

Unit & Output Costing

2.1. UNIT & OUTPUT COSTING

2.1.1. Meaning & Definitions of Unit & Output Costing

Unit and output costing is used in those industries or factories where standard products are produced from a common process and all the units produced are more or less similar to each other.

It is suitable for sugar industry, brickmaking, mining, cement manufacturing, dairy operations, flour mill etc. Unit or output costing is also known as single operation costing method.

According to J.R. Batliboi, "Output or single cost method is used in business where a standard product is turned out and it is desired to find out the cost of a basic unit of production."

According to Herald J. Wheldon, "Unit of output costing is a method of costing by the units of production, where manufacture is continuous and the units are identical or can be made by means of ratios."

2.1.2. Features of Unit & Output Costing

Following are the features of output costing:

- 1) Production consists of a single product or a few varieties of the same product,
- 2) Production units should be identical,
- 3) Production is uniform and on continuous basis,
- 4) Per unit cost has to be determined in this method, and
- 5) The cost per unit of output, measures as per ton, per barrel, per kilogram, per metre, per quintal, per bag, etc. is ascertained.

2.1.3. Objectives of Unit & Output Costing

Following are the main objectives of output and unit costing:

- 1) To know the total cost of production as well as the cost per unit of output.
- 2) To know the profit or loss on the production or output.
- 3) To classify various cost under relevant categories and their detail analysis.
- 4) To facilitate the preparation of tender price or quotation price.
- 5) To control the cost of product through comparative statement study of the cost for two or more periods.
- 6) To analyse the effect of each element of cost on total cost.

2.1.4. Methods of Unit & Output Costing

Method of output and unit costing is classified as:

- 1) Cost Sheet (Statement of Cost), and
- 2) Production Account.

It is to be noted that the fundamental principles for preparing above records of unit or output costing are almost same except that of proforma.

2.2. PREPARATION OF COST SHEET

2.2.1. Meaning of Cost Sheet

This is a statement to show the output during a particular period of time. It also shows the classification of costs. The data for the purpose of preparing this statement is collected from various sources. This sheet is useful for the purpose of analysing total cost of production and cost of sales.

This statement shows per unit cost structure for various levels of production. It is important to identify the stage of production and relevant price. Cost sheet is generally prepared in the case of manufacturing the single product. Cost sheet may be prepared for different time periods ranging from weekly to annually.

It bifurcates the costs into various categories such as prime costs, cost of production and total costs. The main classifications used are prime cost, cost of production, works cost and cost of goods sold.

2.2.2. Objectives of Cost Sheet

Following are the main objectives of cost sheet:

- 1) This statement shows total cost as well as cost per unit of production.
- 2) It also provides detailed analysis of costs under various categories such as material cost, labour cost, etc.
- 3) It helps in making time series comparison. This is done by comparing current costs with past costs and analysing the deviations.
- 4) The cost sheet is an important tool for making managerial decisions, making bids and cost control, etc.

2.2.3. Types of Cost sheet

Historical and estimated data is used for the purpose of preparing cost sheet:

- 1) **Historical Cost Sheet:** Actual costs are used for preparing this type of cost sheet. The statement showing costs after it has been incurred is known as historical cost sheet.
- 2) **Estimated Cost Sheet:** Estimated costs are used for preparing this cost sheet. It is prepared before the commencement of production. Such cost sheets are useful for various purposes such as bidding for tender. It is also used for estimating various components of cost.

The estimates are made using present conditions and likely future conditions. Different elements of cost will be estimated as under:

- i) **Direct Materials:** Direct materials are the traceable elements used in manufacturing of a product. The cost of direct materials can be easily identified with the unit of production.

If there is an increase in the production unit, there will be an increase in the costs of direct materials and vice versa. The estimation of direct materials is reflected in market prices for estimated output in future.

- ii) **Direct Wages:** Direct wages are the payment rendered to the workers per hour as a compensation for the work done. Direct wages per unit cost is estimated on the base of proceeding period. These are projected on the labour work efficiency and the variations in the wage rate.
- iii) **Factory Overheads:** Factory overheads are the total costs involved in operating all production facilities of the manufacturing business. It is estimated by considering the past and existing trends. Generally, to estimate the factory overhead, percentage of direct wages is used.
- iv) **Office and Administration Overheads:** Office and administration overheads are the costs that are not involved in the development or production of goods or services but in the office and administration purposes. Mostly, these costs are fixed. Sometimes, to estimate this overhead, percentage of factory overhead is considered.
- v) **Selling and Distribution Overheads:** Selling and distribution overheads are the costs that are involved in promotion and supplying of final product to the customers. These overheads are estimated on the basis of rate per unit sold or percentage of sales.

2.2.4. Proforma of Cost Sheet

Particulars	Total Cost (₹)	Cost Per Unit (₹)
Opening Stock of Raw Material		
Add: Purchase of Raw Material		
Carriage Inward		
Other Expenses on Purchase		
Less: Closing Stock of Raw Material		
Direct Material Consumed	-	
Add: Direct Labour/Wages		
Direct Expenses		
Direct Cost/Prime Cost	-	
Add: Factory/Manufacturing/Production/Work Overhead:		
Factory Rent		
Power and Fuel		
Haulage Charges		
Indirect Material		
Supervisor Salary		
Depreciation on Machinery		
Oil and Water Charges, etc.		
Factory Cost	-	
Add: Opening Work-in-Progress		
Less: Closing Work-in-Progress		
Factory/Manufacturing/Production/Work Overhead Cost	-	
Add: Office and Administration Overheads:		
Audit Fees		
Director Fees		
Legal Charges		
Depreciation on furniture		
General expenses		
Postage, Telephone, Printing and Stationary		
Donation, Bank Charges, Insurance of Office, etc.		
Office Cost/Cost of Production	-	
Add: Opening Stock of Finished Goods		
Less: Closing Stock of Finished Goods		
Cost of Goods Sold	-	
Add: Selling and Distribution Overheads:		
Trade Discount, Cash Discount Allowed, Brokerage, Commission, Sample Expenses, Branch Expenses, Delivery Van Expenses, Advertisement, Bad Debts, Free Gifts, After-Sale Service, Expenses of Catalogue and Price List, Driver Salary, etc.		
Total Cost	-	
Profit/Loss	-	
Sales	-	

Note:

- 1) Factory overhead can be charged on the basis of labour cost.
- 2) Office and administrative expenses and selling and distribution expenses can be charged on the basis of work cost or factory cost.

2.2.5. Items Excluded from Cost Sheet

The following items are of financial nature and thus are not included while preparing a cost sheet:

- 1) Donation.
- 2) Cash discount.
- 3) Interest paid.
- 4) Income tax paid.
- 5) Dividend paid.
- 6) Preliminary expenses written-off.
- 7) Goodwill written-off.
- 8) Profit or loss on sale of fixed assets.
- 9) Transfer to reserves.
- 10) Provisions.

Example 1: Mr. A furnishes the following data relating to the manufacture of a Standard Product for the month of January 2019.

Particulars	₹
Materials	90,000
Direct Wages	60,000
Depreciation of Machinery	11,500
Power and Consumable Stores	12,000
Indirect Wages at Factory	15,000
Lighting of Factory	5,500
Cost of Rectification of Defective Work	3,000
Sale of Scrap	2,000
Office and Selling Overheads	39,000
Selling Price	3,16,000

Prepare the cost sheet.

Solution:

Cost Sheet
(For the Month of January 2019)

Particulars	₹
Materials	90,000
Direct Wages	60,000
Prime Cost	1,50,000
Add: Factory Overheads:	
Depreciation of Machinery	11,500
Power and Consumable Stores	12,000
Indirect Wages at Factory	15,000
Lighting of Factory	5,500
Cost of Rectification of Defective Work	3,000
	1,97,000
Less: Sale of Scrap	2,000
Work Cost/Production Cost	1,95,000
Add: Office and Selling Overheads	39,000
Cost of Sales	2,34,000
Add: Profit (Balancing figure)	82,000
Sales	3,16,000

Example 2: A factory produces a standard product. The following information is given to you from which you are required to prepare a cost sheet for January 2019:

Particulars	₹
Raw materials consumed	2,91,000
Direct wages	1,29,000
Other direct expenses	81,000
Factory overheads	80% of direct wages
Office overheads	10% of works cost
Selling & Distribution expenses	₹20 per unit sold
Units produced and sold during the month	10,000

Find the selling price per unit when the profit earned is at 20% on selling price.

Solution:

Cost Sheet
(For the Period of January, 2019)

Particulars	Total Cost (10,000 Units) (₹)	Per Unit (₹)
Raw Materials Consumed	2,91,000	29.10
Direct Wages	1,29,000	12.90
Other Direct Expenses	81,000	8.10
Prime Cost	5,01,000	50.10
Add: Factory Overheads: 80% of Direct Wages	1,03,200	10.32
Work Cost	6,04,200	60.42
Add: Office and Administration Overheads: 10% of Works Cost	60,420	6.04
Cost of Production	6,64,620	66.46
Add: Selling and Distribution Overheads: Selling and Distribution Expenses ₹20 per Unit (10,000 × ₹20 p.u)	2,00,000	20.00
Cost of Sales	8,64,620	86.46
Add: Profit (20% on Selling Price)	2,16,155	21.61
Sales	10,80,775	108.07

Example 3: Prepare cost sheet for the year 2018 from the following data, showing cost per unit and profit.

Particulars	₹
Materials consumed	40,000
Direct wages	21,600
Machine hours	3,000
Machine hour rate	0.75
Selling overhead (per unit)	0.90
Unit produced	30,000
Units sold at ₹5 per unit	20,000
Administrative overhead – 10% of works cost	

Solution:

Cost Sheet
(For the year 2018)

Particulars	Total Cost (30,000 Units) (₹)	Cost Per Unit (₹)
Materials Consumed	40,000	1.33
Direct Wages	21,600	0.72
Prime Cost	61,600	2.05
Factory Overheads (3,000 × 0.75)	2,250	0.07
Work Cost	63,850	2.13
Administrative Overhead (10% of Works Cost)	6,385	0.21
Cost of Production	70,235	2.34
Less: Closing Stock	23,400	
Cost of Goods Sold	46,835	2.34
Selling Overhead (20,000 × 0.90)	18,000	0.90
Cost of Sales	64,835	3.24
Profit (Balancing figure)	35,165	1.76
Sales (20,000 × 5)	1,00,000	5

Working Note:

$$\begin{aligned} \text{Closing Stock} &= \text{Unit Produced} - \text{Unit Sold} \times \text{Per Unit of Cost of Production} \\ &= 30,000 - 20,000 \times 2.34 = 23,400 \end{aligned}$$

Example 4: Mr. R & Sons furnishes the following data relating to the manufacture of a standard product during the month of April 2019.

Direct material consumed	₹20,000
Direct labour charges	₹10,000
Machine hour worked	₹1,000
Machine hour rate	₹6
Administration overheads	20% on works cost
Selling overhead	₹0.50 per unit
Unit produced	₹18,000
Units sold	17,000 at ₹4 per unit

You are required to prepare a cost sheet from the above, showing cost per unit sold and profit for the period.

Solution:

Cost Sheet
(For the Month of April 2019)

Particulars	Total Cost (18,000 units) (₹)	Cost Per Unit (₹)
Direct Raw Material Consumed	20,000	1.11
Direct Labour Charges	10,000	0.56
Prime Cost	30,000	1.67
Add: Factory Overheads (Machine hours × Machine-hour rate, i.e., 1000 × ₹6)	6,000	0.33
Factory Cost/Works Cost	36,000	2.00
Add: Administrative Overheads (20% on Works Cost)	7,200	0.40
Cost of Production	43,200	2.40
Less: Closing Stock of Finished Goods (1,000×2.40)	2,400	-
Cost of Goods Sold	40,800	2.40
Add: Selling Overheads (17,000×0.50)	8,500	0.50
Cost of Sales	49,300	2.90
Add: Profit (Balancing figure)	18,700	1.10
Sales	68,000	4.00

Working Note:

Closing Stock = Unit Produced – Unit Sold × Per Unit of Cost of Production
= 18,000 – 17,000 × 2.40 = ₹2,400

Example 5: Calculate the prime cost, factory cost, total cost of production and cost of sales from the following particulars:

Particulars	₹
Direct Materials	50,000
Direct Wages	20,000
Direct Expenses	3,000
Oil & Waste	200
Wages of Foremen	2,000
Storekeepers Wages	1,000
Electric Power	400
Lighting: Factory	600
Office	300
	900
Rent: Factory	3,000
Office	2,000
	5,000
Repairs & Renewals:	
Factory Plant	1,000
Machinery	2,000
Office Premises	400
	3,400
Depreciation:	
Office Premises	600
Plant & Machinery	300
	900

Consumable Stores	2,000
Manager's Salary	3,000
Directors Fees	700
Office Printing & Stationery	300
Telephone Charges	100
Postage & Telegrams	200
Salesmen's Commission & Salary	600
Travelling Expenses	300
Advertising	800
Warehouse Charges	300
Carriage Outward	200

Solution:

Cost Sheet			
Particulars		₹	Total Cost (₹)
Direct Material		50,000	73,000
Direct Labour		20,000	
Direct Expenses		3,000	
Prime Cost			
Factory Overheads			
Indirect Material:			
Consumable Stores	2,000	2,200	
Oil and Waste	200		
Indirect Labour:			
Wages of Foremen	2000	3,000	
Storekeepers Wages	1,000		
Indirect Expenses:			
Electric Power	400	7,300	
Factory Lighting	600		
Factory Rent	3,000		
Repairs & Renewals:			
Plant	1,000	3,000	
Machinery	2,000		
Depreciation:			
Plant & Machinery	300		12,500
Factory or Works Cost			85,500
Office and Administrative Overheads			
Indirect Material: Office Printing and Stationery		300	
Indirect Labour: Manager's Salary		3,000	
Director's Fees		700	3,700
Indirect Expenses: Office Lighting		300	
Office Rent		2,000	
Repairs and Renewals-Office Premises		400	
Depreciation on Office Premises		600	
Telephone Charges		100	
Postage & Telegrams		200	3,600
Cost of Production			7,600
Selling & Distribution Overheads			93,100
Indirect Labour: Salesmen's Commission and Salary		600	
Indirect Expenses:			
Travelling Expenses	300	1,600	
Advertising	800		
Warehouse Charges	300		
Carriage Outward	200		
Cost of Sales			2,200
			95,300

Example 6: Following are the particulars for the production 2,125 machines of Mahek Engineering Co. Ltd. for the year 31st March, 2017:

Particulars	₹
Cost of Materials	80,000
Direct Wages	1,20,000
Manufacturing Expenses	50,000
Office Salaries	60,000
Rent, Rates and Taxes	10,000
Selling Expenses	20,000
General Expenses	30,000
Sales	4,00,000

For the year ending 31st March, 2018 it has been estimated that:

- 1) Output and sales will be 2,500 units.
- 2) Materials price will rise by 25% on the previous year's level.
- 3) Wages will rise by 12.5%.
- 4) Manufacturing expenses will rise in proportion to the combined cost of materials and wages.
- 5) Selling cost per unit will remain unchanged.
- 6) Other expenses will remain unaffected by the rise in output.

Prepare a Cost Statement, showing the price at which the machine would be marketed so as to show a profit at 10% on the selling price.

Solution:

Cost Statement

(for the year ending 31st March 2018)

Particulars	(Output 2,500 Unit)	
	Total Cost (₹)	Cost Per Unit (₹)
Cost of Materials (25% Increases)	1,17,648	47.06
Direct Wages (12.5% Increases)	1,58,823	63.53
Prime Cost	2,76,471	110.59
Add: Manufacturing Expenses	69,118	27.65
Work Cost	3,45,589	138.24
Add: Office Salaries	60,000	24.00
General Expenses	30,000	12.00
Rent, Rates and Taxes	10,000	4.00
Cost of Production	4,45,589	178.24
Add: Selling Expenses	23,525	9.41
Total Cost	4,69,114	187.65
Profit (10% on Selling Price)	52,124	20.85
Sales	5,21,238	208.50

Working Notes:

$$1) \text{ Cost of Material} = \frac{80,000}{2,125} \times 2,500 = ₹94,117.6 \text{ or } ₹94,118 \text{ (approx.)}$$

$$\text{Increased by 25\%} = 94,118 + \frac{25}{100} \times 94,118 = ₹1,17,648 \text{ (approx.)}$$

$$2) \text{ Direct Wages} = \frac{1,20,000}{2,125} \times 2,500 = ₹1,41,176$$

$$\text{Increased by 12.5\%} = 1,41,176 + \frac{12.5}{100} \times 1,41,176 = ₹1,58,823.$$

$$3) \text{ Manufacturing Expenses} = \frac{50,000}{2,00,000} \times 2,76,471 = ₹69,118 \text{ (approx.)}$$

$$4) \text{ Selling Expenses} = \frac{20,000}{2,125} = 9.41 \text{ per unit}$$

$$5) \text{ Profit} = 4,69,114 \times \frac{10\%}{90\%} = ₹52,124$$

Example 7: I.K. manufacturing company manufactures two types of products viz. A and B. The manufacturing cost for the year ended 31st March 2014, were.

Direct Material	2,00,000
Direct Wages	1,12,000
Production Overheads	48,000

It is ascertained that:

- 1) Direct material in product 'A' cost twice as much that of product 'B'.
- 2) Direct wages for product 'B' were 60% those for product 'A'.
- 3) Production overheads was 30 paise per unit for both products.
- 4) Administration overheads for both products was 200% of direct wages.
- 5) Selling on cost was 25 paise per unit for both products.

Production during the year was product A 40,000 units of which 36,000 units were sold. Product 'B'—1,20,000 units of which 1,00,000 units were sold. Selling price were ₹7 per unit for product A and ₹5 per unit for product 'B'.

Prepare a statement showing the total cost per unit of both products and the profit made per unit.

Solution:

Statement of Cost and Profit of Product 'A' and 'B'
(For the year ended 31st March 2014)

Particulars	Product 'A' (Unit Produced 40,000)		Product 'B' (Unit Produced 1,20,000)	
	Total (₹)	Per Unit (₹)	Total (₹)	Per Unit (₹)
Direct Materials	80,000	2.00	1,20,000	1.00
Direct Wages	40,000	1.00	72,000	0.60
Prime Cost	1,20,000	3.00	1,92,000	1.60
Production Overhead	12,000	0.30	36,000	0.30
Work Cost	1,32,000	3.30	2,28,000	1.90
Administrative Expenses	80,000	2.00	1,44,000	1.20
Cost of Production	2,12,000	5.30	3,72,000	3.10
Less: Closing Stock	21,200	—	62,000	—
Cost of Goods Sold	1,90,800	5.30	3,10,000	3.10
Selling Expenses	9,000	0.25	25,000	0.25
Cost of Sales	1,99,800	5.55	3,35,000	3.35
Profit (Balancing Figure)	52,200	1.45	1,65,000	1.65
Sales	2,52,000	7.00	5,00,000	5.00

Working Notes:

1) **Allocation of Material Cost**

Suppose Product 'B' per unit material cost is x

Then, Product 'A' per unit material cost is 2x

$$\therefore 40,000 (2x) + 1,20,000 (x) = ₹2,00,000$$

$$80,000x + 1,20,000x = ₹2,00,000$$

$$2,00,000x = ₹2,00,000$$

$$x = \frac{2,00,000}{2,00,000} = ₹1$$

Product 'B' per unit material cost = ₹1

∴ Product 'A' per unit material cost = $1 \times 2 = ₹2$ per unit

2) Allocation of Direct Wages

Direct wages ₹1,12,000. Let wages for Product 'A' be x and for Product 'B' be 60% of x

Therefore,

$$\therefore 40,000x + (1,20,000 \times 60\% x) = 1,12,000$$

$$40,000x + 72,000x = 1,12,000$$

$$1,12,000x = 1,12,000$$

$$x = \frac{1,12,000}{1,12,000} = ₹1 \text{ per unit.}$$

∴ Product 'A' Labour charges = ₹1 per unit.

Product 'B' Labour charges = $1 \times 60\% = ₹0.60$ per unit.

Total Wages = 1,12,000

$$\text{Product 'A' } (40,000 \times 1) = ₹40,000$$

$$\text{Product 'B' } (1,20,000 \times 0.60) = ₹72,000$$

3) Closing Stock = (Unit Produced – Unit Sold) × Per Unit of Cost of Production

$$\text{Closing Stock of Product A} = (40,000 - 36,000) \times 5.30 = ₹21,200$$

$$\text{Closing Stock of Product B} = (1,20,000 - 1,00,000) \times 3.10 = ₹62,000$$

4) Selling Price = Unit Sold × Per Unit of Selling Cost

$$\text{Selling Price of Product A} = 36,000 \times ₹7 = ₹2,52,000$$

$$\text{Selling Price of Product B} = 100,000 \times ₹5 = ₹5,00,000$$

2.2.6. Treatment of Stock

Various type of stocks such as raw material, work-in-progress and finished goods.

- 1) **Stock of Raw Materials:** It requires information about the opening stock, purchase and closing stock of raw material. Following format may be used for calculating raw material consumed.

Particulars	₹
Opening Stock of Raw Materials	xxx
Add: Purchases of Raw Materials	xxx
	xxx
Less: Closing Stock of Raw Materials	xxx
Cost of Raw Materials Consumed	xxx

- 2) **Stock of Work-in-Progress:** Work-in-Progress are the units which have been partly worked on but are not finished yet. Work-in-Progress may be valued at prime cost or works cost basis. However, in most of the cases, works cost basis is preferred. Following format is used for the purpose of adjusting opening and closing stock if it has been valued at works or factory costs.

Particulars	₹
Prime Cost	
Add: Factory Overheads Incurred	xxx
Add: Work-in-Progress (Beginning)	xxx
	xxx
Less: Work-in-Progress (Closing)	xxx
Factory or Manufacturing or Works Cost	xxx

- 3) **Stock of Finished Goods:** Cost of goods sold may be calculated as below if opening and closing stock of finished goods is provided:

Particulars	₹
Cost of Production	xxx
Add: Opening Stock of Finished Goods	xxx
	xxx
Less: Closing Stock of Finished Goods	xxx
Cost of Goods Sold	xxx

Example 8: In a factory 20,000 units of product 'A' were manufactured in the month of March 2018. From the following figures obtained from the costing records. Prepare a cost sheet showing cost per unit.

Particulars	₹
Opening stock	5,000
Raw materials	55,000
Closing stock of finished goods	1,000
Closing stock of raw materials	10,000
Direct wages	25,000
Factory overhead	40,000
Office overhead	20,000
Material returned to seller	4,000

Solution:

Cost Sheet
(For March 2018)

Particulars	Total Cost (20,000 Units) (₹)	Cost per Unit (₹)
Opening Stock	5,000	
Add: Purchases of Raw Materials	55,000	
	60,000	
Less: Closing Stock of Raw Material	10,000	
	50,000	
Add: Direct Wages	25,000	
Prime Cost	75,000	3.75
Factory Overhead	40,000	2.00
Factory Cost/Works Cost	1,15,000	5.75
Office Overhead	20,000	1.00
	1,35,000	6.75
Less: Closing Stock of Finished Goods	1,000	0.05
Cost of Production	1,34,000	6.7
Less: Material Returned to Seller	4,000	0.2
Cost of Goods Sold/Cost of Sales	1,30,000	6.5

Example 9: Following information is collected from the costing records of a factory. Prepare Statement of Cost:

Particulars	₹
Sales	4,29,000
Direct Wages	72,600
Indirect Wages	5,940
Rent of Office Building	11,880
Rent of Factory Building	19,800
Depreciation on Furniture	7,960
Depreciation on Machinery	6,600

Carriage Inward	3,360
Carriage Outward	1,320
Advertisement Expenses	7,920
Salary of Office Staff	19,600
Sale Commission	9,200
Motive Power	11,550
Dividend Paid	40,000
Direct Expenses	5,610
Work in Progress (1-1-2019)	26,730
Work in Progress (31-3-2019)	14,520
Stock of Raw Material (1-1-2019)	52,800
Stock of Raw Material (31-3-2019)	23,100
Stock of Finished Goods (1-1-2019)	14,850
Stock of Finished Goods (31-3-2019)	19,140
Purchase of Raw Material (per month)	99,400

Solution:

Statement of Cost	
Particulars	Total Cost (₹)
Direct Material	
Add: Opening Stock of Raw Material	52,800
Purchase of Raw Material (99,400 × 3 month)	2,98,200
Carriage Inward	3,360
Less: Closing Stock of Raw Material	23,100
Direct Material Consumed	3,31,260
Add: Direct Wages	72,600
Direct Expenses	5,610
Prime Cost	4,09,470
Add: Work/Factory Overhead:	
Indirect Wages	5,940
Rent of Factory Building	19,800
Depreciation on Machinery	6,600
Motive Power	11,550
Factory Cost	43,890
Add: Opening Stock of Work-in-Progress	26,730
Less: Closing Stock of Work-in-Progress	14,520
Factory Overhead Cost/Work Cost	56,100
Add: Office and Administration Overheads:	
Depreciation on Furniture	7,960
Rent of Office Building	11,880
Salary of Office Staff	19,600
Office Cost/Cost of Production	5,05,010
Add: Opening Stock of Finished Goods	14,850
Less: Closing Stock of Finished Goods	19,140
Cost of Goods Sold	5,00,720
Add: Selling and Distribution Overheads:	
Carriage Outward	1,320
Advertisement Expenses	7,920
Sale Commission	9,200
Cost of Sales	5,19,160
Less: Loss (Balancing Figure)	90,160
Sales	4,29,000

Note: Dividend paid is excluded from cost sheet.

Example 10: The following figures have been taken from the Financial account of a manufacturing firm for the first year of its operations:

Particulars	₹
Direct material consumption	5,60,000
Direct wages	3,00,000
Factory overheads	1,60,000
Administrative overheads	70,000
Selling and distribution overheads	96,000
Bad debts	8,000
Preliminary expenses written off	4,000
Legal charges	1,000
Dividends received	10,000
Interest received on deposits	2,000
Sales (12,000 units)	12,00,000
Closing Stock:	
Finished goods (1000 units)	32,000
Work-in-progress	24,000

The cost accounts for the same period reveal that factory overheads are recovered at 20% on prime cost. Administration overheads are recovered at 7% on factory cost. Selling and distribution overheads are recovered at ₹8 per unit sold. Finished goods are valued at Production Cost. Prepare the Cost Sheet.

Solution:

Statement of Cost/Cost Sheet	
Particulars	Total Cost (₹)
Direct Material	5,60,000
Direct Wages	3,00,000
Prime Cost	8,60,000
Add: Work/Factory Overhead (8,60,000 × 20%)	1,72,000
Less: Closing Stock of Work-in-Progress	24,000
Factory/Work Cost	10,08,000
Add: Office and Administration Overhead (10,08,000 × 7%)	70,560
Cost of Production	10,78,560
Less: Closing Stock of Finished Goods	82,966
Cost of Goods Sold	9,95,594
Add: Selling and Distribution Overhead: Selling Expenses (12,000 × 8)	96,000
Total Cost	10,91,594
Profit	1,08,406
Sales	12,00,000

Working Note:

$$\begin{aligned}
 \text{Closing Stock of Finished Goods} &= \frac{\text{Cost of Production}}{\text{Total Units}} \times 1000 \text{ units} \\
 &= \frac{10,78,560}{(12,000 + 1000)} \times 1,000 \\
 &= \frac{10,78,560}{13,000} \times 1,000 = ₹82,966
 \end{aligned}$$

Example 11: The following figures are extracted from the cost books of Ashoka Company Ltd. for the year ended 31st March, 2019. Prepare a cost statement.

Particulars	₹
Stock on 1 st April, 2018:	
Raw materials	72,000
Work-in-progress	40,000
Finished goods (1,000 units)	40,000
Stock on 31 st March, 2019:	
Raw materials	55,600
Work-in-progress	50,000
Finished goods (2,000 units)	?
Purchase of raw materials	3,10,000
Direct wages	2,30,000
Indirect wages	20,000
Rent, Rates and Insurance (2/3 factory, 1/3 office)	66,000
Carriage Inwards	8,600
Salaries (2/4 factory, 1/4 office, 1/4 selling department)	80,000
General Expenses	6,250
Manager's Salary (2/3 factory, 1/3 office)	24,000
Carriage Outwards	8,000
Electricity (50% factory, 25% office, 25% selling department)	25,000
Sales	9,75,000

Production for the period is 16,000 units, selling and distribution expenses ₹4 per unit sold.

Solution:

Cost Sheet
(For the year ending 31st March, 2019)

Particulars	Total Cost (₹)
Opening Stock of Raw Material	72,000
Add: Purchase of Raw Material	3,10,000
Carriage Inwards	8,600
Less: Closing Stock of Raw Material	55,600
Direct Material Consumed	3,35,000
Add: Direct Wages	2,30,000
Prime Cost	5,65,000
Add: Factory Overheads:	
Indirect Wages	20,000
Rent, Rates and Insurance (2/3)	44,000
Salaries (2/4)	40,000
Manager's Salary (2/3)	16,000
Electricity (50%)	12,500
Factory Cost	6,97,500
Add: Opening Stock of Work-in-Progress	40,000
Less: Closing Stock of Work-in-Progress	50,000
Factory Overhead Cost/Work Cost	6,87,500
Add: Office and Administration Overhead:	
Rent, Rates, and Insurance (1/3)	22,000
Salaries (1/4)	20,000
General Expenses	6,250
Manager's Salary (1/3)	8,000
Electricity (25%)	6,250
Office Cost/Cost of Production	7,50,000

Add: Opening Stock of Finished Goods	40,000
Less: Closing Stock of Finished Goods	88,235
Cost of Goods Sold	7,01,765
Add: Selling and Distribution Overheads:	
Carriage Outward	8,000
Selling and Distribution Expenses (16,000 × 4)	64,000
Salaries (1/4)	20,000
Electricity (25%)	6,250
Total Cost	8,00,015
Add: Profit (Balancing figure)	1,74,985
Sales	9,75,000

Working Note:

$$\begin{aligned}\text{Closing Stock of Finished Goods} &= \frac{\text{Cost of Production}}{\text{Total Units}} \times \text{Units of Closing Stock of Finished Goods} \\ &= \frac{7,50,000}{18,000 - 1,000} \times 2,000 = ₹88,235\end{aligned}$$

$$\begin{aligned}\text{Units Produced} &= \text{Units Sold} + \text{Closing Stock of Finished Goods} - \text{Opening Stock of Finished Goods} \\ &= 16,000 + 2,000 - 1,000 \\ &= 17,000 \text{ units}\end{aligned}$$

Example 12: Prepare a statement of cost from the following trading and profit and loss account for the year ending 31st December, 2017.

Particulars	₹	Particulars	₹
To Opening Stock:		By Sales	2,50,000
Materials	13,000	By Closing Stock:	
Finished Goods	50,000	Materials	30,000
Purchase of Material	1,50,000	Finished Goods	60,000
To Direct Labour	40,000		
To Cost of Moulds	4,000		
To Salary of Factory Workers	2,000		
To Gross Profit c/d	81,000		
	3,40,000		3,40,000
To Salaries:		By Gross Profit b/d	81,000
Office	10,000	By Interest from Bank	1,000
Selling	8,000	By Dividend Received	500
To Insurance:		By Rent Received	1,500
Office Premises	2,000		
Godown	1,000		
To Directors Fees	1,500		
To Telephone Charges	1,000		
To Showroom Expenses	1,500		
To Delivery Vans Expenses	2,000		
To Preliminary Expenses	3,000		
To Interest on Debentures	800		
To Market Research Expenses	900		
To Underwriting Commission	900		
To Depreciation on Machinery	1,000		
To Net Profit c/d	50,400		
	84,000		84,000

Solution:

Statement of Cost
(For the year ending 31st December, 2017)

Particulars		Total Cost (₹)
Direct Material:		
Raw-Materials Purchased	1,50,000	
Opening Stock of Raw-Materials	13,000	
	1,63,000	
Less: Closing Stock of Raw-Materials	30,000	1,33,000
Direct Labour		40,000
Prime Cost		1,73,000
Add: Factory Overheads		
Cost of Moulds	4,000	
Salary of Factory Workers	2,000	
Depreciation on Machinery	1,000	7,000
Factory Cost		1,80,000
Add: Office & Administration Overheads		
Salary	10,000	
Insurance (Office Premises)	2,000	
Director's Fee	1,500	
Telephone Charges	1,000	14,500
Cost of Production		1,94,500
Add: Opening Stock of Finished Goods		50,000
Less: Closing Stock of Finished Goods		60,000
Cost of Production		1,84,500
Add: Selling & Distribution Overheads		
Salaries	8,000	
Insurance (Godown)	1,000	
Showroom Expenses	1,500	
Delivery Vans Expenses	2,000	
Market Research Expenses	900	13,400
Cost of Sales		1,97,900
Profit		52,100
Sales		2,50,000

Example 13: The following information has been obtained from the records of Arpita Co. Ltd., for the year ended 31-3-2018.

Particulars	₹
Stock on 1-4-2017:	
Raw Materials	40,000
Work-in-Progress	16,000
Finished Goods	70,000
Stock on 31-3-2018:	
Raw Materials	30,000
Work-in-Progress	20,000
Finished Goods	60,000
Productive Wages	2,50,000
Depreciation on Machinery	46,000
Direct Chargeable Expenses	32,000
Factory Rent	50,000
Director's Fees	20,000
Selling Overheads	25,000
General Expenses	15,000
Printing and Stationery	10,000
Sales	10,00,000
Underwriting Commission	20,000
Purchases of Raw Materials	5,00,000



Prepare of Statement of Cost showing:

- 1) Cost of Materials Consumed
- 2) Prime Cost
- 3) Factory Cost
- 4) Cost of Production
- 5) Cost of Goods Sold
- 6) Cost of Sales
- 7) Profit

Solution:

Statement of Cost
(For the year 31st March 2018)

Particulars	₹
Opening Stock of Raw Materials	40,000
Add: Purchase of Raw Materials	5,00,000
	5,40,000
Less: Closing Stock of Raw Materials	30,000
Cost of Material Consumed	5,10,000
Add: Production Overheads;	
Productive Wages	2,50,000
Direct Chargeable Expenses	32,000
	2,82,000
Prime Cost	7,92,000
Factory Overheads:	
Factory Rent	50,000
Depreciation on Machinery	46,000
	96,000
Add: Opening Stock of Work in Progress	16,000
	1,12,000
Less: Closing Stock of Work in Progress	20,000
	92,000
Factory Cost	8,84,000
Add: Office and Administrative Overheads	
Director's Fees	20,000
General Expenses	15,000
Printing and Stationery	10,000
	45,000
Cost of Production	9,29,000
Add: Opening Stock of Finished Goods	70,000
Less: Closing Stock of Finished Goods	(60,000)
Cost of Goods Sold	9,39,000
Add: Selling and Distribution Overheads	25,000
Cost of Sales	9,64,000
Profit (balancing figure)	36,000
Sales	10,00,000

Example 14: Half yearly information of Commodity 'X' has been obtained as on 31st Dec. 2017.

Particulars	₹	Particulars	₹
Purchases of Raw Materials	1,40,000	Stock (31st December 2017):	
Works Overheads	52,000	Raw Materials	25,600
Direct Wages	1,20,000	Finished Products (2,000 tons)	44,000
Carriage on Purchases	2,400	Work-in-Progress (1 st July 2017)	4,500
Stock (1st July, 2017):		Work-in-Progress (31 st Dec. 2017)	18,000
Raw Materials	30,000	Sales—Finished Products	4,00,000
Finished Product (1,000 tons)	18,000		

Selling and distribution overheads are Re.1 per ton sold. 18,000 tons of commodity were produced during the period.

You are required to ascertain (i) Cost of materials consumed, (ii) Cost of production, (iii) Cost of goods sold (iv) Cost of sales, (v) Net profit for the period, and (vi) Net profit per ton of the commodity:

Solution:

Statement of Cost and Profit		
Particulars	Units (Tons)	₹
Opening Stock of Raw Materials		30,000
Purchases of Raw materials		1,40,000
Carriage on Purchases		2,400
		1,72,400
Less: Closing Stock of Raw Materials		25,600
Cost of Materials Consumed		1,46,800
Direct Wages		1,20,000
Prime Cost		2,66,800
Works Overheads		52,000
Add: Opening Stock of Work-in-Progress		4,500
		3,23,300
Less: Closing Stock of Work-in-Progress		18,000
Cost of Production	18,000	3,05,300
Add: Opening Stock of Finished Products	1,000	18,000
	19,000	3,23,300
Less: Closing Stock of Finished Products	2,000	44,000
Cost of Goods Sold	17,000	2,79,300
Add: Selling and Distribution Overheads on 17,000 tones @ Re.1 per ton		17,000
Cost of Sales		2,96,300
Net Profit		1,03,700
Sales		4,00,000
Net profit per ton = $\frac{₹1,03,700}{17,000} = ₹6.1$		

Example 15: The AIW Manufacturer Ltd. produced and sold 1,700 waterproof equipments in year 2016. The summarised Trading and Profit and Loss Account is given below:

Particulars	₹	Particulars	₹
To Cost of Material	1,28,000	By Sales	6,40,000
To Direct Wages	1,92,000		
To Manufacturing Expenses	80,000		
To Gross Profit c/d	2,40,000		
	6,40,000		6,40,000
To Office Salaries	96,000	By Gross Profit b/d	2,40,000
To Rent, Rates and Taxes	16,000		
To Selling Expenses	32,000		
To General Expenses	48,000		
To Net Profit	48,000		
	2,40,000		2,40,000

For the next year 2017, it has been estimated that:

- 1) Output and Sales will be 2,000 waterproof equipments.
- 2) Price of materials will rise by 25% on previous year's level.
- 3) Wages will rise by 12.5%.
- 4) Manufacturing expenses will rise in proportion to the combined cost of material and wages.
- 5) Selling price per unit will remain unaffected by the rise in output.
- 6) Other expenses will remain unaffected by the rise in output.

Prepare a Cost Sheet showing the price at which the waterproof equipments would be marketed so as to show a profit at 12% on the selling price per unit.

Solution:

Cost Sheet
(For the year 2017)

Particulars	(Output 2000 Units)	
	Total Cost (₹)	Cost Per Unit (₹)
Cost of Materials (25% Increases)	1,88,235	94.12
Direct Wages (12.5% Increases)	2,54,117	127.06
Prime Cost	4,42,352	221.18
Add: Manufacturing Expenses	1,10,588	55.29
Factory Cost	5,52,940	276.47
Add: Office and Administration Overheads:		
Office Salaries	96,000	48
Rent, Rates and Taxes	16,000	8
General Expenses	48,000	24
Cost of Production	7,12,940	356.47
Add: Selling and Distribution Overheads:		
Selling Expenses	37,647	18.82
Cost of Sales	7,50,587	375.30
Profit (12% on Selling Price)	1,02,353	51.18
Selling Price (to be Quoted)	8,52,940	426.48

Working Notes:

1) Cost of Material = $\frac{1,28,000}{1,700} \times 2,000 = ₹1,50,588$ (approx.)

Increased by 25% = $1,50,588 + \frac{25}{100} \times 1,50,588 = ₹1,88,235$

2) Direct Wages = $\frac{1,92,000}{1,700} \times 2,000 = ₹2,25,882$

Increased by 12.5% = $2,25,882 + \frac{12.5}{100} \times 2,25,882 = ₹2,54,117$ (approx.)

3) Manufacturing Expenses = $\frac{80,000}{3,20,000} \times 4,42,352 = ₹1,10,588$

4) Selling Expenses = $\frac{32,000}{1,700} \times 2,000 = ₹37,647$

5) Profit = $7,50,587 \times \frac{12\%}{88\%} = ₹1,02,353$ (approx.)

Example 16: Kiwik Shoe Polish Company manufacture black and brown polish in one standard size of Tin retaining at ₹1.08 and ₹1.20 respectively. Following data are supplied to you:

Direct Material		
Polish		₹ 7,38,000
Tins		₹ 2,88,000
Direct Wages		₹ 2,44,800
Production Overheads		₹ 3,67,200
Admin. and Selling Overheads		₹ 1,22,400
Sales for the year were: Black-14,40,000 and Brown 6,00,000 tins. The Opening and Closing Stocks were:		
	Black	Brown
Opening Stock (in units)	48,000	1,60,000
Closing Stock (in units)	1,08,000	60,000

The opening stock of Black and Brown polish is valued at production cost of ₹ 0.804 and ₹ 0.864 per tin. The cost of raw material for Brown polish is 10% higher than that for Black, but there is no different in the cost of tins. Direct wages for Brown are 8% higher than those for Black polish. And production overheads are considered to vary with direct wages. Admin. and Selling overheads are absorbed at uniform rate per tin of polish sold. Prepare a statement to show the cost and profit per tin of polish.

Solution:

Statement of Cost of Shoe-Polishes

Particulars	Black Polish (15,00,000 tins)		Brown Polish (5,00,000 tins)	
	Total (₹)	Per Tin (₹)	Total (₹)	Per Tin (₹)
Direct Material:				
Polish	5,40,000	0.36	1,98,000	0.396
Tins	2,16,000	0.144	72,000	0.144
Direct Wages	1,80,000	0.12	64,800	0.1296
Prime Cost	9,36,000	0.624	3,34,800	0.6696
Add: Production Overhead	2,70,000	0.18	97,200	0.1944
Cost of Production	12,06,000	0.804	4,32,000	0.864
Add: Opening Stock	38,592		1,38,240	
	12,44,592		5,70,240	
Less: Closing Stock	86,832		51,840	
Cost of Goods Sold	11,57,760		5,18,400	
Add: Administration & Selling Overhead	86,400	.06	36,000	.06
Cost of Sales	12,44,160	0.864	5,54,400	0.924
		(12,44,160/14,40,000)		(5,54,400/6,00,000)
Add: Profit (Balancing Figure)	3,11,040	0.216	1,65,600	0.276
Sales	15,55,200	1.08	7,20,000	1.20
	(14,40,000 × 1.08)		(6,00,000 × 1.20)	

Working Note:

- Total Production of Black Polish = Sales + Closing Stock – Opening Stock
 $= 14,40,000 + 1,08,000 - 48,000 = 15,00,000$ Tins
 Total Production of Brown Polish = Sales + Closing Stock – Opening Stock
 $= 6,00,000 + 60,000 - 1,60,000 = 5,00,000$ Tins
- Direct Material in Both Polishes:
 Suppose Direct Material in Black Polish = ₹x per tin
 In Brown Polish Direct Material = $\frac{11x}{10}$ per tin
 $15,00,000x + 5,00,000\left(\frac{11x}{10}\right) = 7,38,000$
 $1.1x = ₹0.396$
 $x = ₹0.36$
 Placing the value of x in Brown Polish Direct Material = $\frac{11 \times 0.36}{10} = 0.396$ per tin
 The cost of tins ₹2,88,000 will be allocated between Black and Brown Polish in the ratio of tins manufactured i.e., 15,00,000 : 5,00,000.
- Direct Labour in Both Polishes:
 Suppose wages in Black Polish = y per tin
 Therefore, in Brown Polish = $\frac{108}{100}y = \frac{27}{25}y$ per tin
 $15,00,000y + 5,00,000\frac{27}{25}y = 2,44,800$

$$15,00,000y + 5,40,000y = 2,44,800$$

$$20,40,000y = 2,44,800$$

$$y = \frac{2,44,800}{20,40,000} = 0.12$$

Placing the value of y in Brown Polish = $\frac{27}{25} \times 0.12 = 0.1296$ per tin

- 4) Production overheads is based on Direct Wages:

$$\text{Black} = \frac{3,67,200 \times 1,80,000}{2,44,800} = ₹ 2,70,000$$

$$\text{Brown} = \frac{3,67,200 \times 64,800}{2,44,800} = ₹ 97,200$$

- 5) Opening Stock of Black Polish = $48,000 \times 0.804 = ₹ 38,592$
Opening Stock of Brown Polish = $1,60,000 \times 0.864 = ₹ 1,38,240$

$$\text{Closing Stock of Black Polish} = 1,08,000 \times 0.804 = ₹ 86,832$$

$$\text{Closing Stock of Brown Polish} = 60,000 \times 0.864 = ₹ 51,840$$

- 6) Administration and Selling Overheads = $\frac{1,22,400}{20,40,000} = ₹ 0.06$ per tin of polish sold.

- 7) The administration and selling overheads can be allocated between Black and Brown Polish in the ratio of tins sold, i.e., 1,44,000 : 60,000 or 12:5 since such expenses are absorbed at a uniform rate per tin sold of Black and Brown Polish.

$$\text{Thus, Black Polish} = 1,22,400 \times \frac{12}{17} = ₹ 86,400$$

$$\text{Brown Polish} = 1,22,400 \times \frac{5}{17} = ₹ 36,000$$

2.2.7. Tender/Quotations

Tender or quotation refers to the price at which the goods are offered for sale by the supplier. Proper care must be taken to calculate tender price. It should be calculated keeping in mind following important points:

- 1) The cost sheet of the product to be sold is used for determining the cost of production. In case of any change in material or labour costs, such changes should be taken cognizance of, while calculating the price.
- 2) The cost is influenced by the quantity and quality of the product demanded. Costs may be fixed, variable and semi-variable. Since, fixed cost per unit decreases with the increase in production, it is possible to quote lower price for bigger orders.
- 3) Even a small difference in price per unit can make a big difference for the entire order. For example, a quotation with even a rupee per unit lower will lead to a loss of ₹1 lac on a lot of 1 lac units.
- 4) It is also important to consider the market condition carefully while calculating the quotation price.
- 5) Tender price consists of total cost plus desired profit margin. Total cost includes direct material, direct labour and overhead costs.
- 6) Tender price can be determined using a statement of costs. All changes in costs should be taken into account.

Example 17: Calculate tender price from the following – Total cost of tender = ₹80,000; desired profit on tender prices is 20%.

Solution: Let, assume Tender Price as ₹100

Desired Profit = 20% on Tender Price = ₹20

Total Cost of Tender = $100 - 20 = ₹ 80$

The Proportionate % of Desired Profit on Total Cost of Tender = $\frac{20}{80} \times 100 = 25\%$

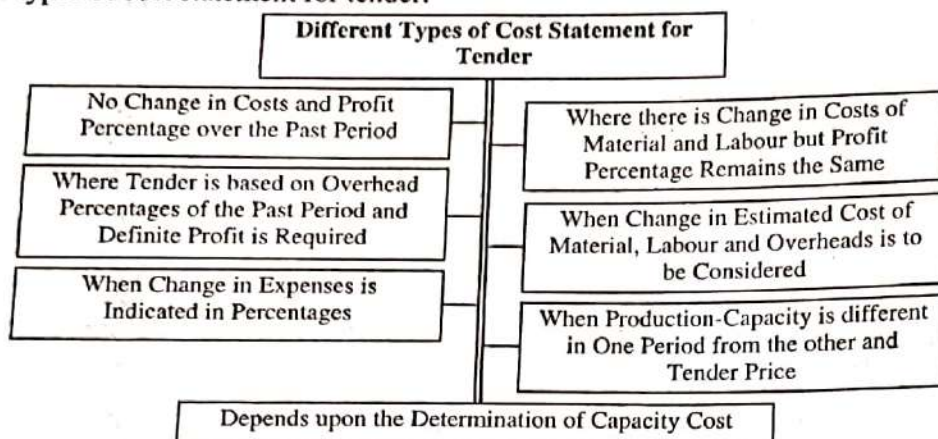
Desired Profit = 20% on Tender Price or 25% on Total Cost of Tender = $80,000 \times 25/100 = ₹20,000$

Therefore,

Tender Price = Total Cost of Tender + Desired Profit = $80,000 + 20,000 = ₹100,000$

2.2.7.1. Different Types of Cost Statement for Tender

Following are the types of cost statement for tender:



1) No Change in Costs and Profit Percentage over the Past Period

Example 18: The following figures relate to the costing of a certain type of cover for a period of three months:

Particulars	₹
Stock of materials, 1st January	6,800
Stock of materials, 1st March	5,200
Factory wages	76,000
Materials purchased	54,500
Sales	1,25,500
Indirect expenses	16,000
Completed stock, 31st January	Nil
Completed stock, 31st March	32,600

The number of covers manufactured during three months was 3,400 and the price is to be quoted for 825 covers in order to realize the same percentage of profits as for the period under review, assuming no alteration in rates of wages and cost of materials. Prepare a statement of cost for the manufacture of 3,400 sheets and quotation for 825 covers.

Solution:

Statement of Cost (For the period ending)

Particulars	Total Cost (3,400 Covers) (₹)	Cost Per Cover (₹)
Opening Stock	6,800	
Purchases of Materials	54,500	
	61,300	
Less: Closing Stock of Materials	5,200	
Materials Consumed	56,100	16.50
Factory Wages	76,000	22.35
Prime Cost	1,32,100	38.85
Indirect Expenses	16,000	4.71
Cost of Production	1,48,100	43.56
Less: Closing Stock of Finished Goods	32,600	9.59
Cost of Sales	1,15,500	33.97
Profit (Balancing Figure)	10,000	2.94
Sales	1,25,500	36.91

Quotation for 825 Covers

Particulars	Total Cost (₹)	Cost per Cover (₹)
Cost of Production	35,937	43.56
Add: Profit @ 8.66% (on cost)	3,112	3.77
Selling Price	39,049	47.33

Working Notes:

- % of Profit on cost of sales $(10,000 \times 100/1,15,500) = 8.66\%$
- Profit @ 8.66% on cost $(8.66 \times 35,937/100) = ₹3,112$

2) Where there is Change in Costs of Material and Labour but Profit Percentage Remains the Same

Example 19: From the following data, prepare a Cost and Production Statement of Toys Manufacturing Co., for the year 2017:

Particulars	₹
Stock of materials on 1-1-2017	17,500
Stock of materials on 31-12-2017	2,450
Purchases of materials	26,250
Factory wages	47,500
Factory expenses	8,750
Establishment expenses	5,000
Finished stock in hand on 1-1-2017	Nil
Finished stock in hand on 31-12-2017	17,500
Sales	94,500

The number of toys manufactured during the year 2017 was 2,000.

For the year 2018, the company has 500 toys, with the increased in material cost by 15% and factory labour by 10%.

Prepare:

- Cost statement for 2017;
- Statement showing profit for 2017; and
- Statement showing tender price, assuming that the cost per unit of overhead charges will be the same as in the previous year.

Solution:

Statement Showing Cost

(For the year ending 2017)

Particulars	Total Cost (2,000 Toys) (₹)	Cost Per Toy (₹)
Opening Stock of Materials	17,500	
Purchase of Materials	26,250	
	43,750	
Less: Closing Stock	2,450	
Materials Consumed	41,300	20.65
Factory Wages	47,500	23.75
Prime Cost	88,800	44.40
Factory Expenses	8,750	4.37
Works Cost	97,550	48.77
Establishment Expenses	5,000	2.50
Cost of Production	1,02,550	51.27

Statement Showing Profit

Particulars	₹
Cost of Production	1,02,550
Add: Opening stock of Finished stock	-
Less: Closing stock of Finished stock	17,500
Cost of Sales	85,050
Profit (Balancing Figure)	9,450
Selling Price	94,500

Statement Showing Tender Price

Particulars	Total Cost (500 Toys) (₹)	Cost Per Toy (₹)
Materials Consumed	11,874	23.74
Factory Wages	13,063	26.12
Prime Cost	24,937	49.87
Factory Expenses	2,188	4.37
Factory Cost	27,125	54.25
Establishment Expenses	1,250	2.50
Total Cost	28,375	56.75
Profit (10% on Selling Price)	3,153	6.30
Selling Price	31,528	63.05

Working Notes:

On the Cost of 500 Toys	
Particulars	₹
Materials Consumed	20.65
Add: 15% increase	3.09
Total Materials Consumed	23.74
Factory Wages	23.75
Add: 10% increase	2.37
Total Factory Wages	26.12
Profit (10% on Selling Price)	(10/100 × 31,528) = 3,153

- 3) **Where Tender is based on Overhead Percentages of the Past Period and Definite Profit is Required**
Example 20: The accounts of the Dhaval Construction Ltd. show the following details for the year ending 31st December, 2017:

Particulars	₹
Materials Consumed	8,75,000
Labour wages directly chargeable	6,75,000
Works Overhead Expenses	1,85,625
Establishment and General Expenses	1,16,250

From the following information:

- Show the works cost and total cost, the percentage that the works overhead expenses bears to the manual and machine labour wages and percentage that the establishment and general expenses bear to the works cost.
- What price should the company quote to manufacture a machine which, will require an expenditure of ₹3,750 in material and ₹3,000 in wages so that it will yield a profit of 25% on total cost or 20% on selling price?

Solution:

Cost Sheet Dhaval Construction Ltd.	
Particulars	₹
Materials Consumed	8,75,000
Labour Wages (Direct)	6,75,000
Prime Cost	15,50,000
Works Overhead Expenses	1,85,625
Works Cost	17,35,625
Establishment and General Expenses	1,16,250
Total Cost	18,51,875

Estimated Cost Sheet	
Particulars	₹
Material	3,750
Labour Wages (Direct)	3,000
Prime Cost	6,750
Works Overhead (27.5% on Direct Labour Wages)	825
Works Cost	7,575
Establishment and General Expenses (6.7% on Works Cost)	507.52
Total Cost	8,082.52
Profit (25% on Total Cost)	2,020.63
Selling Price	10,103.15

Working Note:

i) % of Works Overhead Expenses of Direct Labour Wages

$$= \frac{1,85,625}{6,75,000} \times 100 = 27.5\%$$

ii) % of Establishment and General Expenses on Works Cost

$$= \frac{1,16,250}{17,35,625} \times 100 = 6.7\%$$

4) When Change in Estimated Cost of Material, Labour and Overheads is to be Considered

Example 21: Following are the particulars for the production of 4,000 machines of Tarun Furniture Co. Ltd. for the year 2017:

Particulars	₹
Cost of Materials	3,20,000
Wages	4,80,000
Manufacturing Expenses	2,00,000
Depreciation	2,40,000
Rent, Rates and Insurance	40,000
Selling Expenses	1,20,000
General Expenses	80,000
Sales	16,00,000

The Company plans to manufacture 6,000 furnitures during 2018. You are required to submit a statement showing the price at which furnitures would be sold so as to show a profit of 10% on the selling price.

Additional Information:

- Price of materials is expected to rise by 40%.
- Wage rates are expected to show an increase of 10%.
- Manufacturing expenses will rise by 50% in proportion to the combined cost of materials and wages.
- Selling expenses per unit will remain the same.
- Other expenses will remain unaffected by the rise in output.

Solution:

Statement of Cost		
Particulars	Total Cost (4,000 Furnitures) (₹)	Cost Per Furniture (₹)
Cost of Materials	3,20,000	80
Wages	4,80,000	120
Prime Cost	8,00,000	200
Manufacturing Expenses	2,00,000	50
Works Cost	10,00,000	250
Depreciation	2,40,000	60
Rent, Rates and Insurance	40,000	10
General Expenses (Office)	80,000	20

Cost of Production	13,60,000	340
Selling Expenses	1,20,000	30
Cost of Sales	14,80,000	370
Profit (Balancing Figure)	1,20,000	30
Selling Price	16,00,000	400

Statement of Tender Price

Particulars	Total Cost (6,000 Furnitures) (₹)	Cost Per Furniture (₹)
Cost of Materials	6,72,000	112
Wages	7,92,000	132
Prime Cost	14,64,000	244
Manufacturing Expenses	7,32,000	122
Works Cost	21,96,000	366
Depreciation	2,40,000	40
Rent, Rates and Insurance	40,000	6.67
General Expenses (Office)	80,000	13.33
Cost of Production	25,56,000	426
Selling Expenses	1,80,000	30
Total Cost/ Cost of Sales	27,36,000	456
Profit (Balancing Figure)	3,04,000	50.67
Selling Price	30,40,000	506.67

Working Notes:

On the Cost of 6,000 Furnitures	
Particulars	₹
Materials	80
Add: 40% increase	32
Total Materials	112
Wages	120
Add: 10% increase	12
Total Wages	132
Manufacturing Expense (50% on Prime Cost) (50/100 × 14,64,000)	7,32,000
Profit (1/9 on Total Cost) (1/9 × 456)	50.67

5) When Change in Expenses is Indicated in Percentages

Example 22: A manufacturer with the sale of ₹2,000 incurred expenses in goods cost – Raw materials 15%; Wages 10%; Rent & Rates, etc., 10%; Fuel 5%; General Expenses 10%, now there has been an increase of 25% in Fuel, 15% in Material, 10% in Wages and 10% in Rent and Rates, etc.

Suggest the percentage he must add to the Selling Price in order to obtain the same profit. What would be the result of your calculations and how would you prove to him that they were correct?

Solution:

Cost Sheet		
Particulars	Cost Per Production (%)	Total Cost (₹)
Materials	15	300
Wages	10	200
Prime Cost	25	500
Rent and Rates	10	200
Fuel	5	100
Works Cost	40	800
General Expenses	10	200
Total Cost	50	1,000
Profit	50	1,000
Selling Price	100	2,000

Estimated Cost Sheet

Particulars	Cost Per Production (%)	Total Cost (₹)
Materials	17.25	351.75
Wages	11.00	222.00
Prime Cost	28.25	573.75
Rent and Rates	11.00	222.00
Fuel	6.25	106.25
Works Cost	45.50	902.00
General Expenses	10.00	200.00
Total Cost	55.50	1,102
Profit	27.75	551
Selling Price	83.25	1,653

Working Notes:

On the Estimated Cost Sheet

Particulars		Cost Per Production (%)	Total Cost (₹)
Materials	15	17.25	$(300 + 300 \times 17.25/100) = 351.75$
Add: 15% Increase $(15 \times 15/100)$	2.25		
Wages	10	11	$(200 + 200 \times 11/100) = 222$
Add: 10% Increase $(10 \times 10/100)$	1		
Rent and Rates	10	11	$(200 + 200 \times 11/100) = 222$
Add: 10% Increase $(10 \times 10/100)$	1		
Fuel	5	6.25	$(100 + 100 \times 6.25/100) = 106.25$
Add: 25% Increase $(5 \times 25/100)$	1.25		
Profit (50% on Sales or Cost)			$(50/100 \times 1,102) = 551$

6) When Production-Capacity is different in One Period from the other and Tender Price Depends upon the Determination of Capacity Cost:

Sometimes production differs from the level of normal capacity due to lack of demand for the products in the market, or due to non-availability of material and labour and vice-versa. This directly impacts the tender price of the production.

The following example shows production cost and tender price based on production capacity.

Example 23: The current capacity at factory is 2,40,000 units per annum. The estimated costs of production are as under:

Direct Material	₹6 per unit
Direct Labour	₹4 per unit (subject to a minimum of ₹24,000 per month)
Indirect Expenses:	
Fixed	₹3,20,000 per annum
Variable	₹4 per unit
Semi-Variable	₹1,20,000 per annum upto 50% capacity and an extra ₹40,000 for every 20% increase in capacity or a part thereof.

Each unit of raw material yields scrap which is sold at 40 paise. In 2017 the factory worked at 50% capacity for the first 3 months but it was expected to work at 80% capacity for the remaining 9 months. During the first 3 months, the selling price per unit was ₹24. What should be the price in the remaining 9 months to earn a total profit of ₹4,36,000?

Solution:**Cost Sheet**

Particulars	50% Capacity for first 3 Months 15,000 Units		80% Capacity for next 9 Months 72,000 Units		Total Cost of 87,000 Units	
	Per Unit (₹)	Total Cost (₹)	Per Unit (₹)	Total Cost (₹)	Per Unit (₹)	Total Cost (₹)
Direct Material	6	90,000	6	4,32,000	6	5,22,000
Less: Sale of Scrap	0.40	6,000	0.40	28,800	0.40	34,800
	5.60	84,000	5.60	4,03,200	5.60	4,87,200
Direct Labour	4.80	72,000	4	2,88,000	4.14	3,60,000
Prime Cost	10.40	1,56,000	9.60	6,91,200	9.74	8,47,200
Indirect Expenses:						
Fixed	5.34	80,000	3.34	2,40,000	3.68	3,20,000
Variable	4	60,000	4	2,88,000	4	3,48,000
Semi-Variable	2	30,000	2.36	1,70,000	2.30	2,00,000
Cost of Production	21.74	3,26,000	19.30	13,89,200	19.71	17,15,200
Profit	2.26	34,000	5.58	4,02,000	5.01	4,36,000
Selling Price	24	3,60,000	24.87	17,91,200	24.72	21,15,200

Notes:

- 1) Fixed (₹3,20,000) is divided in the ratio of 1:3
For 50% Capacity = $3,20,000 \times \frac{3}{12} = ₹80,000$
For 80% Capacity = $3,20,000 \times \frac{9}{12} = ₹2,40,000$
- 2) Semi-variable cost of 80% capacity has been ascertained as follows:

Particulars	₹
₹1,20,000 per annum for 9 months for 50%	90,000
₹40,000 for additional 20%	40,000
₹40,000 for additional 10%	40,000
	1,70,000

- 3) As additional ₹40,000 are not given per annum, the full amount of ₹40,000 has been taken and not proportionately for 9 months.
- 4) Profit for remaining 9 months = $4,36,000 - 34,000 = ₹4,02,000$

Example 24: The following particulars have been extracted from the account of Samsung Manufacturing Company, manufacturer of 36 Inch LCD T.V. for the year ended 31st March, 2017:

Particulars	₹
Opening Stock of Raw Materials	20,000
Purchase of Raw Materials	4,80,000
Carriage of Raw Materials	24,000
Direct Wages	2,80,000
Work Overheads: 7,840 Machine Hours, Machine Hour Rate ₹10 per Hour.	
Establishment and General charges	59,668
Closing Stock of Raw Materials	30,000

Find out the work cost and total cost. The percentage of work overhead bears to the wages and percentage that establishment charges bear to the work cost.

Work out what price the company should quoted for an LCD T.V., which it is estimated will require an expenditure of ₹22,000 in Raw Material and ₹16,000 in Wages, so that it would yield Profit 25% on Cost of Production.

Solution:

Cost Sheet
(for the year ended 31st March, 2017)

Particulars	Total Cost (₹)
Opening Stock of Raw Material	20,000
Add: Purchases of Raw Material	4,80,000
Carriage of Raw Material	24,000
Less: Closing Stock of Raw Material	(30,000)
Direct Material Consumed	4,94,000
Add: Direct Wages	2,80,000
Prime Cost	7,74,000
Work Overhead Expenses:	
Add: (Machine Hours × Machine Hour Rate) (7840 × 10)	78,400
Work Cost	8,52,400
Office Overhead:	
Add: Establishment and General Charges	59,668
Cost of Sales	9,12,068

Estimated Cost Sheet

Particulars	Total Cost (₹)
Raw Material	22,000
Direct Wages	16,000
Prime Cost	38,000
Add: Work Overhead (28% on Direct wages i.e., 16000)	4,480
Work Cost	42,480
Add: Office and Administration Overhead: Establishment and General Charges (7% on Work Cost i.e., 42,480)	2,973.6
Total Cost/Cost of Production	45,453.6
Add: Profit (25% on 45,453.6)	11,363.4
Selling Price	56,817

Working Note:

$$1) \text{ Work Overhead of Direct Wages} = \frac{\text{Work Expenses}}{\text{Direct Wages}} \times 100 = \frac{78,400}{2,80,000} \times 100 = 28\%$$

$$2) \text{ Establishment and General Expense on Work Cost} = \frac{\text{Establishment Expenses}}{\text{Work Cost}} \times 100 = \frac{59,668}{852400} \times 100 = 7\%$$

Example 25: V.D. Industries manufactures a product X. On 1st January, there were 5,000 units of finished product in stock. Other stocks on 1st January were as follows:

Work-in-progress ₹57,400

Raw Material ₹1,16,200

The information available from cost records for the year ended 31st December was:

Particulars	₹
Direct Material	9,06,900
Direct Labour	3,26,400
Freight on Material Purchased	55,700
Indirect Labour	1,21,600
Other Factory Overheads	3,17,300
Stock of Raw Materials (31 st December)	96,400
Work-in-Progress Stock (31 st December)	78,200
Sales (1,50,000 units)	30,00,000
Indirect Material	2,13,900

There are 15,000 units of finished stock in hand on 31st December.

You are required to prepare a statement of cost and profit for the year assuming that opening stock of finished goods is to be valued at the same cost per unit as the finished stock at the end of this period.

Solution:

Statement of Cost and Profit of Product X		
Particulars	₹	₹
Opening Stock of Raw Materials	1,16,200	
Add: Direct Materials	9,06,900	
Add: Freight on Raw Materials Purchased	55,700	
	10,78,800	
Less: Closing Stock of Raw Materials	96,400	
Cost of Materials Consumed	9,82,400	
Add: Direct Wages	3,26,400	
Prime Cost		13,08,800
Add: Factory Overheads:		
Indirect Materials	2,13,900	
Indirect Labour	1,21,600	
Other Factory Overheads	3,17,300	
	6,52,800	
Add: Opening Work-in-Progress	57,400	
	7,10,200	
Less: Closing Work-in-Progress	78,200	6,32,000
Factory Cost		19,40,800
Add: Opening Stock Finished Goods		60,650
		20,01,450
Less: Closing Stock of Finished Goods		1,81,950
Cost of Goods Sold		18,19,500
Profit (Balancing Figure)		11,80,500
Sales		30,00,000

Working Notes:

Units produced during the year are not given and therefore have been computed as follows:

$$\begin{aligned}
 \text{Sales} &= \text{Opening Stock} + \text{Units produced} - \text{Closing Stock} \\
 1,50,000 &= 5,000 + X - 15,000 \\
 1,50,000 - 5,000 + 15,000 &= X \\
 \text{Hence, } X &= 1,60,000 \text{ units}
 \end{aligned}$$

$$\begin{aligned}
 \text{Value of Closing Stock of Finished Goods} &= \frac{\text{Cost of Production}}{\text{Total Units}} \times \text{Units of Closing Stock of Finished Goods} \\
 &= \frac{19,40,800}{1,60,000} \times 15,000 = ₹1,81,950
 \end{aligned}$$

$$\begin{aligned}
 \text{Value of Opening Stock of Finished Goods} &= \frac{\text{Cost of Production}}{\text{Total Units}} \times \text{Units of Opening Stock of Finished Goods} \\
 &= \frac{19,40,800}{1,60,000} \times 5,000 = ₹60,650
 \end{aligned}$$

Example 26: Honda Scooters Ltd. manufactured 175 scooters in the year ending on 31st March, 2017 at a production cost of ₹33,46,875 which he sold @ ₹27,000 each. Analysis of cost is as follows:

Particulars	₹
Materials	14,35,000
Wages	16,62,500
Works overheads	2,49,375
Administrative overheads	2,67,750
Selling overheads	3,50,000

Honda Scooters intends to manufacture and sell 200 scooters in 2017-18 by reducing selling price by ₹1,000 per scooter. You are required to estimate per scooter profit he may earn in 2017-18 keep the following details in mind:

- Material cost will go up by ₹300 per scooter.
- Wages will go down by ₹400 per scooter.
- Percentage of works on cost to wages will remain the same as was in 2016-13.
- Administrative overheads will be reduced by ₹20 per scooter.
- Selling overheads per scooter will be reduced by 25%.

Solution: **Statement of Estimated Cost and Profit (for 200 Scooters)**
(for the year ended 31st March, 2018)

Particulars	Total Cost (₹)	Cost Per Scooter (₹)
Materials (8,500 × 200)	17,00,000	8,500
Wages (9,100 × 200)	18,20,000	9,100
Prime cost	35,20,000	17,600
Add: Work Overhead (15% on Wages)	2,73,000	1,365
Work Cost	37,93,000	18,965
Add: Administrative Overhead (1,510 × 200)	3,02,000	1,510
Cost of Production	40,95,000	20,475
Add: Selling and Distribution Overhead (1,500 × 200)	3,00,000	1,500
Cost of Sales	43,95,000	21,975
Profit (Balancing Figure)	8,05,000	4,025
Sales (₹26,000 × 200 Scooter)	52,00,000	26,000

Working Notes:

1) Materials (per scooter) = $\frac{14,35,000}{175 \text{ Unit}} = 8,200$

In year 2013-14 it is increased by ₹300

∴ Material (per scooter) = 8,200 + 300 = ₹8,500

2) Wages (per scooter) = $\frac{16,62,500}{175} = 9,500$

It is decreased by ₹400

∴ Wages (per scooter) = ₹9,500 – 400 = ₹9,100.

3) Administrative Overhead (per Scooter) = $\frac{2,67,750}{175} = ₹1,530$

1,530 decreased by ₹20

∴ Administrative overheads (per scooter) = 1,530 – 20 = ₹1,510

4) Selling Overheads (per scooter) = $\frac{3,50,000}{175} = ₹2,000$

It is decreased by 25%

∴ 2,000 – 2,000 × $\frac{25}{100}$ = 2,000 – 500

Selling Overhead (per scooter) = ₹1,500

5) Work overhead remain same as in 2016-17, i.e., 15% on wages.

6) Selling price reduced by ₹1,000 per scooter
∴ ₹27,000 – ₹1,000 = ₹26,000 per scooter

Example 27: A company has furnished the following information in relation to the production of 2,000 units of compact discs manufactured by it during 2017:

Particulars	₹
Cost of materials	2,00,000
Direct wages	90,000
Cost of power and consumable stores (20% fixed)	20,000
Factory indirect wages (40% fixed)	40,000
Cost of lighting in the factory (fixed)	20,000
Office expenses (fixed)	40,000
Selling expenses (70% variable)	60,000
Depreciation of plant under straight line method	10,000

The entire output was sold at ₹350 per unit.

For the year 2018, it is estimated that the production will be increased by 50% by utilizing the spare capacity and the rates for materials and direct wages will increase by 10% and 20% respectively. Prepare Cost sheet for the year 2017 showing the cost per unit and a statement showing estimated cost and profit for the year 2018, assuming that all the goods produced would be sold at a price of ₹340 per unit.

Solution:

Cost Sheet for 2017

(Production 2000 Units)

Particulars	Total (₹)	Fixed		Variable (₹)		Total (₹) (Per Unit)
		Total (₹)	Per Unit (₹)	Total (₹)	Per Unit (₹)	
Materials	2,00,000	—	—	2,00,000	100	100
Direct Wages	90,000	—	—	90,000	45	45
Prime Cost	2,90,000	—	—	2,90,000	145	145
Factory Overhead:						
Power and Consumable Stores	20,000	4,000	2	16,000	8	10
Factory Indirect Wages	40,000	16,000	8	24,000	12	20
Cost of Lighting	20,000	20,000	10	—	—	10
Depreciation of Plant	10,000	10,000	5	—	—	5
Factory Cost	3,80,000	50,000	25	3,30,000	165	190
Office Expenses	40,000	40,000	20	—	—	20
Cost of Production	4,20,000	90,000	45	3,30,000	165	210
Selling Expenses	60,000	18,000	9	42,000	21	30
Cost of Sales	4,80,000	1,08,000	54	3,72,000	186	240
Profit (Balancing figure)	2,20,000	—	—	—	—	110
Sales	7,00,000	—	—	—	—	350

Estimated Cost Sheet for 2018

(Production 3000 units i.e 2000 + 50%)

Particulars	Total (₹)	Fixed		Variable (₹)		Total (₹) Per Unit
		Total (₹)	Per Unit (₹)	Total (₹)	Per Unit (₹)	
Materials	3,30,000	—	—	3,30,000	110	110
Direct Wages	1,62,000	—	—	1,62,000	54	54
Prime Cost	4,92,000	—	—	4,92,000	164	164
Factory Overhead:						
Power and Consumable Stores	28,000	4,000	1.33	24,000	8	9.33
Factory Indirect Wages	52,000	16,000	5.33	36,000	12	17.33
Cost of Lighting	20,000	20,000	6.67	—	—	6.67
Depreciation of Plant	10,000	10,000	3.33	—	—	3.33
Factory Cost	6,02,000	50,000	16.67	5,52,000	184	200.67
Office Expenses	40,000	40,000	13.33	—	—	13.33
Cost of Production	6,42,000	90,000	30.00	5,52,000	184	213.99
Selling Expenses	81,000	18,000	6.00	63,000	21	27.00
Cost of Sales	7,23,000	1,08,000	36.00	6,15,000	205	241.00
Profit (Balancing figure)	2,97,000	—	—	—	—	99.00
Sales	10,20,000	—	—	—	—	340.00

Example 28: The following figure relate to the costing of Television Centre furnish the following information for 10,000 T.V. valves manufactured during the year ending 31st March, 2017:

Particulars	₹	Particulars	₹
Materials	1,00,000	Defective Work (Cost of rectification)	4,000
Direct Wages	70,000	Office Salaries and Management Expenses	35,000
Power and Consumable Stores	15,000	Selling Expenses	6,000
Factory Indirect Wages	20,000	Sale Proceeds of Scrap	4,000
Factory Lighting	6,000	Plant Repairs and Maintenance	6,000
		Plant Depreciation	6,000

The net selling price was ₹32 per unit sold and all units were sold. As from 1st April, 2017, the selling price was reduced to ₹31 per unit. It was estimated that production could be increased in 2017-18 by 50% due to spare capacity. Rates of materials and direct wages will increase by 10%. You are required to prepare:

- 1) Cost Sheet for the year 2016-17 showing various elements of cost per unit; and
- 2) Estimated cost sheet for 2017-18 assuming that 15,000 units will be produced and sold during the year and factory overheads will be recovered as a percentage of direct wages and office and selling expenses as a percentage of works cost.

Solution:

1)

Cost Sheet
(For the year 2016-17)

(Output – 10,000 Units)

Particulars	Total (₹)	Cost Per Unit (₹)
Materials	100,000	10.00
Direct Wages	70,000	7.00
Prime Cost	1,70,000	17.00
Factory Overheads		
Power and Consumable Stores	15,000	1.50
Factory Indirect Wages	20,000	2.00
Factory Lighting	6,000	0.60
Cost of Rectification of Defective Work	4,000	0.40
Plant Repairs and Maintenance	6,000	0.60
Plant Depreciation	6,000	0.60
	2,27,000	22.70
Less: Sales of Scrap	4,000	0.40
Factory/Works Cost	2,23,000	22.30
Office and Administration Overheads		
Office Salaries and Management Expenses	35,000	3.50
Cost of Production	2,58,000	25.80
Selling Expenses	6,000	0.60
Cost of Sales	2,64,000	26.40
Profit	56,000	5.60
Sales	3,20,000	32.00

Note: It has been assumed that all defective work is of normal nature.

2)

Estimated Cost Sheet
(For the year 2017-18)

(Output – 15,000 Units)

Particulars	Total (₹)	Cost Per Units (₹)
Materials	1,65,000	11.00
Wages	1,15,500	7.70
Prime Cost	2,80,500	18.70
Factory Overheads $\left(1,15,500 \times \frac{75.71}{100}\right)$	87,445	5.83
Works Cost	3,67,945	24.53
Office and Administration Overheads (15.70% of works cost)	57,767	3.85
Cost of Production	4,25,712	28.38
Selling Expenses (2.69% of works cost)	9,898	0.66
Cost of Sales	4,35,610	29.04
Profit (Balancing figure)	29,390	1.96
Sales	4,65,000	31.00

Working Notes:

- 1) Materials in estimated cost sheet = $15,000 \times 10 + 10\% \text{ increase} = ₹1,65,000$
- 2) Wages in estimated cost sheet = $15,000 \times 7 + 10\% \text{ Increase} = ₹1,15,500$
- 3) Factory Overheads Rate = $\frac{\text{Factory Overheads}}{\text{Direct Wages}} \times 100 = \frac{53,000}{70,000} \times 100 = 75.71\%$
- 4) Office and Administration Overhead Rate = $\frac{\text{Office and Administration Overheads}}{\text{Works Cost}} \times 100$
 $= \frac{35,000}{2,23,000} \times 100 = 15.70\%$
- 5) Selling Overhead Rate = $\frac{\text{Selling Expenses}}{\text{Works Cost}} \times 100 = \frac{6,000}{2,23,000} \times 100 = 2.69\%$

Example 29: In respect of a factory the following particulars have been extracted for the year 2017:

Particulars	₹
Cost of materials	6,00,000
Wages	5,00,000
Factory overheads	3,00,000
Administration charges	3,36,000
Selling charges	2,24,000
Distribution charges	1,40,000
Profit	4,20,000

A work order has to be executed in 2018 and the estimated expenses are – Materials ₹8,000, Wages ₹5,000.

Assuming that in 2018, the rate of factory overheads has gone up by 20%, distribution charges have gone down by 10% and selling and administration charges have gone each up by 15%, at what price should the product be sold so as to earn the same rate of profit on the selling price as in 2017. Factory overheads are based on wages and administration, selling and distribution overheads on factory cost.

Solution:

Statement of Cost and Profit
(For the year ending 2017)

Particulars	₹
Cost of Materials	6,00,000
Wages	5,00,000
Prime Cost	11,00,000
Add: Factory Overheads	3,00,000
Factory Cost	14,00,000
Add: Administration Charges	3,36,000
Cost of Production	17,36,000
Add: Selling Charges 2,24,000	
Distribution Charges 1,40,000	3,64,000
Cost of Sales	21,00,000
Profit	4,20,000
Sales	25,20,000

Working Note:

- 1) Factory Overhead to Wages = $\frac{3,00,000}{5,00,000} \times 100 = 60\%$
- 2) Administration Expense to Factory Rate = $\frac{3,36,000}{14,00,000} \times 100 = 24\%$
- 3) Selling Charges to Factory Rate = $\frac{2,24,000}{14,00,000} \times 100 = 16\%$
- 4) Distribution Charges to Factory Rate = $\frac{1,40,000}{14,00,000} \times 100 = 10\%$

$$5) \text{ Profit on Sales} = \frac{4,20,000}{21,00,000} \times 100 = 20\%$$

Statement Showing Price to be Quoted for a Work Order

Particulars	₹
Cost of Materials	8,000
Wages	5,000
Prime Cost	13,000
Factory Overheads (60% of 5,000 + 20%)	3,600
Factory Cost	16,600
Add: Administration Overheads (24% of 16,600 + 15%)	4581.6
Cost of Production	21,181.6
Selling Charges (16% of 16,600 + 15%)	3054.4
Distribution Charges (10% of 16,600 - 10%)	1,494
Cost of Sales	25,730
Profit (20% of 25,730)	5,146
Sales	30,876

Example 30: Following are the particulars for the production of 2000 calculators of Swapna Engineering Co. Ltd. for the year ending on 31st March 2017:

Particulars	₹
Opening Stock of Raw Material	40,000
Purchase of Raw Material	2,00,000
Closing Stock of Raw Material	60,000
Wages	2,40,000
Manufacturing Expenses	1,20,000
Salaries	1,40,000
Rent and Insurance	30,000
General expenses	40,000
Selling expenses	50,000
Sale	8,80,000

Company plans to manufacture 3000 calculator during the year 2018. Company wants profit of 20% on sale, in 2018. Following additional information supplied to you:

- 1) Prices of material will rise by 20%.
- 2) Wages rate will rise by 15%.
- 3) Manufacturing expenses will rise in proportion to the combined cost of material and wages.
- 4) Selling expenses per unit will remain the same.
- 5) Other expenses will remain unaffected by the rise in output.

Prepare statement showing the price at which calculators can be marketed.

Solution:

Statement of Cost Sheet
(For the year ending 2017)

Particulars	Total Cost (2000 Units) (₹)	Cost Per Unit (₹)
Opening stock of raw material	40,000	20
Add: Purchases of raw material	2,00,000	100
Less: Closing stock of raw material	60,000	30
Direct material consumed	1,80,000	90
Add: Wages	2,40,000	120
Direct Cost/Prime Cost	4,20,000	210
Add: Factory Overheads		
Manufacturing expenses	1,20,000	60
Factory cost	5,40,000	270
Add: Office and Administration		
General expenses	40,000	20
Rent and Insurance	30,000	15
Salaries	1,40,000	70

Office cost/cost of production	7,50,000	375
Selling expenses	50,000	25
Cost of goods sold	8,00,000	400
Profit (Balancing figure)	80,000	40
Sales	8,80,000	440

Statement of Tender Price

Particulars	Total Cost (3000 Calculators) (₹)	Cost Per Unit (₹)
Materials	3,24,000	108
Wages	4,14,000	138
Prime cost/Direct cost	7,38,000	246
Manufacturing expenses	2,10,857	70.29
Factory cost	9,48,857	316.29
General expenses	40,000	13.33
Rent and insurance	30,000	10.00
Salaries	1,40,000	46.66
Office cost/cost of production	11,58,857	386.28
Selling expenses	75,000	25.00
Cost of goods sold	12,33,857	411.29
Profit (balancing figure)	3,08,464.25	102.82
Sales	15,42,334.25	514.11

Working Note

(On the cost of 3000 calculators)

Particulars	Amount (₹)
Materials	90
Add: 20% increase (90@20%)	18
Total Material	108
Wages	120
Add: 15% increase (120@15%)	18
Total Wages	138
Manufacturing expenses $\frac{246}{210} \times 60$	70.29
Profit $\frac{12,33,857}{80} \times 20$	3,08,464.25

Example 31: The following details are available from a company books for one year. The company manufactures plants:

Particulars	₹
Stock of Raw Materials (opening)	25,600
Stock of Finished Goods (opening)	56,000
Purchases during the year	5,84,000
Productive Wages	3,97,600
Sale of Finished Goods	11,84,000
Stock of Finished Goods (closing)	60,000
Stock of Raw Material (closing)	27,200
Works Overhead	87,472
Office and General Expenses	71,048

The company is about to send a tender for a large plant. The estimated cost of material required would cost ₹40,000 and wages ₹24,000. Tender is to be made by keeping a net profit of 20% on the selling price. Prepare the cost sheet and state what would be the amount of the tender, if works overhead is recovered as a percentage of wages and office and general expenses as a percentage of works cost.

Solution:

Cost Sheet
(For the year ending 31.12.2017)

Particulars	Total Cost (₹)
Stock of Raw Material (Opening)	25,600
Add: Purchases during the Year	5,84,000
	6,09,600
Less: Stock of Raw Material (Closing)	27,200
Material Consumed	5,82,400
Productive Wages	3,97,600
Prime Cost	9,80,000
Works Overheads	87,472
Works Cost	10,67,472
Office and General Expenses	71,048
Cost of Production	11,38,520
Add: Opening Stock of Finished Goods	56,000
	11,94,520
Less: Closing Stock of Finished Goods	60,000
Cost of Goods Sold	11,34,520
Profit (Balancing Figure)	49,480
Sale of Finished Goods	11,84,000

Working Notes:

1) % of Works or Factory overheads to Productive Wages

$$= \frac{87,472}{3,97,600} \times 100 = 22\%$$

2) % of Office and General Expenses to the Works Cost

$$= \frac{71,048}{10,67,472} \times 100 = 6.65\%$$

Tender for the Plant

Particulars	Total Cost (₹)
Materials	40,000
Productive Wages	24,000
Prime Cost	64,000
Works Overheads (22% of Wages)	5,280
Works Cost	69,280
Office and General Expenses (6.65% on Works Cost)	4,607
Total Cost	73,887
Profit (20% on Selling price, i.e., 25% on Total Cost)	18,471
Sales	92,358