Study Material

2nd Semester

Problems and Solutions

Chapter: Cost Sheet

Calculation of different percentage after preparing Cost Sheet

1. The Directors of a manufacturing company require a statement showing the production results of a business for the month of April, 2018. The cost accounts give the following information:

	₹
Stock in hand (1.4.2018)	
Raw Materials	25,500
Finished goods	17,300
Stock in hand (30.4.2018)	
Raw Materials	26,200
Finished goods	15,000
Purchases of Raw Materials	22,000
Work-in-progress (1.4.2018)	8,200
Work-in-progress (30.4.2018)	9,000
Sale of Finished goods	72,000
Direct wages	17,100
Non-productive wages	800
Stores	100
Office Expenses	3,000
Works Expenses	3,000
Selling and Distribution Exps.	4,200

The following information is required: (*a*) The value of materials consumed, (*b*) Works Cost, (*c*) Total cost of production, (*d*) Cost of goods sold, (*e*) The profit on goods sold, (*f*) Percentage of works overhead to productive wages, (*g*) Percentage of office on cost to works cost, (*h*) Percentage of selling and distribution expenses to sales.

Solution:

Statement of Cost

	₹	₹
Stock of Raw materials (1.4.18)		25,500
Add: Purchases of Raw Materials		22,000
		47,500
Less: Stock of Raw Materials (30.4.18)		26,200
Value of Materials Consumed (*a*)		21,300
Direct Wages		17,100
Prime Cost		38,400

		₹	
Work Overheads:			
Non-Productive wages		800	
Stores		100	
Works Exps.		3,000	
			3,900
	Gross Work Cost		42,300
Add: Work-in-Progress (1.4.18)			8,200
			50,500
Less: Work-in-Progress (30.4.18)			9,000
	Work Cost (*b*)		41,500
Office Exps.			3,000
	Cost of Production (Office Cost) (*c*)		44,500
Add: Stock of Finished goods (1.4.18)			17,300
			61,800
Less: Stock of Finished goods (30.4.18)			15,000
	Cost of Goods Sold (*d*)		46,800
Selling and Distribution Expenses			4,200
	Cost of Sales		51,000
	Profit on Goods Sold (*e*)		21,000
	Selling Price		72,000

Calculation of Percentages:

(*f*) Percentage of Works Overhead to Productive Wages

$$\frac{\text{Works Overhead} \times 100}{\text{Productive Wages}} \text{ or } \frac{3,900 \times 100}{17,100} = 22.807\%$$

(*g*) Percentage of Office on Cost to Works Cost

$$\frac{\text{Office on cost} \times 100}{\text{Works Cost}} \text{ or } \frac{3,000 \times 100}{41,500} = 7.228\%$$

(*h*) Percentage of Selling and Distribution Expenses to Sales

$$\frac{\text{Selling \& Dist. Exps.} \times 100}{\text{Sales}} \text{ or } \frac{4,200 \times 100}{72,000} = 5.833\%$$

WIP valued at Prime Cost and at Works Cost

2. XYZ is manufacturing refrigerators and the following details are furnished in respect of its factory operations for the year ended 31st March, 2018.

	₹	₹
Work-in-Progress in the beginning		
At Prime Cost	51,000	
Manufacturing Exps.	15,000	66,000
Work-in-Progress at the end		
At Prime Cost	45,000	
Manufacturing Exps.	9,000	54,000
Stock of Raw Materials in the beginning		2,25,000
Purchases of raw materials		4,77,000
Direct Labour		1,71,000
Manufacturing expenses		84,000
Closing stock of raw materials		2,04,000

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

Solution:

Statement Showing Cost of Production of Refrigerators for the year ending 31st March 2018

		₹	₹
Raw Materials:	Opening Stock	2,25,000	
	Purchases	4,77,000	
		7,02,000	
	Less: Closing Stock of Raw Materials	2,04,000	
Cost of Raw Materials Consumed			4,98,000
Direct Labour			1,71,000
			6,69,000
Add: Work-in-progress in the beginning			51,000
			7,20,000
Less: Work-in-progress at the end			45,000
	Prime Cost		6,75,000
Manufacturing exps.		84,000	
Add: Work-in-progress in the beginning		15,000	
		99,000	
Less: Work-in-progress at the end		9,000	90,000
	Cost of Production		7,65,000

WIP valued at Prime Cost

WIP valued at Works Cost

Here, Works Cost = Cost of Production

Value of Closing Stock of Finished Goods not given

3. Prepare a Cost Statement and determine profit from the following information:

	₹
Consumable Materials	
Opening stock	10,000
Purchases	85,000
Closing stock	4,000
Direct Wages	20,000
Other Direct Charges	10,000
Factory Overheads	100% of Direct Labour
Office Overheads	10% of Works Cost
Selling and Distribution expenses	₹2 per unit sold.

Units of Finished Product

In hand at the beginning of the period	1000 (Value ₹16,000)
Produced during the period	10,000
In hand at the end of the period	2,000

Also find out the selling price per unit on the basis that profit margin is uniformly made to yield a profit of 20 per cent of the selling price. There was no work-in-progress either at the beginning or at the end of the period.

Solution:

Cost Sheet for the Period ended March 31, 2018
(Output 10,000 units)

		Total ₹	*Per Unit* ₹
Consumable Materials			
Opening Stock	10,000		
Add: Purchases	85,000		
	95,000		
Less: Closing Stock	4,000	91,000	9.10
Direct Wages		20,000	2.00
Other Direct Expenses		10,000	1.00
Prime Cost		1,21,000	12.10
Factory Overheads: 100% of Direct Wages		20,000	2.00
Works Cost		1,41,000	14.10
Office Overheads: 10% of Works Cost		14,100	1.41
Cost of Production (10,000 Units)		1,55,100	15.51
Add: Opening Stock of Finished Goods (1000 units)		16,000	
		1,71,100	
Less: Closing Stock of Finished Goods (2000 units @ ₹15.51 per unit *i.e.* Cost of Production per unit)		31,020	
Cost of Goods Sold (9000 units)		1,40,080	
Add: Selling and Distribution Overheads @ ₹2 per unit (₹2 × 9000 units)		18,000	
Cost of Sales		1,58,080	
Profit (20% of Selling Price *i.e.* 25% of Cost)		39,520	
Selling Price		1,97,600	

(Per Unit Selling Price ₹ $\frac{1,97,600}{9,000}$ units *i.e.* ₹21.96)

Valuation of Closing Stock made by following FIFO Method

$$\frac{\textit{Cost of Production}}{\textit{No of units produced}}$$

$$= \frac{1,55,100}{10.000}$$

Raw Materials Returns, Abnormal Loss of Raw Materials

4. From the following particulars prepare a statement in such form as you consider most suitable for showing clearly all elements of cost :

	₹		₹
Opening stock of 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	2,000	Fuel, gas, water etc.	1,000
Closing stock of raw materials	18,800	Repairs to plant	600
Wages paid to :		Depreciation on machinery	1,400
Productive workers	18,000	Office expenses	1,500
Non-productive workers	2,000	Direct chargeable expenses	800
Salaries paid to office staff	5,000	Advertising	1,200
Carriage on raw materials purchased	500	Abnormal loss of raw materials	1,200

[N.B.U., B.Com. (Hons.)]

Solution

Statement of Cost — *Period ...*

	₹	₹
Materials consumed :		
Opening stock	25,000	
Purchases	70,000	
Carriage on purchases	500	
	95,500	
Less : Returns	2,000	
	93,500	
Less : Abnormal loss (see *Note*)	1,200	
	92,300	
Less : Closing stock	18,800	73,500
Productive wages		18,000
Direct chargeable expenses		800
Prime cost		92,300
Works overhead :		
Non-productive wages	2,000	
Rent and rates of workshop	2,500	
Fuel, gas, water etc.	1,000	
Repairs to plant	600	
Depreciation on machinery	1,400	7,500
Works cost		99,800
Office overhead :		
Salaries to office staff	5,000	
Office expenses	1,500	6,500
Cost of production		1,06,300
Selling and distribution overhead :		
Carriage on goods sold	1,500	
Advertising	1,200	2,700
Cost of sales		1,09,000

Treatment of Returns of Raw Materials and Abnormal Loss of Raw Materials

In case of Normal Loss of Raw Materials, no treatment is required. They are absorbed by the good units produced.

Estimated Cost Sheet

5. The following particulars are available for the previous year's production of fans for M/s. Eastern Engineering Co. :

(i) Total production 1,000 units.
(ii) Total cost of raw materials consumed ₹ 12,000.
(iii) Total cost of direct labour ₹ 20,000.
(iv) Total works overhead expenses ₹ 40,000.
(v) Total general overhead expenses ₹ 36,000.
(vi) Total selling and distribution overhead expenses ₹ 16,000.
(vii) Total sale price for 800 units sold ₹ 1,12,640.

On the basis of the undernoted instructions prepare a detailed price quotation per unit of fan for the current year :

(a) Cost of raw materials and direct labour are to increase by 10% and 15% respectively over the previous year's 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.

[C.U., B.Com. (Hons.)]

Solution

Output : 1,000 units — **Cost Sheet** — *for the year ...*

	Total ₹	Per unit ₹
Raw materials consumed	12,000	12·00
Direct labour	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) @ ₹ 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	140·80

Estimated Price to be quoted per unit — *for the year ...*

	₹
Raw materials : $^{110}/_{100}$ × ₹ 12	13·20
Direct labour : $^{115}/_{100}$ × ₹ 20	23·00
Prime cost	36·20
Works overhead (@ 200% of direct labour) (see *Note* 1)	46·00
Works cost	82·20
General overhead (@ 50% of works cost) (see *Note* 2)	41·10
Cost of production	123·30
Selling and distribution overhead (@ 18·5% of cost of goods sold) (see *Note* 3)	22·81
Total cost	146·11
Profit @ 10% on total cost (see *Note* 4)	14·61
Price to be quoted	160·72

Working Notes :

(1) Percentage of works overhead on direct labour = $\frac{₹\ 40,000}{₹\ 20,000} \times 100 = 200\%$.

(2) Percentage of general overhead on works cost = $\frac{₹\ 36,000}{₹\ 72,000} \times 100 = 50\%$.

(3) Percentage of selling and distribution expenses on cost of goods sold = $\frac{₹\ 16,000}{₹\ 86,400} \times 100 = 18{\cdot}5\%$.

(4) Percentage of profit on cost = $\frac{₹\ 10,240}{₹\ 1,02,400} \times 100 = 10\%$.

Working notes are important for the solution. Be careful about increase/decrease of cost in calculation of quoted price.

Estimated Cost Sheet, when a P/L A/C is given and no. of units to be produced also varies

6. P. Ltd. a manufacturer of fans, manufactured and sold 2,000 fans during the year ended 31.3.17. Following is the profit and loss account of the company during the year.

Profit and Loss Account for the year ended 31.3.17

	₹		₹
To Opening stock of raw materials	20,000	By Sales	6,00,000
" Purchases of raw materials	1,30,000	" Closing stock of raw materials	30,000
" Wages	1,80,000		
" Manufacturing expenses	75,000		
" Gross profit c/d	2,25,000		
	6,30,000		6,30,000
To Rent, rates and taxes	20,000	By Gross profit b/d	2,25,000
" Administration expenses	1,00,000	" Dividend received	3,000
" Selling and distribution expenses	45,000		
" Preliminary expenses written off	8,000		
" Donation	5,000		
" Net profit c/d	50,000		
	2,28,000		2,28,000

The estimates made by the company for the year ending 31.3.18 are as under :

(a) The production and sales of fans will increase by 50%.

(b) The price of material per fan would increase by 20%.

(c) The labour cost per fan would go up by 10%.

(d) Of the manufacturing expenses ₹ 15,000 are fixed and the balance are variable. The variable portion will be in the same proportion of material consumed and wages as in the previous year.

(e) Administration expenses are to be charged at the same respective percentage as in the previous year.

(f) Selling and distribution expenses per fan would remain unchanged.

(g) Selling price per fan will decrease by 10%.

Prepare Cost Sheet for 2016-17 and 2017-18 showing cost, profit and selling price per fan and the total cost, total profit and total sales.

Material Consumed + Wages= Prime Cost

Working Notes :

(1) Percentage of variable manufacturing expenses to prime cost : $\frac{₹\ 60,000}{₹\ 3,00,000} \times 100 = 20\%$.

(2) Percentage of administration expenses to works cost : $\frac{₹\ 1,00,000}{₹\ 3,75,000} \times 100 = 26\frac{2}{3}\%$.

(3) Raw material cost per fan in 2017-18 : ₹ 60 + 20% thereof = ₹ 72.

(4) Labour cost per fan in 2017-18 : ₹ 90 + 10% thereof = ₹ 99.

(5) Selling price per fan in 2017-18 : ₹ 300 – 10% thereof = ₹ 270.

(6) Dividend received is a non-operating income. Preliminary expenses and donation are non-cost items. These items have, therefore, been excluded from the cost sheet.

Example of items not to be considered at Cost Sheet:
Int. paid on bank loan, Int. on debentures, Loss on sale of fixed assets, Income Tax paid, Goodwill written off, Patent written off, Preliminary Exp written off, Transfer to reserve, Donation, Discount received, Dividend received, Profit on sale of fixed assets, Bad debt recovered, Interest received.

Solution

Output : 2,000 Fans — **Cost Sheet** — *Period : Year ended 31.3.17*

		Total ₹	Per unit ₹
Raw materials consumed :			
Opening stock	20,000		
Purchases during the year	1,30,000		
	1,50,000		
Less : Closing stock	30,000	1,20,000	60·00
Wages		1,80,000	90·00
Prime cost		3,00,000	150·00
Manufacturing expenses :			
Fixed	15,000		
Variable	60,000	75,000	37·50
Works cost		3,75,000	187·50
Office and administration expenses :			
Rent, rates and taxes	20,000		
Administration expenses	1,00,000	1,20,000	60·00
Cost of production		4,95,000	247·50
Selling and distribution expenses		45,000	22·50
Cost of sales		5,40,000	270·00
Profit *(balancing figure)*		60,000	30·00
Sales		6,00,000	300·00

Budgeted Output and Sales : 3,000 Fans — ***Estimated Cost Sheet*** — *Period : Year ended 31.3.18*

		Total ₹	Per unit ₹
Raw materials		2,16,000	72·00
Wages		2,97,000	99·00
Prime cost		5,13,000	171·00
Manufacturing expenses :			
Fixed	15,000		
Variable : 20% of ₹ 5,13,000	1,02,600	1,17,600	39·20
Works cost		6,30,600	210·20
Office and administration expenses :			
Rent, rates and taxes	20,000		
Administration expenses : $26^2/_3$% of works cost	1,68,160	1,88,160	62·72
Cost of production		8,18,760	272·92
Selling and distribution expenses		67,500	22·50
Cost of sales		8,86,260	295·42
Loss		76,260	25·42
Sales		8,10,000	270·00

Ascertainment of selling price to maintain desired amount of profit

7. The cost structure of an article, the selling price of which is Rs. 8,000 is:

Direct Materials	50% of total cost
Direct Labour	30% of total cost
Overhead	Balance
Profit	20% on selling price

(a) If the material price and labour rates increase by 20% and 10%, respectively, and overhead remains fixed, what will be the profit percentage on the same selling price?

(b) In the above case, what should be the selling price if the profit thereon shall remain at 20% on selling price?

Solution :

Comparative Statement of Cost, Profit and Selling Price

Particulars	Present condition Rs.	Anticipated Condition	
		Selling Price Constant Rs.	Selling Price Changed Rs.
Direct Materials	$6,400 \times \frac{50}{100} = 3,200$	3,200 + 20% = 3,840	3,840
Direct Labour	$6,400 \times \frac{30}{100} = 1,920$	1,920 + 10% = 2,112	2,112
Overhead	$6,400 \times \frac{20}{100} = 1,280$	1,280 + Nil = 1,280	1,280
Total cost	6,400	7,232	7,232
Profit	1,600	768	1,808
Selling Price	8,000	8,000	9,040
Percentage of Profit on Sale	20%	9.6%	20%

Note : Cost = Sales – Profit = Rs. (8000 – 1,600) = Rs. 6,400.

Use of equation

8. A company manufactures radios which are sold at Rs. 1,600per unit. The total cost is

composed of 30% for direct materials, 40% for direct wages ad 30% for overheads. An increase in material price by 30% and in wage rates by 10% is expected in the next year, as a result of which the profit at current selling price may decrease by 40% of the present profit per unit.

You are required to prepare a statement showing current and future profit at present selling price.

How much should selling price be increased to maintain the present rate of profit?

Solution :

Let x be the total cost and y be the profit.

Since Cost + Profit = Sales, $x + y$ = Rs. 1,600 ..... (1)

Statement of Present and Future Cost of Radio

Cost elements	Present cost	Increase in cost	Future expected cost
	Rs.	Rs.	Rs.
Direct Materials	0.30x	0.09x	0.39x
Direct Labour	0.40x	0.04x	0.44x
Overheads	0.30x	—	0.30x
	x	0.13x	1.13x

The increase in cost is 0.13x and decrease in profit is 40%, selling price remaining unchanged. The increase in cost and reduction in profit can be represented by the following equation :

$1.13x + 0.60y = 1{,}600$ ..... (2)

Multiplying equation (1) by 0.60 and subtracting it from equation (2), we get

$0.60x + 0.60y$	=	960
$1.13x + 0.60y$	=	1,600
$(-) 0.53x$	=	$(-)$ 640

or, x = Rs. 1,207.50 or Cost = Rs. 1,207.55

Substituting the value of x in equation (1), we get

1,207.55 + y = 1,600 or Profit = Rs. 392.45

$$\text{Current Profit} = \frac{392.45}{1{,}207.55} \times 100 = 32.5\% \text{ of cost}$$

Future Profit = 0.60×392.45 = Rs. 235.47

Statement of revised Selling Price to maintain the current rate of profit

		Rs.
Direct Material	Rs. (0.39×1207.55)	470.94
Direct Labour	Rs. (0.44×1207.55)	531.32
Overheads	Rs. (0.30×1207.55)	362.27
Total Cost		1,364.53
Profit (0.325×1364.53)		443.47
Revised Selling Price		1,808.00

Thus, the selling price should be increased by Rs. 208 i.e., from Rs. 1,600 to Rs. 1,808 to maintain the present rate of profit.