

PAPER – 4 : COST ACCOUNTING AND FINANCIAL MANAGEMENT

PART – I : COST ACCOUNTING

QUESTIONS

1. (i) A company produces the product ABC which sells for Rs. 25 per unit. Variable cost is Rs. 20 per unit and Fixed overhead for the year is Rs. 6,00,000.

Required:

- (a) Calculate sales value needed to earn a profit of 10% on sales.
(b) Calculate margin of safety sales if profit is Rs. 1,20,000.

- (ii) Calculate Efficiency and Capacity ratio from the following figures:

Budgeted production	160 units
Actual production	120 units
Standard time per unit	8 hours
Actual hours worked	1000

- (iii) Calculate total passenger kilometres from the following information:

Number of buses 12, number of days operating in a month 25, trips made by each bus per day 10, distance covered 20 kilometres (one side), capacity of bus 40 passengers, normally 90% of capacity utilization.

- (iv) A machinery was purchased from a manufacturer who claimed that his machine could produce 39.5 tonnes in a year consisting of 365 days. Holidays, break-down, etc., were normally allowed in the factory for 70 days. Sales were expected to be 28 tonnes during the year and the plant actually produced 28.2 tonnes during the year. You are required to state the following figures:

- (a) rated capacity
(b) Normal capacity

- (v) Using Taylor's differential piece rate system, find the earning of X from the following particulars:

Standard time per piece	10 minutes
Normal rate per hour (in a 8 hours day)	Rs. 24
X produced	45 Units

Basic Concepts

2. (i) Describe briefly the role of the cost accountant in a manufacturing organisation.
(ii) Distinguish between:
(a) Variable cost and direct cost

(b) Estimated cost and standard cost.

Material

3. The following details apply to an annual budget for a manufacturing company:

Quarter	1 st	2 nd	3 rd	4 th
Working days	65	60	55	60
Production (units per working day)	100	110	120	105
Raw material purchases (%by weight of annual total)	30%	50%	20%	-----
Budgeted purchases price (per kg.)	Re. 1	Rs. 1.05	Rs. 1.125	-----
Quantity of raw materials per unit of production : 2 kg.				

Budgeted opening stock of raw materials 4,000 kg. (cost Rs. 4,000)

Budgeted closing stock of raw materials 2,000 kg.

Issues are priced on FIFO basis.

Calculate the following budget figures:

- (a) Quarterly and annual purchases of raw material, by weight and value.
- (b) Closing quarterly stock by weight and value.

Labour

4. Calculate the earnings of A and B from the following particulars for a month and allocate the labour cost to each job X, Y and Z:

	A	B
(i) Basic Wages	Rs. 100	160
(ii) Dearness Allowance	50%	50%
(iii) Contribution to Provident Fund (on basic wages)	8%	8%
(iv) Contribution to Employees' State Insurance (on basic wages)	2%	2%
(v) Overtime Hours	10	

The Normal working hours for the month are 200. Overtime is paid at double the total of normal wages and dearness allowance. Employer's contribution to State Insurance and Provident Fund are at equal rates and employees' contributions. The two workers were employed on jobs X, Y and Z in the following proportions:

	Jobs		
	X	Y	Z
Workers A	40%	30%	30%
Worker B	50%	20%	30%

Overtime was done on job Y.

Overheads

5. Yapp Ltd, an engineering company, having 25 different types of automatic machines, furnishes you the following data for 2008-09 in respect of Machine B:

	Rs. 50,000
1. Cost of machine Life 10 years with no scrap value.	
2. Overhead expenses are:	
Factory rent	50,000 p. a.
Heating and lighting	40,000 p. a.
Supervision	1,50,000 p.a.
Reserve equipment for Machine B	5,000 p. a.
Area of the factory	80,000 sq. m.
Area occupied by Machine B	3,000 sq. m.
Power cost 50 paise per hour while in operation.	
3. Wages of operator is Rs. 24 per days of 8 hours including all fringe benefits. He attends to one machine when it is under set up and two machines while under operation.	
4. Estimated production hours	3,600 p.a.
Estimated set up time in hours	400 p.a.

Prepare a schedule of comprehensive machine hour rate and find the overhead chargeable to the following jobs:

	Job 1203	Job 1502
Set up time (hours)	80	40
Operation time (hours)	130	160

Non-Integrated Accounting

6. The financial records of Anamika Manufacturers Ltd. reveal the following for the year ended 30-6-2009:

	Rs. in thousands
Sales (20,000 units)	4,000
Materials	1,600
Wages	800
Factory Overheads	720
Office and Administrative Overheads	416
Selling and Distribution Overheads	288
Finished Goods (1,230 units)	240
Work-in-progress:	
Material	48

Labour	32	
Overheads (Factory)	<u>32</u>	112
Goodwill written off		320
Interest on Capital		32

In the Costing records, factory overhead is charged at 100% of wages, administration overhead 10% of factory cost and selling and distribution overhead at the rate of Rs. 16 per unit sold.

Prepare a statement reconciling the profit as per cost records with the profit as per financial records of the company.

Contract Costing

7. Sheron Limited undertook a contract for Rs.5,00,000 on 1st July, 2008. On 30th June, 2009 when the accounts were closed, the following details about the contract were gathered:

	Rs.
Materials Purchased	1,00,000
Wages Paid	45,000
General Expenses	10,000
Plant Purchased	50,000
Materials on Hand 30.06.09	25,000
Wages Accrued 30.06.09	5,000
Work Certified	2,00,000
Cash Received	1,50,000
Work Uncertified	15,000
Depreciation of Plant	5,000

The above contract contained an escalator clause which read as follows:

"In the event of prices of materials and rates of wages increase by more than 5% the contract price would be increased accordingly by 25% of the rise in the cost of materials and wages beyond 5% in each case."

It was found that since the date of signing the agreement the prices of materials and wage rates increased by 25%. The value of the work certified does not take into account the effect of the above clause.

Prepare the contract account. Workings should form part of the answer.

Operating Costing

8. Mr. Robbin Sharma owns a bus which runs according to the following schedule:

- (i) Delhi to Chandigarh and back, the same day.

Distance covered: 150 kms, one way

Number of days run each month: 8

Seating capacity occupied 90%

- (ii) Delhi to Agra and back, the same day.

Distance covered : 120 kms. One way

Number of days run each month: 10

Seating capacity occupied 85%

- (iii) Delhi to Jaipur and back, the same day

Distance covered: 270 kms. one way.

Number of days run each month: 6

Seating capacity occupied 100%

- (iv) Following are the other details:

Cost of the bus Rs. 6,00,000

Salary of the driver Rs. 2,800 p.m.

Salary of the Conductor Rs. 2,200 p.m.

Salary of the part-time Accountant Rs. 200 p.m.

Insurance of the bus Rs. 4,800 p.a.

Diesel consumption 4 kms per litre Rs. 6 per litre

Road tax Rs. 1,500 p.a.

Lubricant oil Rs. 10 per 100 kms.

Permit fee Rs. 315 p.m.

Repairs and maintenance Rs. 1,000 p.m.

Depreciation of the bus @ 20% p.a.

Seating capacity of the bus 50 persons.

Passenger tax is 20% of the total takings. Calculate the bus fare to be charged from each passenger to earn a profit of 30% on total takings. The fares are to be indicated per passenger for the journeys:

- (i) Delhi to Chandigarh

- (ii) Delhi to Agra

- (iii) Delhi to Jaipur

Process Costing

9. A certain product passes through two processes before it is completed and transferred to finished stock. The following data relate to January, 2010:

	Process I	Process II	Finished Stock
	Rs.	Rs.	Rs.
Opening stock	15,000	18,000	45,000
Direct materials	30,000	31,500	
Direct wages	22,400	22,500	
Factory overheads	21,000	9,000	
Closing stock	7,400	9,000	22,500
Inter-process profit included in opening stock		3,000	16,500

Output of Process I is transferred to Process II at 25% profit on the transfer price.

Output of Process II is transferred to finished stock at 20% profit on the transfer price.

Stocks in Process are valued at prime cost. Finished stock is valued at the price at which it is received from Process II. Sales during the period are Rs. 2,80,000.

Prepare and compute:

- Process cost accounts and finished goods account showing the profit element at each stage;
- Actual realized profit ; and
- Stock valuation for balance sheet purpose.

Standard Costing

10. The standard labour complement and the actual labour complement engaged in a week for a job are as follows:

	Skilled Workers	Semi- skilled Workers	Un. Skilled Workers
Standard number of workers in the gang	32	12	6
Standard wage rate per hour (Rs.)	3	2	1
Actual number of workers employed in the gang during the week	28	18	4
Actual wages rate per hour (Rs.)	4	3	2

During the 40 hours working week the gang produced 1,800 standard labour hours of work.

Calculate:

- (i) Total labour cost variance;
- (ii) Labour efficiency variance;
- (iii) Labour mix variance ; and
- (iv) Rate of wages variance.

Marginal Costing

- 11. (i) Explain and illustrate cash break-even chart.
- (ii) Aiasha Ltd. has furnished the following data for the two years:

	2008 – 09	2009 – 10
Sales	Rs. 8,00,000	?
P/V Ratio	50%	37.5%
Margin of Safety (Sales as a % of Total sales)	40%	21.875%

There has been substantial savings in the fixed cost in the year 2009-10 due to the restructuring process. The company could maintain its sales quantity level of 2008-09 in 2009-10 by reducing selling price.

You are required to calculate the following:

- i. Sales for 2009-10 in rupees
- ii. Fixed cost for 2009-10
- iii. Break even sales for 2009-10 in rupees

Budgets and Budgetary Control

- 12. The budgeted cost of a factory specialising in the production of a single product at the optimum capacity of 6,400 units per annum amounts to Rs. 17,60,480 as detailed below:

		Rs.
Fixed costs		2,06,880
Variable costs:		
Power	14,400	
Repairs, etc.	17,000	
Other variable cost	5,400	
Direct material	4,92,800	
Direct labour	<u>10,24,000</u>	<u>15,53,600</u>
		<u>17,60,480</u>

Considering the possible impact on sales turnover by market trends, the company decides to prepare flexible budget with a production target of 3,200 and 4,800 units. On behalf of the company you are required to prepare a flexible budget for production levels at 50% and 75%.

Assuming the selling price per unit is maintained at Rs. 400 as at present, indicate the effect on net profit. Administration, selling and distribution overheads continue at Rs. 36,000.

SUGGESTED ANSWERS/HINTS

1. (i) (a) Suppose sales units are x then

$$S = V + F + P$$

$$S = \text{Sales}$$

$$V = \text{Variable Cost}$$

$$F = \text{Fixed Cost}$$

$$P = \text{Profit}$$

$$25x = 20x + 6,00,000 + 2.5x$$

$$25x - 22.5x = 6,00,000$$

$$\therefore x = \frac{6,00,000}{2.5} = 2,40,000 \text{ units}$$

$$\text{Sales value} = 2,40,000 \times 25 = \text{Rs. } 60,00,000$$

$$(b) \text{ MS Sales} = \frac{\text{Profit}}{\text{P/V ratio}} \therefore \frac{1,20,000}{\text{P/V}}$$

$$\text{where } \text{P/V} = \frac{C}{S} \times 100 \quad \text{Or } \frac{5}{25} \times 100 = 20\%$$

$$\therefore \frac{1,20,000}{20} \times 100 = 6,00,000$$

$$(ii) \text{ Efficiency Ratio} = \frac{\text{Actual output in terms of standard hours}}{\text{Actual hour worked}} \times 100$$

$$\text{Or } \frac{960}{1000} \times 100 = 96\%$$

$$\text{Capacity Ratio} = \frac{\text{Actual hours worked}}{\text{Budgeted hours}} \times 100$$

$$\text{Or } \frac{1000}{1280} \times 100 = 78.12\%$$

(iii) Calculation of passenger kilometers:

$$12 \times 25 \times 10 \times 2 \times 20 \times 40 \times 90\% = 43,20,000 \text{ passenger kms.}$$

- (iv) (a) Rated capacity 39.5 tonnes
(Refers to the capacity of a machine
or a plant as indicated by its manufacturer)
- (b) Normal capacity 28 tonnes
(It is the capacity of a plant utilized based
on sales expectancy)

(v) Standard output per day $\left(\frac{8 \times 60}{10} \right) = 48$ units

Actual output = 45 units

Efficiency percentage $\frac{45}{48} \times 100 = 93.75\%$

Under this method lower rate is 83% of the normal piece rate and is applicable if efficiency of worker is below 100%.

Earning rate per unit = 83% of $\frac{24}{6^*}$ or 3.32 per unit

Earning = $45 \times 3.32 = \text{Rs. } 149.4$

* In one hour, production will be = $\frac{60 \text{ minutes}}{\text{standard time per peice, i.e. } 10 \text{ minutes}} = 6 \text{ units}$

Basic Concepts

2. (i) Cost accountant in a manufacturing organisation plays several important roles. He establishes a Cost Accounting department in his concern. He ascertains the requirement of cost information which may be useful to organisational mangers at different levels of the hierarchy. He develops a manual, which specifies the functions to be performed by the Cost Accounting department. The manual also contains the format of various forms which would be utilised by the concern for procuring and providing information to the concerned officers. It also specifies the frequency at which the cost information would be supplied to a concerned executive.

Usually, the functions performed by a Cost Accounting department includes cost ascertainment, cost comparison, cost reduction, cost control and cost reporting.

Cost ascertainment, requires the classification of costs into direct and indirect. Further it requires classification of indirect costs (known as overheads) into three classes viz, factory overheads; administration overheads and selling and distribution overhead. Cost accountant suggests the basis which may be used by his subordinates for carrying out the necessary classifications as suggested above.

Cost comparison is the task carried out by Cost Accountant for controlling the cost of the products manufactured by the concern. Cost Accountant of the concern establishes standards for all the elements of cost and thus a standard cost of the finished product. The standard cost so determined may be compared with the actual cost to determine the variances. Cost Accountant ascertains the reasons for the occurrence of these variances for taking suitable action.

Cost analysis may also be made by Cost Accountant for taking decisions like make or buy and for reviewing the current performance.

Cost Accountant also suggests suitable techniques for the purpose of cost reduction/cost control, after carrying out a cost benefit analysis.

Cost Accountant also plays a key role in the preparation of Cost reports. These reports help the executives of a business concern in reviewing their own performance and in identifying the weak areas, where enough control measure may be taken in future.

In brief, one may say that there is hardly any activity in a manufacturing organisation with which a Cost Accountant is not directly associated in some form or the other.

(ii) (a) Variable and direct cost:

A variable cost is a cost that changes in total in direct proportion to changes in the related total activity or volume. Cost of material is an example of variable cost.

Direct cost is a cost which can be identified either with a cost centre or with a cost unit. An example of direct cost is the allocation of direct materials to a department and then to the various jobs. All variable costs are direct-but each direct cost may not be variable.

(b) Estimated cost and standard cost:

Kohler defines estimated costs as 'the expected cost of manufacture or acquisition, often in terms of a unit of product computed on the basis of information available in advance of actual production or purchase' Estimated cost are prospective costs since they refer to prediction of costs.

Standard Cost means a pre-determined cost. It attempts to show what the cost should be for clearly defined conditions and circumstances. Standard costs

represent' planned cost of a product. They are expected to be achieved under a particular production process under normal conditions.'

Although pre-determination is the essence of both standard costs and estimated costs, but they differ from each other in the following respects:

- (i) Difference in computation
- (ii) Difference in emphasis
- (iii) Difference in use
- (iv) Difference in records
- (v) Applicability

Material

3. (a) Computation of quarterly and Annual Purchases:

Consumption:

1 st	Quarter	$65 \times 100 \times 2 \text{ kg.}$	=	13,000 kg.
2 nd	Quarter	$60 \times 110 \times 2 \text{ kg.}$	=	13,200 kg.
3 rd	Quarter	$55 \times 120 \times 2 \text{ kg.}$	=	13,200 kg.
4 th	Quarter	$60 \times 105 \times 2 \text{ kg.}$	=	<u>12,600 kg.</u>
				<u>52,000 kg.</u>

Annual Purchases:

Consumption	52,000 kg.
<i>Add: Closing Stock</i>	<u>2,000 kg.</u>
	54,000 kg.
<i>Less: Opening Stock</i>	<u>4,000 kg.</u>
	<u>50,000 kg.</u>

Quarterly Purchases:

			Rs.
1 st quarter	30 % of 50,000 kg. or	15,000 kg. @ Re. 1.00	15,000
2 nd quarter	50 % of 50,000 kg. or	25,000 kg. @ Rs. 1.05	26,250
3 rd quarter	20 % of 50,000 kg. or	<u>10,000 kg.</u> @ Rs. 1.125	<u>11,250</u>
			<u>Rs. 52,500</u>

(b) Closing Quarterly Stock:

Quarter	Purchase			Issue (FIFO)			Closing Stock		
	Weight Kg.	Rate Rs.	Value Rs	Weight Kg.	Rate Rs.	Value Rs.	Weight Kg.	Rate Rs.	Value Rs.
Opening Stock	-----	-----	-----	---	----	--	4,000	1.00	4,000
1 st quarter	15,000	1.00	15,000	13,000	1.00	13,000	6,000	1.00	6,000
2 nd quarter	25,000	1.05	26,250	13,200 { 6,000 7,200	1.00 1.05	6,000 7,560 } 13,560	17,800	1.05	18,690
3 rd quarter	10,000	1.125	11,250	13,200	1.05	13,860	14,600 { 4,600 10,000	1.05 1.125	4,830 11,250 } 16,080
4 th quarter	-----	-----	-----	12,600 { 4,600 8,000	1.05 1.125	4,830 9,000 } 13,830	2,000	1.125	2,250

Labour

4. Statement Showing Earnings of Workers A and B

Workers:	A	B
	Rs.	Rs.
Basic Wages	100	160
Dearness Allowance (50% of Basic Wages)	50	80
Overtime Wages (Refer to Working Note 1)	<u>15</u>	—
Gross Wages earned	165	240
Less: - Provident Fund – 8% of Basic wages		
- ESI – 2% of Basic wage	<u>10</u>	<u>16</u>
Net Wages paid	<u>155</u>	<u>224</u>
Statement of Labour Cost:	Rs.	Rs.
Gross Wages (excluding overtime)	150	240
Employer's Contribution to P.F. and E.S.I.	<u>10</u>	<u>16</u>
Ordinary wages	<u>160</u>	<u>256</u>
Labour Rate per hour	0.80	1.28
	(Rs. 160/200)	(Rs. 256/200)

Statement Showing allocation of Wages to Jobs

	Jobs			
	X	Y	Z	
Total Wages:	Rs.	Rs.	Rs.	Rs.
Worker A:				
Ordinary Wages: (4 : 3 :3)	160	64	48	48
Overtime	15	—	15	—
Workers B:				
Ordinary Wages: (5: 2 : 3)	256	128	51.20	76.8
	<u>431</u>	<u>192</u>	<u>114.2</u>	<u>124.8</u>

Working Notes:

- Normal Wages are considered as basic wages

$$\begin{aligned} \text{Overtime} &= \frac{2 \times (\text{Basic wage} + \text{D.A.})}{200} \times 10 \text{ hours} \\ &= 2 \times (\text{Rs. } 150/200) \times 10 \text{ hours} = \text{Rs. } 15/- \end{aligned}$$

Overheads

5. Computation of Machine Hour Rate

Depreciation 10% of Rs. 50,000	Rs. 5,000
Factory Rent (apportioned on area basis) $\frac{3,000}{80,000} \times \text{Rs. } 50,000$	1,875
Heating and Lighting (apportioned on area basis): $\frac{3,000}{80,000} \times \text{Rs. } 40,000$	1,500
Supervision (apportion on machine numbers basis): $\frac{\text{Rs. } 1,50,000}{25}$	6,000
Reserve Equipment	5,000
Total	19,375
Estimated Total Hours	4,000
Cost per Hour	4.84

	<i>Set up</i>	<i>Operation</i>
	Rs.	Rs.
Cost per Hour as above	4.84	4.84
Add: Power	—	0.50
Operator's Wages: Rs. $\frac{24}{8}$		
Rs. $\frac{24}{8} \times \frac{1}{2}$	3.00	1.50
Comprehensive Rate per Machine Hour	7.84	6.84

Statement showing Overhead chargeable to the Jobs

	<i>Job 1203</i>		<i>Job 1502</i>	
		Rs.		Rs.
Set up	80 hours @ Rs. 7.84	627.20	40 hours @ Rs. 7.84	313.60
Operation	130 hours @ Rs. 6.84	<u>889.20</u>	160 hours @ Rs. 6.84	<u>1,094.40</u>
		1,516.40		1,408.00

Non-Integrated Accounting

6. Profit & Loss Account of Anamika Manufacturers for the year ended 30-6-2009

		<i>(Rs. in thousands)</i>
To Materials	1,600	By Sales 4,000 (20,000 units)
To Wages	800	By Closing Stock 240 (Finished Goods
To Factory Overheads	720	1230 units)
To Office and Admn. Overheads	416	By Work-in-Progress 112
To Selling & Distribution Overheads	288	
To Goodwill written off	320	
To Interest on Capital	32	
To Net Profit	<u>176</u>	
	<u>4,352</u>	<u>4,352</u>

Profit as per Cost Record

	<i>(Rs. In thousands)</i>
Materials	1,600
Wages	<u>800</u>
Prime Cost	2,400
Factory Overhead (100% of wages)	<u>800</u>
Gross Factory Cost	3,200
Less: Closing WIP	<u>112</u>
Factory Cost (21,230 units)	3,088
Add: Office & Administrative Overhead (10% of Factory Cost)	<u>308.80</u>
Total Cost of output	3,396.80
Less: Closing stock (1,230 units) of Finished Goods (See Working Note 1)	<u>196.80</u>
Cost of Production of 20,000 units	3,200.00
Selling and Distribution overhead (@ Rs. 16 p u.)	<u>320.00</u>

Cost of sales	3,520.00
(20,000 units)	
Sales Revenue	4,000.00
(20,000 units)	
Profit	<u>480.00</u>

Reconciliation Statement

	Rs. (,000)	Rs. (,000)
Profit as per Cost Accounts		480
Add: Factory overhead Overabsorbed (800-720)	80	
Selling and Distribution Overhead Overabsorbed (320-288)	32	
Closing stock overvalued in Financial Accounts (240-196.8)	<u>43.20</u>	<u>155.2</u>
		635.20
Less: Office & Administrative Overhead underabsorbed (416-308.80)	107.20	
Goodwill written off	320.00	
Interest on Capital	<u>32.00</u>	<u>459.20</u>
Profit as per Financial Accounts		<u>176.00</u>

Working Note:

$$\begin{aligned}
 \text{(i) Cost per unit of finished good} &= \frac{\text{Total Cost of output}}{\text{Total number of units produced}} \\
 &= \frac{\text{Rs. 3396.80 Thousand}}{21,230 \text{ units}} = \text{Rs. 160}
 \end{aligned}$$

$$\text{Cost of 1230 units} = \text{Rs. 160} \times 1230 = \text{Rs. 1,96,800}$$

Alternatively: Administrative overheads could be excluded from the cost of production.

Contract Costing

**7. Contract Account of Sheron Limited
(for the year ending 30th June, '09)**

	Rs.		Rs.
To Materials	1,00,000	By Work-in Progress:	
To Wages paid and accrued	50,000	Work certified	2,00,000
To General expenses	10,000	Work uncertified	15,000
To Plant depreciation	5,000	By Materials on hand	25,000

To Profit and Loss A/c (See note 2)	20,000	By Contract Escalation (See note 1)	5,000
To Balance c/d	<u>60,000</u>		
	<u>2,45,000</u>		<u>2,45,000</u>

Working Note:

1. Calculation of Escalation:

	<i>Total Increase Rs.</i>	<i>Upto 5% Rs.</i>	<i>Beyond 5% Rs.</i>
Materials: (Effect of increase in price)	15,000	3,000	12,000
$(Rs. 1,00,000 - Rs. 25,000) \times \frac{25}{125}$			
Wages (Effect of increase in wage rates)	10,000	2,000	8,000
$\left(Rs. 50,000 \times \frac{25}{125} \right)$			
Total Increase	25,000	5,000	20,000
Increase in Contract price	= 25% of Increase in Material and wages beyond 5%		
	= 25% of Rs. 20,000 = Rs. 5,000		

2. Calculation of Profit to be transferred:

Since the contract is completed between 25% to 50%, one third of the notional profit as reduced by the proportion of cash received to work certified is transferred:

$$\text{Notional profit} \times \frac{1}{3} \times \frac{\text{Cash received}}{\text{Work certified}}$$

$$Rs. 80,000 \times \frac{1}{3} \times \frac{Rs. 1,50,000}{Rs. 2,00,000} = Rs. 20,000$$

Operating Costing

8. Working Notes

(1) Total running Kms per month:

	<i>Km. per trip</i>	<i>Trips per day</i>	<i>Days per month</i>	<i>Km. per month</i>
Delhi to Chandigarh	150	2	8	2,400
Delhi to Agra	120	2	10	2,400
Delhi to Jaipur	270	2	6	<u>3,240</u>
				<u>8,040</u>

(2) Passenger Kms. per month:

	Total seats available per month	Capacity utilized %	Seats	Km.per trip	Passenger Kms. per month
Delhi to Chandigarh & Back (50 seats × 2 trips × 8 days)	800	90	720	150	1,08,000
Delhi to Agra & Back (50 seats × 2 trips × 10 days)	1,000	85	850	120	1,02,000
Delhi to Jaipur & Back (50 seats × 2 trips × 6 days)	600	100	600	270	1,62,000
				Total	<u>3,72,000</u>

Operating Cost Statement (per month)

	Rs.	Rs.
<i>Fixed Costs:</i>		
Salary of Driver	2,800	
Salary of Conductor	2,200	
Salary of the part-time accountant	200	
Depreciation (Rs.6,00,000 × $\frac{20}{100} \times \frac{1}{12}$)	10,000	
Insurance (Rs.4,800 × 1/12)	400	
Road Tax (Rs. 1,500 × 1/12)	125	
Repairs and maintenance	1,000	
Permit Fee	<u>315</u>	<u>17,040</u>
Total fixed expenses		17,040
<i>Variable Costs</i>		
Diesel $\left(\frac{\text{Rs.8,040 Kms.}}{4 \text{ Kms.}} \times \text{Rs.6} \right)$		12,060
Lubricant Oil $\left(\frac{8,040 \text{ Kms.}}{100 \text{ Kms.}} \times \text{Rs.10} \right)$		<u>804</u>
Total Cost per month		29,904
Profit and passenger tax together accounts for 50% of total taking p.m. or 100% of cost		29,904
Total takings		<u>59,808</u>
Passenger tax (20% of takings)		11,961.60
Profit (30% of takings)		<u>17,942.40</u>

$$\text{Rate per passenger Km.} = \frac{\text{Rs. } 59,808}{\text{Rs. } 3,72,000} = 0.1607741 \text{ passenger Km.}$$

or (Re. 0.16 say)

Fare to be charged

Delhi to Chandigarh, per passenger = 150 Kms. × 0.16 = Rs. 24

Delhi to Agra, per passenger = 120 Kms. × 0.16 = Rs. 19.20

Delhi to Jaipur, per passenger = 270 Kms. × 0.16 = Rs. 43.20

Process Costing

9. *Dr.* **Process I Account** *Cr.*

<i>Particulars</i>	<i>Total Rs.</i>	<i>Cost Rs.</i>	<i>Profit Rs.</i>	<i>Particulars</i>	<i>Total Rs.</i>	<i>Cost Rs.</i>	<i>Profit Rs.</i>
To Opening Stock	15,000	15,000		By Transfer to Process II A/c	1,08,000	81,000	27,000
To Direct Materials	30,000	30,000					
To Direct Wages	22,400	22,400					
	67,400	67,400					
Less : Closing Stock	7,400	7,400					
Prime Cost	60,000	60,000					
To Overheads	21,000	21,000					
To Process Cost	81,000	81,000					
To Profit (1/3 of cost)	27,000		27,000				
	1,08,000	81,000	27,000				

Dr. **Process II Account** *Cr.*

<i>Particulars</i>	<i>Total Rs.</i>	<i>Cost Rs.</i>	<i>Profit Rs.</i>	<i>Particulars</i>	<i>Total Rs.</i>	<i>Cost Rs.</i>	<i>Profit Rs.</i>
To Opening Stock	18,000	15,000	3,000	By Transfer to Finished Stock A/c	2,25,000	1,51,500	73,500
To Transfer from Process I A/c	1,08,000	81,000	27,000				
To Direct Materials	31,500	22,500					
To Direct Wages	22,500						
	1,80,000	1,50,000	30,000				
Less : Closing Stock (see note)	9,000	7,500	1,500				
Prime Cost	1,71,000	1,42,500	28,500				
To Overheads	9,000	9,000					
Process Cost	1,80,000	1,51,000	28,500				
To Profit (1/4 of cost)	45,000	45,000					
	2,25,000	1,51,000	73,500		2,25,000	1,51,500	73,500

Dr.				Finished Stock Account				Cr.			
Particulars	Total Rs.	Cost Rs.	Profit Rs.	Particulars	Total Rs.	Cost Rs.	Profit Rs.				
To Opening Stock	45,000	28,500	16,500	By Sales	2,80,000	1,65,000	1,15,000				
To Transfer from Process II A/c	2,25,000	1,51,500	73,500								
	2,70,000	1,80,000	90,000								
Less : Closing Stock	22,500	15,000	7,500								
	2,47,500	1,65,000	82,500								
To Profit (balancing figure)	32,500		32,500								
	2,80,000	1,65,000	1,15,000		2,80,000	1,65,000	1,15,000				

Working Note:

- (a) Cost of closing stock has been calculated as under:

$$\text{Process II } \frac{\text{Cost}}{\text{Total}} \times \text{Closing stock} = \frac{1,50,000}{1,80,000} \times 9,000 = \text{Rs.}7,500.$$

$$\text{Finished stock } \frac{1,80,000}{2,70,000} \times 22,500 = \text{Rs.}15,000.$$

(Since process stocks have been valued at prime cost, cost in the above formula means prime cost i.e., cost excluding overhead.)

- (b)

Actual Realised Profit:	Rs.	Rs.
Profit from Process I		27,000
Profit from Process II	45,000	
Add: Reserve for Unrealised Profit on Opening Stock (Figure given)	<u>3,000</u>	
	48,000	
Less :Reserve for Unrealised Profit on Closing Stock (9,000 – 7,500)	<u>1,500</u>	46,500
Profit from Finished Stock		
Add: Reserve for Unrealised Profit on Opening Stock (figure given)	32,500	
	<u>16,500</u>	
	49,000	
Less: Reserve for Unrealised Profit on Closing Stock (22,500 – 15,000)	<u>7,500</u>	<u>41,500</u>
		<u>1,15,000</u>

(c) Stock Valuation for Balance Sheet purpose:

	Rs.
Process I	7,400
Process II	7,500
Finished Stock	<u>15,000</u>
Value of Stock at Cost	<u>29,900</u>

Standard Costing

10. Work produced by the gang 1,800 standard labour hours, i.e.,

$\frac{1,800}{32 + 12 + 6}$ or 36 gang hours		
Standard hours of Skilled Labour	36 × 32	1,152 hours
Standard hours of Semi-skilled Labour	36 × 12	432 hours
Standard hours of Un-skilled Labour	36 × 06	<u>216 hours</u>
Total		<u>1,800 hours</u>
Actual hours of Skilled Labour	40 × 28	1,120 hours
Actual hours of Semi-skilled Labour	40 × 18	720 hours
Actual hours of Un-skilled Labour	40 × 04	<u>160 hours</u>
Total		<u>2,000 hours</u>

Revised Standard hours (actual hours worked expressed in standard ratio)

Skilled Labour	$\frac{1,152}{1,800} \times 2,000$	1,280 hours
Semi-skilled Labour	$\frac{432}{1,800} \times 2,000$	480 hours
Unskilled Labour	$\frac{216}{1,800} \times 2,000$	240 hours
		<u>2,000 hours</u>

Standard Cost for Actual Output:

		Rs.
Skilled Labour	1,152 hours @ Rs. 3	3,456
Semi-skilled Labour	432 hours @ Rs. 2	864
Unskilled Labour	<u>216 hours @ Rs. 1</u>	<u>216</u>
	<u>1,800 hours</u>	<u>4,536</u>

Actual Cost:

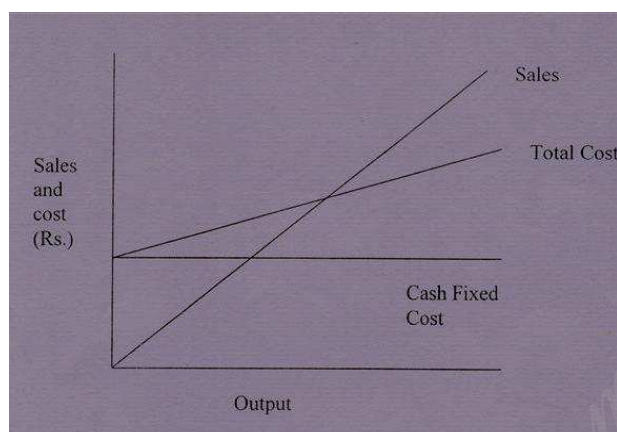
Skilled Labour	1,120 hours @ Rs. 4	4,480
Semi-skilled Labour	720 hours @ Rs. 3	2,160
Unskilled Labour	<u>160 hours @ Re. 2</u>	<u>320</u>
	<u>2,000 hours</u>	<u>6,960</u>

(i)	Total Labour Cost Variance		
	Standard Cost – Actual Cost		Rs.
	Rs. 4,536 – Rs. 6,960		<u>2,424 A</u>
(ii)	Labour Efficiency Variance:		
	(Standard hours for Actual Output – Revised Standard hours) × Standard Rate		
	Skilled	(1,152 – 1,280) × Rs. 3	384 A
	Semi -skilled	(432 – 480) × Rs. 2	96 A
	Un-skilled	(216 – 240) × Re. 1	<u>24 A</u>
			<u>504 A</u>
			504 A
(iii)	Labour Mix Variance :		
	(Revised Standard Hours – Actual Hours) × Standard Rate		
	Skilled	(1,280 – 1,120) × Rs. 3	480 F
	Semi-skilled	(432 – 480) × Rs. 2	480 A
	Un-skilled	(216 – 240) × Re. 1	<u>80 F</u>
			<u>80 F</u>
			80 F
(iv)	Rate of Wage Variance:		
	(Standard Rate – Actual Rate) × Actual Hours		
	Skilled	(Rs. 3 – Rs. 4) × 1,120	1,120 A
	Semi-skilled	(Rs. 2 – Rs. 3) × 720	720 A
	Un-skilled	(Rs. 1 – Rs. 1) × 160	<u>160 A</u>
			<u>2,000 A</u>
	Check : Total Labour Cost Variance = Efficiency + Mix + Rate		<u>2,424 A</u>

Marginal Costing

11. (i) In cash break-even chart, only cash fixed costs are considered. Non-cash items like depreciation etc. are excluded from the fixed cost for computation of break-even point. It depicts the level of output or sales at which the sales revenue will equal to total cash outflow. It is computed as under:

$$\text{Cash BEP (Units)} = \frac{\text{Cash Fixed Cost}}{\text{Cost per Units}}$$



Hence for example suppose insurance has been paid on 1st January, 2006 till 31st December, 2010 then this fixed cost will not be considered as a cash fixed cost for the period 1st January, 2008 to 31st December, 2009.

- (ii) It is given in the question that sales quantity in the two years remains the same. The question also does not mention about change in variable cost. Therefore, variable cost in two years will remain the same.

Variable cost in 2008–09 or 2009–10

$$\begin{aligned} \text{Total contribution in 2008–09: } S \times \text{P/V Ratio} &= C \\ \text{Or Rs. 8,00,000} \times 50\% &= \text{Contribution} \\ &= \text{Rs. 4,00,000} \end{aligned}$$

$$\begin{aligned} \text{Sales} - \text{Variable cost of sale} &= \text{Contribution} \\ \text{Rs. 8,00,000} - \text{Variable cost of sale} &= \text{Rs. 4,00,000} \\ \text{Variable cost of sale in each years} &= \text{Rs. 4,00,000} \end{aligned}$$

- (i) Sales for 2009–10

$$\begin{aligned} S \times \text{P/V Ratio} &= \text{Contribution} \\ \text{Or Contribution in 2009-10} &= 0.375 S \\ \text{and } S - V &= \text{Contribution} \\ \text{Or } S - \text{Rs. 4,00,000} &= 0.375 S \text{ (Variable cost does not change)} \\ \text{Or } 0.625 S &= \text{Rs. 4,00,000 or } S = \text{Rs. 6,40,000} \end{aligned}$$

- (ii) Margin of Safety = 21.875%

$$\begin{aligned} \text{Break-even Sales} &= 100 - 21.875 = 78.125\% \\ \text{Break-even Sales} \times \text{P/V Ratio} &= \text{Fixed cost} \\ (78.125\% \text{ of Rs. 6,40,000}) \times 37.5\% &= \text{Fixed cost} \\ \text{Or Fixed cost} &= \text{Rs. 1,87,500} \end{aligned}$$

(iii) Break-even sales in 2009–10
= 6,40,000 x 0.78125
= Rs. 5,00,000

Budgets and Budgetary Control

12.

Flexible Budget

Activity Level	50%	75%	100%
Production (units)	3,200	4,800	6,400
	Rs.	Rs.	Rs.
Sales @ Rs. 400 per unit	<u>12,80,000</u>	<u>19,20,000</u>	<u>25,60,000</u>
<i>Variable costs :</i>			
Direct Materials	2,46,400	3,69,600	4,92,800
Direct Labour	5,12,000	7,68,000	10,24,000
Power	7,200	10,800	14,400
Repairs etc.	8,500	12,750	17,000
Other variable cost	<u>2,700</u>	<u>4,050</u>	<u>5,400</u>
Total Variable Costs:	<u>7,76,800</u>	<u>11,65,200</u>	<u>15,53,600</u>
<i>Fixed costs :</i>			
Manufacturing	2,06,880	2,06,880	2,06,880
Administration, Selling and Distribution	<u>36,000</u>	<u>36,000</u>	<u>36,000</u>
Total Fixed Costs:	<u>2,42,880</u>	<u>2,42,880</u>	<u>2,42,880</u>
Total Costs	<u>10,19,680</u>	<u>14,08,080</u>	<u>17,96,480</u>
Profit (Sales – Variable Cost) – Fixed Cost	<u>2,60,320</u>	<u>5,11,920</u>	<u>7,63,520</u>