

PAPER – 4 : COST ACCOUNTING AND FINANCIAL MANAGEMENT

SECTION – A : COST ACCOUNTING

QUESTIONS

Basic Concepts and Product Cost Sheet

1. (i) What are the essentials of a Cost Accounting System?
(ii) Narrate the essential factors to be considered while designing and installing a Cost Accounting System.

Materials

2. The Stock Control Policy of a company is that, each stock is ordered twice a year. The quantum of each order being one-half of the year's forecast demand

The materials manager, however, wishes to introduce a policy in which for each item of stock, reorder levels and EOQ is calculated

For one of the items X; the following information is available:

Forecast annual demand	3,600 units
Cost / unit	Rs. 100
Cost of placing an order	Rs.40
Stock holding cost	20% of average stock value
Lead time	1 month

It is estimated by the materials manager that for item X, a buffer stock of additional 100 Units should be provided to cover fluctuations in demand.

If the new policy is adopted, calculate for stock item X:

- (i) the reorder level that should be set by the material manager;
- (ii) the anticipated reduction in the value of the average stock investment;
- (iii) the anticipated reduction in total inventory costs in the first and subsequent years.

Labour

3. Both direct and indirect labor of a department in a factory are entitled to production bonus in accordance with a Group Incentive Scheme, the outlines of which are as follows:
 - (a) For any production in excess of the standard rate fixed at 10,000 tons per month (of 25 days) a general incentive of Rs.10 per ton is paid in aggregate. The total amount payable to each separate group is determined on the basis of an assumed percentage of such excess production being contributed by it, namely @ 70% by direct labor, @ 10% by inspection staff, @ 12% by maintenance staff and @ 8% by supervisory staff.

- (b) Moreover, if the excess production is more than 20% above the standard, direct labor also get a special bonus @ Rs.5 per ton for all production in excess of 120% of standard.
- (c) Inspection staff are penalized @ Rs.20 per ton for rejection by customer in excess of 10% of production.
- (d) Maintenance staff are also penalized @ Rs.20 per hour of breakdown.

From the following particulars for a month, work out the production bonus earned by each group:

- (a) Actual working days: 20
- (b) Production: 11,000 tons
- (c) Rejection by customer: 200 tons
- (d) Machine breakdown: 40 hours

Labour

4. (i) What do you understand by time and motion study? Explain how standard time is set under time study. State how time and motion study is useful to management.
- (ii) What do you understand by Overtime Premium and its affect on productivity and cost?

Overheads

5. (i) ABC Limited manufactured two products A and B during the first year of its operations. The company had budgeted Factory Overheads of Rs 3,40,000 against the 2,00,000 budgeted labour hours. This led to an Overhead absorption rate of Rs 1.70 per direct labour hour. This rate was used by the company for Product Costing purposes. Details of Budgeted Overheads and Labour hours are as follows,

	Budgeted Overhead	Budgeted Hours
Department 1	Rs. 2,40,000	Rs. 1,00,000
Department 2	Rs. 1,00,000	Rs. 1,00,000
	Rs 3,40,000	Rs. 2,00,000

The number of labour hours required to manufacture each of these products was:

	Product A	Product B
In Department 1	4	1
In Department 2	1	4
	5	5

There was no work-in-progress at the end of the year. There were, however, 2,000 and 6,000 finished units respectively of products A and B on hand. Assume that budgeted activity was attained.

- (a) What was the effect on the Company's income of using a plant wise overhead rate instead of departmental overhead rates?
- (b) Assume that material and labour costs per unit of product A were Rs. 10 and that the selling price was established by adding 40 per cent to cover profit and selling and administrative expenses. What difference in selling price would result from the use of departmental overhead rate against plant wise overhead rates?

Activity Based Costing

6. Family Store wants information about the profitability of individual product lines: Soft drinks, Fresh produce and Packaged food. Family store provides the following data for the year 2008-09 for each product line:

	Soft drinks	Fresh produce	Packaged food
Revenues	Rs. 7,93,500	Rs. 21,00,600	Rs. 12,09,900
Cost of goods sold	Rs. 6,00,000	Rs. 15,00,000	Rs. 9,00,000
Cost of bottles returned	Rs. 12,000	Rs. 0	Rs. 0
Number of purchase orders placed	360	840	360
Number of deliveries received	300	2,190	660
Hours of shelf-stocking time	540	5,400	2,700
Items sold	1,26,000	11,04,000	3,06,000

Family store also provides the following information for the year 2008-09:

Activity	Description of Activity	Total cost	Cost-allocation Base
Bottles returns	Returning of empty bottles	Rs. 12,000	Direct tracing to soft drink line
Ordering	Placing of orders for purchases	Rs. 1,56,000	1,560 purchase orders
Delivery	Physical delivery and receipt of goods	Rs. 2,52,000	3,150 deliveries
Shelf stocking	Stocking of goods on store shelves and on-going restocking	Rs. 1,72,800	8,640 hours of shelf-stocking time
Customer Support	Assistance provided to customers including check-out	Rs. 3,07,200	15,36,000 items sold

Required:

- (i) Family store currently allocates support cost (all cost other than cost of goods sold) to product lines on the basis of cost of goods sold of each product line. Calculate

the operating income and operating income as a % of revenues for each product line.

- (ii) If Family Store allocates support costs (all costs other than cost of goods sold) to product lines using an activity based costing system, calculate the operating income and operating income as a % of revenues for each product line.
- (iii) Comment on your answers in requirements (i) and (ii).

Non-Integrated Accounting

7. (i) Why is it necessary to reconcile the Profit between Cost Accounts and Financial Accounts?
- (ii) The following figures are extracted from the Financial Accounts of Sellwel Ltd. For the year ended 31-12-2008:

	Rs.	Rs.
Sales (20,000 units)		50,00,000
Materials		20,00,000
Wages		10,00,000
Factory Overheads		9,00,000
Administrative Overheads		5,20,000
Selling and Distribution Overheads		3,60,000
Finished Goods (1,230 units)		3,00,000
Work-in-progress:		
Materials	60,000	
Labour	40,000	
Factory Overheads	<u>40,000</u>	
		1,40,000
Goodwill Written off		4,00,000
Interest paid on capital		40,000

In the costing records, Factory Overhead is charged at 100% of Wages, Administration Overhead 10% factory cost and Selling and Distribution Overhead at the rate of Rs. 20 per unit sold.

Prepare a statement reconciling the profit as per Cost Records with the profit as per Financial Records.

Job Costing & Batch Costing

8. Leo Limited undertakes to supply 1,000 units of a component per month for the months of January, February and March 2009. Every month a batch order is opened against which

materials and labour cost are booked at actual. Overheads are levied at a rate per labour hour. The selling price is contracted at Rs. 15/- per unit.

From the following data, present the cost and profit per unit of each batch order and the overall position of the order for the 3,000 units.

Month	Batch Output (Numbers)	Material Cost Rs.	Labour Cost Rs.
January 2009	1,250	6,250	2,500
February 2009	1,500	9,000	3,000
March 2009	1,000	5,000	2,000

Labour is paid at the rate of Rs. 2 per hour. The other details are:

Month	Overheads	Total Labour Hours
January 2009	12,000	4,000
February 2009	9,000	3,000
March 2009	15,000	5,000

Contract Costing

9. ABC Ltd is a construction company, which has undertaken three contracts. Information for the previous year along with other details is provided to you below;

	Contract A (Rs.000).	Contract B (Rs.000).	Contract C (Rs.000)
Contract price	1,760	1,485	2,420
Balances brought forward at the beginning of the year:			
Material on site		20	30
Written down value of plant and machinery		77	374
Wages accrued		5	10
Transactions during previous year:			
Profit previously transferred to profit and loss a/c			35
Cost of work certified (cost of sales)		418	814
Transactions during current year:			
Material delivered to site	88	220	396

Wages paid	45	100	220
Salaries and other cost	15	40	50
Written down value of plant issued to site	190	35	
Head office expenses apportioned during the year	10	20	50
Balances c/fwd at the end of the year:			
Material on site	20		
Written down value of plant and machinery	150	20	230
Wages accrued	5	10	15
Value of work certified at the end of the year	200	860	2100
Cost of work not certified at the end of the year			55

The agreed retention rate is 10% of the value of work certified by the contractee's architect. Contract C is scheduled to be handed over to the contractee in the near future. It is estimated that Rs 3,05,000 shall be needed to be spent in addition to what has been tabulated above to complete this particular contract. This amount includes an allowance for plant depreciation, construction services and for contingencies.

You are required to prepare contract accounts for each of the three contracts and recommend how much profit or loss should be taken up for the year.

Operating Costing

10. EPS is a Public School having 25 buses each plying in different directions for the transport of its school students. In view of large number of students availing of the bus service, the buses work two shifts daily both in the morning and in the afternoon. The buses are garaged in the school. The workload of the students has been so arranged that in the morning, the first trip picks up senior students and the second trip plying an hour later picks up junior students. Similarly, in the afternoon, the first trip takes the junior students and an hour later the second trip takes the senior students home.

The distance travelled by each bus, one way is 16 kms. The school works 24 days in a month and remains closed for vacation in May and June. The bus fee, however, is payable by the students for all the 12 months in a year.

The details of expenses for the year 2008-2009 are as under:

Driver's salary – payable for all the 12 in month.	Rs. 5,000 per month per drive.
Cleaner's salary payable for all the 12 months (one cleaner has been employed for every five buses).	Rs.3,000 per month per cleaner
Licence Fees, Taxes etc.	Rs. 2,300 per bus per annum
Insurance Premium	Rs. 15,600 per bus per annum

Repairs and Maintenance	Rs. 16,400 per bus per annum
Purchase price of the bus	Rs. 16,50,000 each
Life of the bus	16 years
Scrap value	Rs. 1,50,000
Diesel Cost	Rs. 18.50 per litre

Each bus gives an average of 10 kms per litre of diesel. The seating capacity of each bus is 60 students. The seating capacity is fully occupied during the whole year.

The school follows differential bus fees based on distance traveled as under:

Students picked up and dropped within the range of distance from the school	Bus fee	Percentage of students availing this facility
4 kms	25% of Full	15%
8 kms	50% of Full	30%
16 kms	Full	55%

Ignore interest. Since the bus fees has to be based on average cost, you are required to

- (i) Prepare a statement showing the expenses of operating a single bus and the fleet of 25 buses for a year.
- (ii) Work out average cost per student per month in respect of:
 - (a) Students coming from a distance of upto 4 kms from the school.
 - (b) Students coming from a distance of upto 8 kms from the school; and
 - (c) Students coming from a distance of upto 16 kms from the school

Process Costing

11. A Ltd. produces product 'XYZ' which passes through two processes before it is completed and transferred to finished stock. The following data relate to October 2008.

Particulars	Process		Finished stock
	I	II	
	Rs.	Rs.	Rs.
Opening stock	7,500	9,000	22,500
Direct materials	15,000	15,750	
Direct wages	11,200	11,250	
Factory overheads	10,500	4,500	
Closing stock	3,700	4,500	11,250
Inter-process profit			
Included in opening stock		1,500	8,250

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 the process II. Sales during the period are Rs. 1,40,000.

Required:

Process cost accounts and finished goods account showing the profit element at each stage.

Process Costing

12. The following data are available in respect of Process for the month of June, 2009:

Opening work-in-progress	2,250 Units at Rs. 11,250
Degree of Completion:	
Materials	100%
Labour	60%
Overheads	60%
Input of materials	22,750 Units at Rs. 88,500
Direct wages	Rs. 20,500
Production overheads	Rs. 41,000
Units scrapped	3,000 Units
Degree of Completion:	
Material	100%
Labour	70%
Production overheads	70%
Closing work-in-progress:	2,500 Units
Degree of Completion:	
Material	100%
Labour	80%
Production overheads	80%
Units transferred to the next process:	19,500 Units
Normal process loss is 10% of total input (opening stock plus units put in). Scrap value is Rs. 3.00 per unit. The company follows FIFO method of inventory valuation;	

You are required to:

- Prepare statement of equivalent production
- Prepare statement of cost per equivalent unit for each element and cost of abnormal loss, closing work-in-progress and units transferred to next process; and
- Prepare process I account.

Cost Audit, Cost Accounting (Records) Rules

13. (i) What are the important aspects of cost audit? How is it useful to the shareholders of a company?
- (ii) Mention any eight areas of maintenance of Cost Accounting Records.

Uniform Costing, Inter-firm Comparison, Cost Reduction & Cost Control

14. (i) Enumerate the points on which uniformity is essential before introducing uniform costing system?
- (ii) What are the pre-requisites of an inter firm comparison system?
- (iii) Distinguish between Cost reduction and Cost control.

SUGGESTED ANSWERS

Basic Concepts and Product Cost Sheet

1. (i) Essentials of a Good Cost Accounting System

The essential features of a good Cost Accounting system are as follows:

- (i) The Cost Accounting System should be tailor made, practical, simple and capable of meeting the requirements of a business concern.
- (ii) The method of costing should be suitable to the industry and serve its objectives.
- (iii) The Costing System should receive co-operation and participation of executives from various departments.
- (iv) The cost of installing and operating the system should justify the results.
- (v) The system of costing should not sacrifice the utility by introducing meticulous and unnecessary details.
- (vi) The system should consider the organisational structure of the business and it should be designed as a sub-system of the overall organisation.
- (vii) There should be a harmonious relationship between costing and financial accounts departments. Unnecessary duplication should be avoided. A single integrated accounting system may be designed.
- (viii) The system should provide adequate checks on ordering, receipts, stocking, issuing and recording of materials. The pricing method and the issue of materials should be efficient.
- (ix) The costing system should ensure proper recording of worker's time and their wages. Wages should be determined from wage analysis sheets. Proper attention should be paid in preparing payrolls and in the payment of wages.

The treatment of idle time, over-time and holiday-pay should not be overlooked.

- (x) The cost accounting system should ensure that overheads are collected, accumulated, allocated and apportioned suitably.

(ii) Essential factors for designing a cost accounting system

The essential factors to be considered while designing a Cost Accounting System are as follows:

- (i) A thorough understanding of – Organisational structure; manufacturing procedure, and process; selling and distribution procedure; and type of cost information required.
- (ii) Selection of a suitable costing technique (Standard or actual, marginal or absorption)
- (iii) Pricing method suitable, for the material, to be issued to production.
- (iv) Method suitable for booking labour cost on jobs.
- (v) A sound plan should be devised for the collection, allocation, apportionment and absorption of overheads.
- (vi) Deciding on ways of treating waste, scrap and idle time.
- (vii) Designing of suitable forms to be used for collecting and dissemination of Cost data/information.
- (viii) Introduction of budgetary control technique so that actual performance may be compared with budgetary figures, for measuring efficiency or performance.

Essential factors for installing a Cost Accounting System.

The essential factors for installing a Cost Accounting System are listed as below:

- (i) The objectives of installing a Costing System and the expectations of the management from the system should be identified first. The system will be a simple one in the case of a single objective but will be an elaborate one in the case of multiple objectives.
- (ii) It is important to ascertain the significant variables of the manufacturing unit which are amenable to control and affect the concern. For example, quite often the production costs control may be more important than control of its marketing cost. Under such a situation, the costing system should devote greater attention to control production cost.
- (iii) A thorough study of the nature of business, its technical aspects, products, methods and stages of production should be made. This will help in selecting a proper method of costing.

- (iv) A Study of the organisation structure, its size and layout etc., is also necessary. This is useful to management to determine the scope of responsibilities of various managers.
- (v) The costing system should be evolved in consultation with the staff and should be introduced only after meeting their objections and doubts, if any. The co-operation of staff is essential for the successful operation of the system.
- (vi) Details of the records to be maintained by the costing system should be carefully worked out. The degree of accuracy of the data to be supplied by the system should be determined.
- (vii) The forms to be used by foreman, workers etc., should be standardised. These forms be suitably designed and must ensure minimum clerical work at all stages.
- (viii) Necessary arrangements should be made for the flow of information/data to all concerned managers, at different levels, regularly and promptly.
- (ix) Reconciliation of costs and financial accounts be carried out regularly, if they are maintained separately.
- (x) The costing system to be installed should be easy to understand and simple to operate.

Materials

2. (i) Reorder level (to be set by the material manager)

= Safety stock + lead time consumption

= 100 units + 3,600 units /12 = 400 units

$$EOQ = \sqrt{\frac{2 \times 3,600 \text{ units} \times \text{Rs.} 40}{0.2 \times \text{Rs.} 100}} = 120 \text{ units}$$

- (ii) Anticipated reduction in the value of average stock investment

The average of total stock held under new system:

= Safety stock + EOQ/2 = 100 units + 60 units = 160 units

The average stock investment under new system = 160 units x Rs.100 = Rs. 16,000

The average of total stock held under old system

Previously, 1,800 units were ordered at a time and so the average stock held was 900 units.

The average stock investment under old system Rs. 90,000 (900 units x Rs.100).

Therefore, anticipated reduction in the value of the average stock investment

= Rs. (90,000 - 16,000) =Rs. 74,000

(iii) Anticipated reduction in total inventory costs (in the first and subsequent years)

Under new system:	Rs.
Annual ordering cost (3, 600 units x Rs.40 / 120units)	1,200
Stock holding cost (0.20 x Rs.16,000)	<u>3,200</u>
Total inventory cost	<u>4,400</u>

Under old system:	
Annual ordering cost (2 orders x Rs. 40)	80
Stock holding cost (0.20 x Rs. 90, 000)	<u>18,000</u>
Total inventory cost	18,080

Thus, anticipated reduction in total inventory costs is Rs. 13,680 (Rs.18,080 - Rs.4,400)

However, in the first year, the safety stock of 100 units is to be purchased at a cost of Rs. 10,000 (100 units x Rs.100). Therefore, while the saving would be of Rs. 13,680, the cost reduction in the system would be only Rs.3,680. In subsequent years, however, the cost reduction will be of Rs. 13,680.

Labour

3. (i) No. of working days during month: 20
- (ii) Standard production for 20 days @ 10,000 tons per month of 25 days

$$= \frac{10,000 \times 20}{25} = 8,000 \text{ tons}$$
- (iii) Actual production during month = 11,000 tons
- (iv) Excess production during month = 11,000 – 8,000 = 3,000 tons
- (v) Excess production above 20% of standard = 3,000 – 20% of 8,000 = 3,000 – 1,600 = 1,400 tons

Statement showing Bonus Earned by Each Category of Staff

Category		General Incentive	Special		Incentive		Penalty	Bonus
		%	Tons	Rs.	Tons	Rs.	Rs.	Rs.
(a)	Direct Labor	70	2,100	21,000	1,400	7,000	—	28,000
(b)	Inspection Staff	10	300	3,000	—	—	,800*	1,200
(c)	Maintenance Staff	12	360	3,600	—	—	800**	2,800
(d)	Supervisory Staff	8	240	2,400	—	—	—	2,400
	Total	100	3,000	30,000	1,400	7,000	2,600	34,400

Remarks:*Penalty for rejection: 90 tons (i.e. 200 tons – 110 tons) @ Rs.20 per ton.

**Penalty for machine breakdown for 40 hours @ Rs.20 per hour.

Labour

4. (i) Time study is defined as a work measurement technique for recording the time and rates of working for the elements of a specified job carried out under specified conditions, and for analyzing the data so as to obtain the time necessary for carrying out the job at a defined level of performance. Thus time study attempts to ascertain the time spent on each element of a job. The sum total of the time taken by all elements of a job is called the standard time. This standard time is the total time which should be taken by an average worker to perform a job under standard conditions.

Motion study involves a detailed study and analysis of the basic operations of a job or process with the object of eliminating unnecessary ones. Motion Study is closely associated with operations analysis. Operations analysis is a primary analysis which aims at eliminating major deficiencies. Motion Study is a secondary analysis which aims at refining the methods and operations to achieve further improvements and in addition it attempts to study the movements of human limbs as well as the mechanical set up and operations.

In brief, the time study aims at determining the standard time for a job and motion study aims at the elimination of unnecessary motions or the movements performed by the workers on the job. Time and motion study are infact complementary to each other.

The main steps involved in setting standard time for a job/operation under time study are as follows:

- (i) Collect and record all the information available about the job, the operator and the surrounding conditions, which may affect the carrying out of the work.
- (ii) Observe and record a complete description of the method and the operations necessary for performing the job. Further break down each of the operations performed for carrying out the job into its elements/parts.
- (iii) Examine each operation and its elements thoroughly to ensure that the motions used to perform are most effective.
- (iv) Measure and record by using a stop watch the time taken by different operators to perform each element of an operation. Enough such observations be taken to determine the average time of these observations. The average time is also known as normal or base time for each element. Sum the base time of each element to arrive at the base time of an operation.
- (v) Determine the allowance for relaxation etc., to be made over and above the base time for the operation.
- (vi) The standard time of an operation is obtained by adding the base time with the allowance made.

Time and Motion study is quite useful to management:

- (a) It helps the management to assess correctly the labour requirements.
 - (b) It helps management in the fixation of wage rates and introduction of effective incentive schemes.
 - (c) It helps management in standardizing jobs, equipments and methods by giving guidance as to the best method of operating in the time set.
 - (d) It helps the management to improve on work methods by comparing time taken to complete the same type of work under different methods.
 - (e) It helps management in planning and exercising cost control.
- (ii) Overtime premium: Overtime is the amount of wages paid for working beyond normal working hours as specified by Factories Act or by a mutual agreement between the workers union and the management. According to Factories Act of 1948, a worker is entitled for overtime at double the rate of his wages (including allowances) if he works beyond 9 hours in a day or 48 hours in a week even where the Act is not applicable, the practice is to pay for overtime work at higher rates usually in accordance with a standing agreement between the employer and the workers. Hence, payment of overtime consists of two elements, the normal wages i.e., the usual amount, and the extra payment i.e., the premium. This amount of extra payment paid to a worker under overtime is known as overtime premium.

The overtime payment affects the productivity and cost in many ways as follows:

- (i) During overtime period the efficiency of a worker is low. This causes reduced productivity, thus during this period the productivity is lesser than the normal one.
- (ii) In their anxiety to earn more, the workers may not concentrate on work during normal time and thus the output during normal hours may also fall.
- (iii) The practice of resorting to overtime adversely affects workers' health which may lead to increase in accident rate and consequently a decrease in productivity.
- (iv) Due to overtime, it is not possible to carry out necessary maintenance of plants and machinery. Such a situation results occasionally in a major breakdown and hence accounts for the stoppage of production cycle.
- (v) Reduced output and increased premium are responsible for bringing an increase in cost of production.

Overheads

5. (a) Departmental Overhead Rate =
$$\frac{\text{Budgeted Overheads of the Department}}{\text{Budgeted hours of the Department}}$$

$$\text{Overhead Rate for Department 1} = \frac{\text{Rs } 2,40,000}{1,00,000 \text{ hrs}} = \text{Rs. } 2.40 \text{ per hour}$$

$$\text{Overhead Rate for Department 2} = \frac{\text{Rs } 1,00,000}{1,00,000 \text{ hrs}} = \text{Rs. } 1.00 \text{ per hour}$$

Element of Overhead in Closing Stocks

(1). Under plant wise rate of Rs. 1.70 per hour

1.	Closing stock of product A : 2,000 units	Rs 17,000
	Overheads included: 2,000 unit @ 5 hours per unit @ Rs. 1.70 per hour (i.e. 2,000 x 5 x Rs. 1.70)	
	Closing stock of product B : 6,000 units	51,000
	Overheads included: 6,000 unit @ 5 hours per unit @ Rs. 1.70 per hour (i.e. 6,000 x 5 x Rs. 1.70)	
		68,000

Element of Overhead in Closing Stocks

(2). Overheads under departmental rates

	Rs
Product A: 2,000 (4 x Rs. 2.40 + 1 x Re. 1)	21,200
Product B: 6,000 (1 x Rs. 2.40 + 4 x Re. 1)	38,400
	59,600

$$\text{Effect on Company's Income (1) - (2) = (68,000 - 59,600) = 8,400}$$

(b) Calculation of Unit Selling Price of Product A

	Plant wise Overhead Rates Charged Rs.	Departmental Overhead Rates Charged Rs.
Material and labour	10	10
Factory Overheads: Applying Plant wise Rate	8.50 (5 hrs. @ Rs.1.70)	
Factory Overheads: Applying Departmental Rates		
Dept. A: 4 hrs. @ Rs. 2.40	Rs.9.60	
Dep't 1 hr. @ Re. 1	Rs.1.00	10.60
	18.50	20.60
Add: 40% Mark up	7.40	8.24
	25.90	28.84

$$\text{Increase in Selling price} = \text{Rs. } 28.84 - \text{Rs. } 25.90 = \text{Rs. } 2.94$$

Activity Based Costing

6. (i) Statement of Operating income and Operating income as a percentage of revenues for each product line

(When support costs are allocated to product lines on the basis of cost of goods sold of each product)

	Soft Drinks Rs.	Fresh Produce Rs.	Packaged Foods Rs.	Total Rs.
Revenues: (A)	7,93,500	21,00,600	12,09,900	41,04,000
Cost of Goods sold (COGS): (B)	6,00,000	15,00,000	9,00,000	30,00,000
Support cost (30% of COGS): (C)	1,80,000	4,50,000	2,70,000	9,00,000
Total cost: (D) = {(B) + (C)}	7,80,000	19,50,000	11,70,000	39,00,000
Operating income: E= {(A)-(D)}	13,500	1,50,600	39,900	2,04,000
Operating income as a percentage of revenues: (E/A) x 100)	1.70%	7.17%	3.30%	4.97%

Working notes:

1. Total support cost:

	Rs.
Bottles returns	12,000
Ordering	1,56,000
Delivery	2,52,000
Shelf stocking	1,72,800
Customer support	<u>3,07,200</u>
Total support cost	<u>9,00,000</u>

2. Percentage of support cost to cost of goods sold (COGS):

$$= \frac{\text{Total support cost}}{\text{Total cost of goods sold}} \times 100$$

$$= \frac{\text{Rs.9,00,000}}{\text{Rs.30,00,000}} \times 100 = 30\%$$

3. Cost for each activity cost driver:

Activity (1)	Total cost Rs. (2)	Cost allocation base (3)	Cost driver rate (4)=[(2)÷(3)]
Ordering	1,56,000	1,560 purchase orders	100 per purchase order
Delivery	2,52,000	3,150 deliveries	80 per delivery

Shelf-stocking	1,72,800	8,640 hours	20 per stocking hour
Customer support	3,07,200	15,36,000 items sold	0.20 per item sold

- (ii) Statement of Operating income and Operating income as a percentage of revenues for each product line

(When support costs are allocated to product lines using an activity-based costing system)

	Soft drinks Rs.	Fresh Produce Rs.	Packaged Food Rs.	Total Rs.
Revenues: (A)	7,93,500	21,00,600	12,09,900	41,04,000
Cost & Goods sold	6,00,000	15,00,000	9,00,000	30,00,000
Bottle return costs	12,000	0	0	12,000
Ordering cost* (360:840:360)	36,000	84,000	36,000	1,56,000
Delivery cost* (300:2,190:660)	24,000	1,75,200	52,800	2,52,000
Shelf stocking cost* (540:5,400:2,700)	10,800	1,08,000	54,000	1,72,800
Customer Support cost* (1,26,000:11,04,000:3,06,000)	<u>25,200</u>	<u>2,20,800</u>	<u>61,200</u>	<u>3,07,200</u>
Total cost: (B)	7,08,000	20,88,000	11,04,000	39,00,000
Operating income C: {(A)- (B)}	<u>85,500</u>	<u>12,600</u>	<u>1,05,900</u>	<u>2,04,000</u>
Operating income as a % of revenues	10.78%	0.60%	8.75%	4.97%

* Refer to working note 3

- (iii) Comment: Managers believe that activity based costing (ABC) system is more credible than the traditional costing system. The ABC system distinguishes with different type of activities at family store more precisely. It also tracks more precisely how individual product lines use resources.

Soft drinks consume less resources than either fresh produce or packaged food. Soft drinks have fewer deliveries and require less shelf stocking time.

Family store managers can use ABC information to guide their decisions, such as how to allocate a planned increase in floor space.

Pricing decision can also be made in a more informed way with ABC information.

Non-Integrated Accounting

7. (i) Need for reconciliation: When cost and financial accounts are maintained separately, the profit shown by one set of books may not agree with that of the other

set. In such a situation, it becomes necessary to reconcile the results (profit / loss) shown by two sets of books.

Causes for difference between profit shown by cost and financial accounts

- (i) There are certain items which appear in financial books only and are not recorded in cost accounting books e.g. loss on sale of fixed assets; expenses on stamp duty; interest on bank loan etc. Similarly, there may be some items which appear in cost accounts only and do not find a place in the financial books e.g. notional rent; national interest etc.
- (ii) In cost accounts, overheads are generally absorbed on the basis of a pre-determined overhead rate, whereas in financial accounts actual expenditure on overheads is recorded, this will also cause a difference between the figure of profit shown under financial and cost account.
- (iii) Different methods of valuation of closing stock adopted in cost and financial accounts will also cause a difference in the results shown by the two sets of books. In financial accounts the method generally followed is cost or market price, whichever is less whereas in cost accounts different methods of pricing of material issues such as LIFO, FIFO, average etc are used.
- (iv) Use of different methods of depreciation is also responsible for the variation of profit shown by two sets of books. In financial accounts, depreciation may be charged according to written down value method whereas in cost accounts is may be charged on the basis of the life of the machine.
- (v) Abnormal items not included in cost accounts also causes a difference in profit. If such items of expenses are included, cost ascertained will not be correct.

(ii)

Sellwel Ltd.

Profit & Loss Account

(For the year ended 31st December, 2008)

Dr.			Cr.
To Opening Stock	Nil	By Sales (20,000 units)	50,00,000
To Materials	20,000	By Closing Stock (1,230 units)	3,00,000
To Wages	10,00,000	By Work-in-progress	1,40,000
To Factory Overheads	9,00,000		
To Administrative Overheads	5,20,000		
To Selling & Distribution Overheads	3,60,000		
To Goodwill written off	4,00,000		
To Interest on Capital	40,000		
To Net Profit	<u>2,20,000</u>		
	<u>54,40,000</u>		<u>54,40,000</u>

Cost Profit & Loss Statement
(For the year ended 31st December, 2008)

	Rs.
Materials	20,00,000
Wages	<u>10,00,000</u>
Prince Cost	30,00,000
Add: Factory Overhead @ 100% of wages	<u>10,00,000</u>
	40,00,000
Less: Closing Work-in-progress	<u>1,40,000</u>
Factory Cost (20,000 + 1,230) units	38,60,000
Administrative Overheads @ 10% of Factory Cost	<u>3,86,000</u>
	42,46,000
Less: Closing Stock of Finished Goods	<u>2,46,000</u>
1,230 units (See Note)	
Cost of Production (20,000 units)	40,00,000
Selling & Distribution Overhead @ Rs. 20 per unit	<u>4,00,000</u>
Cost of Sales (20,000 units)	44,00,000
Sales Revenue (20,000 units)	<u>50,00,000</u>
Profit	<u>6,00,000</u>

Note: Cost of 21,230 units is Rs. 42,46,000. Therefore, the cost of one unit is Rs. 200. Hence the cost of 1,230 units is Rs. 2,46,000.

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

Reconciliation Statement

	Rs.	Rs.
Profit as per Cost Records		6,00,000
Add: Factory Overheads over-absorbed		
(Rs. 10,00,000 – Rs. 9,00,000)	1,00,000	
Selling & Distribution Overhead Over-absorbed	–	
(Rs. 4,00,000 – Rs. 3,60,000)	40,000	
Difference in the valuation of closing stock of finished goods		
(Rs. 3,00,000 – Rs. 2,46,000)	<u>54,000</u>	<u>1,94,000</u>
		7,94,000
Less: Administrative Overhead Underabsorbed		
(Rs. 5,20,000 – Rs. 3,86,000)	1,34,000	
Goodwill written off relates to		
Financial Accounts	4,00,000	
Interest on Capital	<u>40,000</u>	<u>5,74,000</u>
Profit as per Financial Accounts		<u>2,20,000</u>

Job Costing & Batch Costing

8.

Leo Limited

Statement of Cost and Profits Per Unit of Each Batch

	January	February	March	Total
(A) Batch Output (Numbers)	<u>1,250</u>	<u>1,500</u>	<u>1,000</u>	<u>3,750</u>
	Rs.	Rs.	Rs.	Rs.
(B) Sales Value	18,750	22,500	15,000	56,250
(C) Costs	<u>Jan. '09</u>	<u>Feb '09</u>	<u>March '09</u>	<u>Total</u>
	Rs.	Rs.	Rs.	Rs.
Material	6,250	9,000	5,000	20,250
Wages	2,500	3,000	2,000	7,500
Overheads*	<u>3,750</u>	<u>3,000</u>	<u>3,000</u>	<u>9,750</u>
Total	<u>12,500</u>	<u>15,000</u>	<u>10,000</u>	<u>37,500</u>
(D) Profit/Batch (B–C)	6,250	7,500	5,000	18,750
(E) Cost/Unit (C÷A)	10	10	10	
(F) Profit/Unit (D÷A)	5	5	5	

* See note (ii)

Notes

	Jan'09	Feb'09	March'09
(i) Labour Hours	$\left(\frac{\text{Rs.2,500}}{2} \right)$	$\left(\frac{\text{Rs.3,000}}{2} \right)$	$\left(\frac{\text{Rs.2,000}}{2} \right)$
(Labour Cost/Labour rate per hour)	=Rs.1,250	=Rs.1,500	=Rs.1,000
(ii) Overheads per hour (Total Overhead/ Total Labour hours)	$\left(\frac{\text{Rs.12,000}}{4,000} \right)$	$\left(\frac{\text{Rs.9,000}}{4,500} \right)$	$\left(\frac{\text{Rs.15,000}}{5,000} \right)$
	Rs.3	Rs.2	Rs.3
(iii) Overhead for the batch (i)×(ii)	Rs.3,750	Rs.3,000	Rs.3,000

Overall position for 3,000 units

	Rs.
Sales Value (3,000 units × Rs.15)	45,000
Less: Total Cost (3,000 units × Rs.10)	<u>30,000</u>
Profit	<u>15,000</u>

Contract Costing

9.

Contract Accounts

(in Rs 000)

	A	B	C		A	B	C
Material on site b/fwd		20	30	Wages accrued b/fwd		5	10
Plant on site b/fwd		77	374	Material on site c/fwd	20		
Material control a/c	88	220	396	Plant on site c/fwd	150	20	230
Wages control a/c	45	100	220	Cost of work not certified c/fwd			55
Salaries	15	40	50	Cost of sales – current period (balance) c/fwd	183	497	840
Plant control a/c	190	35					
Apportionment of HO expenses	10	20	50				
Wages accrued c/fwd	5	10	15				
	353	522	1,135		353	522	1,135
Cost of sales b/fwd	183	497	840	Attributable sales revenue (current period)*	183	442	1,122
Profit taken this period			282	Loss taken		55	
	183	497	1,122		183	497	1,122
Cost of work not certified b/fwd			55	Wages accrued b/fwd	5	10	15
Material on site b/fwd	20						
Plant on site b/fwd	150	20	230				

* Profit taken plus cost of sales for the current period or cost of sales less loss to date

Note

- Profit/loss on the three contracts are calculated by deducting the cost of sales (both previous years and current year) from the value of work certified

(Rs 000)		
Contract A	17	(Rs 200 – Rs 183)
Contract B	(55)	(Rs 860 – Rs 915)
Contract C	446	(Rs 2,100 – Rs 1,654)

Recommendation

- Computation of profit taken for Contract C is as follows

	(Rs000)
Cost of work certified(cost of sales to date = 814 + 840)	1,654
Cost of work not certified	55
Estimated costs to complete	305
Estimated cost of contract	2,014
Contract price	2,420
Anticipated profit	406

$$\text{Profit taken} = \frac{(0.90 \times \text{Rs}2,100)}{\text{Rs}2,420} \times \text{Rs}406 \text{ less profit previously transferred}$$

$$= \text{Rs } 3,17,000 - \text{Rs } 35,000 = \text{Rs } 2,82,000$$

- No profit has been taken for Contract A as it is in very early stages of completion
- Prudence concept has been utilized for Contract B. All loss has been taken.

Operating Costing

10. (a) (i)

EPS Public School

Statement showing the expenses of operating a single bus and the fleet of 25 buses for a year

Particulars	Per bus per annum (Rs.)	Fleet of 25 buses per annum (Rs.)
Running costs : (a)		
Diesel	56,832	14,20,800
(Refer to working note 1)		
Repairs & maintenance costs: (B)	16,400	4,10,000

Fixed charges:		
Driver's salary	60,000	15,00,000
Cleaners salary	7,200	1,80,000
Licence fee, taxes etc.	2,300	57,500
Insurance	15,600	3,90,000
Depreciation	93,750	23,43,750
Total fixed charges: (C)	1,78,850	44,71,250
Total expenses: (A+B+C)	2,52,082	63,02,050

(iii) Average cost per student per month in respect of students coming from a distance of:

- | | |
|---|------------|
| a) 4 kms. from the school
(Rs. 2,52,082 / 354 students × 12 months)
(Refer to working note 2) | Rs. 59.34 |
| b) 8 kms from the school
(Rs. 59.34 × 2) | Rs. 118.68 |
| c) 16 kms from the school
(Rs. 59.34 × 4) | Rs. 237.36 |

Working notes:

1. Calculation of diesel cost per bus:

No. of trips made by a bus each day	4
Distance travelled in one trip both ways (16 kms × 2 trips)	32 kms
Distance traveled per day by a bus (32 kms × 4 shifts)	128 kms
Distance traveled during a month (128 kms × 24 days)	3,072 kms
Distance traveled per year (3,072 kms × 10 months)	30,720 kms
No. of litres of diesel required per bus per year (30,720 kms / 10 kms)	3,072 litres
Cost of diesel per bus per year (3,072 litres × Rs. 18.50)	Rs. 56,832

2. Calculation of number of students per bus:

Bus capacity of 2 trips	120 students
1/4 th fare students	18 students
(15% × 120 students)	
½ fare 30% students (equivalent to 1/4 th fare students)	72 students
Full fare 55% students (equivalent to 1/4 th fare students)	<u>264 students</u>
Total 1/4 th fare students	<u>354 students</u>

Process Costing

11.

Process I Account

	Total Rs.	Cost Rs.	Profit Rs.		Total Rs.	Cost Rs.	Profit Rs.
Opening stock	7,500	7,500	—	Transfer			
Direct materials	15,000	15,000	—	to process			
Direct Wages	<u>11,200</u>	<u>11,200</u>		II Account	54,000	40,500	13,500
	33,700	33,700					
Less: Closing Stock	<u>3,700</u>	<u>3,700</u>	—				
Prime cost	30,000	30,000	—				
Overheads	<u>10,500</u>	<u>10,500</u>	—				
Process cost	<u>40,500</u>	<u>40,500</u>					
Profit 33⅓%							
of total cost	13,500	—	13,500				
(See working note 1)	_____	_____	_____		_____	_____	_____
	<u>54,000</u>	<u>40,500</u>	<u>13,500</u>		<u>54,000</u>	<u>40,500</u>	<u>13,500</u>

Process II Account

	Total Rs.	Cost Rs.	Profit Rs.		Total Rs.	Cost Rs.	Profit Rs.
Opening stock	9,000	7,500	1,500	Transfer to			
Transferred from Process I	54,000	40,500	—	Finished Stock A/c	112,500	75,750	36,750
Direct materials	15,750	15,750	—				

Direct wages	<u>11,250</u>	<u>11,250</u>	<u>—</u>
	90,000	75,000	15,000
Less: Closing Stock	<u>4,500</u>	<u>3,750</u>	<u>750</u>
Prime cost	85,500	71,250	14,250
Overheads	<u>4,500</u>	<u>4,500</u>	<u>—</u>
Process cost	90,000	75,750	
Profit 25%	22,500	—	22,500
on total cost			
(See working note 1)	<u>1,12,500</u>	<u>75,750</u>	<u>36,750</u>
	<u>1,12,500</u>	<u>75,750</u>	<u>36,750</u>

Finished Stock Account

	Total Rs.	Cost Rs.	Profit Rs.		Total Rs.	Cost Rs.	Profit Rs.
Opening stock	22,500	14,250	8,250	Sales	1,40,000	82,500	57,500
Transferred from							
Process II	<u>1,12,500</u>	<u>75,750</u>	<u>36,750</u>				
	1,35,000	90,000	45,000				
Less: Closing Stock	<u>11,250</u>	<u>7,500</u>	<u>3,750</u>				
Finished Stock at							
cost	1,23,750	82,500	41,250				
Profit	<u>16,250</u>	<u>—</u>	<u>12,250</u>				
	<u>1,40,000</u>	<u>82,500</u>	<u>57,500</u>		<u>1,40,000</u>	<u>82,500</u>	<u>57,500</u>

Working Notes

Let the transfer price, be 100 then profit is 25; i.e. cost price is 75

1. If cost is Rs. 75 then profit is Rs. 25

If cost is Rs. 40,500 then profit is $\frac{25}{75} \times 40,500 = \text{Rs. } 13,500$

2. If cost is Rs. 80 then profit is Rs. 20

If cost is Rs. 90,000 then profit is $\frac{20}{80} \times 90,000 = \text{Rs. } 22,500$

3. Out of Rs. 90,000 total cost, the profit is Rs. 15,000

If the cost is Rs. 4,500, the profit is $\frac{15,000}{90,000} \times \text{Rs. } 4,500 = \text{Rs. } 750$

Process Costing

12. (a) Statement of Equivalent Production

(FIFO Method)

Input		Material	Labour	Overheads					
				%	Units	%	Units	%	Units
Opening W.I.P.	2,250 units	Completed	2,250 units	—	—	40	900	40	900
Introduced	22,750 units	Completed	17,250 units	100	17,250	100	17,250	100	17,250
		Normal loss	2,500 units						
		Abnormal loss	500 units	100	500	70	350	70	350
		Closing W.I.P.	2,500 units	100	2,500	80	2,000	80	2,000
	25,000 units				20,250		20,500		20,500

(b) Statement of cost

Item of Cost	Amount (Rs.)	Equivalent production (Unit)	Cost per unit (Rs.)
Material	88,500		
Less: Revenue from sale of normal loss (2,500 units × Rs. 3)	<u>7,500</u>	81,000	20,250
Direct wages		20,500	20,500
Production overheads		41,000	20,500
Cost of completing one unit			<u>7</u>

Statement of Evaluation

		Amount (Rs.)	Amount (Rs.)
Abnormal loss (500 units)			
Material	500 units × Rs. 4	2,000	
Labour	350 units × Re.1	350	
Production overheads	350 units × Rs. 2	<u>700</u>	3,050

Cost of units transferred				
Opening WIP (2,250 units)			11,250	
Add: Cost incurred				
Labour	900 units × Re. 1	900		
Production overheads	900 units × Rs. 2	<u>1,800</u>	<u>2,700</u>	13,950
Units introduced & completed (17,250 units × Rs.7)				1,20,750
Total cost of 19,500 units transferred to next process				1,34,700
Closing WIP (2,500 units)				
Material	2,500 units × Rs.4		10,000	
Labour	2,000 units × Re.1		2,000	
Production overheads	2,000 units × Rs. 2		4,000	16,000

(c)		Process I Account			
Particulars	Units	Rs.	Particulars	Units	Rs.
To Opening WIP	2,250	11,250	By Normal Loss	2,500	7,500
To Material	22,750	88,500	By Unit completed and		
To Wages		20,500	transferred to	19,500	1,34,700
			Process II		
To Production overheads		41,000	By Abnormal loss	500	3,050
			By Closing WIP	<u>2,500</u>	<u>16,000</u>
	<u>25,000</u>	<u>1,61,250</u>		<u>25,000</u>	<u>1,61,250</u>

Cost Audit, Cost Accounting (Records) Rules

13. (i) Important aspects of Cost Audit:

Cost audit offers valuable assistance to the management in its decision-making process by examining the reliability of cost accounting data and information. Due to the assistance provided by cost audit, management is in a position to know what price is to be fixed for a product, whether the wastages are avoidable, whether to re-organise sales or inventory system, to make the work more efficient and so on. Also cost audit is of great help in maintaining internal control and internal check and can be of advantage even to the statutory financial auditor. Cost audit, apart from having all the normal ingredient of audit. I.e., vouching, verification etc., has within its domain elements of efficiency audit propriety audit as well.

Efficiency audit is directed towards the measurement of whether corporate plans have been effectively executed. It is concerned with the utilisation of the resources in economic and most remunerative manner to achieve the objectives of the

concern. It comprises of studying the plans of organisation, comparing actual performance with plans and investigating the reasons for variances to take remedial action. For example, the effective utilisation of capital in an organisation can be gauged by determining the return on capital employed.

Propriety audit is concerned with the executive actions and plans bearing on the finances and expenditure of the company. The cost auditor has to judge:

- (a) Whether the planned expenditure is designed to give optimum results.
- (b) Whether the size and channels of expenditure were designed to produce the best results.
- (c) Whether the return from expenditure on capital as well as current operations could be bettered by some other alternative plan of action.

(ii) Usefulness of Cost audit to shareholders:

- (i) Cost audit ensures that proper records are kept as to purchases and utilisation of materials and expenses incurred on wages, overheads etc. It also ensures that the unit has been run economically and efficiently. It also makes sure that the valuation of closing stocks and work-in-progress is on a fair basis. Thus, the shareholders are assured of a fair return on their investment.
- (ii) The eight areas (it refers to No. of products/industries) of maintenance of cost accounting records are as under:-
 - (i) Raw materials, components, stores and spare parts etc.
 - (ii) Wages and Salaries.
 - (iii) Overheads.
 - (iv) Utilities.
 - (v) Service department expenses including workshop repair and maintenance.
 - (vi) Depreciation.
 - (vii) Royalty / Technical knowhow fee.
 - (viii) Research and development expenses.

Besides above, the cost accounting records may also be maintained for the following:

- (a) Packing expenses; (b) Interest; (c) Expenses/incentive on export;
- (d) Conversion Cost; (e) Captive consumption; (f) Credit for by-products
- (g) Work-in-progress and finished goods stock; (h) Production records (i) Cost statements;
- (j) Reconciliation with financial accounts and adjustment of cost variances;
- (k) Stock verification records; (l) Inter-company transactions;
- (m) Statistical Statements and other records.

Uniform Costing, Inter-firm Comparison, Cost Reduction & Cost Control

14. (i) Points on which uniformity is essential before introducing uniform costing system are:

1. The firms in the industry should be willing to share / furnish relevant data/information.
2. A spirit of cooperation and mutual trust should prevail among the participating firms.
3. Mutual exchange of ideas, methods used, special achievements made, research and know-how etc. should be frequent.
4. Bigger firms should take the lead towards sharing their experience and know-how with the smaller firms to enable the latter to improve their performance.
5. Uniformity must be established with regard to several points before the introduction of uniform costing in an industry. In fact, uniformity should be with regard to following points:
 - (a) Size of the various units covered by uniform costing.
 - (b) Production methods
 - (c) Accounting methods, principles and procedures used.

(ii) Pre-requisites should be considered while installing a inter-firm comparison system:

1. Centre for Inter-firm Comparison: For collection and analysing data received from member units, for doing a comparative study and for dissemination of the results of study a Central body is necessary. The function of such a body may be:
 - (a) Collection of data and information from its members.
 - (b) Dissemination of results to its members.
 - (c) Undertaking research and development for common and individual benefit of its members.
 - (d) Organising training programmes and publishing magazines.
2. Membership: Another requirement for the success of inter-firm comparison is that the firms of different sizes should become members of the Centre entrusted with the task of carrying out inter-firm comparison.
3. Nature of information to be collected: Although there is no limit to information, yet the following information is useful to the management in general. It is collected by the centre for inter-firm comparison.
 - (a) Information regarding costs and cost structures.
 - (b) Raw material consumption.

- (c) Stock of raw material, wastage of materials, etc.
- (d) Labour efficiency and labour utilization.
- (e) Machine utilization and machine efficiency.
- (f) Capital employed and return on capital.
- (g) Liquidity of the organisation.
- (h) Reserve and appropriation of profit.
- (i) Creditors and debtors.
- (j) Methods of production and technical aspects.

4. Method of collection and presentation of information: The centre collects information at fixed intervals in a prescribed form from its members. Sometimes a questionnaire is sent to each member; the replies of the questionnaire received by the centre constitute the information/data. The information is generally collected at the end of the year as it is mostly related with final accounts and balance sheet. The information supplied by firms is generally in the form of ratios and not in absolute figures. The information collected as above is stored and presented to its members in the form of a report. Such reports are not made available to non-members.

(iii) Distinction between Cost Control and Cost Reduction:

Cost control is operated through setting standards of targets and comparing actual performance therewith, with a view to identify deviations from standards or norms and taking corrective action in order to ensure that future performance conforms to standards or norms.

Cost reduction is a continuous process of critical cost examination, analysis and challenge of standards. Each aspect of business viz., products, process, procedures, methods, organization, personnel, etc. is critically examined and reviewed with a view of improving efficiency and effectiveness and reducing the costs.

Cost control lacks the dynamic approach which planned cost reduction demands. In cost reduction, standards which are the basis of control are constantly challenged for improvement.