# Job Batch and Process Costing

## Definition of Job/Order Costing

According to ***CIMA, London,*** Job costing is "That form of specific order costing which applies where work is undertaken to customers special requirements and each order is of comparatively short duration (compared with those to which contract costing applies)."

According to ***Eric. L. Kohler,*** Job Costing is "a method of Cost Accounting where by costs are compiled for a specific quantity of products, equipment repairs or other services that move through the production process as a continuously identifiable unit."

## Name of industries where job costing is successfully applied

(i)Printing press (ii) Construction companies (iii) Ship building (iv) Furniture making industries (v) Garment makers (vi) Automobile repairing shops (vii) Repair work shops (viii) Foundries (ix) Research projects (x) Consulting engagements (xii) Interior decoration (xiii) Shoe makers (xiv) Machine tool manufacturers (xv) Audit firms (xvi) Contract carriage suppliers etc.



## Significant Features of Job Costing

The salient features of job costing can be mentioned as below:

1. Costs are collected and accumulated for each job.
2. Each job can be separately identified and hence it becomes essential to analyse the costs according to each job.
3. Work is carried out against customers' orders and not for maintaining stock for sale.

## Advantages of Job Costing

**1.** It provides a detailed analysis of cost of materials, wages, and overheads classified by functions, departments and nature of expenses which facilitates the control of the costs of similar future jobs.

**2.** It enables the management to ascertain the profitability of each job separately.

## Disadvantages of Job Costing

**1.** The method is costly and laborious owing to much clerical work in recording daily the cost of materials issued, wages expended and overheads chargeable to each job or work order.

**2.** Previous job cost records may be unsuccessful to steer the future cost, if there is fundamental change in the market conditions.

**Example:**

According to the factory job cost ledger, Job No. A 7689 has incurred the following prime cost:

Materials (direct) 36 kg. at Rs. 2·50 per kg.

Wages (direct) Department M 18 hours at Rs. 3.50 per hour

Department N 32 hours at Rs. 3.00 per hour

Budgeted overhead for the year, based on normal capacity:

Variable overhead:

Department M Rs.6,000 for 9,000 direct labour hours

Department N Rs.8,000 for 10,000 direct labour hours

Fixed overhead:

Total budgeted direct labour hours for the whole factory 22,000

Total budgeted fixed expenditure Rs. 16,500

You are required to calculate:

(a)The cost of Job No. A 7689

(b)Price to be quoted to the customer, if profit is charged 20% on sales.

**Solution:**

**Job Cost Sheet (Job No. A 7689)** **Rs.**

| | |
|---|---|
| Direct Materials: 36 kg. @ Rs. 2·50 | 90.00 |
| Direct Wages: Department M 18 hours @ Rs. 3.50 | 63.00 |
| Department N 32 hours @ Rs. 3.00 | 96.00 |
| Variable Overheads: Department M18 hours @ $66^{2}/_{3}$paise per hour | 12.00 |
| Department N 32 hours @ 80 paise per hour | 25.60 |
| Fixed Overhead: 50 hours @ 75 paise per hour | 37.50 |
| Total Cost | 324.10 |
| (+) profit324.10 x 25% | 81.025 |
| Selling Price | 405.125 |

Working Notes:

Overhead rates:

Variable overhead M = Rs. $^{6,000}/_{9000}$=$66^{2}/_{3}$paise per direct labour hour

N=$^{Rs.8000}/_{10000}$= 80 paise per direct labour hour

Fixed overhead=$^{Rs.16500}/_{22000}$=75 paise per direct labour hour

Working hours 18 + 32=50

**Example:**

A shop floor supervisor of a small factory presented the following cost forjob No. 5679 to determine selling price:-

Per Unit (Rs.)

Material 70

Direct Wages: 18 hrs. @ Rs. 2.50 45

(Dept. X — 8 hrs., Dept. Y — 6 hrs., Dept. Z — 4 hrs.)

Chargeable expenses (special stores items) 5

120

Add:$33^{1}/_{3}$%for Overhead 40

Total Cost 160

Analysis of the Profit & Loss Account for 2008 shows the following: -

| | **Rs.** | **Rs.** | | |
|---|---|---|---|---|
| Materials used | | 1,50,000 | Sales Lessreturns | 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 | | |
| | | 2,00,000 | | |
| Gross Profit c/d | 50,000 | | | |
| 2,50,000 | | | | 2,50,000 |
| Selling expenses | | 20,000 | Gross Profit b/d | 50,000 |
| Net Profit | | 30,000 | | |
| 50,000 | | | | 50,000 |



It is also noted that average hourly rates for the 3 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 2008 actual figures as basis. (iii) Add 20% to total costs to determine selling price.

**Solution:**

**In the books of………………….....................**

**Job Cost Sheet**

Job No. 5679 Date of Commencement………………..

Name of Customer…………….. Date of Completion…………………………

..............................................................................

| **Particulars** | **Rs.** | **Rs.** |
|---|---|---|
| Materials | | 70.00 |
| Direct Wages: Dept. X — 8 hours @ Rs. 2.50 per hour | 20.00 | |
| Dept. Y — 6 hours @ Rs. 2.50 per hour | 15.00 | |
| Dept. Z— 4 hours @ Rs. 2.50 per hour | 10.00 | 45.00 |
| Chargeable Expenses | | 5.00 |
| Prime Cost | | 120.00 |
| Factory Overheads: Dept. — X 50% on direct Wages of Rs. 20 | 10.00 | |
| Dept. — Y 75% on direct Wages of Rs. 15 | 11.25 | |
| Dept. — Z 25% on direct Wages of Rs. 10 | 2.50 | 23.75 |
| Works Cost being Cost of Production | | 143.75 |
| Selling Expenses (@ 10% on of Rs. 143.75) | | 14.38 |
| Total Cost | | 158.13 |
| Profit [@ 20% or 1/5th on cost of production cost of Rs. 158.13] | | 31.63 |
| Selling Price | | 189.76 |

Working Notes: 1. It is assumed that the overheads, i.e., factory overhead was absorbed as a percentage on direct wages. Here, such rate for each

$$\text{Dept.} = \frac{\text{Departmental Total overhead}}{\text{Departmental Total Wages}} \times 100$$

$$X = \frac{\text{Rs.}5000}{\text{Rs.}10000} \times 100 = 50\% \qquad Y = \frac{\text{Rs.}9000}{\text{Rs}12000} \times 100 = 75\% \qquad Z = \frac{\text{Rs.}2000}{\text{Rs.}8000} \times 100 = 25\%$$

2. It is also assumed that selling expenses were absorbed as a percentage on cost of production. Here such rate for 2008

$$= \frac{\text{Total Selling Expenses}}{\text{Total Cost of Production}} \times 100 = \frac{\text{Rs.}20000}{\text{Rs.}200000} \times 100 = 10\%$$

## Batch costing

According to the Terminology of ***CIMA, London,*** batch costing is "that form of specific order costing which applies where similar articles are manufactured in batches either for sale or for use within the undertaking. In most cases this costing is similar to job costing". Batch costing is a form of specific order costing in which items are manufactured for stock. It is applicable to those industries which produce articles in batches or lots against specific orders or special agreements as per requirements of customers.

**Areas of Application**

Batch costing is suitably used in the following cases:

**(i)**Where orders from buyers are received in lots of a number of similar or indistinguishable units,

**(ii)** Where incessant production is not possible because of changes in design, style, fashion, taste, formula, etc.

**(iii)**Where a large number of identical small items, parts, sub-assemblies or products are produced, keeping in mind cost minimisation principle,

**(iv)**Where uniform goods or products are sold by maintaining same colour, shade, specification, design, formula etc,

**(v)**Where production is done more conveniently in batches of definite numbers instead of single item,

The batch costing is widely used in the concerns engaged in manufacturing toys, readymade garments, shoes, biscuits, radios, furniture, etc.

## Economic Batch Quantity

It is that size of production order which gives the maximum economy in the production of output and which ultimately contributes towards maintaining the finished output at the optimum level at different times with minimum cost. The economic batch quantity is also known as Optimum batch quantity (OBQ). The ascertainment of "Economic batch quantity" is important in industries where batch costing is employed. It involves two types of costs;

i) Set-up cost

ii) Inventory carrying costs.

**Set-up costs:** It includes the cost of setting the tools and machines for production in a batch. It is generally fixed per batch, irrespective of the size or quantities of the batch. It includes the following: Cost of tooling, Cost of setting machines, Time cost during change over for one batch to another batch, Loss of skill and speed of worker due to too frequent changes and Wastage of material due to change in the machine feeding etc.

**Carrying cost:** It includes the expenses on manufacturing, storing, depreciation, loss of defectives, interest on capital blocked, Cost of maintaining the materials to avoid deterioration, Transportation costs in relation to stock, Insurance cost, clerical costs etc. It is mainly varies directly with the size or quantities of batch.

As the quantity in each batch increases, the set-up cost per unit decreases and the carrying cost increases. The opposite shall result, if the quantity in each batch decreases.

The economic batch quantity (EBQ) can be computed by the following mathematical formula:

$$EBQ = \sqrt{\frac{2.U.S}{C}}$$



Where, U= Annual Demand or Requirements for the product,

S= Set-up Cost per batch,

C= Carrying Cost per unit of product per year.

Other important things are: (i) Total No. of Batches = Annual Demand (U) / Economic Batch Quantity (EBQ), (ii) Time gap between two consecutive batches = 365 Days or Annual Working Days / Total No. of Batches.

It is to be noted that both U and C are to be expressed in same unit of time, i.e., either both in terms of year or month or quarter etc. The basic assumptions, limitations and other aspects of Economic Batch Quantity (EBQ) are same as those in Economic Ordering Quantity (EOQ) of materials.

## Difference between job Costing and Batch Costing

| Job Costing | Batch Costing |
|---|---|
| Job costing is concerned with the jobs of different specification as per customer's requirements. | Batch costing is concerned with the production of output in batches of number of identical units as per customer's orders or for stock purposes. |
| In job costing a single job is considered as a cost unit. | In batch costing a number of identical jobs or output is taken as a cost unit. |
| Job costing is used where the customer's orders are non-repetitive and the works are not identical to each other. | Batch costing is used where customer's orders consist of a number of identical products as per their specification and where huge production is done for similar goods for stock purposes. |
| The final output or product is different. | The final outputs are identical in nature. |
| Job costing is done on the principles of terminal costing or specific order costing. | Batch costing is extension of job costing. Hence it is an application of terminal costing also. |

**Example:**

Component X is made entirely in machine shop no. II. Material cost is Rs. 20/- per component. Each component takes 6 minutes to produce and the machine operator is paid Rs.15/-per hour. Machine-hour rate is Rs. 72/- per hour. The setting up of the machine to produce the component takes 3 hours for the operator.

You are required to prepare cost sheets showing the setting-up costs and the production costs, both in total (i.e., for the batch) and a per component, assuming a batch size of:

(a) 100 components

(b) 150 components, and

(c) 200 components.

**Solution:**

**Machine Shop No. II**

**Component X**

| | Total Batch Cost Rs. | Cost per component Rs. |
|---|---|---|
| **(a) Batch Size 100 components:** | | |
| Setting up costs | | |
| Wages (3 hours @ Rs. 15 per hour) | 45.00 | |
| Machine expenses | | |
| (3 hours @ Rs. 72 per hour) | 216.00 | 2.61 |
| 261.00 | | |
| Production costs | | |
| Material cost | | |
| (100 units @ Rs. 20 per unit) | 2,000.00 | |
| Wages (10 hours @ Rs.15 per hour) | 150.00 | |
| Machine expenses | | |
| (10 hours @ Rs. 72/- per hour) | 720.00 | |
| | 2,870.00 | 28.70 |
| Total setting up & production costs | 3,131.00 | 31.31 |
| **(b)Batch Size: 150 components:** | | |
| Setting up costs (same as above) | 261.00 | 1.74 |
| Production costs 150 x 28.70 | 4,305.00 | 28.70 |
| Total setting up & production costs | 4,566.0030.44 | |
| **(c) Batch Size: 200 components:** | | |
| Setting up costs (same as above) | 261.00 | 1.31 |

| | | |
|---|---|---|
| Production costs (200 x 28.70) | 5,740.00 | 28.70 |
| Total setting up and production costs | 6,001.00 | 30.01 |

**Example:**

The following particulars are available in respect of production of a small component produced in batches in a factory:

Monthly demand for the component 2,000 units

Setting up cost per batch Rs. 60

Total cost of production per unit Rs. 5

Rate of Interest and other carrying cost 10% p.a.

Compute (a) Economy batch quantity, (b) Total No. of batches during the year 2008 and (c) Time gap between two consecutive batches.

**Solution:**

(a) We know, Economic Batch Quantity (EBQ)=$\sqrt{2US/C}$

Here, U= Annual Demand of the component= 2,000 x 12 = 24,000 units S= Setting-up Cost per batch (in Rs.) = 60, C= Carrying Cost per unit per year (Rs.) = 10% of 5 = 0.50

$$\text{So, EBQ}=\sqrt{\frac{2x24000x60}{0.50}}=\sqrt{\frac{2880000}{0.50}}=\sqrt{5760000}=2400$$

So, economic batch quantity is 2,400 units

(b) Total Optimal No. of Batches to be produced during the year

= Annual Demand (U)/Economic Batch Quantity (EBQ) = 24,000/2,400=10 times.

(c)Time gap between two consecutive batches = 365 days/Optimal No. Batches

= 365 days/10 = 36.5 days

= 36 days (Approx.)

**Example:**

SKF Bearings Ltd is committed to supply 24,000bearings per annum to C Ltd. on a steady daily basis. It is estimated that it costs 10 paise as inventory holding cost per bearing per month and that the set-up cost per run of bearing manufacture is Rs. 324.

(i)What should be the optimum run size for bearing manufacture?

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

(iii)Assuming that the company has a policy of manufacturing 6,000 bearings per run, how much extra costs the company would be incurring as compared to the optimum run suggested in (i)above?

(iv)Find outthe minimum inventory holding cost.

**Solution:**

(i)Economic Batch Quantity (EBQ) =√2US/C

$$\text{So, EBQ} = \sqrt{\frac{2 \times 24000 \times 324}{1.20}} = 3600$$

So, economic batch quantity is 3,600 units

Where,U = units to be produced in a year, S = set-up cost

C = carrying cost per unit for one year (12 x 0.10=Rs. 1.20)

$$\text{No. of runs} = \frac{24000}{3600} = 6.67$$

(ii)Interval between two consecutive optimum runs

$$= \frac{365}{\text{No. of set-up per annum}} = 365/6.67 = 54.73 \text{ or } 55 \text{ calendar days.}$$

$$\text{No. of set-up per annum} = \frac{\text{Annual production}}{\text{Economic run size}} = 24000/3600 = 20/3$$

(iii)Extra cost incurred when the policy of 6,000 run size is applied:

Total set-up cost = No. of production runs x set-up cost per production run.

For 3,600 production run size = 24000/3600 x Rs. 324 = Rs.2,160

For 6,000 production run size = 24000/6000 x Rs. 324 = Rs. 1,296

Total carrying cost = Average inventory x carrying cost of one unit for one year:

For 3,600 production run size= ½ x 3600 x Re.(0·10 x 12) = Rs. 2,160

For 6,000 production run size = ½ x 6000 x Re. (0·10 x 12) = Rs. 3,600

Total cost of maintaining inventory= Total set-up cost + Total carrying cost

For 3,600 production run size = Rs. 2,160 + Rs. 2,160 = Rs. 4,320

For 6,000 production run size = Rs. 1,296 + Rs.3,600 = Rs.4,896

Extra cost incurred Rs. 576

(iv)Minimum inventory holding cost per annum (when run size is 3,600 units): Average inventory=3600/2= 1,800 bearings @ Rs. 1.20=Rs.2,160.

Inventory holding cost will be the minimum when the optimum run size (i.e., 3,600 units) is applied.



## Definition of Process Costing

Process costing has been defined by ***Kohler*** as "a method of cost accounting whereby costs are charged to processes or operations and averaged over units produced".

***ICMA, London,*** defines process costing as "that form of operation costing, where standardised goods are produced”.

## Application of Process Costing

The following is the list of industries which employ process costing:

1. Industries producing steam, gas, electricity, ice, bread, paper, cement, steel, rubber etc.

2. Soap making, Box making, Distillation process, Meat products factory, Oil refining factory, Bottling and packaging Industries etc.

3. Foundries, laundries, dyers, cleaners etc.

4. Milk dairy, Textile, weaving, spinning, Chemical works, Paint, Ink and Varnishing etc.

## Job Costing and Process Costing Compared:

| Job Costing | Process Costing |
|---|---|
| Production is against specific orders. | Production is carried on continuously. |
| It has no fixed period of accounting. | It has a fixed period of accounting and process cost is ascertained at the end of accounting period. |
| There are usually no transfers from one job to another unless there is a surplus or excess production. | Transfer of costs from one process to another is made, as the product moves from one process to another. |
| Each job is quite distinct from the other and hence products of one job cannot mix up with that of another. | Since the production is in a continuous flow, products are mixed up in such a way that they are not separable. |
| The products are heterogeneous. | The products are homogeneous. |
| There may or may not be work-in- progress at the beginning or end of the accounting period. | At the end of a cost period there is every possibility of having work in progress which is regarded as the opening work-in-progress in the next cost period. |
| Output of one job is not the input of another job. | The output of one process is the input of next process. |
| Proper control is comparatively difficult as each product unit is different and the production is not continuous. | Proper control is comparatively easier as the production is standardised and is more stable. |
| Cost per unit = Total cost of job/No. of unit for the job | Cost per unit = Total cost of all process/Final output of last process |

## Advantages of Process Costing

The following advantages of process costing are found:

**1.** Process costing involves less expense and less effort on accounting, owing to its simple nature.

**2.** It is likely to have managerial control by evaluating the performance of each process, because easily management can find out detailed cost of each process, operation or department, budgeted and actual.

**3.** Overheads may be allocated to departments or process accurately on definite bases of allocation.

## Disadvantages of Process Costing

The following weaknesses of process costing have been pointed out:

**1.** In case of joint products (i.e., more than one product coming from the same process), the total costs are apportioned to the various products. Thus, the cost of each product cannot be very much reliable.

**2.** In process costing, work-in-progress has to be valued at the end of each cost period. Valuation of work-in-progress is generally done on estimated basis which introduces further inaccuracies in total cost.

**3.** Costs obtained at the end of the accounting period are only of historical value and are not useful for effective control.



## Treatment of Normal Loss, Abnormal Loss and Abnormal Gains in Process costing

**Normal Loss:** The amount of loss which is unavoidable owing to the nature of raw materials, production technique etc. is taken as normal loss. In other words, the loss which caused during normal production cycle for the inherent quality of inputs of basic materials which are unavoidable in nature is known as normal loss. It is also known as normal wastage. This loss is due to the following reason: evaporation, shrinkage, leakage and breakage etc. For example, in the manufacture of certain product punched out of a metal sheet there must be some loss inherent in the production technique. Normal loss can be estimated before the production by taking into consideration various factors like type of raw materials, nature of operation, other technical factors etc. If the actual output exceeds the expected output, it means that normal loss has been less than what was estimated.

This Loss is uninsurable. Cost of the units representing normal loss is borne by the good units produced. If normal loss has any realisable scrap value, such value is credited to the process account. Normal loss is treated by neglect, if there is neither any scrap value nor any abnormal gain. If, however, there is abnormal gain, separate account for normal loss has to be opened. Normal Loss percentage is estimated on the basis of past experience.

**Abnormal Loss:** There may also be loss of a different nature i.e., loss arising out of unexpected or abnormal conditions. This type of loss is termed abnormal loss. The abnormal loss is due to the following reasons: Accident, firing, theft, burglary, inefficiency, use of substandard materials, breakdown of machineries, wrong plant design, carelessness etc. It is also known as abnormal wastage. Loss exceeding normal loss is treated as abnormal loss. It is avoidable loss. It is valued at cost price. It is insurable type of loss. Thus, abnormal gain may be said to be equal to diminution of normal loss or it may be defined as the excess of actual output overestimated output. Cost of the process is to be apportioned between the units lost abnormally and good units in the ratio of such units. The cost of units representing abnormal loss is debited to abnormal loss account and credited to process account. Thus, the good units are not to bear abnormal loss. If there is scrap value of the units lost, such value is credited to abnormal loss account and the balance remaining thereafter in that account is written off to costing profit and loss account.

$$\text{Cost p.u.} = \frac{\text{Total cost of process} - \text{scrap value of normal loss}}{\text{Total inputs} - \text{Normal loss units}}$$

Actual loss=Abnormal loss unit x cost price p.u. (-) scrap value x Abnormal loss units.

Truly speaking, normal loss and abnormal loss are relative terms. They widely vary from industry to industry, depending upon the nature of materials used, production technique, preventive measures against incidents etc. Loss of same nature may be treated as normal in some industry and as abnormal in some other industry.

**Abnormal Gain:** Sometimes, actual loss of a process is less than that anticipated i.e., actual production is more than that expected. It arises due to the excess estimation of Normal loss. The difference between actual and expected loss or actual and expected production is represented by abnormal gain. Like abnormal loss, abnormal gain also does not affect cost of normal production. It is valued at cost price of the process. The value of units representing abnormal gain is debited to process account and credited to abnormal gain account. At the same time, the scrap value of the units representing normal loss is debited to normal loss account and credited to process account. To the extent of loss of income, the abnormal gain is transferred to normal loss account and the balance of abnormal gain is transferred to costing profit and loss account.

Units representing abnormal gain are valued as below:

$$\frac{\text{Normal cost of normal output}}{\text{Normal output}} \times \text{Units of abnormal gain}$$

Normal cost of normal output = Total cost of the process – Scrap value of normal loss.

Normal output =Output after normal loss.

**Example:**

From the following information, you are required to present accounts for Process 1, Process 2, Finished Goods, Normal Loss, Abnormal Loss, Abnormal Gain, Profit and Loss (so far as it relates to any of the accounts listed above).

Raw materials issued to Process I was 3,000 units at a cost of Rs. 5 per unit.

There was no opening or closing work-in-progress but opening and closing stock of finished goods were Rs. 20,000 and Rs. 23,000 respectively.

| | **Process 1** | **Process 2** |
|---|---|---|
| Normal loss as % of input | 10% | 5% |
| Output in units | 2,800 | 2,600 |
| Scrap value per unit | Rs. 2 | Rs. 5 |
| Additional components | Rs. 1,000 | Rs. 780 |
| Direct wages incurred | Rs. 4,000 | Rs, 6,000 |
| Direct expenses incurred | Rs. 10,000 | Rs. 14,000 |
| Production overhead as a percentage of direct wages | 75% | 125% |

**Solution:**

**In the Books of……………………..**

**Process 1 A/C**

| Particulars | Qty. Units | Rate Rs. | Amount Rs. | Particulars | Qty. Units | Rate Rs. | Amount Rs. |
|---|---|---|---|---|---|---|---|
| To Raw Materials | 3,000 | 5 | 15,000 | By Normal Loss | 300 | 2 | 600 |
| To Components | | | 1,000 | By Process 2 A/C | 2,800 | 12 | 33,600 |
| To Wages | | | 4,000 | | | | |
| To Direct expenses | | | 10,000 | | | | |
| To Production overhead | | | 3,000 | | | | |
| To Abnormal Gain A/c (Bal) | 100 | 12 | 1200 | | | | |
| | 3,100 | | 34,200 | | 3,100 | | 34,200 |

Cost or Rate per unit of output produced in Process 1 $= \dfrac{\text{Rs. } 33,000 - \text{Rs.}600}{3,000u - 300u} = \text{Rs.}12$

-

**Process 2 A/C**

| Particulars | Qty. Units | Rate Rs. | Amount Rs. | Particulars | Qty. Units | Rate Rs. | Amount Rs. |
|---|---|---|---|---|---|---|---|
| To Process 1 A/c | 2,800 | 12 | 33,600 | By Normal Loss | 140 | 5 | 700 |
| To Components | | | 780 | By Finished Stock A/c | 2,600 | 23 | 59,800 |
| To Wages | | | 6,000 | By Abnormal Loss A/c (Bal) | 60 | 23 | 1,380 |
| To Direct expenses | | | 14,000 | | | | |
| To Production overhead | | | 7,500 | | | | |
| | 2,800 | | 61,880 | | 2,800 | | 61,880 |

Cost or Rate per unit of output produced in Process 2 $= \dfrac{\text{Rs. } 61,880 - \text{Rs.}700}{2,800u - 140u} = \text{Rs.}23$

**Normal Loss A/C**

| Particulars | Qty. | Rate | Amount | Particulars | Qty. | Rate | Amount |
|---|---|---|---|---|---|---|---|
| | Units | Rs. | Rs. | | Units | Rs. | Rs. |
| To Process 1 A/c | 300 | 2 | 600 | By C.L.C. A/c (Sale) | 200 | 2 | 400 |
| To Process 2 A/c | 140 | 5 | 700 | By Abnormal Gain A/c (Adjusted) | 100 | 2 | 200 |
| | | | | By C.L.C. A/c (Sale) | 140 | 5 | 700 |
| | 440 | | 1,300 | | 440 | | 1,300 |

**Abnormal Gain A/c**

| Particulars | Qty. | Rate | Amount | Particulars | Qty. | Rate | Amount |
|---|---|---|---|---|---|---|---|
| | Units | Rs. | Rs. | | Units | Rs. | Rs. |
| To Normal Loss A/c (Adjusted) | 100 | 2 | 200 | By Process 1 A/c | 100 | 12 | 1,200 |
| To Costing P & L A/c (Net Gain) | | | 1,000 | | | | |
| | 100 | | 1,200 | | 100 | | 1,200 |

**Abnormal Loss A/c**

| Particulars | Qty. | Rate | Amount | Particulars | Qty. | Rate | Amount |
|---|---|---|---|---|---|---|---|
| | Units | Rs. | Rs. | | Units | Rs. | Rs. |
| To Process 2 A/c | 60 | 23 | 1,380 | By C.L.C. A/c | 60 | 5 | 300 |
| | | | | By Costing P & L A/c (Net Loss Adjusted) | | | 1,080 |
| | 60 | | 1,380 | | 60 | | 1,380 |

**Finished Stock A/c**

| Particulars | Qty. | Rate | Amount | Particulars | Qty. | Rate | Amount |
|---|---|---|---|---|---|---|---|
| | Units | Rs. | Rs. | | Units | Rs. | Rs. |
| To Balance b/d | | | 20,000 | By Cost of Sales A/c | | | 56,800 |
| To Process 2 A/c | 2,600 | 23 | 59,800 | By Balance c/d | | | 23,000 |
| | | | 79,800 | | | | 79,800 |

**Costing Profit &Loss A/c**

| Particulars | Amount | Particulars | Amount |
|---|---|---|---|
| | Rs. | | Rs. |
| To Abnormal Loss A/c | 1,080 | By Abnormal Gain A/c | 1,000 |

**Example:**

A product passes through three processes X, Y and Z. 10,000 units at a cost of Rs. 1.10 were issued to Process A. The other direct expenses were as follows

| | Process X | Process Y | Process Z |
|---|---|---|---|
| | Rs. | Rs. | Rs. |
| Sundry Materials | 1,500 | 1,500 | 1,500 |
| Direct Labour | 4,500 | 8,000 | 6,500 |
| Direct Expenses | 1,000 | 1,000 | 1,503 |

The wastage of Process X was 5%, and in process Y was 4%. The wastage of process X was sold at Re. 0.25 per unit and that of Y at Re. 0.50 per unit and that of 'Z' at Re. 1.00 per unit. The overhead charges were 160% of direct labour. The final product was sold at Rs. 10 per unit fetching a profit of 20% on sales. Find out the percentage of wastage in process Z.

**Solution:** **In the Books of.........**

**Process X A/c**

| Particulars | Qty. | Rate | Amount | Particulars | Qty. | Rate | Amount |
|---|---|---|---|---|---|---|---|
| | Units | Rs. | Rs. | | Units | Rs. | Rs. |
| To Material introduced | 10,000 | 1.10 | 11,0000 | By Normal Loss | 500 | 0.25 | 125 |
| To Sundry Material | | | 1,500 | By Process Y A/c | 9,500 | 2.64 | 25,075 |
| To Labour | | | 4,500 | | | | |
| To Expenses | | | 1,000 | | | | |
| To Overhead | | | 7,200 | | | | |
| | 10,000 | | 25,200 | | 10,000 | | 25,200 |

**Process Y A/c**

| Particulars | Qty. Units | Rate Rs. | Amount Rs. | Particulars | Qty. Units | Rate Rs. | Amount Rs. |
|---|---|---|---|---|---|---|---|
| To Process X A/c | 9,500 | 2.64 | 25,075 | By Normal Loss | 380 | 0.50 | 190 |
| To Sundry Material | | | 1,500 | By Process Z A/c | 9,120 | 5.28 | 48,185 |
| To Labour | | | 8,000 | | | | |
| To Expenses | | | 1,000 | | | | |
| To Overhead | | | 12,800 | | | | |
| | 9,500 | | 48,375 | | 9,500 | | 48,375 |

**Process Z A/c**

| Particulars | Qty. Units | Rate Rs. | Amount Rs. | Particulars | Qty. Units | Rate Rs. | Amount Rs. |
|---|---|---|---|---|---|---|---|
| To Process Y A/c | 9,120 | 5.28 | 48,185 | By Normal Loss | 696 | 1 | 696 |
| To Sundry Material | | | 1,500 | By Finished Stock A/c | 8,424 | | 67,392 |
| To Labour | | | 6,500 | | | | |
| To Expenses | | | 1,503 | | | | |
| To Overhead | | | 10,400 | | | | |
| | 9,120 | | 68,088 | | 9,120 | | 68,088 |



Working Notes: 1.Total Cost of Process Z = Rs. 68,088. Let, quantity of normal loss in Process Z be a

$$\text{Per Unit Cost} = \frac{\text{Total Process Cost} - a \times \text{scrap value per Unit}}{9{,}120 - a}$$

If selling price per unit is Rs. 10 and 20% profit on sale is earned, then cost price per unit= Selling price – Profit = Rs. 10 – 20/100 x Rs. 10 = Rs. 10 – Rs. 2 = Rs. 8

$$\frac{68.088 - a \times 1}{9{,}120 - a} = 8$$

or, 68,088 – a = 72,960 – 8a; or, 7a=72,960 – 68,088;

or, 7a = 4,872 or, a = 696 units.

2. Overhead charge for Process X= 160% of its Direct wages = 160/100 x Rs. 4,500=Rs. 7,200. Similarly overhead for Process Y= 160/100 x Rs. 8,000 = Rs. 12,800 and for Process C =160/100 x Rs. 6,500 = Rs. 10,400.

**Example:**

Atul Ltd. produced product X through three processes — PI, PII and PIII. On January 1, raw materials 1,000 units were introduced in process PI at Rs. 50 per unit. The details of expenses incurred on the three processes during the year 2008 were as under:

| | PI | PII | PIII |
|---|---|---|---|
| Sundry other materials | Rs. 1,600 | Rs.3,315 | Rs. 3,220 |
| Labour | Rs. 2,600 | Rs. 8,000 | Rs. 6,392 |
| Normal loss (% of input) | 5% | 10% | 5% |
| Scrap value per unit | Re. 1 | Rs. 3 | Rs. 6 |
| Actual output (units) | 940 | 846 | 410 |
| Sales price of output per unit | Rs. 70 | Rs.100 | Rs. 200 |

Entire output of PI was passed to the next process while 1/2 of the output of PII was passed to the next process and the balance was sold. The entire output of PIII was sold. Management expenses and selling expenses were Rs. 6,000 and Rs. 9,000 respectively. These are not allocable to the processes.

You are required to prepare — (a) Process A/cs and (b) Statement of Profit.

**Solution: In the books of Atul Ltd.**

**Process PI Account**

| **Particulars** | **Qty. Units** | **Rate Rs.** | **Amount Rs.** | **Particulars** | **Qty. Units** | **Rate Rs.** | **Amount Rs.** |
|---|---|---|---|---|---|---|---|
| To Material | 1,000 | 50 | 50,000 | By Normal Loss | 50 | 1 | 50 |
| To Sundry Material | | | 1,600 | By Process II A/c | 940 | 57 | 53,580 |
| To Labour | | | 2,600 | By Abnormal Loss A/c (Bal) | 10 | 57 | 570 |
| | 1,000 | | 54,200 | | 1,000 | | 54,200 |

**Process PII Account**

| Particulars | Qty. | Rate | Amount | Particulars | Qty. | Rate | Amount |
|---|---|---|---|---|---|---|---|
| | Units | Rs. | Rs. | | Units | Rs. | Rs. |
| To Process I A/c | 940 | 57 | 53,580 | By Normal Loss | 94 | 3 | 282 |
| To Sundry Material | | | 3,315 | By Process III A/c | 423 | 76.37 | 32,306 |
| To Labour | | | 8,000 | By Finished Goods A/c (Trans. for Sale) | 423 | 76.37 | 32,307 |
| | 940 | | 64,895 | | 940 | | 64,895 |

**Process PIII Account**

| Particulars | Qty. | Rate | Amount | Particulars | Qty. | Rate | Amount |
|---|---|---|---|---|---|---|---|
| | Units | Rs. | Rs. | | Units | Rs. | Rs. |
| To Process II A/c | 423 | 76.37 | 32,306 | By Normal Loss | 21 | 6 | 126 |
| To Sundry Material | | | 3,220 | By Finished Goods A/c (Trans. for Sale) | 410 | 103.96 | 42,624 |
| To Labour | | | 6,392 | | | | |
| To Abnormal Gain A/c (Bal) | 8 | 103.96 | 832 | | | | |
| | 431 | | 42,750 | | 431 | | 42,750 |



Cost or Rate per unit of output produced in Process I $= \dfrac{\text{Rs. } 54{,}200 - \text{Rs.}50}{1{,}000\text{u} - 50\text{u}} = \text{Rs.}57$

Cost or Rate per unit of output produced in Process II $= \dfrac{\text{Rs. } 64{,}895 - \text{Rs.}282}{940\text{u} - 94\text{u}} = \text{Rs.}76.3747$

Cost or Rate per unit of output produced in Process III $= \dfrac{\text{Rs. } 41{,}918 - \text{Rs.}126}{423\text{u} - 21\text{u}} = \text{Rs.}103.96$

**Statement showing the Profit earned by Atul Ltd.**

| Particulars | Amount | Amount |
|---|---|---|
| **Total Sale Proceeds:** | **Rs.** | **Rs.** |

| | | | |
|---|---|---|---|
| (i) Output of Process PII — 423 units @ Rs. 100 each | 42,300 | | |
| (ii) Output of Process PIII — 410 units @ Rs. 200 each | 82,000 | 1,24,300 | |
| Less: Production Cost Charged: | | | |
| (i) Output of Process PII — 423 units @ Rs.76.3747 each | 32,307 | | |
| (ii) Output of Process PIII— 410 units @ Rs. 103.96 each | 42,624 | 74,931 | |
| **Gross Profit** | | | 49,369 |
| Less: Unallocated Indirect Expenses | | | |
| (i) Management expenses | 6,000 | | |
| (ii) Selling expenses | 9,000 | 15,000 | |
| Add: Net Abnormal Gain for 8 units in PIII | | 34,369 | |
| (Gross Gain — Normal Loss adjusted = Rs. 832 — 8 x Rs. 6) | | 784 | |
| Less: Net Abnormal Loss for 10 units in PI | | 35,153 | |
| (Gross Loss — Scrap Value = Rs. 570 — 10 x Re. 1) | | 560 | |
| **Net Profit** | | 34,593 | |



**Note: As in the syllabus it is stated that 'Fundamentals of Process costing', therefore (i) Inter-process profit, (ii) W-I-P and Equivalent units and (iii) Joint product and By-product are not included as a part of process costing.**