

COST SHEET – FORMAT

Particulars	Amount	Amount
Opening Stock of Raw Material	***	
Add: Purchase of Raw materials	***	
Add: Purchase Expenses	***	
Less: Closing stock of Raw Materials	***	
Raw Materials Consumed	***	
Direct Wages (Labour)	***	
Direct Charges	***	
Prime cost (1)		***
Add :- Factory Over Heads:		
Factory Rent	***	
Factory Power	***	
Indirect Material	***	
Indirect Wages	***	
Drawing Office Salary	***	
Factory Insurance	***	
Factory Asset Depreciation	***	
Supervisor Salary	***	
Works cost Incurred		***
Add: Opening Stock of WIP	***	
Less: Closing Stock of WIP	***	
Works cost (2)		***
Add:- Administration Over Heads:-		
Office Rent	***	
Asset Depreciation	***	
General Charges	***	
Audit Fees	***	
Bank Charges	***	
Counting house Salary	***	
Other Office Expenses	***	
Cost of Production (3)		***
Add: Opening stock of Finished Goods	***	
Less: Closing stock of Finished Goods	***	
Cost of Goods Sold		***
Add:- Selling and Distribution OH:-		
Sales man Commission	***	
Sales man salary	***	
Traveling Expenses	***	
Advertisement	***	
Delivery man expenses	***	
Sales Tax	***	
Bad Debts	***	
Cost of Sales (5)		***
Profit (balancing figure)		***
Sales		***

Notes:-

- 1) Factory Over Heads are recovered as a percentage of direct wages
- 2) Administration Over Heads, Selling and Distribution Overheads are recovered as a percentage of works cost.

M A T E R I A L

- 1) Reorder level = Maximum usage * Maximum lead time
(Or) Minimum level + (Average usage * Average Lead time)
- 2) Minimum level = Reorder level – (Average usage * Average lead time)
- 3) Maximum level = Reorder level + Reorder quantity – (Minimum usage * Minimum lead time)
- 4) Average level = $\frac{\text{Minimum level} + \text{Maximum level}}{2}$ (or)
Minimum level + $\frac{1}{2}$ Reorder quantity
- 5) Danger level (or) safety stock level
= Minimum usage * Minimum lead time (preferred)
(or) Average usage * Average lead time
(or) Average usage * Lead time for emergency purposes
- 6) EOQ (Economic Order Quantity - Wilson's Formula) = $\sqrt{2AO/C}$
Where A = Annual usage units
O = Ordering cost per unit
C = Annual carrying cost of one unit
i.e. Carrying cost % * Carrying cost of unit
- 7) Associated cost = Buying cost pa + Carrying cost pa
- 8) Under EOQ Buying cost = Carrying cost
- 9) Carrying Cost = Average inventory * Carrying cost per unit pa * Carrying cost %
(Or) Average Inventory * Carrying cost per order pa
- 10) Average inventory = EOQ/2
- 11) Buying cost = Number of Orders * ordering cost
- 12) Number of Orders = Annual Demand / EOQ
- 13) Inventory Turnover (T.O) Ratio = $\frac{\text{Material consumed}}{\text{Average Inventory}}$
- 14) Inventory T.O Period = $\frac{365}{\text{Inventory Turn over Ratio}}$
- 15) safety stock = $\frac{\text{Annual Demand}}{365} * (\text{Maximum lead time} - \text{Average lead time})$
- 16) Total Inventory cost = Ordering cost + Carrying cost of inventory + Purchase cost

17) Input Output Ratio = $\frac{\text{Quantity of input of material to production}}{\text{Standard material content of actual output}}$

Remarks :-

- 1) High Inventory T.O Ratio indicates that the material in the question is fast moving
- 2) Low Inventory T.O Ratio indicates over investment and locking up of working Capital in inventories

Pricing of material Issues:-

1) Cost price method:-

- a) Specific price method
- b) First in First Out method (FIFO)
- c) Last in First Out method (LIFO)
- d) Base stock method

2) Average price method:-

a) Simple average price method = $\frac{\text{Total unit price}}{\text{Total No. of purchases}}$

b) Weighted average price method = $\frac{\text{Total cost}}{\text{Total No. of units}}$

c) Periodic simple average price method = $\frac{\text{Total unit price of certain period}}{\text{Total Number of purchases of that period}}$
(This rate is used for all issues for that period. Period means a month (or) week (or) year)

d) Periodic weighted average price method = $\frac{\text{Total cost of certain period}}{\text{Total Number of units of that period}}$

e) Moving simple average price method
= $\frac{\text{Total of periodic simple average of certain number of periods}}{\text{Number of periods}}$

f) Moving weighted average price method
= $\frac{\text{Total of periodic weighted average of certain number of periods}}{\text{Number of periods}}$

3) Market price method:-

- a) Replacement price method = Issues are valued as if it was purchased now at current market price
- b) Realizable price method = Issues are valued at price if it is sold now

4) Notional price method:-

- a) Standard price method = Materials are priced at pre determined rate (or) Standard rate
- b) Inflated price method = The issue price is inflated to cover the losses incurred

- 5) Re use price method = When materials are returned (or) rejected it is valued at different price. There is no final procedure for this method.

ABC Analysis (or) Pareto Analysis :- In this materials are categorized into

<u>Particulars</u>	<u>Quantity</u>	<u>Value</u>
"A" – Important material	10%	70%
"B" – Neither important nor unimportant	20%	20%
"C" – UN Important	70%	10%

Note:-

- 1) Material received as replacement from supplier is treated as fresh supply
- 2) If any material is returned from Department after issue, it has to be first disposed in the next issue of material
- 3) loss in the book balance of stock and actual is to be transferred to Inventory adjustment a/c and from there if the loss is normal it is transferred to Over Head control a/c. If it is abnormal it is transferred to costing profit and loss a/c.
- 4) CIF = Cost Insurance and Freight (This consignment is inclusive of prepaid insurance and freight)
- 5) FOB = Free on Board (Materials moving by sea – insurance premium is not paid)
- 6) FOR = Free on Rail (Insurance and freight is not borne by the supplier but paid by the company or purchase)
- 7) For each receipt of goods = Goods Receipt note
- 8) For each issue of goods = Materials Requisition note (or) Material Issue note

Accounting Treatment :-

- 1) Normal Wastage = It should be distributed over goods output increasing per unit cost
- 2) Abnormal Wastage= It will be charged to costing profit and loss a/c
- 3) Sale value of scrap is credited to costing profit and loss a/c as an abnormal gain.
- 4) Sale proceeds of the scrap can be deducted from material cost or factory overheads.
- 5) Sale proceeds of scrap may be credited to particular job.
- 6) Normal Defectives = cost of rectification of defectives should be charged to specific
- 7) Abnormal Defectives = This should be charged to costing profit and loss a/c
- 8) Cost of Normal spoilage is to borne by good units

9) Abnormal spoilage should be charged to costing profit and loss a/c

LABOUR

Method of Remuneration:

1) Time Rate system

- a) Flat time Rate
- b) High wage system
- c) Graduated time rate

2) Payment by Results

a) Piece rate system

- i) Straight piece rate
- ii) Differential piece rate
 - Taylor system
 - Merrick system

b) Group Bonus System

- i) Budgeted Expenses
- ii) Towne gain sharing scheme
- iii) Cost efficiency bonus
- iv) Priest man system

c) Combination of Time and Piece rate

- i) Gantt task and Bonus scheme
- ii) Emerson Efficiency system
- iii) Point scheme
 - Bedaux system
 - Haynes manit system

d) Premium bonus plans

- i) Halsey premium plan
- ii) Halsey weir premium plan
- iii) Rowan scheme
- iv) Barth scheme
- v) Accelerating premium bonus scheme

e) Other incentive schemes

- i) Indirect monetary incentive
 - Profit sharing
 - Co-partnership
- ii) Non-Monetary Incentive

1) Time rate system = Hours worked * Rate per hour (Basic wages)

2) Piece rate system:

i) **Straight piece rate earnings = Number of units produced * Rate per unit**

ii) **Differential Piece rate**

a) **F.W.Taylor's differential rate system**

- » 83% of piece rate when below standard
- » 125% of piece rate when above or at standard

b) **Merrick differential or multiple piece rate system**

<u>Efficiency level</u>	<u>Piece rate</u>
» up to 83%	» Normal piece rate
» 83% to 100%	» 110% of Normal rate
» Above 100%	» 120% of Normal rate

iii) **Gantt Task and Bonus system**

<u>Output</u>	<u>Payment</u>
» Below standard	» Time rate (guaranteed)
» At standard	» 20% Bonus of Time rate
» Above standard	» 120% of ordinary piece rate

iv) **Emerson's Efficiency system**

<u>Efficiency</u>	<u>Payment</u>	
» Below 66.7%	» Hourly Rate	
» from 66.7% to 100%	» Hourly rate (+) increasing bonus according to degree of efficiency on the basis of step bonus rates	
» Above 100%	» Hourly rate (+) 20% Bonus (+) additional bonus of 1% of hourly rate for every 1% increase in efficiency	1%

v) **Halsey Premium Plan = Basic wages + 50% of time saved * Hourly Rate**

vi) **Halsey Weir Premium Plan = Basic wages + 30% of time saved * Hourly rate**

vii) **Rowan Plan = Basic wages + $\frac{\text{Time saved}}{\text{Time allowed}} * \text{Basic Wages}$**

viii) **Bedaus Point system = Basic wages + 75% * Bedaus point/60 * Rate/hr**

ix) **Barth's System = Hourly rate * $\sqrt{\text{Std time} * \text{Time taken}}$**

Labour Turnover:-

1) **Separation rate method = $\frac{\text{Separation during the period}}{\text{Average No. of worker's during the period}}$**

2) **Net labour T.O rate (or) Replacement method**
= $\frac{\text{Number of replacements}}{\text{Average No. of worker's during the period}}$

3) **Labour flux rate = $\frac{\text{No. of separation} + \text{No. of replacement}}{\text{Average No. of worker's during the period}}$**

Average No. of worker's during the period

Accounting Treatment

- 1) Normal Idle time = Charged to factory overheads
- 2) Normal but un-controllable = It should be charged to job by inflating wage rate.
- 3) Abnormal = It should be charged to costing P & L a/c

OVER HEADS

Reapportionment of service department expenses over production department :-

- 1) Direct redistribution method:
 - Service department costs are divided over production department.
 - Ignore service rendered by one dept. to another
- 2) Step method of secondary distribution (or) Non reciprocal method:
 - Service department which serves largest number of service department is divided first and go on.
- 3) Reciprocal service method:
 - i) Simultaneous equation method (or) Algebraic method
 - Equation is formed between service departments and is solved to find the amount due.
 - ii) Repeated distribution method:
 - Service department cost separated repeatedly till figure of service dept. is exhausted or too small.
 - iii) Trial and Error method:
 - Cost of service department is apportioned among them repeatedly till the amount is negligible and the total is divided among production department.

Treatment of Over/Under absorption of overheads:-

- i) If under absorbed and over absorbed overheads are of small value then it should be transferred to costing profit and loss a/c
- ii) If under and over absorption occurs due to wrong estimates then cost of product manufactured should be adjusted accordingly.
- iii) If the same accrued due to same abnormal reasons the same should be transferred to costing profit & loss a/c

Apportionment of overhead expenses – Basis

- a) Stores service expenses = Value of materials consumed
- b) Factory rent = Floor area
- c) Municipal rent, rates and taxes = floor area

d) Insurance on Building and machinery = Insurable value

e) Welfare department expenses

f) Supervision

g) Amenities to employee's

h) Employees liability for insurance

Number of employees

j) Lighting power = Plug point

k) Stores over heads = Direct material

l) General over heads = Direct wages

RECONCILIATION OF COST AND FINANCIAL A/C

Causes of differences:-

1) Purely financial items :

- i) Appropriation of profits ► Transferred to reserves, goodwill, preliminary expenses, dividend paid etc.
- ii) Loss on sale of investment, penalties and fines
- iii) Income ► Interest received on Bank deposits, profit on sale of investments, fixed assets, transfer fees.

2) Purely cost account items: - Notional Rent / Interest / Salary

3) Valuation of stock:-

i) Raw-material = In financial a/c's stock is valued at cost or market value
Whichever is less, while in cost a/c's it is valued at LIFO, FIFO etc.

ii) Work in progress = In financial a/c's administrative expenses are also considered while valuing stock, but in cost a/c's it may be valued at prime (or) factory cost (or) cost of production

iii) Finished Goods = In financial a/c's it is valued at cost or market price
whichever is less, in cost a/c's it is valued at total cost of production.

4) Overheads: In financial = Actual expenses are taken
In cost = Expenses are taken at predetermined rate.

5) Depreciation: In financial = Charged in diminishing or fixed balance method
In cost = Charged in machine hour rate

6) Abnormal Gains: In financial = Taken to profit & Loss a/c
In cost = Excluded to cost a/c's or charged in costing

JOB AND BATCH COSTING

With job costing, we are dealing with one off situations. We are dealing with organisations that carry out functions and services on a one at a time basis. Good examples of job costing situations include jobbing builders: the builder who will provide a householder, or a shop owner, or a factory owner with a service that he provides for no one else. The jobbing builder will build an extension, or renovate some property to a design that will probably not be copied anywhere else at any time: it is a one off job. Job costing can apply in non manufacturing situations as well as in manufacturing situations.

Even though many jobbing enterprises are small scale, we are not suggesting that all jobbing enterprises are small scale enterprises. An engineering shop may be working on a job for a customer that takes several months and many man and machine hours to complete.

Here are two definitions:

A job is "A customer order or task of relatively short duration"
Job costing is "A form of specific order costing; the attribution of cost to jobs"

Batch costing is not normally seen as much of an advance on job costing.

A batch is A group of similar articles which maintains its identity throughout one or more stages of production and is treated as a cost unit Batch costing is A form of specific order costing; the attribution of costs to batches.

Economic Batch Quantity = $EBQ = \sqrt{2AS/C}$

Where A = Annual Demand

S = Setting up cost per batch

C= Carrying cost / unit of production.

PROCESS COSTING

Format of process a/c

Particulars	Unit	Rate	Rs.	Particulars	Unit	Rate	Rs.
To Direct material				By Normal Loss			
To Direct Labour				By Units transferred to other process			
To Indirect material				By Abnormal loss (B/F)			
To Other Expenses							
To Abnormal gain(B/F)							
Total				Total			

Format of Abnormal loss

Particulars	Unit	Rs.	Particulars	Unit	Rs.
To Process a/c			By Sale of wasted units		
			By costing P & L a/c		
Total			Total		

Format of Abnormal gain a/c

Particulars	Units	Rs.	Particulars	Units	Rs.
To Normal Loss a/c			By Process a/c (names of different process)		
To costing P & Ia/c					
Total			Total		

1) To find the cost per unit for valuation of units to be trans. to next process and also for abnormal, loss or gain = $\frac{\text{Total process cost} - \text{Salvage value of normal spoilage}}{\text{Total units introduced} - \text{Normal loss in units}}$

2) To find abnormal loss (or) gain (all in units):
= Units from previous process + fresh units introduced – Normal loss – units transferred to next process (If the result is positive then abnormal loss. If negative then abnormal gain)

3) In case of opening WIP and closing WIP are given then there are different methods of valuation of closing WIP

- i) FIFO Method
 - ii) LIFO Method
 - iii) Average Method
 - iv) Weighted Average Method

4) Various statements to be prepared while WIP is given:

- i) Statement of equivalent production
- ii) Statement of cost
- iii) Statement of apportionment of cost
- iv) Process cost a/c

5) FIFO Method: In these method total units transferred to next process includes full opening stock units and the closing stock includes the units introduced during the process. In this method the cost incurred during the process is assumed as to be used

- First to complete the units already in process
- Then to complete the newly introduced units
- For the work done to bring closing inventory to given state of completion

6) LIFO Method = Cost incurred in process is used for:

- a) First to complete newly introduced units
- b) Then to complete units already in process in this method closing stock is divided into two :
 - i) Units which represent opening stock but lie at the end of the period
 - ii) Newly introduced units in closing stock.

7) Average Method: In this method

- a) **No distinction is made between opening stock and newly introduced material.**
 - b) **In finding cost per unit, cost incurred for opening stock is also to be added with current cost. (This addition is not done in LIFO & FIFO method as cost incurred in that process is only taken)**
- 8) Weighted average method:** This method is only used when varied product in processed through a single process. General procedure is adopted here.
- a) **Statement of weighted average production should be prepared. Under this statement output of each products is expressed in terms of points.**
 - b) **Cost of each type of product is computed on basis of Points.**

Points of vital importance in case of Abnormal Gain / Loss:

- a) **Calculate cost per unit by assuming there is no abnormal loss / gain**
- b) **Cost per unit arrived above should be applied for valuation of both abnormal Loss/gain units and output of the process.**
- c) **Separate a/c for both abnormal loss/gain is to be prepared.**

JOINT PRODUCT AND BY PRODUCT COSTING

Methods of apportioning joint cost over joint products :

- 1) **Physical unit method = Physical base to measure (i.e.) output quantity is used to separate joint cost. Joint cost can be separated on the basis of ratio of output quantity. While doing this wastage is also to be added back to find total quantity.**
- 2) **Average unit cost method = In this method joint cost is divided by total units Produced of all products and average cost per unit is arrived and is multiplied With number of units produced in each product.**
- 3) **Survey method or point value method = Product units are multiplied by points or weights and the point is divide on that basis.**
- 4) **Standard cost method = Joint costs are separated on the basis of standard cost set for respective joint products.**
- 5) **Contribution margin method = Cost are divided into two categories (i.e.) variable and fixed. Variable costs are separated on unit produced. Fixed on the basis of contribution ratios made by different products.**
- 6) **Market value method:-**

a) **Market value at the point of separation: Joint cost to sales revenue percentage is found which**

is called as multiplying factor = $\frac{\text{Joint cost}}{\text{Sales revenue}} \times 100$

Sales Revenue

- Joint cost for each product is apportioned by applying this % on sales revenue of each product.
- Sales revenue = Sales Revenue at the point of separation.
- This method cannot be done till the sales revenue at the separation point is given.

b) Market value after processing: Joint cost is apportioned on the basis of total sales Value of each product after further processing.

c) Net Realizable value method = Form sales value following items are deducted

- Estimated profit margin
- Selling and distribution expenses if any included.
- Post split off cost

The resultant amount is net realizable value. Joint cost is apportioned on this basis.

Bi-product → Method of accounting

- Treat as other income in profit and loss a/c
- Net Realizable value of Bi-product is reduced from cost of main product.
- Instead of standard process, Standard cost or comparative price or re-use price is credited to joint process a/c.

OPERATION COSTING

Service costing is “A cost accounting method concerned with establishing the costs of services rendered”. Service costing is also applied within a manufacturing setting.

The Differences Between Product Costing and Service Costing?

- There may be very few, if any, materials to worry about
- Overheads will comprise the most significant portion of any costs of which, labour costs may well comprise as much as 70%

No.	Enterprise	Cost per unit
1.	Railways or bus companies	Per passenger-kilometer
2.	Hospital	Per patient/day, per bed/day
3.	Canteen	Meals served , cups of tea
4.	Water supply service	Per 1000 gallons
5.	Boiler House	1000 kg of steam
6.	Goods Transport	Per tonne km, quintal km
7.	Electricity Boards	Per kilowatt – hours
8.	Road maintenance department	Per mile or road maintenance
9.	Bricks	One thousand
10.	Hotel	Per room/day

In this various terms such as passenger km, quintal km, tonne km, these are all known as composite units and are computed in 2 ways:

- a) Absolute (weighted average): (e.g.) tones km - Multiplying total distance by respective load quantity.
- b) Commercial (simple average): (e.g.) tonne Km–Multiplying total distance by average load quantity

All accumulated cost is classified into 3 categories:

- 1) Standing charges (or) fixed cost
- 2) Running cost (or) variable cost
- 3) Maintenance charges (or) semi variable cost

Running charges = Fuel, Driver Wages, Depreciation, oil etc.

Maintenance charges = Supervision salary, Repairs and Maintenance

Note:-

- % of factory overheads on direct wages
- % of administration overheads on works cost
- % of selling & distribution overheads on works cost
- % of profit on sales

Operating cost sheet :-

	Particulars	Total cost	Cost per km
A	<u>Standing charges :-</u>		
	License fees		
	Insurance Premium		
	Road tax		
	Garage rent		
	Driver's wages		
	Attendant-cum-cleaner's wages		
	Salaries and wages of other staff		
	Total		
B	<u>Running charges :-</u>		
	Repairs and maintenance		
	Cost of fuel (diesel, petrol etc.)		
	Lubricants, grease and oil		
	Cost of tires, tubes and other spare parts		
	Depreciation		
	Total		
C	Total charges [(A) + (B)]		

M A R G I N A L C O S T I N G

Statement of profit:-

Particulars	Amount
Sales	***
Less:- Variable cost	***
Contribution	***
Less:- Fixed cost	***
Profit	***

1) Sales = Total cost + Profit = Variable cost + Fixed cost + Profit

2) Total Cost = Variable cost + Fixed cost

3) Variable cost = It changes directly in proportion with volume

4) Variable cost Ratio = {Variable cost / Sales} * 100

5) Sales – Variable cost = Fixed cost + Profit

6) Contribution = Sales * P/V Ratio

7) Profit Volume Ratio [P/V Ratio]:-

- {Contribution / Sales} * 100
- {Contribution per unit / Sales per unit} * 100
- {Change in profit / Change in sales} * 100
- {Change in contribution / Change in sales} * 100

8) Break Even Point [BEP]:-

- Fixed cost / Contribution per unit [in units]
- Fixed cost / P/V Ratio [in value] (or) $\frac{\text{Fixed Cost} * \text{Sales value per unit}}{(\text{Sales} - \text{Variable cost per unit})}$

9) Margin of safety [MOP]

- Actual sales – Break even sales
- Net profit / P/V Ratio
- Profit / Contribution per unit [In units]

10) Sales unit at Desired profit = {Fixed cost + Desired profit} / Cont. per unit

11) Sales value for Desired Profit = {Fixed cost + Desired profit} / P/V Ratio

12) At BEP Contribution = Fixed cost

13) Variable cost Ratio = $\frac{\text{Change in total cost}}{\text{Change in total sales}} \times 100$

14) Indifference Point = Point at which two Product sales result in same amount of profit

= $\frac{\text{Change in fixed cost}}{\text{Change in variable cost per unit}}$ (in units)

= $\frac{\text{Change in fixed cost}}{\text{Change in contribution per unit}}$ (in units)

= $\frac{\text{Change in Fixed cost}}{\text{Change in P/Ratio}}$ (in Rs.)

= $\frac{\text{Change in Fixed cost}}{\text{Change in Variable cost ratio}}$ (in Rs.)

15) Shut down point = Point at which each of division or product can be closed

= $\frac{\text{Maximum (or) Specific (or) Available fixed cost}}{\text{P/V Ratio (or) Contribution per unit}}$

If sales are less than shut down point then that product is to shut down.

Note :-

1) When comparison of profitability of two products if P/V Ratio of one product is greater than P/V

Ratio of other Product then it is more profitable.

2) In case of Indifference point if Sales > Indifference point --- Select option with higher fixed

cost (or) select option with lower fixed cost.

STANDARD COSTING

Method one of reading:-

Material:-

	$\frac{\text{SP} * \text{SQ}}{(1)}$	$\frac{\text{SP} * \text{AQ}}{(2)}$	$\frac{\text{SP} * \text{RSQ}}{(3)}$	$\frac{\text{AP} * \text{AQ}}{(4)}$
a) Material cost variance =			(1) – (4)	
b) Material price variance =			(2) – (4)	
c) Material usage variance =			(1) – (2)	
d) Material mix variance =			(3) – (2)	
e) Material yield variance =			(1) – (3)	

Labour :-

$\frac{SR*ST}{(1)}$	$\frac{SR*AT \text{ (paid)}}{(2)}$	$\frac{SR*RST}{(3)}$	$\frac{AR*AT}{(4)}$	$\frac{SR*AT \text{ (worked)}}{(5)}$
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- a) Labour Cost variance = (1) – (4)
 b) Labour Rate variance = (2) – (4)
 c) Labour Efficiency variance = (1) – (2)
 d) Labour mix variance = (3) – (5)
 e) Labour Idle time variance = (5) – (2)

Variable Overheads cost variance :-

$\frac{SR * ST}{(1)}$	$\frac{SR * AT}{(2)}$	$\frac{AR * AT}{(3)}$
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- a) Variable Overheads Cost Variance = (1) – (3)
 b) Variable Overheads Expenditure Variance = (2) – (3)
 c) Variable Overheads Efficiency Variance = (1) – (2)

[Where: SR =Standard rate/hour = $\frac{\text{Budgeted variable OH}}{\text{Budgeted Hours}}$]

Fixed Overheads Cost Variance:-

$\frac{SR*ST}{(1)}$	$\frac{SR*AT \text{ (worked)}}{(2)}$	$\frac{SR*RBT}{(3)}$	$\frac{SR*BT}{(4)}$	$\frac{AR*AT \text{ (paid)}}{(5)}$
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- a) Fixed Overheads Cost Variance = (1) – (5)
 b) Fixed Overheads Budgeted Variance = (4) – (5)
 c) Fixed Overheads Efficiency Variance = (1) – (2)
 d) Fixed Overheads Volume Variance = (1) – (4)
 e) Fixed Overheads Capacity Variance = (2) – (3)
 f) Fixed Overheads Calendar Variance = (3) – (4)

Sales value variance:-

$\frac{\text{Budgeted Price}*BQ}{(1)}$	$\frac{BP*AQ}{(2)}$	$\frac{BP*\text{Budgeted mix}}{(3)}$	$\frac{AP*AQ}{(4)}$
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- a) Sales value variance = (4)–(1)
 b) Sales price variance = (4) – (2)
 c) Sales volume variance = (2) – (1)
 d) Sales mix variance = (2) – (3)
 e) Sales quantity variance = (3) – (1)

Note :-

i) Actual margin per unit (AMPU) = Actual sale price – selling cost per unit

ii) Budgeted margin per unit (BMPU) = Budgeted sale price – selling price per unit

Sales margin variance :-

$\frac{BMPU*BQ}{(1)}$	$\frac{BMPU*AQ}{(2)}$	$\frac{BMPU*\text{Budgeted mix}}{(3)}$	$\frac{AMPU*AQ}{(4)}$
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(1) (2) (3) (4)

- a) Sales margin variance = (4) – (1)
 b) Sales margin price variance = (4) – (2)
 c) Sales margin volume variance = (2) – (1)
 d) Sales margin mix variance = (2) – (3)
 e) Sales margin quantity variance = (3) – (1)

Control Ratio :-

1) Efficiency Ratio = $\frac{\text{Standard hours for actual output}}{\text{Actual hours worked}} \times 100$

2) Capacity Ratio = $\frac{\text{Actual Hours Worked}}{\text{Budgeted Hours}} \times 100$

3) Activity Ratio = $\frac{\text{Actual hours worked}}{\text{Budgeted Hours}} \times 100$

Verification: Activity Ratio = Efficiency * Capacity Ratio

STANDARD COSTING

Method two of reading:-

Material:-

- a) Material cost variance = SC – AC = (SQ*AQ) – (AQ*AP)
 b) Material price variance = AQ (SP – AP)
 c) Material usage variance = SP (SQ – AQ)
 d) Material mix variance = SP (RSQ – AQ)
 e) Material yield variance = (AY – SY for actual input) Standard material cost per unit of output
 f) Material revised usage variance (calculated instead of material yield variance)
 = [standard quantity – Revised standard
 for actual output quantity] * Standard price

Labour :-

- a) Labour Cost variance = SC – AC = (SH*SR) – (AH*AR)
 b) Labour Rate variance = AH (SR - AR)
 c) Labour Efficiency or time variance = SR (SH – AH)

d) Labour Mix or gang composition Variance = $SR(RSH-AH)$

e) Labour Idle Time Variance = Idle hours * SR

f) Labour Yield Variance = $\frac{[Actual Output - Standard output for actual input]}{Standard labour cost/unit of output}$

g) Labour Revised Efficiency Variance (instead of LYV) = $[Standard hours for actual output - Revised standard hours] * Standard rate$

Notes :- i) $LCV = LRV + LMV + ITV + LYV$

ii) $LCV = LRV + LEV + ITV$

iii) $LEV = LMV, LYV (or) LREV$

Overhead variance :- (general for both variable and fixed)

a) Standard overhead rate (per hour) = $\frac{Budgeted\ Overheads}{Budgeted\ Hours}$

b) Standard hours for actual output = $\frac{Budgeted\ hours * Actual\ Output}{Budgeted\ output}$

c) Standard OH = Standard hrs for actual output * Standard OH rate per hour

d) Absorbed OH = Actual hrs * Standard OH rate per hour

e) Budgeted OH = Budgeted hrs * Standard OH rate per hour

f) Actual OH = Actual hrs * Actual OH rate per hour

g) OH cost variance = Absorbed OH – Actual OH

Variable Overheads variance :-

a) Variable OH Cost Variance = Standard OH – Actual OH

b) Variable OH Exp. Variance = Absorbed OH – Actual Variable OH

c) Variable OH Efficiency Variance = Standard OH – Absorbed OH

$$= \frac{[Standard\ hours\ for - Actual\ * Standard\ rate]}{actual\ output\ hours} \text{ for variable OH}$$

Fixed Overheads variance :-

a) Fixed OH Cost Variance = Standard OH – Actual OH

b) Fixed OH expenditure variance = Budgeted OH – Actual OH

c) Fixed OH Efficiency Variance = Standard OH (units based) – Absorbed OH (Hours based)

d) Fixed OH Volume Variance = Standard OH – Budgeted OH

$$= \left[\frac{\text{Standard hrs for actual output} - \text{Budgeted hours}}{\text{hours}} \right] * \text{standard rate}$$

e) Fixed OH capacity variance = Absorbed OH – Budgeted OH

f) Fixed OH Calendar Variance = [Revised budgeted hrs – Budgeted hrs] * Standard rate/hrs

Note:- When there is calendar variance capacity variance is calculated as follows :-

$$\text{Capacity variance} = \left[\frac{\text{Actual hours} - \text{Revised Budgeted hrs}}{\text{(Revised)}} \right] * \text{Standard rate/hour}$$

Verification :-

i) variable OH cost variance = Variable OH Expenditure variance + Variable OH Efficiency variance

ii) Fixed OH cost variance = Fixed OH Expenditure variance + Fixed OH volume variance

iii) Fixed OH volume variance = Fixed OH Efficiency variance + Capacity variance + Calendar variance

Sales variances :-

Turnover method (or) sales value method :-

a) Sales value variance = Actual Sales – Budgeted Sales

b) Sales price variance = [Actual Price – Standard price] * Actual quantity

$$= \text{Actual sales} - \text{standard sales}$$

c) Sales volume variance = [Actual-Budgeted quantity] * Standard price

$$= \text{Standard sales} - \text{Budgeted sales}$$

d) Sales mix variance = [Actual quantity – Revised standard quantity] * Standard price

$$= \text{Standard sales} - \text{Revised sales}$$

e) Sales quantity variance = [Revised standard variance – Budgeted quantity] * Standard price

$$= \text{Revised Standard sales} - \text{Budgeted sales}$$

Profit method:-

a) Total sales margin variance = (Actual Profit – Budgeted price)

$$= \{\text{Actual quantity} * \text{Actual profit per unit}\} -$$

{Budgeted quantity * Standard profit per unit}

b) Sales margin price variance = Actual profit – Standard profit
= {Actual Profit per unit – Standard profit per unit} * Actual quantity of sales

c) Sales margin volume variance = Standard profit – Budgeted Profit
= {Actual quantity – Budgeted quantity} * Standard profit per unit

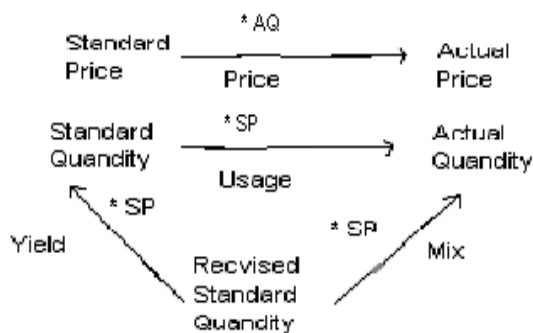
d) Sales margin mix variance = Standard profit – Revised Standard profit
= {Actual quantity – Revised standard quantity} * Standard profit per unit

e) Sales margin quantity variance = Revised standard profit - Budgeted profit
= {Revised standard quantity – Budgeted quantity} * Standard profit per unit

STANDARD COSTING

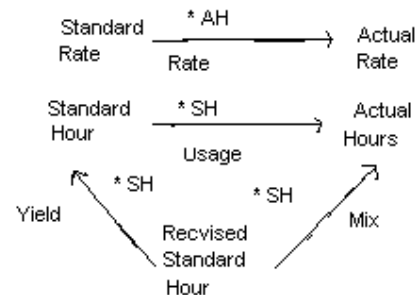
Diagrammatic Representation: -

Material Variance: -



Material cost variance = SC – AC = (SQ*AP) – (AQ*AP)

Labour Variances:-



Labour Cost variance = SC – AC = (SH*SR) – (AH*AR)

Fixed Overhead Variance : -

a) Standard OH = Standard hrs for actual output * Standard OH rate per hour

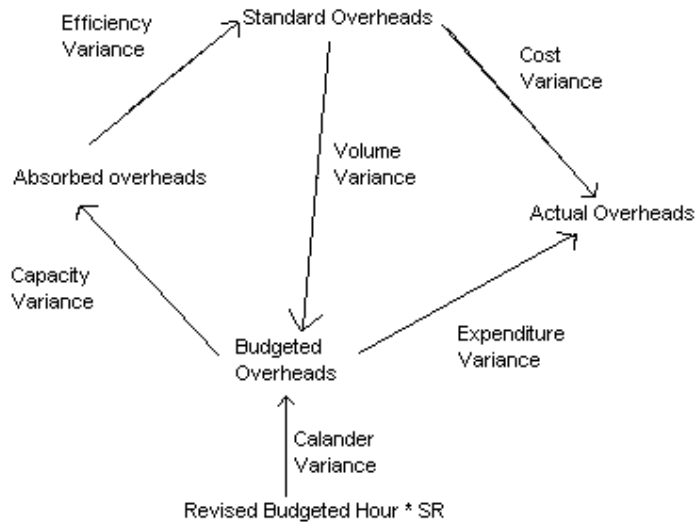
b) Absorbed OH = Actual hrs * Standard OH rate per hour

c) Budgeted OH = Budgeted hrs * Standard OH rate per hour

d) Actual OH = Actual hrs * Actual OH rate per hour

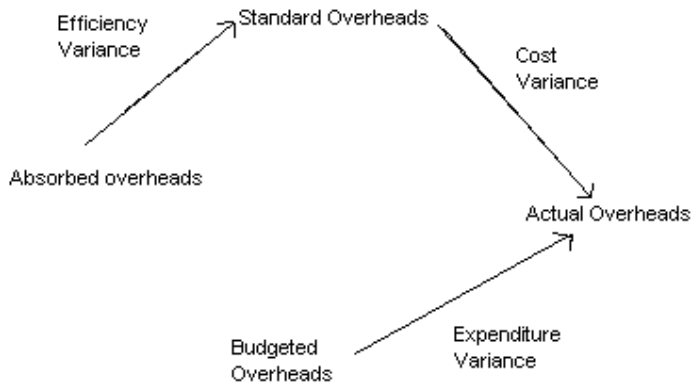
**e) Revised Budgeted Hour = Actual Days * Budgeted Hours per day
(Expected hours for actual days worked)**

**When Calendar variance is asked then for capacity variance Budgeted Overhead is
(Budgeted days * Standard OH rate per day)**

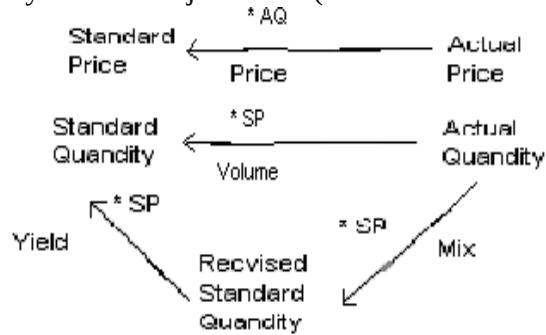


Revised Budgeted Hour (Budgeted hours for actual days) = Actual days * Budgeted hours per day

Variable Overhead Variance : -

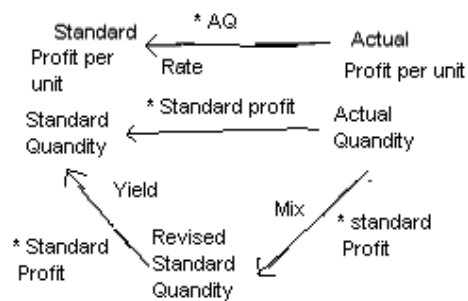


Sales Value Variances : -



Sales value variance = Actual Sales – Budgeted Sales

Sales Margin Variances : -



**Total sales margin variance = (Actual Profit–Budgeted price)
= {Actual quantity * Actual profit per unit}-
{Budgeted quantity * Standard profit per unit}**

[Where :-

SC = Standard Cost,
SP = Standard Price,
AP = Actual Price,
AY = Actual Yield,
RSQ = Revised Standard Quantity,
ST = Standard Time
AT = Actual Time
BP = Budgeted Price,
RBT = Revised Budgeted Time
BMPU = Budgeted Margin per Unit
AMPU = Actual Margin per Unit

AC = Actual Cost
SQ = Standard Quantity
AQ = Actual Quantity
SY = Standard Yield
SR = Standard Rate,
AR = Actual Rate,
RST = Revised Standard Time,
BQ = Budgeted Quantity

Reconciliation:-

Reconciliation statement is prepared to reconcile the actual profit with the budgeted profit

Particulars	Favorable	Unfavorable	(Rs)
Budgeted Profit :			
Add Favorable variances			
Less Unfavorable variances			
Sales Variances : Sales price variance			
Sales mix variance			
Sales quantity variance			
Cost variance :-			
Material : Cost variance			
Usage variance			
Mix variance			
Labour : Rate variance			
Mix variance			
Efficiency variance			
Idle time variance			
Fixed overhead variance : Expenditure variance			
Efficiency variance			
Fixed overhead variance : Expenditure variance			
Efficiency variance			
Capacity variance			
Calendar variance			

NON-INTEGRATED ACCOUNTS

Material:

- a) For material purchases (cash or credit)
- i) Material control a/c Dr
 To Cost ledger control a/c
 - ii) Stores ledger control a/c Dr
 To Material control a/c
- b) Purchases for a special job
- Work-in-progress ledger control a/c Dr
 To Cost ledger control a/c
- c) Material returned to vender
- Cost ledger control a/c Dr
 To Stores ledger control a/c
- d) Material (direct) issued to production
- Work-in-progress control a/c Dr
 To Stores ledger control a/c
- e) Material (indirect) issued to production
- Manufacturing overheads a/c Dr
 To Stores ledger control a/c
- f) Material returned from shop to stores
- Stores ledger control a/c Dr
 To Work-in-progress control a/c
- g) Material transferred from Job 1 to Job 2
- Job 2 a/c Dr
 To Job 1 a/c
- i) Material issued from stores for repairs
- Manufacturing overhead a/c Dr
 To Stores ledger control a/c

Labour:

- a) Direct wages paid
- i) Wage control a/c Dr
 To Cost ledger control a/c
 - ii) Work-in-progress a/c Dr
 To Wage control a/c
- b) Indirect wages paid to workers in Production,
Administration, Selling and Distribution departments
- i) Wage control a/c Dr
 To Cost ledger control a/c

ii) **Production Overhead a/c** **Dr**
Administrative Overhead a/c **Dr**
Selling & Distribution Overhead a/c **Dr**
To Wage control a/c

c) Direct Expenses on a particular job

Job a/c **Dr**
To Cost ledger control a/c

Overheads:-

a) Overhead expenses incurred

Production overhead a/c **Dr**
Administrative Overhead a/c **Dr**
Selling & Distribution Overhead a/c **Dr**
To cost ledger control a/c

b) Carriage inward

Manufacturing Overhead a/c **Dr**
To Cost ledger control a/c

c) Production Overheads recovered

Work-in-progress control a/c **Dr**
To Production Overhead a/c

d) Administrative Overhead recovered from finished goods

Finished goods ledger control a/c **Dr**
To Administrative Overhead a/c

e) Selling and Distribution Overhead recovered from sales

Cost of sales a/c **Dr**
To Selling & Distribution a/c

f) If over/under absorbed amounts are carried forward to subsequent year, the balance of each Overhead account will have to be transferred to respective Overhead suspense (or reserve) Accounts as follows:

i) For over recovery : **Production Overhead a/c** **Dr**
To Production overhead suspense a/c

ii) For under recovery : **Administrative Overhead Suspense a/c** **Dr**
To Administrative Overhead a/c

Selling & Distribution Overhead Suspense a/c **Dr**
To Selling & Distribution Overhead a/c

g) In case the Under/Over absorbed overheads are transferred to costing profit & loss a/c then the relevant entries are:

i) For Over recovery: **Production Overhead a/c** **Dr**
To Costing Profit & Loss a/c

ii) For Under recovery: **Costing Profit & Loss a/c** **Dr**

Sales:-

For sales effected: Cost ledger control a/c Dr
To Costing Profit & Loss a/c

Profit / Loss:

a) In case of profit the entry is as follows
Costing Profit & Loss a/c Dr
To Cost ledger control a/c

b) Reverse the entry in case of loss

The main accounts which are usually prepared when a separate cost ledger is maintained is as follows:-

- i) Cost ledger control a/c**
- ii) Stores ledger control a/c**
- iii) Work-in-progress control a/c**
- iv) Finished goods control a/c**
- v) Wage control a/c**
- vi) Manufacturing/Production/ Works Overheads a/c**
- vii) Administrative Overhead a/c**
- Viii) Selling & Distribution Overhead a/c**
- ix) Cost of sales a/c**
- x) Costing profit & loss a/c**

i) to assume some % as selling Expenses but it should not exceed 5% .

Budgetary Control

Budget Ratios:-

1) Capacity usage Ratio
= $\frac{\text{Budgeted Hours}}{\text{Maximum possible working hours in budget period}} \times 100$

2) Standard Capacity Employed Ratio
= $\frac{\text{Actual Hours Worked}}{\text{Budgeted}} \times 100$ **hours**

3) Level of Activity Ratio
= $\frac{\text{Standard Hours for Actual Production}}{\text{Standard Hours for Budgeted Production}} \times 100$

4) Efficiency Ratio

$$= \frac{\text{Standard Hours for Actual Production}}{\text{Actual Hours}} * 100$$

5) Calendar Ratio

$$= \frac{\text{Actual Working days}}{\text{Budgeted working days}} * 100$$

Zero Base Budgeting:

The name zero base budgeting derives from the idea that such budgets are developed from a zero base: that is, at the beginning of the budget development process, all budget headings have a value of ZERO. This is in sharp contrast to the incremental budgeting system in which in general a new budget tends to start with a balance at least equal to last year's total balance, or an estimate of it.

Definition of Zero Base Budgeting (ZBB)

“A method of budgeting whereby all activities are reevaluated each time a budget is set. Discrete levels of each activity are valued and a combination chosen to match funds available”.

Objectives and Benefits of ZBB

What zero base budgeting tries to achieve is an optimal allocation of resources that incremental and other budgeting systems probably cannot achieve. ZBB starts by asking managers to identify and justify their area(s) of work in terms of decision packages (qv).

An effective zero base budgeting system benefits organisations in several ways. It will

- Focus the budget process on a comprehensive analysis of objectives and needs
- Combine planning and budgeting into a single process
- Cause managers to evaluate in detail the cost effectiveness of their operations
- Expand management participation in planning and budgeting at all levels of the organisation

Activity Based costing

In Traditional Method we split the Over Head incurred in production, based on machine hours which are not acceptable for many reasons.

In ABC method Over Head are splitted according to the related activity, for each type of Over Head. Overhead are apportioned among various Production cost centers on the basis of Activity cost drivers.

Relevant Costing - some theory

Introduction: -

A management decision involves predictions of costs & revenues. Only the costs and revenues that will differ among alternative actions are relevant to the decision. The role of historical data is to aid the prediction of future data. But historical data may not be relevant to the management decision itself. Qualitative factors may be decisive in many cases, but to reduce the number of such factors to be judged, accountants usually try to express many decision factors as possible in quantitative terms.

Meaning of Relevant Costs: -

Relevant costs represent those future costs that will be changed by a particular decision. While irrelevant costs are those costs that will not be affected by a decision. In the short run, if the relevant revenues exceed the relevant costs then it will be worthwhile accepting the decision. Therefore relevant costs play a major role in the decision-making process of an organization. A particular cost can be relevant in one situation but irrelevant in another, the important point to note is that relevant costs represent those future costs that will be changed by a particular decision, while irrelevant costs are those costs that will not be affected by that decision. We shall now see what are relevant costs and revenues for decision-making process. In summary relevant information concerns:

Other Important Terminologies : -

Relevant costs are costs appropriate to aiding the making of specific management decisions. Actually, to affect a decision a cost must be:

Future: Past costs are irrelevant as they are not affected them by future decisions & decisions should be made as to what is best now.

Incremental: This refers to additional revenue or expenditure, which may appear as a result of our decision-making.

(A cash flow - Such charges as depreciation may be future but do not represent cash flows and, as such, are not relevant.)

Sunk costs: Past costs, not relevant for decision making

Committed costs: This is future in nature but which arise from past decisions, perhaps as the result of a contract.

Relevant Costs: Problem areas:

1 Problems in determining the relevant costs of materials:

When considering various decisions, if the any materials required is not taken from existing stocks but would be purchased on a later date, then the estimated purchase price would be the relevant material cost. A more difficult problem arises when materials are taken

from existing stock. In this situation the relevant cost of materials for a particular job (say job X) depends on

Material is in regular use of the company

Material is not in regular use of the company

Material is in short supply.

If the material is in regular use of the company then the material taken from existing stock requires replacement for the purpose of regular use therefore the relevant cost of material will be the Replacement cost.

If the material is not in regular use of the company the relevant cost of the materials depends on their alternative use. The alternative use of the materials will be either to sell them or to use them on other jobs. Hence the cost of using the materials results in an opportunity cost consisting of either

The net sales revenue if the materials were sold (or) The expense that would be avoided if the materials were used on some other job Whichever is greater.

If the material is in short supply the only way material for the job under consideration can be obtained is by reducing production of some other product / job. *This would release material for the order. but the reduced production* will result in loss of contribution which should be taken in to account when ascertaining the relevant costs for the specific order. Therefore the relevant cost will be Contribution lost (before the material cost since the material cost will be incurred in any case) will be the relevant cost.

labour:

2 Determining the direct labour that are relevant to short - term decision depends on the circumstances.

Where a company has temporary spare capacity and the labour force is to be maintained in the short - term, the direct labour cost incurred will remain same for all alternative decisions. The direct labour cost will therefore be irrelevant for short - term decision - making purposes.

However where casual labour is used and where workers can be hired on a daily basis; a company may then adjust the employment of labour to exactly the amount required to meet the production requirements. The labour cost will increase if the company accepts additional work, and will decrease if production is reduced. In this situation the labour cost be a relevant cost for decision - making purposes.

In a situation where full capacity exists and additional labour supplies are unavailable in the short - term, and where no further overtime working is possible, the only way that labour resources could then be obtained for a specific order would be to reduce existing production. *This would release labour for the order. but the reduced production* will result in loss of contribution, which should be taken in to account when ascertaining the relevant costs for the specific' order. Therefore the relevant cost will be Contribution lost (before the labour cost) will be the relevant cost.