EXPERT

CA INTERMEDIATE – COST & MANAGEMENT ACCOUNTING

UNIT BATCH & JOB COSTING

CA VINOD REDDY

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UNIT, BATCH, & JOB COSTING

Unit Costing

Unit costing is a method of costing used where the output produced by an entity is identical and each unit of output require identical cost. Unit costing is synonymously known as single or output costing but these are sub-division of unit costing method. This method of costing is followed by industries which produces single output or few variants of a single output. Under this method costs are collected and analysed element wise and then total cost per unit is ascertained by dividing the total cost by number of units produced. If we have to state it in the form of a formula, then

$$\text{Cost per unit} = \left(\frac{\text{Total Cost Production}}{\text{No. of units produced}}\right)$$

It therefore finds application in industries like paper, cement, steel works, mining, breweries. These industries produce identical products and therefore have identical costs.

Industry Type	Cost Unit
Bricks	Per 1,000 Bricks
Cement	Per bag
Steel	Per tonne
Coal	Per tonne
Paper	Per tonne
Breweries	Per litre

Treatment of Spoiled and defective work :

Circumstances	Treatment
(1) Loss due to normal reasons	When a normal rate of defectives has already been established and actual number of defectives is within the normal limit, the cost of rectification or loss will be charged to the entire output. If, on the other hand, the number of defective units substantially exceeds the normal limits, the cost of rectification or loss are written off in Costing Profit and Loss Account.
(2) Loss due to abnormal reasons	In this case cost of rectification and loss is treated as abnormal cost, the cost of rectification or loss is written off as loss in costing Profit and Loss account.

Batch Costing

Batch Costing is a type of specific order costing where articles are manufactured in

predetermined lots, known as batch. Under this costing method, the cost object for cost determination is a batch for production rather output as seen in unit costing method.

Reasons for batch manufacturing may either be technical or economical or both. For example, in pen manufacturing industry, it would be too costly to manufacture one pen of a particular design at a time to meet the demand of one customer. On the other hand, the production of say 10,000 pens of the same design will reduce the cost to a sizeable extent.

Costing Procedure in Batch Costing –

To facilitate convenient cost determination, one number is allotted for each batch. Material cost for the batch is arrived at on the basis of material requisitions for the batch and labour cost is arrived at by multiplying the time spent on the batch by direct workers as ascertained from time cards or Job Tickets. Overheads are absorbed on some suitable basis like machine hours, direct labour hours etc.

Economic Batch Quantity

As the product is produced in batches or lots, the lot size chosen will be critical in achieving least cost operation. Primarily the total production cost under Batch production comprises two main costs namely

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

- **Machine Set-up Cost (or Preparation Cost) :** The processing of a particular batch gives rise to clerical and machine set up costs followed by machine disassembly costs on completion of the batch. These costs are incurred in connection with each batch processed and are independent of the size of the batch.
- **Inventory Holding Cost (or Carrying Cost) :** The larger the batch size, the greater will be number of units in inventory. Hence the costs associated with holding / carrying the inventory like space – occupancy, interest etc. will also be higher. These are carrying costs. If batch size increases, there is an increase in the carrying cost but the set up cost per unit of product is reduced; this situation is reversed when the batch size decreases. Thus there is one particular batch size for which the total of set up and carrying costs are minimum. This size is known as economic or optimum batch quantity.

Formula : EBQ can be mathematically determined with the help of the following formula;

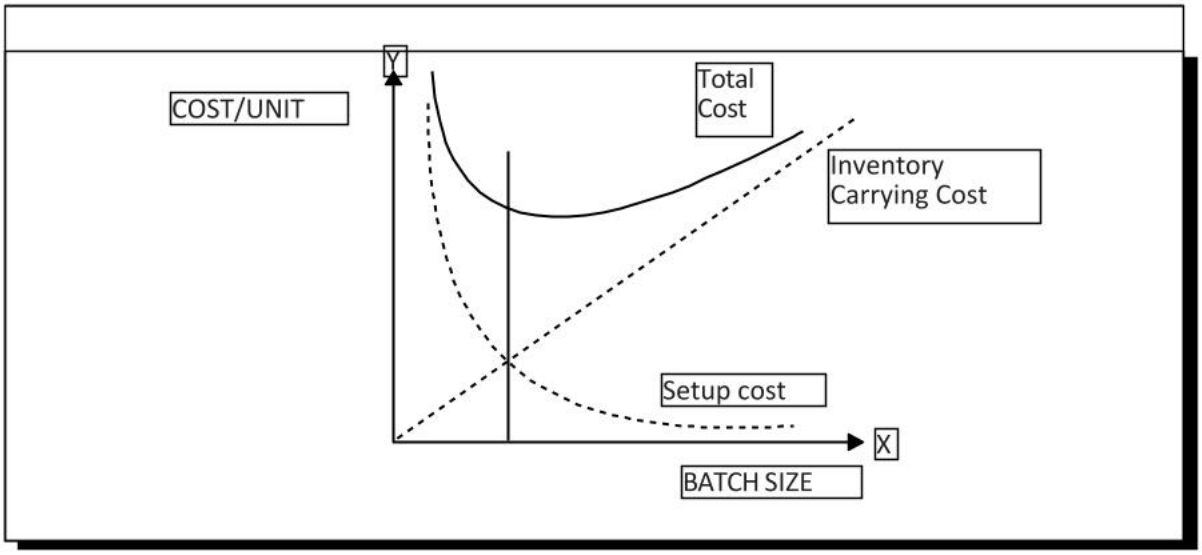
$$EBQ = \sqrt{\frac{2DS}{C}}$$

Where,

D = Annual demand for the product

S = Set up costs per batch

C = Carrying cost per unit of production



As can be seen in the above diagram, Costs are shown on the Y axis and Batch size or Batch Quantity is shown on the X Axis. With the higher batch size, holding cost shows a tendency to increase whereas Set-up costs show a declining trend. The point where both the cost lines intersect each other represents the lowest cost combination.

Job Costing

As the name suggests job-order costing refers to a costing system that determines the production cost of individual orders / jobs. Under this system costs are assigned to and accumulated for individual jobs. Thus the job order cost system refers to the procedure to accumulate cost when work is performed according to an order and when products are manufactured or services are rendered to meet individual customers specifications.

CIMA London defines Job Costing as "the category of basic costing methods which is applicable where the work consists of separate contracts, jobs or batches, each of which is authorised by specific order or contract."

Principles of Job Costing :

The job costing method may be regarded as the principal method of costing since the basic object and purpose of all costing is to -

- Analysis and ascertainment of cost of each unit of production
- Control and regulate cost
- Determine the profitability

The basic principles enunciated for the job costing method are valid essentially for all types of industry. For example, printing; furniture; hardware; ship-building; heavy machinery; interior decoration, repairs and other similar work.

Please read

Characteristics:

a. Production is undertaken after obtaining customers order.

b. Each order is different depending on customer's requirements.

c. The identity of each order is retained throughout the manufacturing process from start to finish.

d. Production cycle is normally short but a large order may continue over a period of time.

e. Cost information is collected job wise.

Suitability of Job Costing -This system may be applied in the following situations :

1. Auto repair shops, garages,
2. Printers,
3. Foundries and machine shops,
4. Furniture Maker, etc.

The procedure involved in job costing may be summarized as follows

a. When an inquiry is received from a customer, the cost expected to be involved for the job in question is estimated. This estimate forms the basis for the price quotation. If the job is accepted a production order is prepared with complete instructions as to materials and operations to be performed in various departments. The estimated costs are also noted in the job-sheet.

b. When the job is commenced, identification of the following costs in the job are essential :

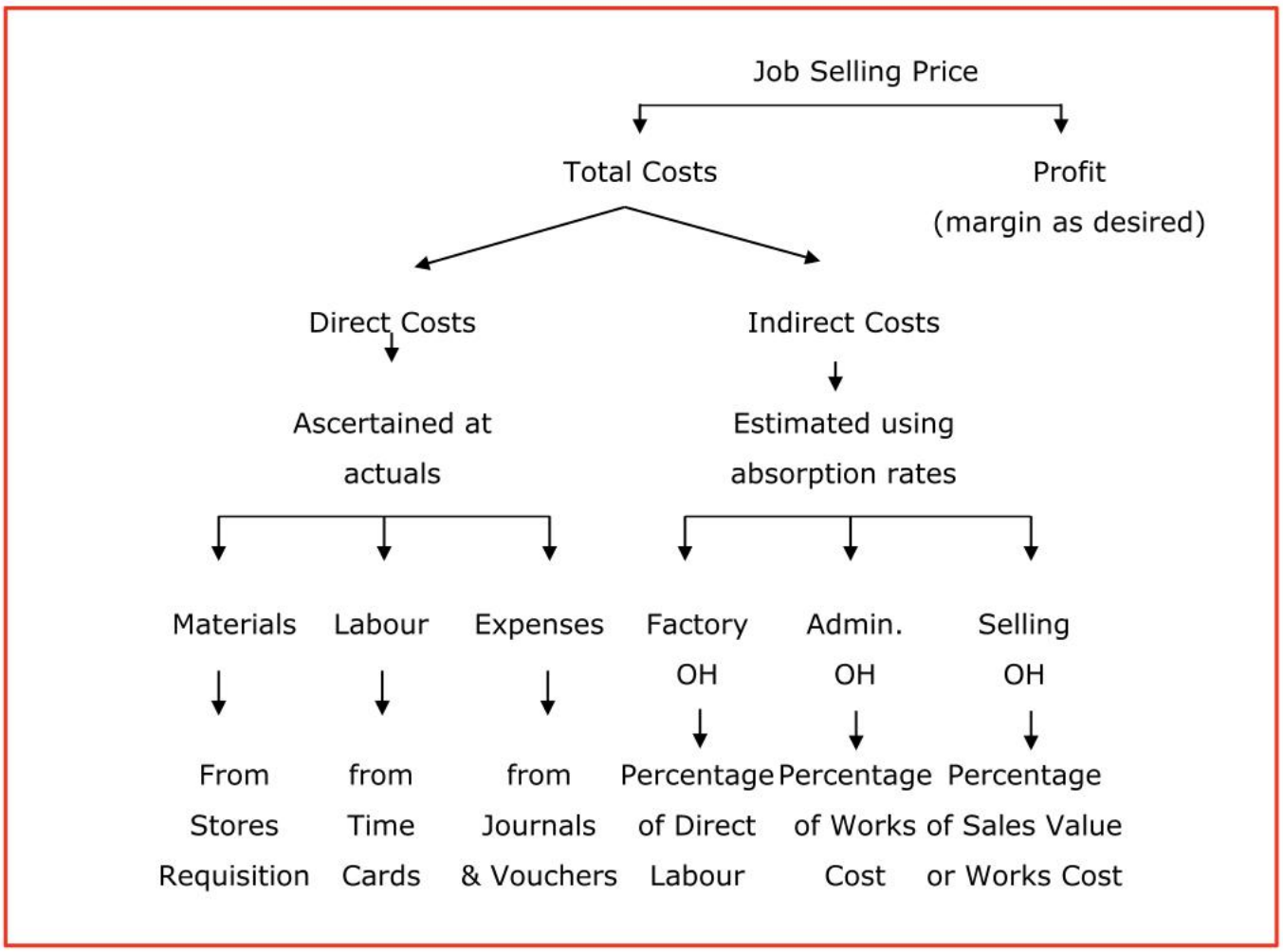
- Direct Material (through material requisition notes / Bill of material)
- Direct Labour (through time sheets)
- Factory Overheads (on the predetermined basis)
- Selling, distribution and administration overheads (on the predetermined basis)

c. A cost ledger or integrated ledger is maintained to record the costs in various job accounts.

d. When each job is completed, the total cost and sale value of job are compared and profit is ascertained. Comparison of actual profit with estimated profit indicates the efficiency or inefficiency of working.

Ascertainment of costs of a job

Job costs are classified and ascertained as under:



Ascertainment of Direct Material Costs for Jobs -

a. Materials Issued from Stores: Materials will be issued to jobs against stores requisitions. These documents constitute the basis for accounting material costs. When the entire quantity of materials specified in the bill of materials is drawn in one lot, the bill of materials could be made to serve as a substitute for stores requisition.

b. Special Materials purchased: If any special material is purchased for a particular job, the general practice is to charge such special material direct to the job concerned without passing it through the Stores Ledger.

c. Surplus Materials: Surplus materials are returned to stores with proper supporting document (Stores Debit Note or Shop Credit Note), and the relevant job account is credited with the value of excess material returned. If such materials are transferred to another job, a transfer note is prepared and accounted accordingly.

Ascertainment of Labour Costs for Jobs -

a. Direct Labour: Direct Labour Cost is ascertained from job time cards or sheets. All direct labour is booked against specific jobs in the job time cards or sheets.

Direct Labour Cost = Time taken x Labour rate used for costing purposes.

b. Idle Time Cost: Normal or unavoidable idle time cost is treated as regular costs and

included as part of Direct Labour Cost. If idle time is abnormal, it is treated as a loss and debited to Costing P & L Account.

c. Indirect Labour: Indirect labour costs are collected from the payroll books or wage analysis sheets. These are included as Overhead and absorbed over various jobs on a suitable basis.

Ascertainment of Overhead Costs of jobs -

Normally indirect costs i.e. overheads are not incurred for any specific job or work order. Hence they cannot be determined accurately. However, each job should be charged with a suitable amount of overhead incurred to ascertain the total cost. Conventionally, the basis of estimating Overheads is as under:

- Manufacturing Overheads – Using Labour Hour Rate or as a percentage of Direct Labour Cost
- Administration Overheads – As a percentage of Works Cost
- Selling Overheads – As a percentage of Works Cost or Sales Value

charctristics of Job costing

1. production is undertaken after obtaining customer order
2. Each order is different depending upon customer's requirements
3. identity of each job order is retained throughout the manufacturing process from start to end
4. production cycle is generally short
   (For Long duration Jobs contract wsting is used)
5. cost information is collected job wise
6. This method is suitable for repairs jobs, garages, painters, machine shops, Furniture makers, Interior designers etc.

Job Cost Card / Job Cost Sheet – Each job order is asymmetrical to other due to specific and customised requirements. To ascertain cost of a particular job, it is necessary to record all the expenditure related with a job separately. For this purpose, Job Cost card is used. Job cost card is a cost sheet where the quantity of materials issued, hours spent by different class of employees, amount of other expenses and share of overheads are recorded. This is helpful in knowing the total cost, profitability etc. of a job. The following is an illustrative format of Job Cost card/ sheet.

Format of Job Cost Sheet –

JOB COST SHEET

Description:_____ Job No.: _____ Blue Print No.:

_____ Quantity:_____ Material No.:

_____ Date of delivery: _____ Reference No.:

_____ Date commenced: _____

Date finished: _____

Date	Reference	Details	Material	Labour	Overhead
		Total			

Summary of costs	Estimated (₹)	Actual (₹)	
Direct material cost			For the job _____
Direct wages			Units produced _____
Production overhead			Cost/unit_____ Remarks
PRODUCTION COST			Prepared by: _____ Checked
Administration and Selling			by: _____
& Distribution Overheads			
TOTAL COST			
PROFIT/LOSS			
SELLING PRICE			

Treatment of Spoiled and defective work –

Circumstances	Treatment

(1) Where a percentage of defective work is allowed in a particular batch as it cannot be avoided.	When a normal rate of defectives has already been established, if the actual number of defectives is within the normal limit or is near thereto the cost of rectification will be charged to the whole job and spread over the entire output of the batch. If, on the other hand, the number of defective units substantially exceeds the normal, the cost of rectification of the number which exceeds the normal will be written off as a loss in the Costing Profit & Loss Account.
(2) Where defect is due to bad workmanship.	In this case cost of rectification will be abnormal cost, i.e., not a legitimate element of the cost. Therefore, the cost of rectification shall be written off as a loss, unless by an arrangement, it is to be recovered as a penalty from the workman concerned. It is possible, however that the management did provide for a certain proportion of defectives on account of bad workmanship as an unavoidable feature of production. If that be the case, the cost of rectifying to the extent provided for by the management will be treated as a normal cost and charged to the batch.
(3) Where defect is due to the Inspection Department wrongly accepting incoming material of poor quality.	In this case the cost of rectification will be charged to the department and will not be considered as cost of manufacture of the batch. Being an abnormal cost, it will be written off to the Costing Profit and Loss Account.

Advantages of Job Costing:

ii. On completion of job, each element of costs, selling price and profit can be compared with the estimate for the purpose of cost control and reduction so that profit on each job is maximized.

iii. System of budgetary control can be implemented because of estimation in job costing.

iv. Comparison of cost can be made with actual cost of the pervious jobs of the same year or earlier years. Compilation of historical costs will provide trend analysis.

v. Spoilage and defective jobs can be easily identified and responsibility fixed.

Limitation of Job Costing:

i. Because of nonstandard jobs done as per specifications of the various customers, more supervision is required.

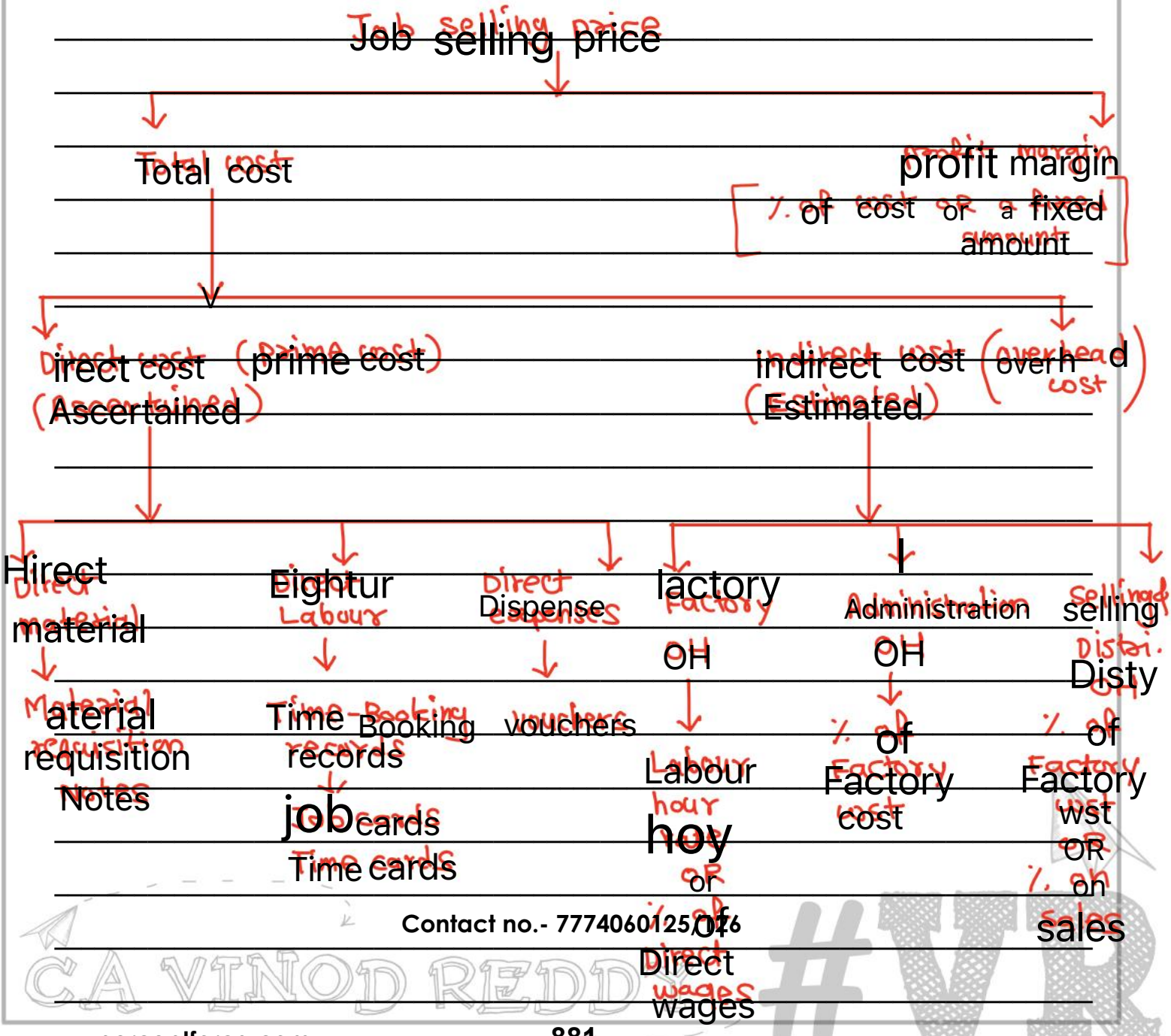
ii. More clerical work is involved for cost collection of each job, hence job costing is expensive.

iii. Chances of errors are more in cost collection because of large number of small jobs.

No corrective action is possible, in case the actual profit is lower than estimated. The data however can be used for estimation of future job costs correctly.

Difference between Job Costing & Batch Costing

	Job Costing	Batch Costing
1	Method of costing used for non- standard and non-repetitive products produced as per customer specifications &against specific orders.	Homogeneous products produced in a continuous production flow in lots.
2	Cost determined for each Job.	Cost is determined in aggregate for the entire Batch and then arrived on per unit basis.
3	Jobs are different from each other and independent of each other. Each Job is unique.	Products produced in a batch are homogeneous and lack of individuality.



Unit costing

1. It is a method of costing & not a technique of costing.
   It is method used where output produced by an entity is identical & each unit of output require identical cost.
   unit costing is also called as single output costing.
   This method is followed by the industries where a single output or few variants of single output are produced. under this method costs are collected and analysed element wise then Total cost p.u. is ascertained by dividing to the total cost by no. of units produced.

$$\text{Total cost p.y} = \left(\frac{\text{Total cost of production}}{\text{No of units produced}}\right)$$

2. This method finds its application in paper, cement, mines, breweries etc where identical products are produced having identical cost.
3. when goods are manufactured against a specific customer order as per his specifications then method of costing followed is Job costing.

Batch costing

1. It is a method of costing & not a technique of costing.
   Batch costing is a type of specific order costing where goods/articles are manufactured in predetermined lots, batches.
2. under this method the cost object is batch rather than output units as seen in unit costing.

③ Reasons for batch manufacturing may be technical, economical or both. For example, in pen manufacturing industry it would be too costly to manufacture a particular pen of a design. on the other hand the production of say 10,000 pens of same design will reduce the cost to sizeable extent.

④ XYZ Ltd manufactures product-P

(Annual demand from customers) = Annual demand = 2400,000 units product P = (Annual production requirements)

How many units should be produced in one Batch/lot?

Question in front of management is:

How much Quantity should be produced in one Batch? (No of units to be produced in one batch is known Batch size)

→ What should be the optimum Batch size?

EBQ = Economic Batch Quantity

↓

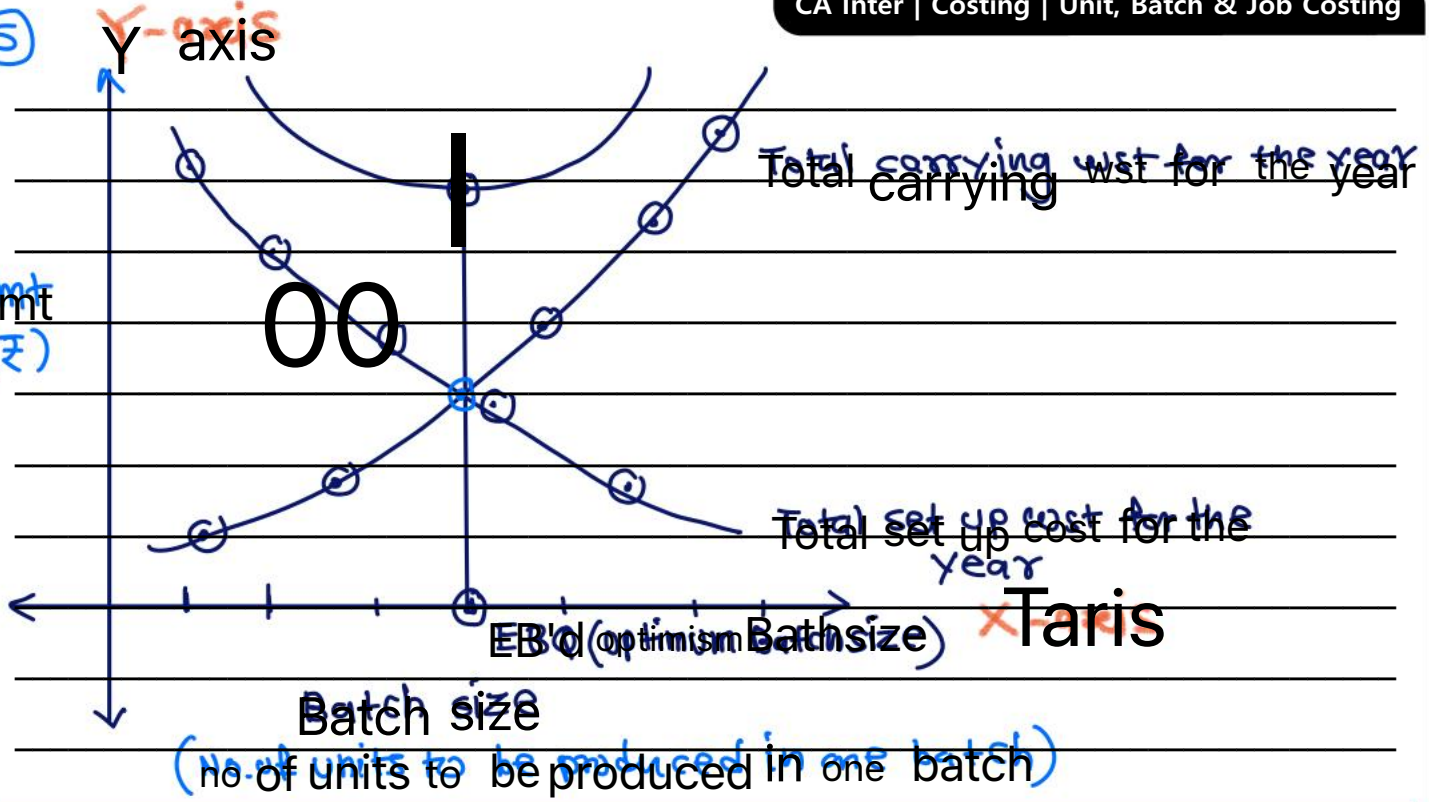
2 relevant costs for deciding optimum Batch size EBQ

1. Set up cost
2. carrying cost

→ The Batch size which results in minimum Total of setup wst & carrying wst is known as optimum Batch size.

Batch size	setup wst for the year	carrying wst for the year
Big	↓	↑
small	↑	↓

(5)



If we follow the policy of EBQ then

(i) Total of set up & carrying wst for the year is kept at minimum level

(ii) (Total set up cost for the year) = (Total carrying wst for the year)

(6) EBQ = Economic Batch quantity = optimum Batch size

= (The Batch size which minimises the total of set up & carrying cost for the year)

$$= \sqrt{\frac{2AS}{C}}$$

where

A = Annual production requirement (i.e. Annual demand of FG)

S = set up cost per batch OR set up cost per production run

C = carrying cost per unit p.a.

- EOQ is the concept for deciding optimum order size for raw materials whereas
- EBQ is the concept for deciding optimum Batch/run size for producing Finished goods

(7) Total inventory mgmt cost for the year = Total set up cost for the year + Total carrying cost for the year

(8) Total set up cost for the year = (set up cost per Batch OR per production run) × (No. of Batches to be produced in a year)

= (set up cost per Batch OR per production run) × (Annual production requirements in units / Batch size)

where Batch size = No. of units to be produced in one Batch OR in one production run

(9) Total carrying cost for the year = carrying cost per unit × Avg. stock

= carrying cost per unit × Batch size / 2

(10) **Job costing**

It is a method of costing & not a technique of costing. As the name suggests Job order costing refers to costing system that determines production cost of individual Jobs/orders under this system costs are assigned to and accumulated for individual jobs, Thus job costing refers to the procedure to accummulate the cost when work is performed (goods are manufactured or services are rendered) as per customer's specifications

MULTIPLE CHOICE QUESTIONS

Unit / Batch Costing

1. *Different businesses in order to determine cost of their product or service offering follow:*

(a) Different methods of Costing
(b) Uniform Costing
(c) Different techniques of costing
(d) None of the above

2. *In order to determine cost of the product or service, following are used:*

(a) Techniques of costing like Marginal, Standard etc.
(b) Methods of Costing
(c) Comparatives
(d) All of the above

3. *Unit Costing is applicable where:*

(a) Product produced are unique and no 2 products are same
(b) Dissimilar articles are produced as per customer specification
(c) homogeneous articles are produced on large scale
(d) Products made require different raw materials

4. *In case product produced or jobs undertaken are of diverse nature, the system of costing to be used should be:*

(a) Process costing
(b) Operating costing
(c) Job costing
(d) None of the above

5. *Job Costing is:*

(a) Applicable to all industries regardless of the products or services provided
(b) Technique of costing
(c) Suitable where similar products are produced on mass scale
(d) Method of costing used for non- standard and non- repetitive products.

6. *The production planning department prepares a list of materials and stores required for the completion of a specific job order, this list is known as:*

(a) *Bin card*

(b) *Bill of material*

(c) *Material requisition slip*

(d) *None of the above*

7. *Batch costing is a type of:*

(a) *Process costing*

(b) *Job Costing*

(c) *Differential costing*

(d) *Direct costing*

8. *Batch costing is similar to that under job costing except with the difference that a:*

(a) *Job becomes a cost unit.*

(b) *Batch becomes the cost unit instead of a job*

(c) *Process becomes a cost unit*

(d) *None of the above*

9. *The main points of distinction between job and contract costing includes:*

(a) *Length of time to complete.*

(b) *Big jobs*

(c) *Activities to be done outside the factory area*

(d) *All of the above*

10. *Economic batch quantity is that size of the batch of production where:*

(a) *Average cost is minimum*

(b) *Set-up cost of machine is minimum*

(c) *Carrying cost is minimum*

(d) *Both (b) and (c)*

Job Costing

1. *In case product produced or jobs undertaken are of diverse nature, the system of costing to be used should be:*

(a) Process costing
(b) Operating costing
(c) Job costing
(d) None of the above

2. *The production planning department prepares a list of materials and stores required for the completion of a specific job order, this list is known as:*

(a) Bin card
(b) Bill of material
(c) Material requisition slip
(d) None of the above

3. *Job costing is similar to that under Batch costing except with the difference that a:*

(a) Job becomes a cost unit.
(b) Batch becomes the cost unit instead of a job
(c) Process becomes a cost unit
(d) None of the above.

4. *In job costing which of the following documents are used to record the issue of direct material to a job':*

(a) Goods received note
(b) Material requisition
(c) Purchase order
(d) Purchase requisition

5. *The most suitable cost system where the products differ in type of materials and work performed is :*

(a) Job Costing
(b) Process Costing
(c) Operating Costing
(d) None of these.

6. *Which of the following statements is true:*

(a) *Job cost sheet may be used for estimating profit of jobs.*

(b) *Job costing cannot be used in conjunction with marginal costing.*

(c) *A production order is an order received from a customer for particular jobs.*

(d) *None of these.*

7. *Which of the following statements is true:*

(a) *Job cost sheet may be prepared for facilitating routing and scheduling of the job*

(b) *Job costing can be suitably used for concerns producing uniformly any specific product*

(c) *Job costing cannot be used in companies using standard costing*

(d) *Neither (a) nor (b) nor (c)*

Question 1:

The manufacturing cost of a work order is ₹1,00,000; 8% of the production against that order spoiled and the rejection is estimated to have a realisable value of ₹2,000 only. The normal rate of spoilage is 2%. Record this in the costing journal.

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① Actual Loss due to spoilage = ₹1,00,000 × 8% = ₹8,000/- 8,0001

Normal Loss = ₹1,00,000 × 2% = ₹2,000/- 2,0001

i. Abnormal Loss = ₹8,000 − ₹2000 = ₹6,000 8,000 6,000

The rejection has the realisable value of ₹2000, which is to be apportioned between Normal Loss & Abnormal Loss in the ratio of ₹2000 : ₹6000 i.e. 1 : 3 = ₹500 : ₹1500

② Necessary Accounting Entry

Necessary Accounting Entry

Material control A/c	Dr	2,000		
OH control A/c	Dr	1,500		(Normal loss)
costing P & L A/c	Dr	4,500		(Abnormal Loss)
To wip control A/c			8,000	

Question 2 :

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

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

Analysis of the Profit/Loss Account
(for the year 2022)

Particulars		Amount	Particulars	Amount
Material used		1,50,000	Sales less returns	2,50,000
Direct Wages :				
Dept. X	10,000			
Dept. Y	12,000			
Dept. Z	8,000	30,000		
Special stores items		4,000		
Overheads				
Dept. X	5,000			
Dept. Y	9,000			
Dept. Z	2,000	16,000		
Work Cost		2,00,000		
Gross Profit c/d		50,000		
		2,50,000		**2,50,000**
			Gross Profit b/d	50,000
Selling expenses		20,000		
Net Profit		30,000		
		50,000		**50,000**

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

You are required to :

(i) Draw up a job cost sheet.

(ii) Calculate the entire revised cost using 2022 actual figures as basis.

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

① calculation of overhead absorption rates

i) Factory overheads of :

Dept X = ₹5,000 / ₹10,000 × 100 = 50% of Direct wages

Dept y = ₹9,000 / ₹12,000 × 100 = 75% of Direct wages

Dept z = ₹2,000 / ₹8,000 × 100 = 25% of Direct wages

ii) selling overheads

= ₹20,000 / ₹2,00,000 × 100 = 10% of works cost

(2) Estimated cost sheet for Job 303

Particulars	Amt (₹)	Amt (₹)
(a) Direct materials		70.00
(b) Direct Labour :		45.00
Dept X : 8 hrs × ₹2.50	20.00	
Dept Y : 6 hrs × ₹2.50	15.00	
Dept Z : 4 hrs × ₹2.50	10.00	
(c) Direct chargeable expenses		5.00
(d) paime cost (a+b+c)		120.00
(e) Factory overhead of		23.75
Dept X : ₹20 × 50%	10.00	
Dept Y : ₹15 × 75%	11.25	
Dept Z : ₹10 × 25%	2.50	
(f) Factory cost or works cost (d+e)		143.75
(g) selling overheads (f × 10%)		14.375
(h) Estimated total cost of job 303 (f+g)		158.125
(i) Estimated profit (h × 20%)		31.625
(j) Estimated selling price of job 303		189.75

Question 3:

The following data relate to the manufacture of a standard product during the 4-week ended 28th February 2018:

Raw Materials Consumed	₹4,00,000
Direct Wages	₹2,40,000
Machine Hours Worked	3,200 hours
Machine Hour Rate	₹40
Office Overheads	10% of works cost
Selling Overheads	₹20 per unit
Units produced and sold	10,000 at ₹120 each

OH absorption rate per machine hour

You are required to find out the cost per unit and profit for the 4- week ended 28th February 2018.

Statement of cost & profit for 4-week period ended 28th Feb 2018 (No of units produced & sold = 10,000)

Particulars	Amount (₹) (Per unit)	Amount (₹) (Total)
(a) Raw material consumed	40.00	4,00,000
(b) Direct wages	29.00	2,90,000
(c) Prime cost (a+b)	64.00	6,40,000
(d) Factory overheads = (Machine hrs worked 3200 hrs × OH absorption rate per machine hour ₹40)	12.80	1,28,000
(e) Factory cost (c+d) or works cost	76.80	7,68,000
(f) Administration OH (ex 10%)	7.68	76,800
(g) Selling overheads (₹20 × 10,000 units)	20.00	2,00,000
(h) cost of sales of 10,000 units (e+f+g)	104.98	10,44,800
(i) Sales value (10,000 units × ₹120)	120.00	12,00,000
(j) profit (i-h)	15.52	1,55,200

Question 4:

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

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

Assuming that the company charges a profit of 20% on selling price, find out the selling price per unit when the weekly output is 2,000 units

(1) Analysis of cost

i) Direct materials : It is a variable cost.

Direct material cost p.u = 9,000 / 1200 units = 12,000 / 1600 units = 13,500 / 1800 units

= ₹ 7.50 p.u.

ii) Direct wages : It is a variable cost.

Direct wages per unit = ₹3,600 / 1200 units = ₹4,800 / 1600 units = ₹5,400 / 1800 units

= ₹ 3.00 p.u.

iii) Factory overheads : It is a semi-variable cost.

Let's segregate it by level of activity method,

Variable Factory OH cost p.u = Change in cost / change in quantity

= (33,000 − 31,000) / (1600 − 1200) units ..... comparing data of weeks 1 & 2

= (₹2,000 / 400 units) = ₹5 p.u.

using data of week-1

1 (Fixed Factory OH for the week) = ₹31,000 − (1200 units × Esp 4)
= ₹31,000 − 26,000
= 225,0001

2 Statement showing calculation of selling price per unit if weekly output is 2000 units

particulars	Amt (₹)
(a) Direct materials (₹7.50 p.u × 2000 units)	15,000
(b) Direct wages (₹3.00 p.u × 2000 units)	6,000
(c) prime cost (a+b)	21,000
(d) Factory overheads	
variable: (Esp.u × 2000 units)	10,000
Fixed :	25,000
sub-total (d)	35,000
(e) Total cost of 2000 units to be produced in a week (c+d)	56,000
(f) Estimated profit (256000 × 25%)	14,000
20% on sales means 25% on wst	
(g) Estimated sales value of 2000 units (e+f)	70,000
(h) Estimated selling price per unit (g/2000 units)	35.00

Question 5:

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

Direct materials - ₹500, Direct wages - ₹50, Oven set- up cost - ₹150

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

AC requires a profit margin of 25% of sales value. Determine the selling price for 600 muffins.

Statement showing calculation of selling price of 600 muffins

(600 muffins = 12 batches)

particulars	Amt (₹)
(a) Direct materials (₹ 500 × 12 batches) OR (₹500 / 50 muffins) × 600 muffins	6,000
(b) Direct wages (₹ 50 × 12 batches)	600
(c) oven set-up cost (₹150 × 12 batches)	1,800
(d) production overheads (b × 20%)	120
(e) Total cost before selling & distid Admin OH (a+b+c+d)	8,520
(f) selling distribution, Administration overheads (ex 10%)	852
(g) Total cost of 600 muffins (e+f)	9,372
(h) profit margin 9,372 × 33.33333333% (25% on sales means 33⅓% on cost)	3,124
(i) Estimated sales value of 600 muffins (g+h)	12,496
(j) Estimated selling price per muffin i/600	20.8266666

Question 6:

A jobbing factory has undertaken to supply 200 pieces of a component per month for the ensuing six months. Every month a batch order is opened against which materials and labour hours are booked at actual. Overheads are levied at a rate per labour hour. The selling price contracted for is ₹8 per piece. From the following data present the cost and profit per piece of each batch order and overall position of the order for 1,200 pieces.

Month	Batch Output	Material cost	Direct wages	Direct labour
		(₹)	(₹)	hours
January	210	650	120	240
February	200	640	140	280
March	220	680	150	280
April	180	630	140	270
May	200	700	150	300
June	220	720	160	320

The Other details are:

Month	Overheads	Direct labour
	(₹)	hours
January	12,000	4,800
February	10,560	4,400
March	12,000	5,000
April	10,580	4,600
May	13,000	5,000
June	12,000	4,800

② overall position of 1200 pieces

profit p.u. = selling price p.u. − Total wstp.cr.

= (₹8 − ₹9025/1230 hrs)

= ₹8 − ₹7.33 7398 37398

= ₹0.66260 162602 p.u.

Total profit = 1200 units × ₹0.66260162602 p.u.

= ₹795.122

717ft

(i) Statement showing cost & profit per piece for each batch order

particulars	Months						Total
	Jan	Feb	March	April	May	June	
(a) Direct materials (E)	650	640	680	630	700	720	4,020
(b) Direct wages (E)	120	140	150	140	150	160	860
(c) overheads absorption rate per hour (E)	250	2040	2.40	2.30	2.60	2.50	
	(12000/4800)	(10560/4800)	(12000/4800)	(10,580/4600)	(13000/5000)	(12000/4800)	
	15	15	1				
(d) Direct Labour hours	240	280	280	270	300	320	
(e) OH cost absorbed (E) (cxd)	600	672	672	621	780	800	4,145
(f) Total cost (F) (a+b+e)	1,370	1,452	1,502	1,391	1,630	1,680	9,025
(g) Batch output (units)	210	200	220	180	200	220	1,230
(h) cost per unit (E) (f/g)	6.5238	7.26	6.8273	7.7278	8.15	7.6364	7.3374
(i) profit per unit (piece) (8-h)	1.4762	0.74	1.1727	0.2722	(0.15)	0.3636	0.6626

Question 7:

Monthly demand for a product	500 units
Setting-up cost per batch	₹ 60
Cost of manufacturing per unit	₹ 20
Rate of interest	10% p.a.
Determine economic batch quantity.	

Also calculate total setup. carrying cost p.u.p.a. = ₹20 × 10% = ₹ 2

The 1st Year

(1) Calculation of Economic Batch Quantity (i.e. EBQ)

$$EBQ = \sqrt{\frac{2 \times \text{Annual production requirement} \times \text{set up cost per batch}}{\text{carrying cost p.u.p.a.}}}$$

$$= \sqrt{\frac{2 \times (500 \text{ units per month} \times 12 \text{ months}) \times ₹60}{₹20 \times 10\%}}$$

$$= \sqrt{\frac{2 \times 6000 \text{ units} \times ₹60}{₹2}} = 600 \text{ units}$$

(2) i) Total set up cost for the year = (set up cost per batch × No. of batches to be produced in a year)

$$= \left(₹60 \times \frac{\text{Annual production requirement}}{EBQ}\right) = ₹60 \times \frac{6000 \text{ units}}{600 \text{ units}}$$

$$= ₹60 \times 10 \text{ batches to be produced in a year} = ₹600/-$$

ii) Total carrying cost for the year = carrying cost p.u.p.a. × (EBQ / 2)

$$= (₹20 \times 10\%) \times \left(\frac{6000 \text{ units}}{2}\right)$$

$$= ₹2 \times 300 \text{ units}$$

$$= ₹600/-$$

Total = ₹600/- + ₹600/- = ₹1200/-

Question 8:

M/s. KBC Bearings Ltd. is committed to supply 48,000 bearings per annum to M/s. KMR Fans on a steady daily basis. It is estimated that it costs ₹1 as inventory holding cost per bearing per month and that the set up cost per run of bearing manufacture is ₹3,200

(i) What would be the optimum run size of bearing manufacture? (EBQ)

(ii) What would be the interval between two consecutive optimum runs?

(iii) Find out the minimum inventory cost?

(i) calculation of optimum run size of bearing manufacture

i.e Economic Batch Quantity = EBQ

$$EBQ = \sqrt{\frac{2AS}{C}}$$

where A = Annual production requirement for KBC Bearings Ltd.
= 48,000 bearings

S = set up cost per batch
= ₹3,200

C = carrying cost per bearing p.a.
= ₹1 × 12 months = ₹12

$$= \sqrt{\frac{2 \times 48,000 \times ₹3200}{₹12}}$$

= 5059.64 units

= 5060 units (approx)

(2) No. of Batches to be produced in a year = (Annual requirement of Nayfar batches / Economic production run for Affiliating batches)

= (48000 bearings / 5060 bearings)

= 9.4862 runs

∴ (Time interval between 2 consecutive runs) = 365 days / 9.4862 runs

= 38.48 days

(3) Minimum Total inventory cost for the year

= Total set up cost for the year + Total carrying cost for the year

= (₹3200 × 9.4862 batches in a year) + (₹12 × 5060/2)

= ₹30,356 + ₹30,360 = ₹60,716/-

Question 9:

A Company has an annual demand from a single customer for 50,000 litres of a paint product. The total demand can be made up of a range of colour to be produced in a continuous production run after which a set-up of the machinery will be required to accommodate the colour change. The total output of each colour will be stored and then delivered to the customer as a single load immediately before production of the next colour commences.

The Set up costs are ₹100 per set up. The Service is supplied by an outside company as required.

The Holding costs are incurred on rented storage space which costs ₹50 per sq. meter per annum. Each square meter can hold 250 Litres suitably stacked.

You are required to calculate

(i) Calculate the total cost per year where batches may range from 4,000 to 10,000 litres in multiples of 1,000 litres and hence choose the production batch size which will minimize the cost.

(ii) Use the economic batch size formula to calculate the batch size which will minimise total cost.

① calculation of Total inventory cost (Total set up cost + Total carrying wst) for each Batch size in multiples of 1,000 from 4,000 to 10,000 litres

BYTE Batch size (Litres) (a)	No of Batches to be produced in a year (b)	Total set up wst for the year (E) (c)	carrying cost P.u.p.a (d)	Avg stock (Litres) (e)	Total carrying cost for the year (E) (f)	Total inventory cost (E) (g)
(Given)	= (50,000 / a)	= E 100 × b	= Given	= a/2	= d × e	= c + f
4000	12.50	1,250	0.20	2,000	400	1,650
5000	10.00	1,000	0.20	2,500	500	1,500
6000	8.33333	833.333	0.20	3,000	600	1,433
7000	7.1428571	714.28	0.20	3,500	700	1,4144
8000	6.25	625	0.20	4,000	800	1,425
9,000	5.55555	555.55	0.20	4,500	900	1,455
10,000	5.00	500	0.20	5,000	1,000	1,500

carrying cost per litre p.a. = (₹ 50 for one sq meter p.a. / 250 litres that can be stored in one sq meter) = ₹ 0.20 per litre p.a.

∴ optimum Batch size = 7000 litres of paint, as it results in minimum total inventory cost of ₹ 1,414 (approx)

② calculation of optimum Batch size by using formula of EBQ (Economic Batch Quantity)

$$EBQ = \sqrt{\frac{2 \times \text{Annual production requirement} \times \text{Set-up cost per Setup}}{\text{carrying cost p.u.p.a}}}$$

$$= \sqrt{\frac{2 \times 50{,}000 \text{ litres} \times ₹\ 100}{₹\ 0{\cdot}20}}$$

$$= 7{,}071 \text{ litres (approx)}$$

Question 10:

XYZ Ltd. uses two types of raw materials – 'Material A' and 'Material B' in the production process and has provided the following data for the year ended on 31st March, 2021:

Particulars	*Material A (₹)*	*Material B (₹)*
Opening stock as on 01.04.2020	*30,000*	*32,000*
Purchase during the year	*90,000*	*51,000*
Closing stock as on 31.03.2021	*20,000*	*14,000*

(i) You are required to calculate:

(a) The inventory turnover ratio of 'Material A' and 'Material B'.

(b) The number of days for which the average inventory is held for both materials 'A' and 'B'.

(ii) Based on above calculations, give your comments.

(Assume 360 days in a year.)

(1) Statement showing calculation of Inventory turnover ratio & No of days for which avg. inventory is held during the year

Particulars	Material - A	Material - B
(a) Opening stock as on 01.04.2020 (E)	30,000	32,000
(b) Purchases during the year (E)	90,000	51,000
(c) Closing stock as on 31.03.2021 (E)	20,000	14,000
(d) Cost of raw material consumed during the year (a+b-c) (E)	1,00,000	69,000
(e) Avg stock held during the year [(a+c)/2] (E)	25,000	23,000
(f) Inventory turnover ratio (d/e)	4.00	3.00
(g) No of days for which avg. inventory is held (360/f)	90 days	120 days
(h) Fast/slow moving	Fast moving as compared to B	slow moving as compared to A

From above table, It is clear that Raw material - A is fast moving as compared to Raw material - B as Raw material A has higher inventory turnover ratio as compared to Raw material B.

Question 11:

The Accountant of KPMR Ltd. has prepared the following budget for the coming year 2022 for its two products 'AYE' and 'ZYE':

Particulars	*Product 'AYE'*	*Product 'ZYE'*
Production and Sales (in Units)	*4,000*	*3,000*
	Amount (in ₹)	*Amount (in ₹)*
Selling Price per unit	*200*	*180*
Direct Material per unit	*80*	*70*
Direct Labour per unit	*40*	*35*
Variable Overhead per unit	*20*	*25*
Fixed Overhead per unit	*10*	*10*

After reviewing the above budget, the management has called the marketing team for suggesting some measures for increasing the sales. The marketing team has suggested that by promoting the products on social media, the sales quantity of both the products can be increased by 5%. Also, the selling price per unit will go up by 10%. But this will result in increase in expenditure on variable overhead and fixed overhead by 20% and 5% respectively for both the products.

You are required to prepare flexible budget for both the products:

(i) Before promotion on social media,

(ii) After promotion on social media.

(please refer page no- 1181, 1182)

please refer page No 1181, 1182

Question 12:

A skilled worker is paid a guaranteed wage rate of ₹ 150 per hour. The standard time allowed for a job is 10 hours. He took 8 hours to complete the job. He has been paid the wages under Rowan Incentive Plan.

You are required to:

(i) Calculate an effective hourly rate of earnings under Rowan Incentive Plan.

(ii) Calculate the time in which he should complete the job, if the worker is placed under Halsey Incentive Scheme (50%) and he wants to maintain the same effective hourly rate of earnings.

① calculation of effective hourly rate under Rowan's incentive plan

Total wages payable = (Hrs worked × Rate per hour) + (Time saved / Time allowed) × (Hrs worked × Rate per hour)

= (8 hrs × ₹150) + ((Time allowed − Time taken) / Time allowed) × ₹1200

= ₹1200 + ((10 hrs − 8 hrs) / 10 hrs × ₹1200)

= ₹1200 + ₹240 = ₹1,440

Effective hourly rate under Rowan's incentive plan

= (Total wages payable / Hrs worked) = (₹1,440 / 8 hrs) = ₹180 per hour

② calculation of time that should be taken to complete the job to maintain same effective rate of ₹180 per hour under Halsey's scheme

Let Time taken to complete the Job be 'x' hours

∴ Time saved = Time allowed − Time taken

= (10 hrs − x hrs) = (10 − x) hrs

Effective wage rate per hour under Halsey's plan = (Hrs worked × Rate per hr) + 50% (Time saved × Rate per hr) / Hrs worked

₹180 = [(2x × ₹150) + 50% (10 − 2) × ₹150] / x

$1802 = 1500 + 75(10 - x)$

$302 = 750 - 75x$

$1500 = 750$

$x = 7.142857142857$ has $= 7\frac{1}{7}$ hours

worker should complete the job in $7\frac{1}{7}$ hrs in order maintain same effective hourly rate of ₹ 180.

Question 13:

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

Required:

(i) Calculate the Economic Order Quantity (EOQ) of raw materials.

(ii) Advise, how frequently company should order to minimize its procurement cost. Assume 360 days in a year.

(iii) Calculate the total ordering cost and total inventory carrying cost per annum as per EOQ.

① calculation of Economic order quantity (EOQ)

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

$= \sqrt{\frac{2 \times 12000 \times 750}{18}}$

$= 1,000$ kgs

where

A = Annual requirement of raw material

= 12000 kgs

1 kg of raw material — 5 units of toys

? — 60,000 units of toys

$= \frac{60000 \times 1}{5} = 12000$ kgs

O = ordering cost per order

= ₹400 + ₹350 = ₹750

C = (₹0.25 per kg p.m. × 12 months) + ₹15 p.a.

= ₹3 per kg p.a. + ₹15 per kg p.a.

= ₹18 per kg p.a.

② No. of orders to be placed in a year = $\frac{\text{Annual requi. of raw material}}{\text{order size}}$

$= \frac{12000 \text{ kgs}}{1000 \text{ kgs per order}} = 12$ orders

i. Time Gap between a consecutive orders = $\frac{360 \text{ days}}{12 \text{ orders}} = 30$ days

(3) Total of ordering & carrying wst for the year if company follows EOQ policy

= (No of orders to be placed in a year × ordering wst) + (carrying wst per unit × EOQ / 2)

= (12 orders × ₹ 750) + (₹ 18 × 1000 units / 2)

= ₹ 9,000 + ₹ 9,000 = ₹ 18,000/-

Question 14:

PQR Limited has replaced 72 workers during the quarter ended 31st March 2022. The labour rates for the quarter are as follows:

Flux method	*16%*
Replacement method	*8%*
Separation method	*5%*

You are required to ascertain:

(i) Average number of workers on roll (for the quarter),

(ii) Number of workers left and discharged during the quarter,

(iii) Number of workers recruited and joined during the quarter,

(iv) Equivalent employee turnover rates for the year.

(1) (Labour turnover ratio by replacement method) = (No. of workers replaced during the quarter / Avg. No. of workers on Roll during the quarter)

0.08 = 72 / (Avg. No. of workers on Roll during the quarter)

∴ Avg. No. of workers on Roll during the quarter = (72 / 0.08) = 900

(2) (Labour turnover ratio by separation method) = (No. of workers left & discharged during the quarter / Avg. No. of workers on row during the quarter)

0.05 = (No. of workers left & discharged during the Quarter / tq)

No. of workers left & discharged during the quarter = 900 × 0.05 = 45

③ Labour turnover ratio by Flux method = (No. of workers left & discharged + No. of workers recruited & joined) / Avg. no. of workers on roll during the quarter

0.16 = (45 + No. of workers recruited & joined) / 900

∴ No. of workers recruited & joined during the Quarter = (900 × 0.16) − 45 = 99

④ Equivalent labour turnover ratios for the year by:

i) Flux method = 0.16 / 1 quarter × 4 Quarters = 0.64 = 64%

ii) Replacement method = 0.08 / 1 quarter × 4 Quarters = 0.32 = 32%

iii) Separation method = 0.05 / 1 quarter × 4 Quarters = 0.20 = 20%

Question 15:

Wonder Ltd. has a capacity of 120,000 units per annum as its optimum capacity. The production costs are as under:

Direct Material – ₹ 90 per unit

Direct Labour- ₹ 60 per unit

Overheads:

Fixed: ₹ 30,00,000 per annum

Variable: ₹ 100 per unit

Semi Variable: ₹ 20,00,000 per annum up to 50% capacity and an extra amount of ₹ 4,00,000 for every 25% increase in capacity or part thereof

The production is made to order and not for stocks.

If the production programme of the factory is as indicated below and the management desires a profit of ₹20,00,000 for the year DETERMINE the average selling price at which each unit should be quoted.

First 3 months: 50% capacity

Remaining 9 months: 80% capacity

Ignore Administration, Selling and Distribution overheads.

① calculation of No of units to be sold in a year

normal (i.e optimum) capacity per month = (1,20,000 / 12 months) = 10,000 units

No of units to be sold in a year

= (10,000 units × 3 months × 50%) + (10,000 units × 9 months × 80%)

= 87,000 units

∴ capacity utilisation for the year = (87,000 units / 1,20,000 units × 100) = 72.50%

② Variable cost p.u of output

= (Direct material cost + Direct lab cost + Variable OH cost)

= 90 + 60 + 100 = 250 p.u

③ Fixed cost for production of 87000 units p.a

= 30,00,000 + 20,00,000

= 50,00,000

④ Let Aug selling price p.u for 87000 units to be sold in a year be ₹ a

Sales value at 1989's − variable cost of goods sold − fixed cost for the period = profit

87000a − [(250 × 87000 units) + 400,0001] − (30100,000 + 2000,000) = 20,09000

870002 − 2,21 50,000 − 50,00 000 = 20,00 000

870002 = 2,9150,000

a = ₹ 335.057471264

Aug selling price at which unit should be quoted = ₹ 335.057

Question 16:

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

(i) FIND the most economic production run.

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

(1) calculation of most economical production run (i.e. Economic Batch Quantity)

$$EBQ = \sqrt{\frac{2 \times \text{Annual production requirement} \times \text{set up cost per batch}}{\text{carrying cost p.u.p.a.}}}$$

$$= \sqrt{\frac{2 \times 90{,}000 \text{ columns} \times ₹ 1500}{(₹ 2120 + ₹ 60 + ₹ 20) \times 5\%}}$$

$$= \sqrt{\frac{27{,}00{,}00{,}000}{110}} = 1{,}567 \text{ columns (approx)}$$

(2) calculation of extra cost company incurs due to processing 18,000 columns in a batch instead of following EBQ policy

particulars	Batch size	
	1566.6989 columns	18,000 columns
(a) No. of Batch set-ups in a year (90,000 / Batch size)	57.4456 setups	5 set-ups
(b) Total set up cost for the year (E) (ax ₹ 1500)	286,168 (approx)	₹ 7,500
(c) Avg stock (Batch size / 2)	783.34945 columns	9,000 columns

(d) Total carrying cost for the year (4 × 110)	286,168 (approx)	₹ 990,000
(e) Total inventory cost (btd) (E)	1,72,336	9,97500
(f) Extra cost (E)		8,25,164

Question 17:

XYZ Ltd. has obtained an order to supply 48000 bearings per year from a concern. On a steady basis, it is estimated that it costs ₹ 0.20 as inventory holding cost per bearing per month and the set-up cost per run of bearing manufacture is ₹ 384.

You are required to:

(i) compute the optimum run size and number of runs for bearing manufacture.

(ii) compute the interval between two consecutive runs.

(iii) find out the extra costs to be incurred, if company adopts a policy to manufacture 8000 bearings per run as compared to optimum run Size.

(iv) give your opinion regarding run size of bearing manufacture.

Assume 365 days in a year.

① Calculation of Economic Batch Quantity (EBQ)

(EBQ = optimum run size)

$$EBQ = \sqrt{\frac{2 \times \text{Annual prodn requirement} \times \text{set up cost per batch}}{\text{carrying cost per bearing p.a}}}$$

$$= \sqrt{\frac{2 \times 48000 \text{ bearings} \times ₹384}{₹0.20 \text{ per bearing per month} \times 12 \text{ months}}}$$

$$= \sqrt{\frac{2 \times 48000 \times 384}{2.40}} = 3,919 \text{ bearings (approx)}$$

② No of Batches to be produced in a year (ie No of prodn runs in a year)

$$= \frac{48,000}{3919 \text{ bearing per batch}}$$

$$= 12.248 \text{ batches}$$

i. Time Gap between consecutive runs

$$= \frac{365 \text{ days}}{12.248 \text{ runs}}$$

$$= 29.80 \text{ days (approx)}$$

③ Statement showing calculation of Extra cost if run size is 8000 bearings instead of EBQ policy

particulars	Batch size	
	EBQ = 3919 units	8000 units
a. Total no of setups for the year	12.248 (48,000/3919)	6.00 (48,000/8000)
b. Total set up cost for the year (a × ₹384)	4,703	2,304
c. Avg stock (Batchsize/2)	1959.50 units	4,000 units
d. Total carrying cost for the year (c × ₹2.40)	4,703	9,600
e. Total inventory wst (b+d) (₹)	9,406	11,904
f. Extra cost if company produces 8000 units per prodn run	= ₹11,904 − ₹9,406 = ₹2,498	

In order to minimize Total inventory cost (Total of set up carrying wst for the period), company should follow the policy of EBQ

Question 18: (Important) Important

Ares Plumbing and Fitting Ltd. (APFL) deals in plumbing materials and also provides plumbing services to its customers. On 12th August, 2022, APFL received a job order for a students' hostel to supply and fitting of plumbing materials. The work is to be done on the basis of specification provided by the hostel owner. Hostel will be inaugurated on 5th September, 2022 and the work is to be completed by 3rd September, 2022. Following are the details related with the job work:

Direct Materials

APFL uses a weighted average method for the pricing of materials issues.

Opening stock of materials as on 12th August 2022:

- *15mm GI Pipe, 12 units of (15 feet size) @ ₹600 each*
- *20mm GI Pipe, 10 units of (15 feet size) @ ₹660 each*
- *Other fitting materials, 60 units @ ₹26 each*
- *Stainless Steel Faucet, 6 units @ ₹204 each*
- *Valve, 8 units @ ₹404 each*

Purchases:

On 16th August 2022:

- *20mm GI Pipe, 30 units of (15 feet size) @ ₹610 each*
- *10 units of Valve @ ₹402 each*

On 18th August 2022:

- *Other fitting materials, 150 units @ ₹28 each*
- *Stainless Steel Faucet, 15 units @ ₹209 each*

On 27th August 2022:

- *15mm GI Pipe, 35 units of (15 feet size) @ ₹628 each*
- *20mm GI Pipe, 20 units of (15 feet size) @ ₹660 each*
- *Valve, 14 units @ ₹424 each*

Issues for the hostel job:

On 12th August 2022:

- *20mm GI Pipe, 2 units of (15 feet size)*
- *Other fitting materials, 18 units*

On 17th August 2022:

- *15mm GI Pipe, 8 units of (15 feet size)*
- *Other fitting materials, 30 units*

On 28th August 2022:

- *20mm GI Pipe, 2 units of (15 feet size)*
- *15mm GI Pipe, 10 units of (15 feet size)*
- *Other fitting materials, 34 units*
- *Valve, 6 units*

On 30th August 2022:

- *Other fitting materials, 60 units*
- *Stainless Steel Faucet, 15 units*

Direct Labour:

Plumber: 180 hours @ ₹ 50 per hour (includes 12 hours overtime)

Helper: 192 hours @ ₹35 per hour (includes 24 hours overtime)

Overtimes are paid at 1.5 times of the normal wage rate.

Overheads:

Overheads are applied @ ₹ 13 per labour hour.

Pricing policy:

It is company's policy to price all orders based on achieving a profit margin of 25% on sales price.

You are required to

(a) Calculate the total cost of the job.

(b) Calculate the price to be charged from the customer

① calculation of cost of raw material consumed for Hostel Job

i) 15 mm GI pipe

opening stock as on 12th Aug 2022 = 12 units @ ₹600 p.u.

cost of Quantity issued to Hostel job on 17th Aug = 8 units × ₹600 = ₹4,800

purchases on 27th Aug = 35 units @ ₹628 p.u.

cost of Quantity issued to Hostel job on 28th Aug

(4 units × ₹600) + (35 units × ₹628) / 39 units × 6 units = ₹1,851.2821

∴ Total cost of 15mm GI pipe issued to Hostel job = ₹4800 + ₹6251.2821 = ₹ 11,051.2821

ii) 20 mm Gel pipe

opening stock as on 12th Aug 2022 = 1 units @ ₹660 p.u

cost of quantity issue to Hostel job on 12th Aug = 2 units × ₹660 = ₹1320

Quantity purchased on 16th August = 30 units @ ₹610

Quantity purchased on 27th August = 20 units @ ₹660

cost of quantity issue to Hostel job on 28th August

$$= \left[\frac{(8 \text{ units} \times ₹660) + (30 \text{ units} \times ₹610) + (20 \text{ units} \times ₹660)}{(8 + 30 + 20) \text{ units}}\right] \times 2 \text{ unit}$$

= ₹ 1,268.2759

Total cost of 20 mm Gel pipe issued to Hostel job

= ₹1320 + ₹1268.2759 = ₹2,588.2759

iii) other fitting materials

opening stock as on 12th Aug 2022 = 60 units @ ₹26 p.u

cost of quantity issued on 12th Aug = 18 units × ₹26 p.u = ₹468

cost of Quantity issued on 17th Aug = 30 units × ₹26 p.u = ₹780

Quantity purchased on 18th Aug = 150 units @ ₹28 p.u

cost of quantity issued on 28th August

$$= \left[\frac{(12 \text{ units} \times ₹26) + (150 \text{ units} \times ₹28)}{(12 + 150) \text{ units}}\right] \times 34 \text{ units} = ₹946.9630$$

cost of quantity issued on 30th August

$$= \left[\frac{(12 \text{ units} \times ₹26) + (150 \text{ units} \times ₹28)}{(12 + 150) \text{ units}}\right] \times 60 \text{ units} = ₹1671.1111$$

∴ Total cost of other fitting material issued to Hostel job = ₹468 + ₹780 + ₹1671.1111 = ₹3866.0741 = 946.9630

iv) Stainless steel Faucet

opening stock as on 12th August 2022 = 6units @ E204 p.u

Quantity purchased on 18th August = 15units @ E209p.u

Total cost of quantity issued on 30th August

$$= \left[\frac{(6\text{units} \times 2204) + (15\text{units} \times 209)}{(6+15)\text{units}}\right] \times 16\text{ units}$$

= E 3,113.5714

v) Values

4) values

opening stock as on 12th August 2022 = 8 units @ ₹404 P.M

Quantity purchased on 16th August = 10 units @ ₹402 p.u

Quantity purchased on 27th August = 14 units @ ₹424 P.u

Total cost of quantity issued on 28th August

$$= \left[\frac{(8\text{units} \times 404) + (10\text{units} \times 402) + (\text{Kunits} \times 424)}{(8+10+14)\text{units}}\right] \times 6\text{units}$$

= ₹2,472.75

(2) Statement showing Total cost of the Job & selling price to be charged from the customer

Particulars	Amount (₹)	Amount (₹)
(a) cost of direct material issued to Hostel job		23,091.9535
15 mm GI pipe	11,051.2821	
20 mm GI pipe	2,588.2759	
other fitting materials	3,866.0741	
stainless steel faucet	3,113.5714	
Values	2,972.75	
(b) Direct Labour		16,440.00
plumber 168 hrs x ₹50	9,300.00	
Helper 1242 x ₹75	7,140.00	
(c) overheads		4,836.00
(180 + 192) hrs x ₹13		
(d) Total cost of job order of student's Hostel to supply & fitting plumbing materials (₹) (a+b+c)		44,367.9535
(e) Estimated profit margin (d x 33 1/3 %)		14,789.3178
25% on sales means 33.3333% on wst		
(f) Estimated sales value for the job order of student's Hostel to supply & fitting plumbing materials (₹) (d+e)		59,157.2713