** $\frac{\text{EAT}}{\text{Equity}}$ | • Either Pre-tax (or) Post-tax ROE may be computed.<br>• Post-tax ROE is generally preferred for analysis purposes. | Equity (or) Net Worth (or) Shareholders Funds (or) Proprietor's funds (or) Owner's funds (or) Own funds | Indicates Profitability of Equity funds / Owner's funds invested in the business. |
| **3.** | Return on Assets (ROA) | **Pre tax ROA:** $\frac{\text{EBT}}{\text{Avg. Total Assets}}$ **Post-tax ROA:** $\frac{\text{EAT}}{\text{Avg.Total Assets}}$ | • Either Pre-tax (or) Post-tax ROA may be computed.<br>• Post-tax ROA is generally preferred for analysis purposes. | Average, i.e., ½ of Opg.& Clg balances of any of the following items<br>• Total Assets, (or)<br>• Tangible Assets, (or)<br>• Fixed Assets | Indicates Net income per rupee of Avg. Total Assets (or) Fixed Assets. |
| **4.** | Earnings Per Share (EPS) | $\frac{\text{Residual Earnings}}{\text{No.of Equity Shares}}$ | • Residual Earnings, i.e. EAT (-) Preference Dividend | No.of Equity shares outstanding = $\frac{\text{Residual Earnings}}{\text{No.of Equity Shares}}$ | Income per share, whether (or) not distributed as dividends. |

| | | | | | |
|---|---|---|---|---|---|
| **5.** | Dividend Per Share (DPS) | $\frac{\text{Total Equity dividend}}{\text{No. of Equity shares}}$ | Profits distributed to equity share holders. | As per (4) above. | Profits distributed per equity share. |
| **6.** | Dividend payout Ratio | $\frac{\text{Dividend per share}}{\text{Earnings per share}}$ | DPS as per (5) above | EPS as per (4) above | % of EPS paid out & balance retained. |
| **7.** | Price Earnings Ratio (PE ratio) | $\frac{\text{Market price per share}}{\text{Earnings per share}}$ | Average market price [(or) closing Market price] as per stock exchange quotations. (Market price per share = MPS) | EPS as calculated in (4) above. | Indicates relationship between MPS and EPS, and share holder's perception of the company |
| **8.** | Dividend yield (%) | $\frac{\text{Dividend}}{\text{Market price per share}}$ | Dividend | Average MPS (or closing MPS) as per stock Exchange quotations. | True Return on Investment, based on Market value of shares. |
| **9.** | Book Value per share | $\frac{\text{Net worth}}{\text{No. of Equity shares}}$ | Equity (or) Net worth [See point B (b)] | No. of Equity shares O/S = $\frac{\text{Equity capital}}{\text{Facevalue per share}}$ | Basis of valuation of share based on book values. |
| **10.** | Market value to Book value | $\frac{\text{Market price per share}}{\text{Book value per share}}$ | Average MPS (or closing MPS) as per stock Exchange quotations. | Ratio as calculated in (a) above | Higher ratio indicates better position for share holders in terms of return & capital gains. |



**Liquidity Ratio:**

**a.** Current Ratio = $\frac{\text{Current Assets}}{\text{Current liabilities}}$

**b.** Quick Ratio = $\frac{\text{Quick Assets}}{\text{Current liabilities}}$

**Note:** Quick Assets = Current assets – Stock – Prepaid expense

**c.** Absolute cash ratio = $\frac{\text{Cash, bank \& Marketable Securities}}{\text{Current liabilities}}$

**d.** Defense interval measure = $\frac{\text{Quick Assets}}{\text{Average daily operating expenses}}$

**Solvency Ratio:**

**a.** Debt equity ratio = $\frac{\text{Long term debt}}{\text{Share holder's funds (E+P)}}$

**b.** Total assets to debt ratio = $\frac{\text{Total Assets}}{\text{Long term debt}}$

**c.** Proprietary ratio = $\frac{\text{Equity}}{\text{Total assets}}$

**d.** Capital gearing ratio = $\frac{\text{Fixed interest bearing securities}}{\text{Equity share holders funds}}$

**e.** Interest coverage ratio = $\frac{\text{EBIT}}{\text{Interest on long term debt}}$

**f.** Preference dividend coverage ratio = $\frac{\text{EAT}}{\text{Preferece dividend}}$

**g.** Debt service coverage ratio = $\frac{\text{earnings available for debt services}}{\text{Interest + Instalment}}$

**Activity Ratios:**

**a.** Capital T/o ratio = $\frac{\text{Net sales}}{\text{Capital employed}}$

**b.** Fixed assets T/o ratio = $\frac{\text{Net sales}}{\text{Net fixed assets}}$

**c.** Stock T/o ratio = $\frac{\text{COGS}}{\text{Average stock}}$

**d.** Debtors T/o ratio = $\frac{\text{Net credit sale}}{\text{Average debtors}}$

**e.** Creditor T/o ratio = $\frac{\text{Net credit purchases}}{\text{Average creditors}}$



**Profitability Ratios:**

**i.** Operating profit ratio = $\frac{\text{Operating profit}}{\text{Net sales}} \times 100$

**ii.** Operating ratio = $\frac{\text{Operating cost}}{\text{Net sales}} \times 100$

**iii.** GP/ NP ratio = $\frac{\text{GP/NP}}{\text{Net sales}} \times 100$

**iv.** ROI / Return on capital employed = $\frac{\text{EBIT}}{\text{Capital employed}} \times 100$

**v.** Return on Equity (or) Return on shareholders funds = $\frac{\text{EAT}}{\text{Shareholders funds}} \times 100$

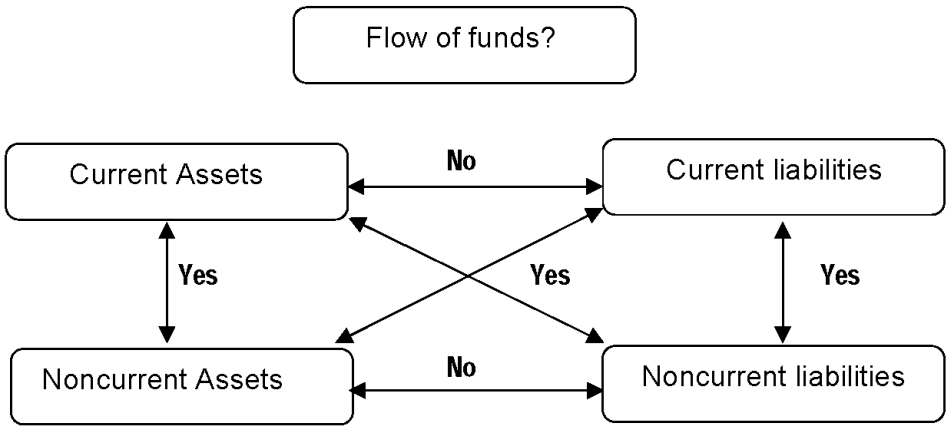
**vi.** Price earning ratio = $\frac{\text{Market price}}{\text{EPS}}$

**vii.** Earning yield = $\frac{\text{EPS}}{\text{MP}} \times 100$

**viii.** Dividend yield = $\frac{\text{DPS}}{\text{MP}}$

# 9. FUNDS FLOW STATEMENT

**Summary of fund flow: (In diagrammatic presentation):**




**Summary of flow of funds:**

Flow of Fund = Fixed asset changes into current asset or current asset changes into fixed assets.

**Or**

Fixed liability changes into current liability or current liability changes into fixed liability.

**Or**

Any transaction which attract one current account and one non-current account then it is only flow of fund

**Procedure for preparing funds flow statement:** Funds means working capital. The procedure for preparation of Funds Flow Statement is as under –



| Stage | Procedure |
|---|---|
| 1. | Prepare the schedule of changes in Net working capital, and ascertain the Increase / Decrease.<br>[Note: Current Assets and current liabilities items will be considered in this schedule] |
| 2. | Analyze the Non-current Assets and Non-Current Liability accounts, viz. Fixed Assets, Investments, Capital, Loans, etc. to ascertain movement of funds as under –<br>**a)** Fixed Assets: Sale / Disposal (or) Fresh purchase of Fixed Assets.<br>**b)** Investments: Sale of Investments (or) additional investments made during the year.<br>**c)** Capital: Redemption / Buyback of shares (or) Fresh Issue of capital (at premium, if any).<br>**d)** Loans: Repayment of Loans (or) Additional borrowing during the year.<br>[Note: In the course of analysis in stage 2, -(a) Non-cash Items (like Depreciation, Transfer to Reserves, etc,) and (b) Non-operating Items / Adjustments (e.g. Profit/loss on sale of assets / investments, etc.) will also be identified.] |
| 3. | Compute Funds from Operations (FFO), i.e., surplus generated from activities during the period, as under-<br>Add: Transfers to Reserves out of profits.<br>Add: Proposed Dividends for the current year.<br>Add: provision for taxation for current year.<br>Add: Non-operating and Non-cash Items – Write offs, Depreciation, Amortization, Loss on sale of FA, etc. |
| 4. | Prepare the statement of sources and Application of Funds (i.e. Funds Flow Statement) showing the various funds movements during the period. |

| Example of Sources of Funds | Example of Application of Funds |
|---|---|
| **1.** Decrease in Net working capital. | **1.** Increase in Net working capital. |
| **2.** Issue of Equity / Preference shares | **2.** Buyback / Redemption of Equity/preference shares. |
| **3.** Issue of Debentures / Raising of Long Term Loans | **3.** Redemption of Debentures / Repayment of Long Term Loans |
| **4.** Sale of Fixed Assets / Investments | **4.** Purchase of Fixed Assets / Investments. |
| | **5.** Payment of Dividends, payment of Taxes. |
| | **6.** Funds lost in operation (if any). |

**Statement or schedule of changes in working capital:**

| Particulars | Previous Year Rs. | Current Year Rs. | Effect on working capital | |
|---|---|---|---|---|
| | | | Increase | Decrease |
| **Current Assets**<br>Cash in hand<br>Debtor<br>Inventory<br>Bills Receivable | | | | |
| **Total Current Assets (A)** | | | | |
| **Current Liabilities**<br>Trade Creditors<br>Bills Payable | | | | |
| **Total Current Liabilities (B)** | | | | |
| Total Working Capital (A-B) | | | | |
| **Change in Working Capital** | | | | |



**Statement of fund from operations:**

The fund flow statement is prepared as per the following Performa:

**Statement of Funds from operations for the _____**

| Particulars | Rs. | Rs. |
|---|---|---|
| Net Profit after tax for the year | | XXX |
| Add: Non-Current/Non-Operating Expenses (E.G) | | |
| Depreciation | XX | |
| Loss on Sale of Fixed Assets | XX | |
| Interest on Debentures | XX | |
| Goodwill Written Off | XX | |
| Provision for Tax | XX | |
| Proposed Dividend | XX | |
| Interim Dividend | XX | |
| Transfer from Statement of Profit & Loss (Profit & Loss Account) | XX | |
| Other Non-Current & Non-Operating items debited | XX | XXX |
| Less: Non-Current & Non Operating Incomes (e.g.) | | |
| Interest on Investment | XX | |
| Dividend Received | XX | |
| Profit on Sale of Fixed Assets | XX | |
| Interest on Bank Deposit | XX | |
| Refund of Tax | XX | |
| Other Non-Current & Non-Operating items credited | XX | XXX |
| **Net Fund Flow From Operation** | | XXX |

**Fund Flow Statement in Account Form**

**Adjusted Profit & Loss Account for the period _____**

| Dr. | | | Cr. |
|---|---|---|---|
| **Particulars** | **Amount Rs.** | **Particulars** | **Amount Rs.** |
| To Non-Current & Non-Operating items Charged: | | By Balance b/d | XXX |
| Transfer to General Reserve | XXX | By Non-Current & Non-Operating Items credited | |
| Proposed Dividend | XXX | Profit on Sale of Fixed Assets | XXX |
| Goodwill Written Off | XXX | Income from Investment | XXX |
| Preliminary Expenses | XXX | Other Non-Current & Non Operating Items | XXX |
| Depreciation | XXX | By Net Fund Flow from Operation ( Balancing Figure) | XXX |
| Provision for Taxation | XXX | | |
| Other Non-Current & Non Operating Items | XXX | | |
| To Balance c/d | XXX | | |

**Advantages and Disadvantages of Funds Flow Statement:**

A. **Advantages:** The benefits of Funds Flow Analysis are –

1. **Evaluation:** Funds Flow Statement Provides answers to questions such as –
   a) How have the profits earned been used / applied by the business ?
   b) What is the relationship between liquidity position and profitability position of the enterprise.
   c) Why does the Firm have liquidity crunch inspite of reasonable profits? (or) How is the Firm able to meet its short-term commitments inspite of losses?
2. **Sales to Net working capital:** Increase in sales can be sustained only with adequate increase in the working capital base. Funds Flow Analysis seeks to ensure this aspect.
3. **Funds Management:** Funds Flow Analysis helps in determining whether the entity has managed its funds property i.e. proper mix / balance of long-term and short-term sources and application of funds.
4. **Forecasting:** Projected Funds Flow Statement is one of the tools of financial planning and budgetary control.

B. **Disadvantages:** The limitations of Funds flow Statement include –

1. **Profit vs Funds flow:** Separate Reconciliation between profitability and Net working capital is necessary for proper understanding of Funds flow statement. It cannot be a substitute for the Income statement.
2. **Supplementary to Cash Flow Analysis:** Funds flow Analysis is only supplementary to, and does not replace the cash flow analysis.





**THE END**