

Lesson-13

Elements of Cost and Cost Sheet

Learning Objectives

- To understand the elements of cost
- To classify overheads on different bases
- To prepare a cost sheet

Elements of Cost

Raw materials are converted into finished products by a manufacturing concern with the help of labor, plants etc. The elements that constitute the cost of manufacturing are known as elements of cost. The elements of cost include the following:

- Material
- Labor
- Expenses

Each of these elements is again subdivided into direct and indirect material.

Direct material, direct labor and direct expenses are those which can be traced in relationship with a particular process, job, operation or product. Indirect material, indirect labor and indirect expenses are those which are of general nature and cannot be traced in relationship with a particular process, operation, job or product.

Direct material	}	together constitute prime cost
Direct labor		
Direct expenses		

Indirect material	}	of the factory together constitute factory (or works)
Indirect labor		
Indirect expenses		

Prime cost + Factory (or works) overhead = Factory cost or works cost

Factory cost + Administration overhead = Cost of production

Cost of production + Selling and distribution overhead = Total cost or cost of sales

While working out the cost of sales, following details are to be kept in mind:

Opening stock of raw material	Rs. ***	
Add: Purchasing of raw materials	***	

Less: Return to suppliers	***	
Less: abnormal loss of materials		

<p>Less: Closing stock of raw materials Raw material consumed Direct wages Direct expenses Prime cost Factory overhead expenses Add: Opening work in process</p> <p>Less: sales of scraps</p> <p>Less: closing work in process Factory cost or works cost Office and administration overhead Cost of production Add: Opening finished stock</p> <p>Less: closing finished stock Cost of production of goods sold Selling overhead Distribution overhead Total cost or cost of sales Profit Selling price</p>		
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Key Terms

Direct Material

Direct material is the material which can be conveniently identified with or allocated to cost centers and cost units. It refers to the material out of which a product is manufactured. For example, leather shoes are produced out of leather, butter is produced out of milk, steel utensils are produced out of stainless steel and so on. Thus, leather, milk and stainless steel are the direct materials for the manufacture of shoes, butter and steel utensils respectively.

Like direct material, another kind of material may be required for manufacturing but not directly. For example, machines used for production require lubricants, jute and cotton wastes etc. which are indirect materials.

Direct material is a component of prime cost and indirect material is a component of factory overhead. Direct material directly varies with the output whereas indirect material does not so.

Direct Wages

Direct wages are the wages which can be conveniently identified with or allocated to cost centers and cost units. It refers to the wages paid to the workers who actually produce goods. In case of manual work, it is not difficult to locate direct worker because he is the one who produces goods. In case of the work done by a machine, the person who collects input and

output and in whose account the output is credited for the purpose of payment of wages is direct worker.

There are several other workers in a factory who help direct workers in connection with their work with regard to supply of materials, power etc. and in respect of supervision and maintenance. These are indirect workers and wages of indirect workers at different stages of production are indirect wages. Direct wage is a component of prime cost whereas indirect wage is a component of factory overhead. The former directly varies with the output whereas the latter may not vary so.

Direct Expenses

Besides direct material and direct layout, certain expenses may be wholly and exclusively necessary for a particular production. This expense is referred as direct expense and it can be easily identified with or allocated to cost centers or cost units. For example, if an order is received, a manufacturer will have to prepare a mould exclusively for this purpose. The cost of the mould may be regarded as direct expense of the production. Similarly, the charge for hiring a special plant for production is also direct expense and it can be easily identified with and allocated to cost centers or cost units. The cost of preparing blue print for a production is another example of direct expense.

Overhead

Overhead is an indirect expense incurred at various levels of activities of an enterprise. These expenses cannot be conveniently identified with or allocated to cost centers or cost units. According to functions, classification of overhead expenses may be done as follows:

(i) Factory or Works Overhead

Factory or works overhead refers to all indirect expenses of a factory. It includes the following:

- Wages of all factory staff excluding those of direct workers
- Indirect material
- Rent
- Rates
- Taxes of factory
- Depreciation of factory assets
- Excise duty
- Canteen expenses
- Labor welfare expenses

(ii) Administration Overhead

It refers to all the expenses incurred in connection with general administration. In administrative building, following things are included:

- Salary of administrative staff
- Rent

- Rates
- Taxes of administrative accommodation
- Postage
- Telegram and telephone
- Stationery
- Lighting of administrative building
- Depreciation of office appliances

Depreciation of office appliances etc. is included in administration overhead.

(iii) Selling Overhead

Selling overhead refers to all expenses incurred in connection with sales. In selling overhead, following things are included:

- Salary of sales staff
- Traveler's commission
- Advertisement
- Rent
- Rates
- Taxes of sales office
- Depreciation of sales office appliances
- Cost of participation in industrial fares and exhibitions
- Cost of free gifts
- Cost of free after sales service
- Normal bad debt

(iv) Distribution Overhead

Distribution overhead refers to all the expenses incurred in connection with the delivery of a product after the sale is affected. In distribution overhead, following things are included:

- Delivery van expenses
- Fright and insurance
- Packing for delivery loading and unloading
- Salary of the deliverymen
- Customs duty

According to behavior, classification of overhead expenses may be done as follows:

a. Variable Overhead

The overhead expenses that vary proportionately with the output are variable overhead.

b. Semi-Variable or Semi-Fixed Overhead

The overhead expenses that vary with the output but not proportionately are semi-variable or semi-fixed overhead.

It should be always kept in mind that in this connection direct materials, direct wages and direct expenses are variable items of direct cost. Therefore, if we classify cost according to behavior, we get the following classification:

a. Fixed Costs

Fixed costs include only those overhead expenses which remain fixed irrespective of the level of output. Some of the items of fixed costs are as follows:

- Rent and rate of building
- Salary of work mangers, administrative manager, sales managers
- Depreciation of buildings
- Insurance

b. Variable costs

Variable costs include prime cost and variable overheads. These costs vary proportionately with the output. Some of the items of variable costs are as follows:

- Direct material
- Direct wages
- Direct expenses
- Consumable stores
- Power
- Fuel

c. Semi-Variable Costs

Semi-variable costs include overhead expenses that vary according to output but not proportionately, so these costs are partly fixed and partly variable. Some of the items of semi-variable costs are as follows:

- Normal repairs and maintenance of building and plant
- Salary of supervisors
- Charge men
- Foremen
- Service department expenses
- Depreciation of plant and machinery

Consider the element repairs. Normal repair is mostly fixed in nature because within a certain degree of capacity, utilization is beyond that degree. More frequent repairs will be necessary involving further cost. But still, such an increase in cost will not be proportionate to an increase in output. This is why the element is semi-fixed or semi-variable.

It is important to know the behavior-wise classification of cost because the total of variable costs per unit of output is known as marginal cost. Marginal cost represents the cost incurred in producing one extra unit. If one extra unit is to be produced, the fixed costs will not increase. Only the variable costs will come into the picture.

Summary

1. The elements that constitute the cost of manufacturing are known as elements of cost.
2. Direct material is the material which can be conveniently identified with or allocated to cost centers and cost units.
3. Direct wages are the wages which can be conveniently identified with or allocated to cost centers and cost units
4. Overhead is an indirect expense incurred at various levels of activities of an enterprise. These expenses cannot be conveniently identified with or allocated to cost centers or cost units.

Exercise

Problem 1

A manufacturer has shown an amount of Rs. 16190 in his books as “establishment” which includes the following expenses:

- Agents commission-- Rs. 5750
- Warehouse wages-- Rs. 1800
- Warehouse repairs-- Rs. 510
- Lighting of office-- Rs. 70
- Office salaries-- Rs. 1130
- Director’s remuneration-- Rs. 1400
- Traveling expenses-- Rs. 760
- Rent, rates and insurance of warehouse-- Rs. 310
- Rent, rates and insurance of office-- Rs. 230
- Lighting of warehouse-- Rs. 270
- Printing and stationery-- Rs. 1500
- Trade magazines-- Rs. 70
- Donations-- Rs. 150
- Bank charges-- Rs. 100
- Discount allowed-- Rs. 1970
- Bad debts-- Rs. 170

From the above information, prepare a statement showing the following (in separate totals):

- Selling expenses
- Distribution expenses
- Administration expenses
- Expenses which you will exclude from total cost

Solution

Statement of Cost		
	Rs.	Rs.
Selling expenses:		
Agents' commission	5,750	
Traveling expenses	760	
Bad debts	170	
	6,680	6,680
Distribution expenses:		
Warehouse wages	1,800	
Warehouse repairs	510	
Rent, rates and insurance of warehouse	310	
Lighting of warehouse	270	
	2,890	2,890
Administration expenses:		
Lighting of office	70	
Office salaries	1,130	
Directors' remuneration	1,400	
Rent, rates and insurance of office	230	
Printing and stationery	1,500	
Trade magazines	70	
Bank charges	100	
	4,500	4,500
Total expenses to be considered in estimation costs		1,4,070
Expenses to be excluded form costs:		
Donations	150	
Discount allowed	1,970	2,120
Total	1,970	1,6,190

Problem 2

ABC Ltd., a manufacturing company, incurred the following expenses during a certain period. You are required to prepare a statement showing the subdivision of total cost.

	Rs.		Rs.
Materials used on jobs	1,20,540	Depreciation of plant	3,800
Wages traceable to jobs	86,650	Depreciation of delivery vans	1,600
Wages paid to men for maintenance work		Insurance on finished goods	2,500
Salaries of sales men	1,26,00	Lubrication oil	250
Directors' fees	15,100	Bad debts	300
Carriage inwards on raw materials	10,000	Commission to salesmen	2,850
Carriage outwards	860	Cost of idle time in factory	510
Factory rent and rates	2,800	Auditors fees	3,800
Works salaries	8,300	Dividends paid	6,800
Hire of crane for job no, 132	20,400	Lighting of showroom	1,500
Consumable stores	1,300	Office salaries and expenses	7,000
		Income tax	8,600

	340		
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Solution

Statement of Cost

	Rs.	
Direct materials	1,20,540	
Add: carriage inwards	860	1,21,400
Direct wages		86,650
Direct expenses (hire of crane for job no. 132)		1,300
Prime cost		2,09,350
Works overhead		
Wages paid to men on maintenance work	12,600	
Factory rent and rates	8,300	
Works salaries	20,400	
Consumable stores	340	
Depreciation of plant	3,800	
Lubricating oil	250	
Cost of idle time in factory	510	46,200
Works cost		2,55,550
Administration overhead		
Directory fees	10,000	
Auditors fees	3,800	
Office salaries and expenses	7,000	20,800
Cost of production		2,76,350
Selling and distribution overhead		
Salaries of salesmen	15,100	
Carriage outwards	2,800	
Depreciation of delivery vans	1,600	
Insurance of finished goods	2,500	
Commission to sales men	2,850	
Lighting of showroom	1,500	
Bad debts	300	26,650
Total cost		3,03,000

Problem 4

The following figures are taken from the books of a manufacturing company for the year ended on March 31, 1995. Prepare a cost sheet showing clearly the cost per unit under the various elements and also the profit or loss per unit.

	Rs.		Rs.
Direct materials	25,00,000	Branch office expenses	30,000
Direct labor	8,00,000	Depreciation of office building	10,000
Depreciation of factory building	16,000	Depreciation of staff cars	
Insurance:			

Staff cars	2,000	Electricity (including Rs. 5,000) for administrative office)	15,000
Office building	1,500	Advertisement	35,000
Factory building	2,000	Sundry factory expenses	18,000
Delivery van-maintenance and running expenses	12,000	Sales promotion	
Salaries (including that of Sales Manager Rs. 20,000 and Factory Chief Engineer (Rs.25,000)	2,75,000	Office administration expenses	4,20,000
Finished goods warehouse expenses	15,000	Expenses for participating in industrial exhibition	4,000
		Sales (10,000 units)	60,000
		Units produced--10,000	
			8,000
			50,000

Solution

Cost Sheet

Output-- 10,000

Period -- Year ended on March 31, 1995

	Total			Per unit	
	Rs.	Rs	Rs	Rs	
Direct materials		25,00,000		250.00	
Direct labor		8,00,000		80.00	
Prime cost		33,00,000		330.00	
Works overhead					
Depreciation of factory building	6,000		1.60		
Insurance Of factory building	2,000		0.20		
Salary of factory chief engineer	25,000		2.50		
Electricity (35,000-5,000)	30,000		3.00		
Sundry factory expenses	4,20,000		42.00		
		4,93,000		49.30	
Work cost		37,93,000		379.30	
Office and administration overhead					
Depreciation of office building	10,000		1.00		
Depreciation of staff cars	15,000		1.50		
Insurance of staff cars	2,000		0.20		
Insurance of office building	1,500		0.15		
Salaries (2,75,000-20,000-25,000)	2,30,000		23.00		
Electricity	5,000		0.50		
Other office administration expenses	60,000		6.00		
		3,23,500		32.35	
Cost of production		41,16,500		411.65	
Selling and distribution overhead:					
Sales manager's salary	20,000		2.00		
Advertisement	18,000		1.80		
Sales promotion	4,000		0.40		

Expenses in industrial exhibition	8,000		0.80	
Branch office expenses	30,000		3.00	
Finished goods warehouse expenses	15,000		1.50	
Delivery van-maintenance and running expenses	12,000		1.20	
		1,07,000		10.70
Cost of sales		42,23,500		422.35
Profit (balancing figure)		7,76,500		77.65
Sales		50,00,000		500.00

Problem 5

From the following figures, prepare separate statements of cost and profit for the month of October 1995.

	Rs.		Rs.
Stock on 1 st October, 95			
Raw materials	60,600	Purchase of raw materials	2,85,700
Finished goods	35,900	Sale of finished goods	13,40,000
Stock on 31 st October, 95		Direct wages	3,75,000
Raw materials	75,000	Factory expenses	2,12,500
Finished goods	30,900	Office and administration expenses	1,03,400
Work-in-progress:		Selling and distribution expenses	75,000
On 1 st October, 95	1,25,600	Sale of scrap	2,600
On 31 st October, 95	1,42,200		

Solution

Statement of Cost of Production

Period-- October 1995

	Rs.	Rs.
Materials consumed		
Opening stock	60,600	
Purchases	2,85,700	
	3,46,300	
Less: Closing stock	(75,000)	2,71,300
		3,75,000
Direct wages		6,46,300
Prime cost		
Factory expenses		

Less: Sale of scrap	2,12,500 (2,600)	2,09,900
Adjustment for work-in- progress: Opening	1,25,600	8,56,200
Closing	(1,42,200)	(16,600)
Works cost		8,39,600
Office and administration expenses		1,03,400
Cost of production		9,43,000

Statement of Profit or Loss

Period-- October 1995

Rs.	
Stock of finished goods on October 01, 1995	35,900
Add: Cost of production	9,43,000
	9,78,900
Less-- Stock of finished goods on October 31, 1995	(30,900)
Cost of goods sold	9,78,900
Selling and distribution expenses	75,000
Cost of sales	10,23,000
Profit (balancing figure)	3,17,000
Sales	13,40,000

Note-- Office and administration expenses may also be shown in the statement of profit or loss as illustrated in the next problem.

Problem 6

The Susan and company makes art prints. The following details are available for the year ended on June 30, 1995.

Rs. (thousands)		Rs. (thousands)	
Opening stock		Selling expenses	140
Direct materials	26	Factory power, heat and light	20
Work-in-progress	74	Sundry factory overheads	12
Finished goods	120	Financial charges	120
Direct materials purchased	436	Sales	1,460
Direct labor	120	Closing stock:	
Indirect labor and supervision	44	Direct materials	42
Administrative expenses	160		

Factory rent, rates and insurance	94	Work-in-progress	54
Depreciation of factory equipment	70	Finished goods	80

The company values work-in-progress at factory cost.

You are required to prepare the following:

- A schedule of cost of goods manufactured for the year ended on 30th June, 95
- A profit statement for the year ended on 30th June, 95

Solution

Schedule of Cost of Goods Manufactured

Period-- Year ended on June 30, 1995

	Rs. (Thousands)	Rs. (Thousands)
Direct materials consumed		
Opening stock	26	
Purchases	436	
	462	
Less: Closing stock	(42)	
		420
Direct labor		120
		540
Prime cost		
Factory overhead		
Indirect labor and supervision		
Rent, rates and insurance	44	
Depreciation of equipment	94	
Power, heat and light	70	
Sundry	20	
	12	
		240
Adjustment for work-in-progress:		780
Opening	74	
Closing	(54)	
		20
Cost of goods manufactured		800

Profit Statement

Period-- Year ended on June 30, 1995

	Rs. (Thousands)	Rs. (Thousands)
Sales		1,460
Less: Cost of goods sold:		

Opening stock of finished goods	120	
Cost of goods manufactured	800	
	<u>920</u>	
Less: Closing stock of finished goods	(80)	(840)
Gross profit		<u>620</u>
Less: Administrative expenses		
Selling expenses	160	
Financial charges	140	
	<u>120</u>	
Net profit		<u>(420)</u>
		<u>200</u>

Problem 7

A company is manufacturing refrigerators and the following details are furnished in respect of its factory operations for the year ended on December 31, 1995:

Work-in-progress on 1st January, 1995	Rs.	Rs.
At prime cost	51,000	
Manufacturing expenses	<u>15,000</u>	66,000
Work-in-progress, 31 st December, 95		
At prime cost	45,000	
Manufacturing expenses	<u>9,000</u>	54,000
Stock of raw materials on 1st January, 95		2,25,000
Purchase of raw materials		4,77,000
Direct labor		1,71,000
Manufacturing expenses		84,000
Stock of raw materials on 31 st December, 95		<u>2,04,00</u>

On the basis of above data, prepare a statement showing the cost of production.

Solution

Schedule of Cost of Production

Raw materials consumed:	Rs.	
Opening stock	2,25,000	
Purchases	4,77,000	
	<u>7,02,000</u>	
Less: Closing stock	<u>(2,04,000)</u>	4,98,000
Direct labor		<u>1,71,000</u>
		<u>6,69,000</u>

Adjustment for work in progress:		
Opening	51,000	
Closing	(45,000)	6,000
		<hr/>
Prime cost		6,75,000
Manufacturing expenses	84,000	
Adjustment for work in progress:		
Opening	15000	
Closing	9000	

	6,000	
		<hr/>
Cost of production		90,000
		<hr/>
		7,65,000

Problem 8

The accounts of the Steel Ways Engineering Co. Ltd for 1995 are as follows:

	Rs.
Materials used	1,80,000
Manual and machine labor wages directly chargeable	1,60,000
Works overhead expenditure	40,000
Establishment and general expenses	19,000

- Show the works cost and total cost, the percentage that the works overhead cost bears to the manual and machines labor wages and the percentage that the establishment and general expenses bear to the works cost.
- What price should the company quote to manufacture a machine which is estimated to require an expenditure of Rs. 8,000 on materials and Rs. 6,000 on wages so that it will yield a profit of 25% on the total cost or 20% on selling price.

Solution

Statement of Cost

	Rs.
Materials used	1,80,000
Manual and machine labor wages (directly chargeable)	1,60,000
Prime cost	<hr/> 3,40,000
Works overhead expenditure	40,000
Works cost	<hr/> 3,80,000
Establishment and general expenses	19,000
Total cost	<hr/> 3,99,000
Percentage of works overhead to manual and machine labor (40000/160000) x 100	<hr/> 25%
Percentage of establishment and general expenses to works cost (19000/380000) x 100	5%

Statement of Estimated Cost for the Manufacture of the Machine

Enquiry from....

Cost of materials		Rs.
Direct wages		8,000
		6,000
	Prime cost	14,000
Works overhead: 25% of wages		1,500
	Works cost	15,500
Establishment and general expenses: 5% of works cost		775
	Total cost	16,275
Profit (20% on selling price or 25% on cost)		4,069
	Price to be quoted	20,344

Date

Prepared by

Checked by.....

Problem 9

From the following details, prepare a statement in the way which you consider most suitable for showing clearly all elements of cost:

	Rs.		Rs.
Opening stock or raw materials	25,000	Carriage on goods sold	1,500
Purchase of raw materials	70,000	Rent and rates of workshop	2,500
Raw materials returned to suppliers		Flues, gas, water etc.	100
Closing stock of raw materials	2,000	Repairs to plant	600
	18,800	Depreciation on machinery	1,400
Wages paid to--		Office expenses	1,500
Productive workers		Direct chargeable expenses	800
Non-productive workers	18,000	Advertising	1,200
Salaries paid to office staff	2,000	Abnormal loss of raw materials	
Carriage on raw materials purchased	5,000		1,200
	500		

Solution

Statement of Cost

Materials consumed:	Rs.	Rs.
Opening stock	25,000	
Purchasing	70,000	
Carriage on purchases	500	
	95,500	
Less: Returns	(2,000)	
	93,500	
Less: abnormal loss	(1,200)	
	92,300	

Less: closing stock	(18,800)	73,500
Productive wages		18,000
Direct chargeable expenses		800
		<hr/>
		92,300
Prime cost		
Works overhead:	2,000	
Non-productive wages	2,500	
Rent and rates of workshop	1,000	
Fuel, gas, water etc.	600	
Repairs to plant	1,400	
Depreciation on machinery		7,500
		<hr/>
		99,800
Works cost		
Office overhead:	5,000	
Salaries to office staff	1,500	
Office expenses		6,500
		<hr/>
		1,06,300
Cost of production		
Selling and distribution overhead	1,500	
Carriages on goods sold	1,200	
Advertising		2,700
		<hr/>
		1,09,000
Cost of sales		

Problem 10

The following data relates to the manufacture of a standard product during the four weeks period to June 30, 1995:

Raw materials consumed	Rs. 4,000
Wages	Rs.600
Machine hours worked	1000
Machine hours rate	50 paise
Office overhead	20% on works cost
Selling overhead	6paise per unit
Units produced	20000
Units sold	18000 @ Re. 1 per unit

You are required to prepare a cost sheet showing the cost per units and profit for the period.

Solution

Cost Sheet

Output-- 20000 units

Period-- 4 weeks ended on June 30, 1995

	Total	Per unit
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	Rs.	Rs.
Raw materials consumed	4,000	0.200
Wages	6,000	0.300
Prime cost	10,000	0.500
Works overhead (1000 hrs. @ Re. 0.50)	500	0.025
Works cost	10,500	0.525
Office overhead (20% on works cost)	2,100	0.105
Cost of production	12,600	0.630
Less: Closing stock (2000 units @Re. 0.630)	(1,260)	---
Cost of goods sold (18000 units)	11,340	0.630
Selling overhead (Re. 0.06 per unit on 18000 units)	1,080	0.060
Cost of sales	12,420	0.690
Profit (balance figure)	5,580	0.310
Sales	18,000	1.000

Problem 11

The following figures for the month of April 1995 were taken from the records of a factory:

	Rs.
Opening stock of finished goods (5000 units)	45,000
Purchase of raw materials	2,57,100
Direct wages	1,05,000
Factory overhead	10% of direct wages
Administration overhead	Re. 1 per unit
Selling and distribution overhead	10% of sales
Closing stock of finished goods (10000 units)	103,420
Sales (45000 units)	Rs. 6,60,000

Prepare a cost sheet for the month of April 1995 assuming that the sales are made on the basis of first in first out principle.

Solution

Cost Sheet

Output-- 50000 units

Period-- April 1995

	Total Rs.	Per units Rs.
Raw materials	2,57,100	5.142
Direct wages	1,05,000	2.100
Prime cost	3,62,100	7.242
Factory overhead: 100 % of direct wages	1,05,000	2.100
Works cost	4,67,100	9.342
Administrations overhead: Re. 1 per unit	50,000	1.000
Cost of production	5,17,100	10.342
Add: opening stock of finished goods	45,000	

	5,62,100	
Less: closing stock of finished goods: 10000 units @ Rs. 10.342	1,03,420	
Cost of goods sold (45000 units)	4,58,680	10.193
Selling and distribution overhead @10% of sales	66,000	1.467
Cost of sales	5,24,680	11.660
Profit (balancing figures)	1,35,320	3.007
Sales	6,60,000	14.667 ⁴

Working Notes

1. Production during the month = (sales 45000 units + closing stock 10000 units – opening stock 5000 units) = 50000 units.
2. Since goods have been sold on FIFO basis, the entire closing stock represents current production @ Rs. 10.342 pr unit because sales include all opening stock and part of current production.
3. Per unit cost of goods sold Rs. 10.193 has been obtained by dividing Rs. 4,58,680 by 45000 sales units.
4. Per unit Rs. 14.667 has been obtained by dividing Rs. 6,60,000 by 45,000 sales units.

Problem 12

From the following details related to production and sales for the year ended on December 31, 1992, prepare a cost statement showing the following things:

- Prime cost
- Works cost
- Cost of production
- Cost of sales
- Profit or loss

Stock on 1.1.92:		Rs.
(a) Raw materials--		25,000
(b) Work in progress--		
At prime cost	Rs. 30,000	
Add manufacturing expenses	Rs. 6,000	36,000

(c) Finished goods (at cost)		1,44,000
Raw materials purchased		2,00,000
Freight on raw material		10,000
Machines hours worked-- 48000 hours		
Chargeable expenses		50,000
Factory wages for direct labor		2,70,000
Administration expenses		1,00,000
Selling expenses		54,000
Distribution expenses		36,000
Sales proceeds of finished goods (30000 units)		9,00,000

Stock as on December 31, 1992:		
(a) Raw materials		45,000
(b) Work in progress		
At prime cost	Rs. 45,000	
Add: Manufacturing expenses	Rs. 9,000	54,000

(c) Finished goods at cost (10000 units)		
Finished goods produced 32000 units		

Apply FIFO principal in finished goods valuation.

Solution

Cost Sheet

Output-- 32000 units

Period--Year ended on December 31, 1992

	Rs.	Rs.
Raw materials consumed:		
Opening stock	25,000	
Purchase	2,00,000	
Freight on purchases	10,000	
	<u>2,35,000</u>	
	(45,000)	1,90,000
Less: closing stock		<u>2,70,000</u>
Factory wages		50,000
Chargeable expenses		<u>5,10,000</u>
Adjustment for work in progress:		
Opening	30,000	
Closing	<u>(45,000)</u>	<u>(15,000)</u>
		4,95,000
Prime cost		<u>1,44,000</u>
Works overhead (48000 hrs. @Rs, 3.00 per hr.)		<u>6,39,000</u>
Adjustment for work in progress:		
Opening	6,000	
Closing	<u>(9,000)</u>	<u>(3,000)</u>
		6,36,000
Works cost		<u>1,00,000</u>
Administration expenses		<u>7,36,000</u>
Cost of production (32000 units @Rs. 23 per units)		<u>1,44,000</u>
Add: opening stock of finished goods (8000 units)		<u>8,80,000</u>
		<u>1,90,000</u>
Less: closing stock of finished goods (10000 units)		<u>6,90,000</u>
Cost of goods sold (30000 units)		54,000
Selling expenses		<u>36,000</u>
Distribution expenses		<u>7,80,000</u>
Cost of sales		<u>1,20,000</u>
Profit (balancing figures)		

Sales		9,00,000
-------	--	----------

Working Notes

- Units of opening stock = (sales 30000 units + closing stock 10000 units – production during the year 32000 units) = 8000 units
- Value of closing stock (applying FIFO basic):

	Rs.
8000 units at last year's rate	1,44,000
2000 units at current year rate of Rs. 23 per unit	46,000

	1,90,000

Problem 13

A manufacturing company submits the following information on March 31, 1995:

Sales for year		Rs. 2,75,000
Inventories at the beginning of the year:		
Materials	Rs. 3,000	
Finished goods	7,000	
Work in progress	4,000	
Purchase of raw materials for the year		1,10,000
Direct labor		65,000
Inventories at the end of the year:		
Materials	4,000	
Work in progress	6,000	
Finished goods	8,000	
Other expenses for the year		
Selling expenses @10% of sales		
Factory overhead @ 60% of direct labor cost		
Administrative expenses @5% of sales		
Prepare a statement of cost		

Solution

Statement of Cost For the year ended on March 31, 1995

	Rs.	Rs.
--	-----	-----

Materials consumed:		
Opening inventory	3,000	
Purchases	1,10,000	
	<u>1,13,000</u>	
	4,000	
Less: closing inventory		1,09,000
		<u>65,000</u>
Direct labor		1,74,000
Prime cost		<u>39,000</u>
Factory overheads: 60% of direct labor cost		2,13,000
Adjustment for work in process		
Opening	4,000	
Closing	(6,000)	(2,000)
Cost of finished goods manufactured		<u>2,11,000</u>
		7,000
Add: opening inventory of finished goods		<u>2,18,000</u>
		8,000
Less: closing inventory of finished goods		<u>2,10,000</u>
Cost of goods sold		
Administration expenses: 5 % of sales	13,750	
Selling expenses: 10% of sales	<u>27,500</u>	
		41,250
Cost of sales		<u>2,51,250</u>
Profit (balancing figure)		23,750
Sales		<u>2,75,000</u>

Note

Since administration expenses have been expressed as a percentage of sales, these have not been included in cost of goods manufactured.

Problem 14

The books of a manufacturing company present the following data for the month of April 1992:

Direct labor cost Rs. 17,500 being 175% of works overhead. Cost of goods sold excluding administrative expenses Rs. 56000.

Inventory account showed the following opening and closing balances:

	April 1		April 30
	Rs.		Rs.
Raw materials	8,000		10,600
Work in progress	10,500		14,500
Finished goods	17,600		19,000

Other data are:		Rs.	
Selling expenses		3,500	
General and administration expenses		2,500	
Sales for the month		75,000	

You are required to:

- (i) Compute the value of raw material purchased.
- (ii) Prepare a cost statement showing the various elements of cost and also the profit earned.

Solution

(i) Statement Computing the Value of Raw Materials Purchased

	Rs.
Cost of goods sold	56,000
Add: closing stock of finished goods	19,000
	<hr/> 75,000
Less: opening stock of finished goods	(17,600)
Works cost of cost of production	<hr/> 57,400
	14,500
Add: closing stock of work in progress	<hr/> 71,900
	(10,500)
Less: opening stock of work in progress	<hr/> 61,400
	(10,000)
Less: works overhead (100/175 x direct labor, i.e. 100/175x17500)	<hr/> 51,400
Prime cost	(17,500)
Less: direct labor	<hr/> 33,900
Raw materials consumed	10,600
Add: closing stock of raw materials	<hr/> 44,500
	(8,000)
Less: opening stock of raw materials	<hr/> 36,500
Values of raw material purchased	<hr/>

(ii) Cost Statement

Period-- April 1992

		Rs.
Raw materials consumed [as in (i) above]		33,900
Direct labor		17,500
Prime labor		<hr/> 51,400
Works overhead		10,000
		<hr/> 61,400
Adjustment for work in progress:		
Opening	10,500	
Closing	(14,500)	
	<hr/>	(4,000)
Works cost or cost of production		<hr/> 57,400

Add: opening stock of finished goods	17,600
	<hr/> 75,000
Less: closing stock of finished goods	(19,000)
Cost of goods sold	<hr/> 56,000
General and administration expenses	2,500
Selling expenses	3,500
	<hr/> 62,000
Profit (balancing figures)	13,000
Sales	<hr/> 75,000
	<hr/>

Problem 15

Shrelekha Mfg. Co. manufactures two types of pens P and Q. The cost data for the year ended on June 30, 1995 is as follows:

Direct materials	4,00,000
Direct wages	2,24,000
Production overhead	96,000

	7,20,000

It is further ascertained that:

- (i) Direct materials of type P costs twice as much direct materials of type Q
- (ii) Direct wages for type Q were 60% of those for type P
- (iii) Production overhead was of the same rate for both types
- (iv) Administration overhead for each was 200% of direct labor
- (v) Selling costs were 50 paise per pen for both types
- (vi) Production during the year:

Type P	40000
Type Q	120000

- (vii) Sales during the year:

Type P	36000
Type Q	100000

- (viii) Selling prices were Rs. 14 per pen for type P and Rs. 10 per pen for type Q.

Prepare a statement showing per unit cost of production total cost, profit and also total sales value and profit separately for the two types of pen P and Q.

Solution

Statement of Cost

For the year ended on June 30, 1995

		P 40000 units	Q 120000 units
--	--	---------------	----------------

	Total Rs.	Total Rs.	Per unit Rs.	Total Rs.	Per unit Rs.
Direct materials 40000 x 2:120000 x 1	4,00,000	1,60,000	4.00	2,40,000	2.00
Direct wages 40000 x100-- 120000 x60	2,24,000	80,000	2.00	1,44,000	1.20
Prime cost	6,24,000	2,40,000	6.00	3,84,000	3.20
Production overhead 40000: 120000	96,000	24,000	0.60	72,000	0.60
Works cost	7,20,000	2,64,000	6.60	4,56,000	3.80
Administration overhead	4,48,000	1,60,000	4.00	2,88,000	2.40
Cost of production	11,68,000	4,24,000	10.60	7,44,000	6.20
Less: Closing stock of finished goods: (P-4000 x Rs.10.60, Q- 20000 x Rs.6.20)					
Cost of goods sold (P – 36000, Q-100000)	1,66,400	42,400	10.60	1,24,000	6.20
Selling costs @50 p. per pen	10,01,600	3,81,600	10.60	6,20,000	6.20
Total cost	68,000	18,000	0.50	50,000	0.50
Profit (balancing figure)	10,69,600	3,99,600	11.10	6,70,000	6.70
Sales	4,34,400	1,04,400	2.90	3,30,000	3.30
	15,04,000	5,04,000	14.00	10,00,000	10.00

Problem 16

A critical study of past expenses incurred in the manufacture of two kinds of acid containers shoes is as follows:

Nature of expenses	Expenses incurred on the manufacture of acid containers	
	Type X	Type Y
	Rs.	Rs.
Direct materials	3.50	6.50
Direct wages	1.00	1.50
Plant and machine usage allocated on hourly basis	2.00	3.00
General overhead apportioned at 200%of direct wages	2.00	3.00
Cost per container	8.50	14.00
Cost record for the month of august 1995 shows:		
Direct materials utilized	Rs. 26,500	

Direct wages	5,850	
Plant and machine usage	16,250	
General overheads	11,700	
Total	<u>60,300</u>	

Containers produced-- Type X= 2000 units
Type Y= 3000 units

Prepare a consolidated cost sheet distributing the total production cost between the two types of containers according to the different elements of cost and also showing the cost per container of each type.

Solution

Computation of the cost of production of the given quantities of the two types of containers on the basis of past expenses per container is as follows:

	Type X (2000 units)	Type Y (3000 units)	Total
	Rs.	Rs.	Rs.
Direct materials	7,000	19,500	2,65,000
Direct wages	2,000	4,500	6,500
Plant and machine usage	4,000	9,000	13,000
General overhead	4,000	9,000	13,000
	<u>17,000</u>	<u>42,000</u>	<u>59,000</u>

Except direct materials, other expenses as computed above are quite different from the actual expenses incurred in August 1995. The actual expenses should, therefore, be distributed between the two types of containers on the basis of past expenses for given quantities.

	Types X (2000 units)	Type Y (3000 units)
	Rs.	Rs.
Direct materials (2000 x 3.50) and (3000 x 6.50)	7,000	19,500
Direct wages: $\frac{2000}{65000} \times \text{Rs.}5850$	1,800	-----
$\frac{4500}{65000} \times \text{Rs.}5850$	---	4,050
Prime cost	<u>8,800</u>	<u>23,550</u>
Plant and machinery usage: $\frac{4000}{13000} \times \text{Rs.}16250$	5,000	
$\frac{9000}{13000} \times \text{Rs.}16250$	-----	11,250
Work cost	<u>13,800</u>	<u>34,800</u>
General overhead: $\frac{4000}{13000} \times \text{Rs.}16250$	3,600	----
	-----	8,100

	$\frac{9000}{13000} \times \text{Rs.}16250$		
Total cost		17,400	42,900
Cost per container		8.70	14.30

Problem 17

A factory produced and sold 1000 units of a product in July 1995 for which the following details are available:

	Rs.
Stock of direct material on 1.7.95	6,000
Purchase and receipt of direct materials in July 1995	1,44,000
Direct wages paid in cash in July 1995 (which includes Rs. 3000 on account of June 1995 and an advance of Rs. 2000)	55,000
Works overhead charges for the month	60,000
Stock of direct materials on 31.7.95	10,000
Administration and selling overheads	25 per unit
Sales price	300 per unit

From the above details, you are required to:

- (i) Prepare a cost statement for July 1995.
- (ii) Estimate the sale price of unit of the same product in August 1995 assuming:
 - 20% increase in direct materials cost
 - 10% increase in direct wages
 - 5% increase in works overhead charges
 - 20% reduction in administration and selling overhead charges
 - Same percentage of profit on sales price as in July 95

Solution

Statement of Cost

Output-- 1000 units

Period-- July 1995

	Total amount		Cost per unit
	Rs.	Rs.	Rs.
Materials consumed:			
Stock as on 1.7.95	6,000		
Purchases during the month	1,44,000		
	1,50,000		
	(10,000)		
Less: stock as on 31.7.95		1,40,000	140
Direct wages-- Paid in July	55,000		
Less: payment for June	(3,000)		
	52,000		
Less: advance payment	(2,000)		

Prime cost		50,000	50
Works overhead		1,90,000	190
Works cost or cost of production		60,000	60
Administration and selling overheads @Rs.25 per unit		2,50,000	250
Cost of sales		25,000	25
Profit (balancing figure)		2,75,000	275
Selling price @Rs. 300		25,000	25
		3,00,000	300

Estimate of Selling Price Per Unit in August 1995

	Rs.
Direct materials 120/100 x Rs. 140	168.00
Direct wages 110/100 Rs. 50	55.00
Prime cost	223.00
Works overhead 105/100 x Rs. 60	63.00
Works cost or cost of production	286.00
Administration and selling overheads 80/100 x Rs. 25	20.00
Cost of sales	306.00
Profit @ $8\frac{1}{3}\%$ on sale or $\frac{1}{12}$ th of sales, i.e. $\frac{1}{11}$ th of cost	27.82
selling price	333.82

Working Note

$$\text{Ratio of profit to sales in July 95} = \frac{25000}{300000} = \frac{1}{12}^{\text{th}} \text{ or } 8\frac{1}{3}\%$$

Problem 18

The following details are available for the previous years production of fans for M/s Eastern Engineering Co.

- Total production-- 1000 units
- Total cost of raw materials consumed-- Rs. 12,000
- Total cost of direct labor-- Rs. 20,000
- Total works overhead expenses-- Rs. 40,000
- Total general overhead expenses-- Rs. 36,000
- Total selling and distribution overhead expenses-- Rs. 16,000
- Total sale price for 800 units sold-- Rs. 11,2640

On the basis of the following instructions, prepare the details of price quotation per unit of fan for the current year:

- (a) Costs of raw materials and direct labor have to be increased by 10% and 15% respectively over the previous year level.
- (b) Works overhead, general overhead as well as selling and distribution overhead are to be charged at the same respective percentages as in the previous year.

(c) Profit is to be estimated at the same percentage on total cost as is earned in the previous year.

Solution

Cost Sheet for the Year.....

(Output-- 1000 units)

	Total	Per unit
	Rs.	Rs.
Raw materials consumed	12,000	12.00
Direct labor	20,000	20.00
Prime cost	32,000	32.00
Works overhead expenses	40,000	40.00
Works cost	72,000	72.00
General overhead expenses	36,000	36.00
Cost of production	1,08,000	108.00
Less: closing stock (200 units) @ Rs. 108	(21,600)	----
Cost of goods sold (800 units)	86,400	108.00
Selling and distribution overhead expenses (on 800 units)	16,000	20.00
Cost of sales	1,02,400	128.00
Profit (balancing figure)	10,240	12.80
Sales	1,12,640	140.00

Estimated Price to be Quoted Per Units for the Year...

	Rs.
Raw materials $110/100 \times \text{Rs. } 12$	13.20
Direct labor $115/100 \times \text{Rs. } 20$	23.00
Prime cost	36.20
Works overhead @ 200% of direct labor	46.00
Works cost	82.20
General overhead @ 50% of works cost	41.10
Cost of production	123.30
Selling and distribution overhead @ 18.5% of cost of goods sold	22.80
Total cost	146.10
Profit @ 10% on total cost	14.61
Price to be quoted	160.71

Working Notes

(1) Percentage of works overhead on direct labor = $\frac{40000}{20000} \times 100 = 200\%$

(2) Percentage of general overhead on works cost = $\frac{36000}{72000} \times 100 = 50\%$

(3) Percentage of selling and distribution expenses on cost of goods sold = $\frac{16000}{86400} \times 100 = 18.5\%$

(4) Percentage of profit on cost = $\frac{10240}{102400} \times 100 = 10\%$

Problem 19

Bharat Electronics Ltd. furnishes the following information for 1000 TV valves manufactured during the year 1995:

	Rs.	Clerical salaries and management expenses	33,500
Materials	90,000	Selling expenses	5,500
Direct wages	60,000	Sales proceeds of scraps	2,000
Power and consumable stores	12,000	Plant repair & maintenance and depreciation	11,500
Factory indirect wages	15,000		
Lighting of factory	5,500		
Defective works (Cost of rectification)	3,000		

The net selling price was Rs. 31.60 per units sold and all the units were sold.

As from January 01, 1996, the selling price was reduced to Rs. 31.00 per unit. It was estimated that the production could be increased in 1996 by 50% utilizing spare capacity. Rates for materials and direct wages will increase by 10%.

You are required to prepare:

- Cost sheet for the year 1995 showing various elements of cost per units
- Estimated cost and profit for 1996 assuming that 15000 units will be produced and sold during the year

Factory overheads are recovered as a percentage of direct wages and office and selling expenses as a percentage of works cost. (Apply the same respective percentages as in the previous year).

Solution

Cost Sheet

Output-- 10000 units

Period-- Year ended on December 31, 1995

	Total		Per unit	
Materials		90,000		9.00
Wages		60,000		6.00
Prime cost		1,50,000		15.00
Factory overheads:				
Power and consumable stores	12,000		1.20	
Factory indirect wages	15,000		1.50	
Lighting of factory	5,500		0.55	
Defective work (cost of rectification)	3,000		0.30	
Plant repairs & maintenance and depreciation	11,500		1.15	
	47,000		4.70	
Less: sale of scraps	(2,000)		(0.20)	
		45,000		4.50
Works cost		1,95,000		19.50

Office and selling expenses:				
Clerical salaries and management expenses	33,500		3.35	
Selling expenses	5,500		0.55	
		39,000		3.90
		2,34,000		23.40
Cost of sales		82,000		8.20
Profit (balancing figures)		3,16,000		31.60
Sales				

Note

The cost of rectification of defective works has been included in factory overheads on the assumption that the defectives are normal. In case where defective works is due to abnormal causes, the cost of rectification should be charged to the costing profit and loss account.

Estimated Cost Sheet for 1996

Estimated output-- 15000 units

	Total	Per unit
Materials: 15000 x Rs. 9.90	1,48,500	9.90
Wages: 15000 x Rs. 60.60	99,000	6.60
Prime cost	2,47,500	16.50
Factory overheads @ 75% of wages	74,250	4.95
Works cost	3,21,750	21.45
Office and selling expenses @ 20% of works cost	64,350	4.29
Cost of sales	3,86,100	25.74
Estimated profit (balancing figure)	78,900	5.26
Sales (15000 x Rs. 31)	4,65,000	31.00

Working Notes

$$(1) \text{ Percentage of factory overhead on wages in 1995} = \frac{45000}{60000} \times 100 = 75\%$$

$$(2) \text{ Percentage of office and selling expenses on works cost in 1995} = \frac{39000}{195000} \times 100 = 20\%$$

Problem 20

A factory uses job costing method. The following cost data is obtained from its books for the year ended on December 31, 1995:

	Rs.		Rs.
Direct materials	1,80,000	Selling and distribution overheads	1,05,000
Direct wages	1,50,000	Administration overheads	84,000
Profit	1,21,800	Factory overheads	90,000

- a. Prepare a job cost sheet indicating the following:

- Prime cost
- Works cost
- Production cost
- Cost of sales
- Sales value

- b. In 1996, the factory receives an order for a number of jobs. It is estimated that direct materials required will be of Rs. 2,40,000 and direct labor will cost Rs. 1,50,000. What should be the price for these jobs if the factory intends to earn the same rate of profit on sales assuming that the selling and distribution overheads have gone up by 15%?

The factory recovers factory overheads as a percentage of direct wages and administration, selling and distribution overheads as a percentage of works cost on the basis of cost rates in the previous year.

Solution

Job Cost Sheet For the year ended on December 31, 1995

	Rs.
Direct materials	1,80,000
Direct wages	1,50,000
Prime cost	3,30,000
Factory overheads	90,000
Works cost	4,20,000
Administration overheads	84,000
Cost of production	5,04,000
Selling and distribution overheads	1,05,000
Cost of sales	6,09,000
Profit	1,21,800
Sales values	7,30,800

Estimated Cost Sheet and Price of Jobs for 1996

	Rs.
Direct materials	2,40,000
Direct wages	1,50,000
Prime cost	3,90,000
Factory overheads: 60% of direct wages	90,000
Work cost	4,80,000
Administration overheads: 20% of works cost	96,000
Cost of production	5,76,000
Selling and distribution overhead: 28:75% of works cost	1,38,000
Cost of sales	7,14,000
Profit: $16\frac{2}{3}\%$ on sales, i.e. 20% on cost	1,42,800
Selling price	8,56,800

Working Notes

(1) Percentage of factory overheads on direct wages $\frac{90000}{150000} \times 100 = 60\%$

(2) Percentage of administration overheads on works cost = $\frac{84000}{1420000} \times 100 = 20\%$

(3) Percentage of selling and distribution overheads on works cost =

Selling and distribution overheads	105000
Add: 15% increase	15750

	120750

Percentage on works cost = $\frac{120750}{420000} \times 100 = 28.75\%$

Alternatively percentage in 1995 is $\frac{105000}{420000} \times 100 = 25\%$

So, percentage in 1996 = 25% + 15% of 25% = 28.75%

(4) Percentage of profit –

On sales $\frac{121800}{730800} \times 100 = 16 \frac{2}{3}\%$

On cost $\frac{121800}{609000} \times 100 = 20\%$

Problem 21

Following figures are taken from the records of a company for the year 1994-95:

	Rs.
Direct materials	60,000
Direct wages	50,000
Works overhead	30,000
Administrative overhead	33,600
Selling overhead	22,400
Distribution overhead	1,400
Profit	52,500

A material had been manufactured and supplied to Mr. X in 1995-96 for which the following expenses were incurred:

	Rs.
Direct materials	4,000
Direct wages	2,000

In 1995-96, works overhead was increased by 20%, distribution overhead was decreased by 10% and selling and administrative overhead each was increased by 12.5%. At what price,

the above supply is to be billed to Mr. X so as to earn the same rate of profit on selling price as earned in 1994-95.

Solution

	Rs.
Direct materials	4,000
Direct wages	2,000
Prime cost	6,000
Works overhead: 72% of wages	1,440
Works cost	7,440
Administration overhead: 25.89% of works cost	1,926
Cost of production	9,366
Selling overhead: 13.71% of cost of production	1,284
Distribution overhead: 8.86% of cost of production	830
Cost of sales	11,480
Profit 20% of sales i.e. 25% of cost	2,870
Sale price	14,350

Cost Sheet for the Year 1994-95

	Actual	At 1995-96 rate	
	Rs.		Rs.
Direct materials	60,000		60,000
Direct wages	50,000		50,000
Prime cost	11,000		1,10,000
Works overhead	30,000	30000 + 20% thereof	36,000
Works cost	1,40,000		1,46,000
Administration overhead	33,600	336 + 12.5% thereof	37,800
Cost of production	1,73,600		1,83,800
Selling overhead	22,400	22400 + 12.5% thereof	25,200
Distribution overhead	14,000	14000 - 10% thereof	12,600
Cost of sales	2,10,000		2,21,600

Working Notes

(1) Percentage of works overheads on wages in 1995-96 = $\frac{3600}{50000} \times 100 = 72\%$

(2) Percentage of administration overhead on works cost in 1995-96 = $\frac{37800}{146000} \times 100 = 25.89\%$

(3) Percentage of selling overhead on cost of production in 1995-96 = $\frac{25200}{183800} \times 100 = 13.71\%$

(4) Percentage of distribution overhead in 1995-96 = $\frac{12600}{183800} \times 100 = 6.86\%$

$$(5) \text{ Percentage of profit on cost in 1994-95} = \frac{52500}{210000} \times 100 = 25\%$$

Problem 22

Following figures are available from the books of a manufacturing company for the year ended on 31.12.95:

Materials:	Rs.	Profit for the year	Rs.
Stock on 1.1.95	1,000	Selling overhead	5,250
Stock on 31.12.95	2,000	Factory overhead	4,500
Purchase during 1995	10,000	Administration overhead	4,200
Wages	7,500		

a. Prepare a cost sheet showing the following:

- Prime cost
- Works cost
- Cost of production
- Cost of sales
- Sales

b. In 1996, the factory receives an order for a job which will require materials of Rs. 1,200 and wages Rs. 750. Ascertain the sale price of the job if the factory intends to earn a profit 10% higher than the percentage of profit earned in 1995. Assume that factory overhead has gone up by $16\frac{2}{3}\%$ and selling overhead has gone down by 20% in 1996. Further assume that factory overhead is recovered as a percentage of the wages and administration and selling overhead as a percentage of works cost.

Solution

Cost Sheet

For the year ended on December 31, 1995

Materials consumed:	Rs.	
Stock on 1.1.95	100	
Purchased during 1995	10,000	
	11,000	
Less: stock on 31.12.95	(2,000)	
Wages		9,000
Prime cost		7,500
Factory overhead		16,500
Works cost		4,500
Administration overhead		21,000
Cost of production		4,200

Selling overhead		25,200
Cost of sales		5,250
Profit for the year		30,450
Sales		6,090
		36,540

Estimated Cost Sheet and Price of Job for 1996

	Rs.
Materials	1,200
Wages	750
Prime cost	1,950
Factory overhead: 70% of wages	525
Works cost	2,475
Administration overhead: 19.31% of works cost	478
Cost of production	2,953
Selling overhead: 19.31% of works cost	478
Cost of sales	3,431
Profit: $26\frac{2}{3}\%$ of sales, i.e. $\frac{4}{11}$ th of cost	1,248
Sale price	4,679

Working Notes

Cost sheet for the year 1995 at 1996 rates

Materials	9,000
Wages	7,500
Prime cost	16,500
	5,250
Factor overhead: $4500 + 16\frac{2}{3}\%$ thereof	21,750
Work cost	4,200
Administration overhead	25,950
Cost of production	4,200
Selling overhead: 5250 – 20% thereof	30,150
Cost of sales	

$$(1) \text{ Percentage of factory overhead on wages in 1996} = \frac{5250}{7500} \times 100 = 70\%$$

$$(2) \text{ Percentage of administration overhead on works cost in 1996} = \frac{4200}{21750} \times 100 = 19.31\%$$

$$(3) \text{ Percentage of selling overhead on works cost in 1996} = \frac{4200}{21750} \times 100 = 19.31\%$$

$$(4) \text{ Percentage of profit on sale in 1995} = \frac{6090}{36540} \times 100 = 16\frac{2}{3}\%$$

$$\text{Percentage of profit on sale in 1996} = 16\frac{2}{3}\% + 10\% = 26\frac{2}{3}\%$$

When sales value is Rs. 100, profit is Rs. $26\frac{2}{3}$.

Cost is Rs. $73\frac{1}{3}$

$$\text{So, } \frac{\text{profit}}{\text{cost}} = 26\frac{2}{3} / 73\frac{1}{3} = \frac{4}{11}$$

Normally, profit is expressed as a percentage of sales. In the problem nothing has been mentioned whether the percentage is on cost or sales. The result will be different if the percentage is applied on cost.

Problem 23

The following details related to the year 1992 have been taken from the books of chemical works:

	Kg	Rs.	Salaries:	Kg	Rs
Stock on 1.1.1992					
Raw materials	2000	2,000	Factory	72220	
Finished mixtures	500	1,750	Office	37220	
Factory stores		7,250	Selling	41500	
Purchase:					
Raw materials	160000	1,80,000	Direct	18500	
Factory stores		24,250	Office	18200	
			Selling	18000	
Sales:					
Finished mixture	153050	9,18,000	Raw materials	1200	?
Factory scrap		8,170			
Factory wages		1,78,650	Finished		
Power		30,400	mixture	450	?
Depreciation of machinery		18,000	Factory stores		
					5,550

The stock of finished mixtures at the end of 1992 is to be valued at the factory cost of the mixture for that year. The purchase price of raw materials remained unchanged throughout 1992.

Prepare a statement giving the maximum possible information about cost and its break up for the year 1992.

Solution

Statement of Cost

Period-- Year ended on December 31, 1992

	Rs.	Rs.	Rs.
Materials consumed:			
Opening stock		2,000	

Purchases		1,80,000	
		<u>1,82,000</u>	
Less: closing stock $\left(\frac{1200}{160000} \times Rs.180000\right)$		(1,350)	
Factory wages			1,80,650
Direct expenses			1,78,650
Prime cost			<u>18,500</u>
Factory overheads:			3,77,800
Power		30,400	
Depreciation of machinery		18,000	
Salary (factory)		72,220	
Factory stores:			
Opening stock	7,250		
Purchases	<u>24,250</u>		
	31,500		
Less: Closing stock	<u>(5,550)</u>		
		25,950	
		<u>1,46,570</u>	
Less: sale of factory scrap		(8,170)	
			1,38,400
Cost of goods manufactured			<u>5,16,200</u>
Add: opening stock of finished mixture			1,750
			<u>5,17,950</u>
Less: closing stock of finished mixture		37,220	(1,518)
Cost of goods sold		<u>18,200</u>	<u>5,16,432</u>
Office and administration overhead:			
Salary (office)			
Office expenses		41,500	
		<u>18,000</u>	
Selling and distribution overhead:			55,420
Salary (selling)			
Selling expenses			
			<u>59,500</u>
Cost of sales			<u>6,31,352</u>
Profit (balancing figure)			<u>2,86,648</u>
Sales			<u>9,18,000</u>

Note

The closing stock of finished mixture valued at factory cost (as stated in the problem) is as follows:

$$\frac{450}{153050 + 450 - 500} \times Rs.516200 = Rs1518$$

Problem 24

From the cost ledger of B.K. industries, the following information was obtained for the year 1990:

Rates and taxes for factory premises	Rs. 2,800	Repairs and maintenance	Rs. 20,000
Lighting of the factory	5,200	Cost of rectification of defective work	5,600
Depreciation (plant)	7,000	Consumable stores	15,000
Staff salaries	24,000	Selling expenses	14,660
Management salaries	12,000	General expenses	9,200
Power	9,000	Receipt form the sale of scrap	2,400
Indirect wages	24,500	Profit form guest house	1,000

Production was 100000 units, prime cost per unit of materials was Rs. 1.80 and wages was Rs. 1.20. The net selling price was Rs. 4.70 per unit. All the units were sold.

As from January 01, 1991, the selling price was reduced to Rs. 4.50 per unit. It was estimated that the production could be increased in 1991 by 50 percent without incurring any overtime or extra shift.

Prepare statements showing different element of cost for 1990 and estimated cost and profit for 1991 assuming that 150000 units will be produced and sold in the year. State the assumption made to solve the problem.

Solution

Statement of Cost
Period-- Year ended on December 31, 1990
(Output-- 1,00,000 units)

	Total amount		Cost per unit	
	Rs.	Rs.	Rs.	Rs.
Materials		1,80,000		1.800
Wages		1,20,000		1.200
Prime cost		3,00,000		3.000
Works overhead:				
Variable: power			0.090	
Consumable stores	9,000		0.150	
Cost of rectification of defective work	15,000			
	5,600		0.056	
	29,600		0.296	
Less: sales of scrap	2,400		0.024	
Fixed: indirect wages	24,500	27,200		0.272
Depreciation (plant)	7,000		0.245	
Rates and taxes for factory premises			0.070	
	2,800		0.028	
Lighting of the factory repairs and maintenance (plant)	5,200		0.052	
	20,000		0.200	
		59,500		0.595
Works cost		3,86,700		3.867

Administrative overhead:				
Fixed Management salaries	12,000		0.120	
Staff salaries	24,000		0.240	
General expenses	9,200	45,200	0.092	0.452
		4,31,900		4.319
Cost of production		14,660		0.147
Selling overhead: Fixed		4,46,560		4.466
Cost of sales		23,440		0.234
Profit (balancing figures)		4,70,000		4.700
Sales				

Working Notes

- (1) The profit from guest house has been excluded from cost because it is not an item of cost accounts. It is an income to be shown in financial accounts.
- (2) It has been assumed that the defectives are within normal limit.

Statement of Estimated Cost and Profit for 1991

(Estimated output-- 150000 units)

	Total	Per unit
	Rs.	Rs.
Materials @Rs. 1.80 per unit	2,70,000	1.800
Wages @Rs. 1.20 per unit	1,80,000	1.200
Prime cost	4,50,000	3.000
Works overhead: variable @Rs. 0.272 per unit	40,800	0.272
Fixed	59,500	0.397
Works cost	5,50,300	3.669
Administration overhead: Fixed	45,200	0.301
Cost of production	5,95,500	3.970
Selling overhead: fixed	14,660	0.098
Profit (balancing figure)	6,10,160	4.068
Sales (150000 x Rs. 4.50)	64,840	0.432
	6,75,000	4.500

Note

It has been assumed that selling and other expenses of fixed nature will not change as a result of increase in output.

Problem 25

The cost structure of an article, the selling price of which is Rs. 500 is as follows:

Direct material	50% of the total cost
Direct labor	30% of the total cost
Overhead	Balance amount

Due to an anticipated increase in existing materials price by 20% and in the existing labor rate by 10%, the existing profit would come down by 30% in case the selling price remains unchanged.

Prepare a comparative statement showing the cost, profit and sale price under the present conditions and with the increase expected for future, assuming the same percentage of profit on cost as at present had to be earned.

Solution

Let “a” be the total cost per unit and “b” be the profit per unit.

Then, a+ b = Rs. 500 per unit

	Present cost	Increases	Expected cost
Direct materials	0.50a	0.10a (20%)	0.60a
Direct labor	0.30a	0.03a (10%)	0.33a
Overhead	0.20a		0.20a

If the selling price remains unchanged, profit will go down by 30%. Hence,

$$a + b = 500 \dots\dots\dots(i)$$

$$1.13a + 0.70b = 500 \dots\dots\dots(ii)$$

Multiplying equation (i) by 1.13, we get:

$$1.13a + 1.13b = 565 \dots\dots\dots(iii)$$

Subtracting equation (ii) from equation (iii), we get:

$$0.43b = 65,$$

$$\text{or } b = \frac{65}{0.43} = 151 \text{ (nearly)}$$

Putting the value of b in equation (i), we get:

$$a + 151 = 500,$$

$$\text{or } a = 500 - 151 = 349$$

$$\text{Percentage or profit on cost} = \frac{151}{349} \times 100 = 43.27\%$$

Comparative Statement

	Present cost		Increase		Expected cost
Direct material	174	(50%)	35	(20%)	209
Direct labor	105	(30%)	110	(10%)	116
Overhead	70	(20%)	---		70
Total cost	<u>349</u>				<u>395</u>
Profit 43.27%	<u>151</u>				<u>171</u>
	500				566

