Objectives

In this lecture you will learn the following

- Introduction.
- Product costing.
- Job costing.
- Process costing.
- Cost Sheet.
- Costing Procedure.
- Loss treatment.
- Equivalent units.
- Operation costing.

Product Costing

**Financial Accounting**

Product costs are used to value inventory and to compute cost of goods sold.

**Cost and Managerial Accounting**

Product costs are used for planning, control, directing, and management decision making.

The product costs for a manufacturing firm include only the costs necessary to complete the product.

The product inventory for a manufacturing firm is treated as an asset until it has market value and is sold.
Product-Costing types

- Process Costing
- Job Costing

Used for production of small, identical, low cost items.
Mass produced in automated continuous production process.
Costs cannot be directly traced to each unit of product.

Process cost applications:
- Refinery
- Steel
- Paper mill
- Ready-made garments
**Product-Costing types**

- **Job Manufacturing:**
  Products manufactured in very low volumes or one at a time.
- **Batch Manufacturing:**
  Multiple products in batches of relatively small quantity.

**Product-Costing types**

- **Typical job cost applications:**
  - Special-order printing
  - Building construction
  - Designer costumes
  - Tailor-made Garments
Job Costing in Non-manufacturing Organizations:

Job Costing

Usually Cost sheet is prepared to record and report the costs. It may be prepared for a job or for some period.

**COST SHEET For June**

<table>
<thead>
<tr>
<th><strong>Particulars</strong></th>
<th><strong>Total Cost</strong></th>
<th><strong>Per Unit</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Material</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opening Stock of Raw Material</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Add: Purchase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less: Closing stock of Raw material</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct Labour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct Expenses</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Prime Cost</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Add: Factory Overheads

Works Cost
Add: Opening Work in Progress
Less: Closing Work in Progress

Factory Cost
Add: Office and Administration Exp

Cost of Production
Add: Opening stock of Finished Goods
Less: Closing stock of Finished Goods

Cost of goods Sold
Add: Selling and Distribution Exp

Cost of Sales
Add: Profit

Sales

Loss
- Loss of material is inherent during certain production processes.
- There are two types of material losses viz. (i) Normal Loss (ii) Abnormal Loss.
  - **Normal Loss**: It is defined as the loss of material which is inherent in the nature of work. Such a loss can be reasonably anticipated from the nature of material, Nature of operation, the experience and technical data.
  - **Abnormal Loss**: It is defined as the loss in excess of the predetermined loss. This type of loss may occur due to carelessness of workers, a bad plant design or operation etc.

Process Costing
Usually Process Accounts are prepared for some period to record and report the costs.

The cost of each process comprises the cost of:

1. Direct Material.
2. Direct Labour.
3. Direct Expenses.
4. Production Overheads.

From the following data prepare process a/c of 1, 2 and 3.
The output of each process is treated as input for next process. Direct Costs are:

<table>
<thead>
<tr>
<th></th>
<th>Pr 1</th>
<th>Pr 2</th>
<th>Pr 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>70000</td>
<td>15000</td>
<td>30000</td>
</tr>
<tr>
<td>Wages</td>
<td>38000</td>
<td>40000</td>
<td>25000</td>
</tr>
<tr>
<td>Expenses</td>
<td>11000</td>
<td>12000</td>
<td>15000</td>
</tr>
</tbody>
</table>

Factory overheads of Rs. 40000 to be apportioned on the basis of wages paid. There was no opening or closing stock.
15000 units have been introduced in 1st process and the output and normal loss for each process are as follows:
### Output Normal Loss

<table>
<thead>
<tr>
<th>Process</th>
<th>Units</th>
<th>Normal Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process 1</td>
<td>14550</td>
<td>3%</td>
</tr>
<tr>
<td>Process 2</td>
<td>13500</td>
<td>6%</td>
</tr>
<tr>
<td>Process 3</td>
<td>13300</td>
<td>2%</td>
</tr>
</tbody>
</table>

### Solution

#### Process 1 A/c

<table>
<thead>
<tr>
<th>Particular</th>
<th>Units</th>
<th>Total Cost</th>
<th>Particular</th>
<th>Units</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>15000</td>
<td>70000</td>
<td>Normal Loss</td>
<td>450</td>
<td>0</td>
</tr>
<tr>
<td>Wages</td>
<td>38000</td>
<td></td>
<td>Transfer to Process 1</td>
<td>14550</td>
<td>133737</td>
</tr>
<tr>
<td>Other Expenses</td>
<td></td>
<td></td>
<td></td>
<td>11000</td>
<td></td>
</tr>
<tr>
<td>Factory Overheads</td>
<td>14757</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15000</td>
<td>133737</td>
<td></td>
<td>15000</td>
<td>133737</td>
</tr>
</tbody>
</table>

#### Process 2 A/c

<table>
<thead>
<tr>
<th>Particular</th>
<th>Units</th>
<th>Total Cost</th>
<th>Particular</th>
<th>Units</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer from Process 1</td>
<td>14550</td>
<td>133757</td>
<td>Normal Loss</td>
<td>873</td>
<td>0</td>
</tr>
<tr>
<td>Material</td>
<td>15000</td>
<td></td>
<td>Abnormal Loss</td>
<td>177</td>
<td>2799</td>
</tr>
<tr>
<td>Wages</td>
<td>40000</td>
<td></td>
<td>Transfer to Pr2</td>
<td>13500</td>
<td>213492</td>
</tr>
<tr>
<td>Other Expenses</td>
<td>12000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factory Overheads</td>
<td>15534</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14550</td>
<td>216291</td>
<td></td>
<td>14550</td>
<td>216291</td>
</tr>
</tbody>
</table>

#### Process 3 A/c

<table>
<thead>
<tr>
<th>Particular</th>
<th>Units</th>
<th>Total Cost</th>
<th>Particular</th>
<th>Units</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer from Process 1</td>
<td>13500</td>
<td>213492</td>
<td>Normal Loss</td>
<td>270</td>
<td>0</td>
</tr>
<tr>
<td>Material</td>
<td>30000</td>
<td></td>
<td>Finished Stock</td>
<td>13300</td>
<td>294752</td>
</tr>
<tr>
<td>Wages</td>
<td>25000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Expenses</td>
<td>15000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factory Overheads</td>
<td>9709</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abnormal Gain</td>
<td>70</td>
<td>1551</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13570</td>
<td>294752</td>
<td></td>
<td>13570</td>
<td>294752</td>
</tr>
</tbody>
</table>

### Equivalent Units

Thus, in Process Costing

Cost per unit = Cost/Output Units

What can be done when partially produced units remain in stock?

To ascertain the cost of each completed unit it is necessary to ascertain the cost of work in progress in the beginning and at the end of the process. Hence the method of converting partly finished units to equivalent finished units is used.

Equivalent production means converting the incomplete production units into their completed units.

Equivalent completed units = \( \text{Actual number of units in the process} \times \text{percentage of work completed} \)

- **Conversion + direct material applied**: The term equivalent unit cost refers to conversion and
direct-material applied to physical units after adjusting the stage of completion.

- **Physical and equivalent units equal in completed batch**: If a batch of goods has been completed, the number of physical units and equivalent units will be the same.
- **Work-in-Process only partially completed**: The units in ending Work-in-Process Inventory are only partially completed and may be in different stages of production.
- **Example**: 100% of the conversion work (labor and overhead) may have been done.
- **Conversion costs added continuously**: Conversion costs are usually added continuously throughout the process.

  - **Example**: If 100 units are 60% of the way through the process, 60 equivalent units have been produced. Notice that none of the units are completed—the firm is said to have done the work equivalent to manufacturing 60 finished units.
- **Direct material added at specific points**: Direct materials are usually added at discrete points in the process in text problems.
- **Consider when material added**: When considering materials, determine at what point the ending in-process costs are and evaluate whether or not the materials have been added.
- **Once added 100% complete**: If added, the units are 100% complete with respect to materials; if not, the units are 0% complete.
- **Unit cost based on equivalent units**: When computing the cost of a unit, the related calculations are based on equivalent units, not physical units.

The procedure states fully-completed units on the same measurement scale as partially-completed units, thus avoiding the addition (combination) of "apples and oranges."

- **Next divide costs by equivalent units**: Next, the cost of direct materials and conversion is divided by the proper number of equivalent units for each of these production elements.

**Operation Costing**

It is a refinement of process costing. It is used in service industries.