COST ACCOUNTING

I Group

VIII Paper

THE INSTITUTE OF COST ACCOUNTANTS OF INDIA

(Statutory body under an Act of Parliament)

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WORK BOOK

COST ACCOUNTING

INTERMEDIATE

GROUP – I

PAPER – 8

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Preface

Professional education systems around the world are experiencing great change brought about by the global demand. Towards this end, we feel, it is our duty to make our students fully aware about their curriculum and to make them more efficient.

Although it might be easy to think of the habits as a set of behaviours that we want students to have so that we can get on with the curriculum that we need to cover. It becomes apparent that we need to provide specific opportunities for students to practice the habits. Habits are formed only through continuous practice. And to practice the habits, our curriculum, instruction, and assessments must provide generative, rich, and provocative opportunities for using them.

The main purpose of this volume is to disseminate knowledge and motivate our students to perform better, as we are overwhelmed by their response after publication of the first edition. Thus, we are delighted to inform our students about the **e-distribution of the second edition of our 'Work book'.**

This book has been written to meet the needs of students as it offers the practising format that will appeal to the students to read smoothly. Each chapter includes unique features to aid in developing a deeper under-standing of the chapter contents for the readers. The unique features provide a consistent reading path throughout the book, making readers more efficient to reach their goal.

Discussing each chapter with illustrations integrate the key components of the subjects. In the second edition, we expanded the coverage in some areas and condensed others.

It is our hope and expectation that this second edition of work book will provide further an effective learning experience to the students like the first edition.

The Directorate of Studies,

The Institute of Cost Accountants of India

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Suggested Marks Distribution from Examination Point of View

Only for Practice Purpose

		Paper-5/6/7/8/11	Paper-9/10/12
Total 100 Marks [3 Hours]	Objective	= 25 Marks	= 28 Marks
	Others	= 75 Marks	= 72 Marks

Objective Question

25 Marks/28 Marks (1 Mark each questions)	MCQ	1 mark
	Match	1 mark
	True/False	1 mark
	Fill in the Blanks	1 mark

Short Notes / Case Study

Minimum Marks for each Questions	4 Marks
Maximum Marks for each Questions	10 Marks

Practical Problem

Minimum Marks for each Questions	4 Marks
Maximum Marks for each Questions	15 Marks

Study Note – 1

INTRODUCTION TO COST ACCOUNTING

Section –A

Learning Objective: ***This chapter discusses and explains the objectives and significance of Cost Accounting and its relationship to Financial Accounting with the elements and classification of cost.***

1. What is the distinction between Financial Accounting and Cost Accounting?

Answer:

The main differences between Financial and Cost Accounting are as follows:

Financial Accounting	Cost Accounting
(a) It provides the information about the business in a general way. i.e Profit and Loss Account, Balance Sheet of the business to owners and other outside partners.	(a) It provides information to the management for proper planning, operation, control and decision making.
(b) It classifies, records and analyses the transactions in a subjective manner, i.e according to the nature of expense.	(b) It records the expenditure in an objective manner, i.e according to the purpose for which the costs are incurred.
(c) It lays emphasis on recording aspect without attaching any importance to control.	(c) It provides a detailed system of control for materials, labour and overhead costs with the help of standard costing and budgetary control.
(d) It reports operating results and financial position usually at the end of the year.	(d) It gives information through cost reports to management as and when desired.
(e) Financial Accounts are accounts of the whole business. They are independent in nature.	(e) Cost Accounting is only a part of the financial accounts and discloses profit or loss of each product, job or service.
(f) Financial Accounts records all the commercial transactions of the business and include all expenses i.e Manufacturing, Office, Selling etc.	(f) Cost Accounting relates to transactions connected with Manufacturing of goods and services, means expenses which enter into production.
(g) Financial Accounts are concerned with external transactions i.e transactions between business concern and third party.	(g) Cost Accounts are concerned with internal transactions, which do not involve any cash payment or receipt.
(h) Only transactions which can be measured in monetary terms are recorded.	(h) Non-Monetary information like No of Units / Hours etc are used.

(i)	Financial Accounting deals with actual figures and facts only.	(i)	Cost Accounting deals with partly facts and figures and partly estimates / standards.
(j)	Financial Accounting do not provide information on efficiencies of various workers / Plant & Machinery.	(j)	Cost Accounts provide valuable information on the efficiencies of employees and Plant & Machinery.
(k)	Stocks are valued at Cost or Market price whichever is lower.	(k)	Stocks are valued at Cost only.
(l)	Financial Accounting is a positive science as it is subject to legal rigidity with regarding to preparation of financial statements.	(l)	Cost Accounting is not only positive science but also normative because it includes techniques of budgetary control and standard costing.
(m)	These accounts are kept in such away to meet the requirements of Companies Act as per Sec 128 & Income Tax Act Sec 44AA.	(m)	Generally Cost Accounts are kept voluntarily to meet the requirements of the management, only in some industries Cost Accounting records are kept as per the Companies Act.

2. What are the different elements of cost?

Answer:

The elements of cost are shown in the following table:

Material	Labour	Expenses
• Direct • Indirect	• Direct • Indirect	• Direct • Indirect(Overheads)

Direct Materials: Materials the costs of which can be attributed to a cost object in an economically feasible way.

Indirect Materials: Materials, the costs of which cannot be directly attributed to a particular cost object.

Direct Employee Cost: Employee cost, which can be attributed to a Cost object in an economically feasible way.

Indirect Employee Cost: Employee cost, which can not be directly attributed to a particular cost object.

Direct Material + Direct Labour (Direct Employee cost) + Direct Expenses = **Prime Cost**

Indirect Material+ Indirect Labour (Indirect Employee cost) + Indirect Expenses = **Overheads**

3. Write short notes on Cost Centre, Profit Centre, Responsibility Centre and Cost Unit.

Answer:

Cost centre (Please refer Cost Accounting Standard 13): cost centre can be termed as *a location, a person, or an item of equipment (or a group of them) in or connected with an undertaking, in relation to which costs ascertained and used for the purpose of cost control*. The determination of suitable cost centres as well as analysis of cost under cost centres is very helpful for periodical comparison and control of cost. In order to obtain the cost of product or service, expenses should be suitably segregated to cost centre. In a manufacturing concern, the cost centres generally follow the pattern or layout of the departments or sections of the factory and accordingly, there are two main types of cost centres as:- (i) **Production Cost Centre**: These centres are engaged in production work i.e engaged in converting the raw material into finished product, for example Machine shop, welding shops...etc (ii) **Service Cost Centre**: These centres are ancillary to and render service to production cost centres, for example Plant Maintenance, Administration...etc The number of cost centres and the size of each vary from one undertaking to another and are dependent upon the expenditure involved and the requirements of the management for the purpose of control.

Responsibility Centre: A responsibility centre in Cost Accounting denotes a segment of a business organization for the activities of which responsibility is assigned to a specific person. Thus a factory may be split into a number of centres and a supervisor is assigned with the responsibility of each centre. All costs relating to the centre are collected and the Manager responsible for such a cost centres judged by reference to the activity levels achieved in relation to costs. Even an individual machine may be treated as responsibility centre for cost control and cost reduction.

Profit Centre: Profit centre is a segment of a business that is responsible for all the activities involved in the production and sales of products, systems and services. Thus a profit centre encompasses both costs that it incurs and revenue that it generates. Profit centres are created to delegate responsibility to individuals and measure their performance. In the concept of responsibility accounting, profit centres are sometimes also responsible for the investment made for the centre. The profit is related to the invested capital. Such a profit centre may also be termed as investment centre.

Cost Unit: Cost Unit is a device for the purpose of breaking up or separating costs into smaller sub divisions attributable to products or services. Cost unit can be defined as a 'Unit of product or service in relation to which costs are ascertained'. The cost unit is the narrowest possible level of cost object. It is the unit of quantity of product, service of time (or combination of these) in relation to which costs may be ascertained or expressed. We may, for instance, determine service cost per tonne of steel, per tonne-kilometre of a transport service or per machine hour. Sometimes, a single order or contract constitutes a cost unit which is known as a job. A batch which consists of a group of identical items and maintains its identity through one or more stages or production may also be taken as a cost unit. A few typical examples of cost units are given below:

Industry/ Product	Cost Unit
Automobile	Number of vehicles
Cable	Metres / kilometres
Cement	Tonne
Chemicals/ Fertilizers	Litre / Kilogram
Gas	tonne Gas Cubic Metre
Power/ electricity	Kilowatt Hour
Transport	Kilometre, Passenger-Kilometre
Hospital	Patient Day Hotel Bed Night
Education	Student year
Telecom	Number of Calls
BPO Service	Accounts handled
Professional Service	Chargeable Hours

4. Distinguish between cost reduction and cost control.

Answer:

Both Cost Reduction and Cost Control are efficient tools of management but their concepts and procedure are widely different. The differences are summarised below:

Cost Control	Cost Reduction
(a) Cost Control represents efforts made towards achieving target or goal.	(a) Cost Reduction represents the achievement in reduction of cost.
(b) The process of Cost Control is to set up a target, ascertain the actual performance and compare it with the target, investigate the variances, and take remedial measures.	(b) Cost Reduction is not concern with maintenance of performance according to standard.
(c) Cost Control assumes the existence of standards or norms which are not challenged.	(c) Cost Reduction assumes the existence of concealed potential savings in standards or norms which are therefore subjected to a constant challenge with a view to improvement by bringing out savings.
(d) Cost Control is a preventive function. Costs are optimized before they are incurred.	(d) Cost Reduction is a corrective function. It operates even when an efficient cost control system exists. There is room for reduction in the achieved costs under controlled conditions.
(e) Cost Control lacks dynamic approach.	(e) Cost Reduction is a continuous process of analysis by various methods of all the factors affecting costs, efforts and functions in an organization. The main stress is upon the why of a thing and the aim is to have continual economy in costs.

5. Define Explicit costs. How is it different from implicit costs? [4]

Answer:

Explicit costs: These costs are also known as out of pocket costs. They refer to those costs which involves immediate payment of cash. Salaries, wages, postage and telegram, interest on loan etc. are some examples of explicit costs because they involve immediate cash payment. These payments are recorded in the books of account and can be easily measured. Main points of difference:

The following are the main points of **difference** between explicit and implicit costs. (i) Implicit costs do not involve any immediate cash payment. As such they are also known as imputed costs or economic costs. (ii) Implicit costs are not recorded in the books of account but yet, they are important for certain types of managerial decisions such as equipment replacement and relative profitability of two alternative courses of action.

5. Choose the Correct answer:

1. Which of the following items is not included in preparation of Cost Sheet?

(a) Carriage inward

(b) Purchase returns

(c) Sales commission

(d) Interest paid

2. Cost Control represents

(a) efforts made towards achieving target or goal

(b) the achievement in reduction of cost

(c) existence of concealed potential savings in standards or norms

(d) a corrective function

Answer:

1. (d) Interest paid

2. (b) efforts made towards achieving target or goal

6. Match the following:

A	**Automobile**	**Accounts Handled**
B	**Cement**	**Number of vehicles**
C	**BPO**	**Kilometre, Passenger-Kilometre**
D	**Transport**	**Tonne**
E	**Telecom**	**Patient Day Hotel Bed Night**
F	**Hospital**	**No of calls**

Answer:

A	Automobile	Number of vehicles
B	Cement	Tonne
C	BPO	Accounts Handled
D	Transport	Kilometre, Passenger-Kilometre
E	Telecom	No of calls
F	Hospital	Patient Day Hotel Bed Night

7. True or False:

1. **Cost centre is a location, person or item of equipment for which cost may be ascertained (T)**
2. **Implicit costs involve immediate cash payment (F)**

Answer:

1. True
2. False

8. Fill in the blanks:

1. **Costs which involves immediate payment of cash. Salaries, wages, etc is known as _____ .**
2. **Centre is a segment of a business that is responsible for all the activities involved in the production and sales of products, systems and services is called _____ .**

Answer:

1. Explicit cost
2. Cost centre

Study Note – 2

COST ASCERTAINMENT – ELEMENTS OF COST

Learning Objective: ***This chapter discusses cost ascertainment and elements of cost like- Material cost, Employee Costs, Direct expenses and Overheads.***

MATERIALS:

1. Choose the correct answer:

A. Which of the following is considered as normal loss of material?

(a) Pilferage

(b) Loss due to accident

(c) Loss due to careless handling of material

(d) None of the above.

B. Which of the following is considered as normal loss of material?

(a) Pilferage

(b) Loss due to accident

(c) Loss due to careless handling of material

(d) None of the above.

C. What is scrap?

(a) Discarded material having no or insignificant value

(b) Loss in the production process

(c) Production that does not meet the quality requirements

(d) None of the above

Answer:

A. (c) Loss due to careless handling of material

B. (c) Loss due to careless handling of material

C. (a) Discarded material having no or insignificant value

2. True /False

A. Materials which can be identified with the given product unit cost centre is called as indirect materials.

B. In case of materials that suffers loss in weight due to evaporation etc. The issue price of the materials is inflated to cover up the loss.

C. Spoilage is the production that does not meet the quality requirements or specifications and cannot be rectified economically.

D. Waste is the material lost during production or storage and discarded material which have very high value.

Answer:

A. False

B. True

C. True

D. False

3. Fill in the blanks:

Material transfer note is a _____ for transferring the materials from one job to other job.

Answer:

Material transfer note is a Document for transferring the materials from one job to other job.

4. Match the following:

A	**Reorder level**	**Record kept by storekeeper**
B	**Danger level**	**Level of stock at which materials are ordered**
C	**Bin card**	**Record kept by cost department**
D	**Stores ledger**	**shall be absorbed in the cost of balance material**
E	**Normal loss or spoilage of material**	**shall be absorbed in material cost to the extent they are normal**
F	**Losses due to shrinkage or evaporation**	**Level of stock of material below which production may stop**

Answer:

A	Reorder level	Level of stock at which materials are ordered
B	Danger level	Level of stock of material below which production may stop
C	Bin card	Record kept by storekeeper
D	Stores ledger	Record kept by cost department
E	Normal loss or spoilage of material	shall be absorbed in the cost of balance material
F	Losses due to shrinkage or evaporation	shall be absorbed in material cost to the extent they are normal

5. RST Limited has received an offer of quantity discount on its order of materials as under: Price per tone Tones number ₹ 9,600 Less than 50 ₹ 9,360 50 and less than 100 ₹ 9,120 100 and less than 200 ₹ 8,880 200 and less than 300 ₹ 8,640 300 and above The annual requirement for the material is 500 tonnes. The ordering cost per order is ₹12,500 and the stock holding cost is estimated at 25% of the material cost per annum.

Required (i) Compute the most economical purchase level. [4]

Answer:

Order size	40	50	100	200	300
No. Of order	13	10	5	3	2
Cost of purchase(1)(₹)	48,00,000 (500×9600)	46,80,000 (500×9360)	45,60,000 (500×9120)	44,40,000 (500×8880)	43,20,000 (500×8640)
Ordering cost (2)	162500	125000	62500	37500	25000
Carrying cost (3)(₹)	48,000	58,500	1,14,000	2,22,000	3,24,000
Total cost (4) =1+2+3)(₹)	5010500	4863500	4736500	4699500	4669000

The above table shows that the total cost of 500 units including ordering and carrying cost is minimum (46,69,000) where the order size is 300 units. Hence the most economical purchase level is 300 units.

6. From the following information calculate Economic Order quantity (EOQ)

Annual Consumption	**18000 units**
Ordering Cost	**₹ 12 per order**
Cost per unit	**₹ 1.50**
Obsolance	**8% of unit value**
Insurance	**12% of unit value**

Answer:

EOQ = √2AB/CS

= √2 × 18,000 × 12 × 100/1.50 × 20

=√4,32,00,000/30

= √14,40,000 = 1,200 units

where,

A = Annual Consumption = 18000 units

B = Ordering Cost = ₹ 12

C = Cost per unit = ₹ 1.50

S = Inventory Carrying Cost = 20%.

7. In a factory component A is used as follows:

Normal usage – 50 kg per week

Minimum usage – 25 kg per week

Maximum usage – 75 kg per week

Re-order quantity 300 kg.

Re-order period 4 to 6 weeks.

Re-order for emergency purchase – 3 weeks

Calculate for component A:

(i) Re-order level,

(ii) Maximum level.

(iii) Minimum level; and

(iv) Average stock level.

(v) Danger level

Answer:

(i) Re-order level = Maximum usage × Maximum period

= 75 × 6 = 450 kgs.

(ii) Maximum level = Re-order level + Re-order quantity – (Minimum usage × Minimum time)

= 450 + 300 – (25 × 4) = 650 kgs.

(iii) Minimum level = Reorder level – (Normal usage × Average time)

= 450 – (50 × 5) = 200 kgs.

(iv) Average stock level = Maximum level + Minimum level/2

= (650 + 200/2)kg = 425 kgs.

(v) Danger level = Consumption for emergency purchase = 50 x 3 = 150 kgs.

8. Prepare a stores ledger account under LIFO method of pricing the issue of stores, using the following information:

Date	Particulars	Units	Date	Particulars	Units
January 1, 2018	**Balance in hand @ ₹ 1.10 per unit**	**100**	**January 23, 2018**	**Retuen from the issue on 10th Jan, 2018**	**20**
January 2, 2018	**Received @ ₹ 1.20 per unit**	**200**	**January 26, 2018**	**Received @ ₹ 1.20 per unit**	**100**
January 10, 2018	**Issued**	**150**	**January 30, 2018**	**Wastage**	**10**
January 14, 2018	**Received @ ₹ 1.30 per unit**	**100**	**January 31, 2018**	**Issued**	**110**
January 18, 2018	**Issued**	**150**			

Answer:

Stores Ledger Account (LIFO Method)

Date	Receipt				Issues				Balance			Remarks
	GRN	Quantity	Rate (₹)	Amount (₹)	SRN	Quantity	Rate (₹)	Amount (₹)	Quantity	Rate (₹)	Amount (₹)	
Jan 1 2018									100	1.1	110	
Jan 2		200	1.20	240					100 200	1.10 1.20	110 240	
Jan 10						150	1.20	180	100 50	1.10 1.20	110 60	
Jan 14		100	1.30	130					100 50 100	1.10 1.20 1.30	110 60 130	
Jan 18						100 50	1.30 1.20	130 60	100	1.10	110	
Jan 23		20	1.20	24					100 20	1.10 1.20	110 24	
Jan 26		100	1.20	120					100 120	1.10 1.20	110 240	
Jan 30						10	1.20	12	100 110	1.10 1.20	110 132	
Jan 31						110	1.20	132	100	1.10	110	

Students' note:

As per Cost Accounting Standard – 6 (Para 5.2.1) material Issues shall be valued using appropriate assumptions on cost flow. E.g. First In First Out, Last In First Out, Weighted

EMPLOYEE COST (LABOUR COST)

9. True /False

1. **Increasing labour turnover increases the productivity of labour resulting in low costs.**
2. **Idle time due to a strike is an abnormal idle time.**

Answer:

1. False
2. True

10. Fill in the blanks:

1. One of the disadvantages of overtime working is increasing _____ labour cost.
2. The extra amount payable beyond the normal wages and salaries for beyond the normal working hours is _____ _____ .

Answer:

1. Indirect
2. overtime premium

11. Match the following:

A	**Work study**	**Analysis and classification of Job**
B	**Time study**	**Analysis of work to eliminate unnecessary operations**
C	**Job Evaluation**	**Evaluation of the worker**
D	**Merit Rating**	**Procedure of fixing standard time**
E	**Employee cost**	**Difference between the time for which employees are paid /payable and time booked against cost objects**
F	**Idle time**	**Shall not include imputed costs**

Answer:

A	Work study	Analysis of work to eliminate unnecessary operations
B	Time study	Procedure of fixing standard time
C	Job Evaluation	Analysis and classification of Job
D	Merit Rating	Evaluation of the worker
E	Employee cost	Shall not include imputed costs
F	Idle time	Difference between the time for which employees are paid /payable and time booked against cost objects

12. Choose the correct answer:

1. The total earnings of a worker both under Halsey and Rowan plan will be equal when:

(a) Time save is 40% of time allowed

(b) Time save is 50% of time allowed

(c) Time save is 40% of time allowed

(d) None of the above

2. Normal Idle time cost shall be assigned to:

(a) Employee cost

(b) Overheads

(c) Any one of (a) or (b)

(d) None of the above

Answer:

1. (b) Time save is 50% of time allowed.
2. (b) Overheads

13. A worker has a time rate of ₹ 15/hr. He makes 720 units of component (standard time : 5 minutes/ unit) in a week of 48 hours. What is his total wages including Rowan bonus for the week? [2]

Answer:

Standard time = 5 minutes x 720 units = 60 hours 60 minutes Time taken = 48 hrs. Time saved = 12 hrs. Total earning of a worker under Rowan plan = (48 hrs. x ₹ 15) + (12 hrs. x 48 hrs. x ₹15) 60 hrs. = 720 + 144 = ₹ 864

14. ABC Ltd. is having 400 workers at the beginning of the year and 500 workers at the end of the year. During the year 20 workers were discharged and 15 workers left the organization. During the year the company has recruited 65 workers. Of these, 18 workers were recruited in the vacancies of those leaving, while the rest were engaged for an expansion scheme. What is the labour turnover rate under separation method?[2]

Answer:

Average number of workers = (400 + 500)/2 = 450

Separation method = No. of separations during the period x 100

Average number of workers during the period = 20 + 15 x 100 450 = 7.78%

15. What is group bonus? [2]

Answer:

Group Bonus refers to the bonus paid for the collective efforts made by a group of workers. Such a scheme is introduced generally when individual efficiency cannot be established/ measured for the payment of bonus. The quantum of bonus is determined on the basis of productivity/ output of the team as a whole. Bonus is shared by the individual workers in specified proportions e.g. on proportions of time based wages.

16. 'Under the Rowan Premium Bonus system, a less efficient worker can obtain same bonus as a highly efficient worker.' Discuss with suitable examples. [4]

Answer:

Bonus under Rowan system = time saved rate per hour Time allowed Time taken For example let time allowed for a job = 4 hours and Labour rate = ₹ 5 per hour. Case I : Less efficient worker If time taken = 3 hours Then time saved = 4 – 3 = 1 hour Bonus = 1hour ₹5 ₹3.75 4 hours 3 hours Case II : Highly efficient worker If time taken = 1 hour Then time saved = 4 – 1 = 3 hours Bonus = 3 hours ₹5 ₹3.75 4 hours 1hour So, it can be concluded that under Rowan System, the less efficient worker and highly efficient worker can get the same bonus.

17. Discuss the treatment of overtime premium in cost accounts. [4]

Answer:

Overtime premium is a part of total wages of overtime period. In cost accounting the treatment of overtime premium will be as follows:

(i) If the overtime is resorted to at the desire of the customer, then the entire amount of overtime including overtime premium should be charged to the job directly.

(ii) If it is due to a general pressure of work to increase the output, the premium as well as overtime wages may be charged to general overheads.

(iii) If it is due to the negligence or delay of workers of a particular department, it may be charged to the concerned department.

(iv) If it is due to circumstances beyond control, it may be charged to Costing Profit & Loss Account.

18. In a unit, 10 men work as a group. When the production for the group exceeds the standard output of 200 pieces per hour, each man is paid an incentive for the excess production in addition to his wages at hourly rates. The incentive is at half the percentage, the excess production over the standard bears to the standard production, Each man is paid an incentive at the rate of this percentage of a wage rate of ₹ 2 per hour. There is no relation between the individual workman's hourly rate and the bonus rate. In a week, the hours worked are 500 hours and the total production is 1,20,000 pieces.

(a) Compute the total amount of the bonus for the week.

(b) Calculate the total earnings of two workers A and B of the group:- A worked 44 hours and his basic rate per hour was ₹ 2.20. B worked 48 hours and his basic rate per hour was ₹ 1.90. [3+2=5]

Answer:

Actual production during the week 1,20,000 pieces Standard production during the week of 500 hours, @ 200 pieces per hour 1,00,000 pieces Excess production over standard 20,000 pieces Percentage of the excess production over the Standard bears to the standard production 100 20% 1,00,000 20,000 Incentive is half of 20% i.e. 10%. The rate of incentive is at 10% over a wage rate of ₹ 2.00 per hour. Thus the rate of incentive per hour is 0.20P.

(a) Total amount of bonus for the week: 500 hours × Re. 0.20 = ₹ 100.

(b) Total Earnings of two workers A & B of the group. Amount ₹ A's Wages for 44 hours @ ₹ 2.20 per hour 96.80 Bonus for 44 hours @ Re. 0.20 per hour 8.80 Total Earning of A 105.60

B's Wages for 48 hours @ ₹ 1.90 per hour 91.20 Bonus for 48 hours @ 0.20 per hour 9.60 Total Earning of B 100.80

OVERHEAD:

19. Select the correct answer:

1. Selling and distribution overheads are absorbed on the basis of

(i) Rate per unit

(ii) Percentage of works cost

(iii) Percentage of selling price of each unit

(iv) Any of the above.

2. Warehouse expense is an example of

(a) Production overhead

(b) Selling overhead

(c) Distribution overhead

(d) None of above

Answer:

1. (iii) Percentage of works cost
2. (a) Production overhead

20. Match the following:

A	**Over absorption of Overhead**	**Amount of sales**
B	**Rent paid**	**Actual overhead expenditure is less**
C	**Advertisement expenditure**	**Actual overhead expenditure is more**
D	**Under absorption of Overhead**	**Floor area occupied**

Answer:

A	Over absorption of Overhead	Actual overhead expenditure is less
B	Rent paid	Floor area occupied
C	Advertisement expenditure	Amount of sales
D	Under absorption of Overhead	Actual overhead expenditure is more

21. True or false:

1. **Salary to employees is apportioned according to the floor are occupied.**
2. **Over or Under absorption of overhead is transferred to Costing P/L account when the amount is insignificant.**
3. **Fine, penalties payable to statutory authorities shall form part of production overhead.**
4. **Any subsidy received with respect to production overheads shall be reduced for ascertainment of cost of the object.**

Answer:

1. False
2. True
3. False
4. True

22. Fill in the blanks:

1. Distribution of identifiable expenses to any department is called _____ .
2. Charging of fair share of overhead expenses to cost centre or a department is called _____ .
3. The variable production overhead shall be absorbed to product or service based on _____ .
4. The fixed production overhead shall be absorbed to product or service based on _____ .

Answer:

1. Allocation
2. Apportionment
3. Actual production
4. Normal capacity

23. Consider the following data pertaining to the production of a company for a particular month : Opening stock of raw material ₹ 11,570 Closing stock of raw material ₹ 10,380 Purchase of raw material during the month ₹ 1,28,450 Total manufacturing cost charged to product ₹ 3,39,165 Factory overheads are applied at the rate of 45% of direct labour cost. What is the amount of factory overheads applied to production?

Answer:

Raw material used = Op. Stock + Purchases – Cl. Stock = ₹ 11,570 + ₹ 1,28,450 – ₹ 10,380 = ₹ 1,29,640 Manufacturing cost = Raw material used + Direct labour + Factory overhead ₹ 3,39,165 = ₹ 1,29,640 + Direct labour + 45% of Direct labour 1.45 Direct labour = ₹ 2,09,525

Direct labour = ₹ 1,44,500 The amount of factory overhead = 45% of 1,44,500 = ₹ 65,025.

24. In a factory, overhead of a particular department are recovered on the basis of ₹ 5 per machine hour. The total expenses incurred and the actual machine hours for the department for the month of August were ₹ 80,000 and 10,000 hours respectively. Of the amount of ₹ 80,000, ₹ 15,000 became payable due to an award of the Labour Court and ₹ 5,000 was in respect of expenses of the previous year booked in the current month (August). Actual production was 40,000 units of which 30,000 units were sold. On analysing the reasons, it was found that 60% of the under absorbed overhead was due to defective planning and the rest was attributed to normal cost increase. How would you treat the under absorbed overhead in the cost accounts? [6]

Answer:

Under-absorbed Overhead Expenses during the month of August:

Particulars	₹	₹
Total Expenses incurred in the month of August		80,000
Less: The amount paid according to labour court award (Assumed to be non-recurring)	15,000	
Expenses of previous year	5,000	20,000
Net overhead expenses incurred for the month		60,000
Overhead recovered for 10,000 hours @ ₹ 5/- per hour		50,000
Under absorbed overheads		**10,000**

Treatment of under – absorbed overhead in the Cost Accounts It is given in the question that 40,000 units were produced out of which 30,000 units were sold. It is also given that 60% of the under-absorbed overhead was due to defective planning and the rest was attributed to normal cost increase

60 percent of under absorbed overhead is due to defective planning. This being abnormal, should be debited to Profit and Loss A/c (60% of ₹ 10,000) 6,000

2. Balance 40 percent of under-absorbed overhead should be distributed over, Finished Goods and Cost of Sales by supplementary rate (40% of ₹ 10,000) or ₹ 4,000 may be distributed over Finished Goods and Cost of Sales as follows; Finished Goods *₹ 1,000 Cost of Sales * 3,000

***Working notes:** Under absorbed overhead : ₹ 4,000 – Units produced : 40,000 – Rate of Under- absorbed overhead recovery ₹ 0.10 per unit – Amount of under–absorbed overheads charged to finished goods (10,000 ×0.10P) 1,000 – Amount of under–absorbed overheads charged to Cost of sales (30,000 × 0.10P) 3,000.

25. XYZ Ltd. has five departments A, B, C, D and E. Of these departments A, B and C are production departments while D and E are service departments. The overheads incurred during the year 2017 were:

	₹		₹
Rent	**10,800**	**Rent and Taxes**	**3,000**
Depreciation on Building	**54,000**	**Lighting**	**12,800**
Depreciation on other assets	**42,000**	**Power**	**16,500**
Insurance on Building	**9,600**	**Stores Overhead**	**5,400**
Insurance on Plants	**8,400**	**Subsidy to Canteen**	**5,600**

Apportionment of costs to the departments after taking into account the following further information:

	Departments				
	A	B	C	D	E
Area (in Sq. Ft.)	300	4000	4000	2000	2000
Number of employees	80	110	60	30	20
Value of assets other than building (₹)	150000	190000	180000	100000	80000
Number of light points	15	10	7	5	3
Horse power of machines	400	300	200	200	----
Value of materials consumed (₹)	90000	80000	60000	---	40000

If service departments D and E given the service in the ratio of 3:2:1 and 2:2:1 respectively to the production departments A,B and C, and Machine Hours produced as 1000, 1500 and 750 hours in the production departments A,B and C respectively, compute Machine Hour Rate.

Answer:

Items of overhead	Basis of apportionment	Total	Production Department			Service Department	
			A	B	C	D	E
Rent	Area occupied	10800	2160	2880	2880	1440	1440
Rent and Taxes	Area occupied	3000	600	800	800	400	400
Depreciation on Building	Area occupied	54000	10800	14400	14400	7200	7200
Depreciation on other assets	Value of assets	42000	9000	11400	10800	6000	4800
Lighting	Light points	12800	4800	3200	2240	1600	960
Insurance on Building	Area occupied	9600	1920	2560	2560	1280	1280
Power	HP of machines	16500	6000	4500	3000	3000	----
Insurance on Plants	Value of assets	8400	1800	2280	2160	1200	960
Stores Overhead	Value of materials	5400	1800	1600	1200	-----	800
Subsidy to Canteen	Number of employees	15600	4160	5720	3120	1560	1040
Total Expenses after primary distribution		178100	43040	49340	43160	23680	18880
Distribution of D			11840	7894	3946	(23680)	------
Distribution of E			7552	7552	3776		(18880)
Total Expenses after secondary distribution			62432	64786	51332		
Machine Hours			1000	1500	750		
Machine Hour Rate (MHR)			62.432	43.19	68.44		

26. Dolphin Ltd. has three production departments X,Y and Z and two service departments A and B. The following particulars are available in respect of the departments for the month of January 2018:

		X	Y	Z	A	B
Total Overhead after primary distribution	**In ₹**	**6500**	**5400**	**4200**	**3600**	**2500**
Basis of distribution of service department's cost	**A**	**40%**	**25%**	**20%**	**---**	**15%**
	B	**25%**	**30%**	**35%**	**10%**	**-----**

You are required to apportionment the overheads of service departments A and B to the production departments under repeated distribution method.

Answer:

Items of overhead	**Production Department**			**Service Department**	
	X	**Y**	**Z**	**A**	**B**
Total as per primary Distribution	6500	5400	4200	3600	2500
A	1440	900	720	(3600)	540
B	760	912	1064	304	(3040)
A	122	76	61	(304)	45
B	11	13	16	5	(45)
A	2	1	1	(5)	1
B	1	---	----	-----	(1)
Total	8836	7302	6062	-----	------

Study Note – 3

COST ACCOUNTING STANDARDS

Section –A

Learning Objective: ***The council of the Institute of Cost Accountants of India has constituted 'Cost Accounting Standards Board with the objective of developing high quality Cost Accounting Standards to enable the management to take informed decisions. This chapter deals with the Cost Accounting Standards for the simple understanding of the students.***

1. (A) Choose the correct answer from the given four alternatives. [1×5=5]

A. CAS 10 stand for :

a. Direct expenses; **b. Repairs & Maintenance cost;**

c. Selling and Distribution overhead; **d. Research & Development cost.**

B. Uniformity and Consistency in the principles and method of depreciation and Amortization deals by:

a. CAS19; **b. CAS24;** **c. CAS16;** **d. CAS14.**

C. Packing material cost deals by :

a. CAS 9; **b. CAS 10;** **c. CAS11;** **d. CAS 12.**

D. Research & Development cost are linked with:

a. CAS 17; **b. CAS16;** **c. CAS19;** **d. CAS 18.**

E. Standard deals with captive consumption:

a. CAS 3; **b. CAS 4;** **c. CAS 5** **d. CAS 18.**

F. Any perquisites provided to an employee by the employer deals by.

a. CAS 10; **b. CAS11;** **c. CAS 12;** **d. CAS 7**

Answer:

A. - a, B. - c, C. - a, D. - d, E. - b, F. - d

(B) Match the following: **[1×5=5]**

Sl . No	Column I	Sl . No	Column II
1.	Packing cost of a product related to	A	CAS 14
2.	Pollution control cost	B	CAS 22
3.	Depreciation charged on machinery	C	CAS 17
4.	Interest paid on	D	CAS 16
5.	Manufacturing cost of excisable goods	E	CAS 09
6.	Expenses relating to manufacture of a product or rendering a service, which can be identified or linked with the cost object	F	CAS 10

Answer:

1. - E, 2. - A, 3. - D, 4. - C. 5. - B, 6. - F

(C) State whether the following statements are 'True' or 'False': **[1×5=5]**

(i) Selling and Distribution overhead recorded as per CAS17.

(ii) Manufacturing cost is one of the vital parts of total cost and it should deals as per CAS 22.

(iii) CAS 6 helps us to determine equalized transportation cost.

(iv) Determination of employee cost becomes reasonably accurate if we follow CAS 7.

(v) CAS 10 deals with handling of carriage on materials.

(vi) Pollution Control Cost deals as per CAS 13.

Answer:

(i) FALSE

(ii) TRUE

(iii) FALSE

(iv) TRUE

(v) TRUE

(vi) FALSE

(D) Fill in the blanks: (You may write only the Roman numeral and the content filling the blank) [1x5=5]

(i) In case of captive consumption, valuation shall be in accordance with Cost Accounting Standard _____ .

(ii) The Cost Statement shall disclose the any abnormal portion of direct expenses of as per CAS _____ .

(iii) CAS 6 deals with _____ .

(iv) CAS 9 bring uniformity and consistency in the principles and methods of determining the _____ .

(v) Repairs and maintenance cost deals as per CAS _____ .

(vi) Bring uniformity and consistency in the principles and methods of determining the Joint Costs deals with _____ .

Answer:

(i) 4

(ii) 10

(iii) Material cost

(iv) Packing material cost

(v) 12

(vi) CAS 19

Section B

2. (a) Explain the Objectives of Cost Accounting Standard Board (CASB). 5

Answer:

The objectives of the CASB are to develop high quality Cost Accounting Standards on important issues/topics relating to Cost and Management Accounting with the following objectives:

(i) To issues the guidelines for Cost Accounting Standard.

(ii) To equip the profession with better guidelines on standard cost accounting practices.

(iii) To assists the Cost Accountant in preparation of uniform cost statements.

(iv) To provide from time to time proper interpretations on various Cost Accounting Standards.

(v) To assist the management to follow the standard cost accounting practices in the matter of compliances of statutory obligations.

(vi) To issue appropriate guidelines relating to particular standard.

(vii) To help Government and Industry towards better cost control and cost management.

(viii) To assist the cost accountant to undertake cost audit in appropriate way as all cost statement are in uniform format.

(b) How much cost accounting standard are issued by the ICAI ? Also explain the basic rules relating to the classification of cost as per CAS – 1. 3

Answer:

The Institute of Cost Accountants of India issued 24 CAS till to date (30.01.2018). Classification of cost is the arrangement of items of costs in logical groups having regard to their nature (subjective classification) or purpose (objective classification).

The Scheme of classification should be such, so that every item of cost can be classified. As per CAS-1 the following basis are normally followed:

(a) Nature of expense ;

(b) Relation to object – traceability ;

(c) Functions / activities ;

(d) Behaviour - Fixed, Semi-variable or Variable ;

(e) Management decision making ;

(f) Production Process and

(g) Time period.

(c) What are the disclosure norms of overhead as per CAS-3? 3

Answer:

The cost statements shall disclose the following:-

1. The basis of assignment of overheads to the cost objects.
2. Overheads incurred in foreign exchange.
3. Overheads relating to resources received from or supplied to related parties.
4. Any Subsidy / Grant / Incentive or any amount of similar nature received / receivable reduced from overheads.
5. Credits / recoveries relating to overheads.
6. Any abnormal cost not forming part of the overheads.
7. Any unabsorbed overheads.

(d) Briefly explain the objectives and scope of Cost Accounting Standard on Depreciation and Amortization. (As per CAS 16). 2

Answer:

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the Depreciation and Amortisation with reasonable accuracy.

This standard shall be applied to cost statements which require measurement, assignment, presentation and disclosure of Depreciation and Amortisation, including those requiring attestation.

(e) Explain the objectives of CAS 17 on Interest and Financial Charges? 2

Answer:

The objective of this standard is to bring uniformity and consistency in the principles, methods of determining and assigning the Interest and Financing Charges with reasonable accuracy.

3. Briefly explain the objectives of any ten CAS. (10 ×1.5 = 15)

Answer:

The objectives of ten CAS are:

(i) **CAS-3: Cost Accounting Standard on Overheads:**

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the Overheads with reasonable accuracy.

(ii) **CAS-6: Cost Accounting Standard on Material Cost :**

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the Material Cost with reasonable accuracy.

(iii) **CAS-8: Cost Accounting Standard on Cost of Utilities :**

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the Cost of Utilities with reasonable accuracy.

(iv) **CAS-10: Cost Accounting Standard on Direct Expenses :**

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the Direct Expenses with reasonable accuracy.

(v) **CAS-14: Cost Accounting Standard on Pollution Control Cost :**

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the Pollution Control Costs with reasonable accuracy.

(vi) **CAS -18: Cost Accounting Standard on Research and Development Costs :**

The objective of this standard is to bring uniformity and consistency in the principles and methods of determining the Research, and Development Costs with reasonable accuracy and presentation of the same.

(vii) **CAS-19 : Cost Accounting Standard on Joint Costs:**

The objective of this standard is to bring uniformity, consistency in the principles, methods of determining and assigning Joint Costs with reasonable accuracy.

(viii) **CAS-21: Cost Accounting Standard on Quality Control :**

The objective of this standard is to bring uniformity, consistency in the principles, methods of determining and assigning Quality Control cost with reasonable accuracy.

(ix) **CAS 23 Cost Accounting Standard on Overburden Removal Cost :**

The objective of this standard is to bring uniformity, consistency in the principles, methods of determining and assigning Overburden Removal Cost with reasonable accuracy.

(x) **CAS 24 Cost Accounting Standards on Treatment of Revenue in Cost Statements:**

The objective of this standard is to bring uniformity and consistency in the principles and methods for treatment of revenue in cost statements with reasonable accuracy.

Study Note – 4

COST BOOK KEEPING

Section –A

Learning Objective: ***This chapter deals with Cost Accounting Records, Ledgers and Cost Statements. While determining total cost of resources, the costs of all resources used; directly or indirectly in the process are accumulated. Integral accounting and Reconciliation of Cost Accounting records with Financial Accounts are also discussed in the chapter.***

1. (A) Choose the correct answer from the given four alternatives. [1x5=5]

A. Non- integral accounting means

a. Cost Ledger accounting

b. Financial accounting

c. Management accounting

d. Cost & Management accounting

B. Integrated accounting means

a. Cost & Financial Management

b. Cost & Financial Reporting

c. Cost & Financial Transactions

d. Cost & Management Accounting.

C. Losses due to Scrapping of machinery is an items of

a. Cost Accounts

b. Financial Accounts

c. Management Accounts

d. Human Resource Accounts

D. The complimentary status of cost and financial accounts shown in

a. Cost Accounting

b. Financial Accounting

c. Integral Accounting

d. Non Integral Accounting

E. When Reconciliation start with cost accounts profit, the under charges of depreciation in Cost A/Cs to be

a. Added with Cost Accounts profit

b. Added with Financial Accounts profit

c. No Adjustment is required

d. Deducted from Cost Accounts profit.

F. There is no need to open a Cost Ledger Control Account in:

a. Integral Accounting System;

b. Non-integral Accounting System;

c. Management Accounting System

d. Both a and b

Answer:

A. – a, B. – c, C. – b, D. – c, E. – d, F. – a

(B) Match the following: **[1×5=5]**

Column –1		Column –1	
(i) Cost Department concerned with		A. Impersonal Account.	
(ii) Financial Department concerned with		B. Reliability of Cost Accounts	
(iii) Cost & Financial transaction kept separate		C. Various jobs, jobs numbers.	
(iv) Under Cost Ledger Work-in-Progress Ledger		D. One set of books	
(v) Reconciliation of Cost & financial Accounts		E. Cost Ledger Accounting	
(vi) Only one figure of profit arises in		F. Personal, Real and Nominal Accounts	
		G. Cost Accounting System	
		H. Integral Accounting System	

Answer:

(i) – A, (ii) – F, (iii) – E, (iv) – C, (v) – B, (vi) – H

(C) State whether the following statements are 'True' or 'False': **[1×5=5]**

(i) Credit balance of administrative overhead represents under absorption of these expenses.

(ii) Debit balance of selling and distribution overheads represent over absorption of selling and distribution overheads.

(iii) In Cost ledger accounting transactions are recorded on the basis of single entry system.

(iv) Control accounts are the total accounts maintained in the cost ledger.

(v) Cost ledger accounting is a system of integrating financial and cost accounts.

(vi) Loss on sale of capital assets is not included in accounts under integral system

Answer:

(i) – F, (ii) – F, (iii) – F, (iv) – T, (v) – F, (vi) – F

(D) Fill in the blanks. (You may write only the Roman numeral and the content filling the blank) **[1×5=5]**

(a) Purchases for special job is debited to ———— Accounts.

(b) The reconciliation is needed in ———— accounting system.

(c) The year ending balance of cost of sales accounts transferred to ———— .

(d) Dividend received is recorded in ———— .

(e) Cost Ledger contain all ———— .

(f) ———— of accounts is possible in integrated accounts

Answer:

(a) Work-in- Progress Control A/C

(b) Non- Integral

(c) Costing P/L A/C or Sales A/C

(d) Financial Accounting

(e) Impersonal Accounts

(f) Concentration.

Section B

1. Component Camel is produced by combining two material X and Y and the various cost associated with the same are as follows:

Particulars	Amount ₹
Material X 2000 tons @ ₹2	4,000
Material Y 2400 tons @ ₹1.60	3,840
Insurance	196
Freight	220
Sales tax	392
Total	8,648

Normal loss for material X is 20 tons and for material Y is 12 tons.

A. What rate would you adopt to issue the material X and Y for component Camel?

B. What rate would you adopt if a provision of 25% is to be made for probable risk of obsolescence?

Answer:

A. Cost Statement for Material X and Y

Particulars	Material X		Material Y	
	Tons	₹	Tons	₹
Cost of materials	2,000	4,000	2,400	3,840
Add: insurance	---	100	---	96
Add: Freight	---	100	---	120
Add: Sales Tax	---	200	---	192
Total Less : Normal loss	2,000 20	4,400 ---	2,400 12	4248 ---
	1,980	4,400	2,388	4,248
Rate per ton (for issue)	4,400/1,980 = ₹ 2.22		4,248/2,388 = ₹ 1.78	

(**Note:** insurance and sales tax apportioned in ratio of cost of material and freight in ratio of weight of material)

B. If provision of 25% is to be made for probable risk of obsolescence

The rate:

For Material X (₹ 2.22 + 25% on ₹ 2.22) = ₹ 2.775

For Material Y (₹ 1.78 + 25% on ₹ 1.78) = ₹ 2.225

(C) Indian Product Ltd. Have received an enquiry for the supply of 2,00,000 numbers of a special type of machine screw. Capacity exists for the manufacture of the screw in the company's unit no. 3 but a fixed investment of ₹ 60,000 and working capital to the extent of 25% of the sales value will be required if the job is undertaken. The costs are estimated as follows:

i. Materials – 20,000 lbs at ₹ 2.30 per lb.

ii. Labour hours – Direct 18,000 of which 2,000 would be overtime hours payable at double the labour rate.

iii. Labour rate – ₹1 per hour.

iv. Factory overhead – Re. 1 per direct labour hour.

v. Selling and distribution cost- ₹ 23,000

vi. Material recovered as a scrap at the end of the operations is estimated at ₹ 2,000.

vii. The company expects a net return of 25% on the Capital Employed.

Prepare a Cost Sheet and price statement indicating the price which should be quoted to the customer.

Answer:

Cost Sheet and Price Statement

For 2,00,000 Numbers of machine screw

Particulars	₹	₹
Raw Materials (20,000 x ₹2.30) Less: Sale of scrap	46,000 2,000	 44,000
Direct labour : Normal : 16,000 x Re.1 Overtime : 2,000 x ₹ 2	16,000 4,000	 20,000
Prime cost Add: Factory overhead : 18,00 hours x Re.1		***64,000*** 18,000
Works cost Add: Selling and Distribution overhead		***82,000*** 23,000
Cost of Sales ***Profit (WN-1)***		***1,05,000*** ***23,000***
Selling price		***1,28,000***

Working Note -1.

Let X be the selling price,

Then,

Selling price = cost + profit (profit = 25% of capital employed)

X = ₹ 1,05,000 + 25% of (Fixed capital + working capital)

X = 1,0,5000+ 25% (60,000 + 0.25X)

X= 1,0,5000+ 15,000 + 0.0625X

X= 1,28,000

Selling price = ₹ 1,28,000, so, profit = ₹ 1,28,000 – ₹ 1,05,000 = ₹ 23,000

(6+2+7 = 15)

2. (A) St. Ltd manufactures two types of pen P and Q. The cost data for the year ended 30th June, 2017 is as follows:

Particulars	₹
Direct materials	**4,00,000**
Direct wages	**2,24,000**
Production overhead	**96,000**
Total	**7,20,000**

It is further ascertained that:

i. Direct materials in type P cost twice as much direct material as in type Q.

ii. Direct wages for type Q were 60% of those for type P.

iii. Production overhead was of the same rate for both types.

iv. Administration overhead for each was 200% of direct labour.

v. Selling costs were 50 paise per pen for both types.

vi. Production during the year (In units):

Type P 40000

Type Q 1,20,000

vii. Sales during the year (In units) :

Type P 36,000

Type Q 1,00,000

viii. Selling prices were ₹ 14 per pen for type P and ₹10 per pen for type Q.

Prepare a statement showing per unit cost of production, total cost, profit and also total sales value and profit separately for the two types of pen P and Q. 9

Answer:

Cost Statement

Period: year ended 30.06.17

Particulars	Total	P 40000 units		Q 120000 units	
	₹	Total ₹	Per unit ₹	Total ₹	Per unit ₹
Direct materials (40000x2:120000x1)	4,00,000	1,60,000	4.00	2,40,000	2.00
Direct wages (40000x100:120000x60)	2,24,000	80,000	2.00	1,44,000	1.20
Prime cost	6,24,000	2,40,000	6.00	3,84,000	3.20
Production overhead (40,000:1,20,000)	96,000	24,000	0.60		
				72,000	0.60
Works cost	7,20,000	2,64,000	6.60		
Administrative overhead	4,48,000	1,60,000	4.00	4,56,000	3.80
Cost of production				2,88,000	2.40
	11,68,000	4,24,000	10.60		
Less : Closing Finished stock				7,44,000	6.20
(4000x10.60 & 20000x6.20)	1,66,400	42,400	----		
Cost of goods sold				1,24,000	-----
	10,01,600	3,81,600	10.60		
Selling cost @ 50 paise per ton				6,20,000	6.20
	68,000	18,000	00.50		
Total cost				50,000	0.50
Profit (Balancing figure)	10,69,000	3,99,600	11.10		
	4,34,000			6,70,000	6.70
		1,04,400	2.90	3,30,000	3.30
Sales	**15,04,000**	**5,04,000**	**14.00**	**10,00,000**	**10.00**

2. (B) Sarada India Ltd. Manufactured P, Q & R products. The material and wages costs are as follows:

Particulars	P	Q	R
Materials (₹ Per unit)	**36**	**60**	**440**
Labour (₹ Per Unit)	**48**	**40**	**120**
Units produces	**600**	**300**	**60**

The factory overhead is ₹ 60,000.

You are required to determine the works cost of each product after assuming that one R is equivalent to 4 P and 2 Q are equivalent to 1 R for the purpose of allocation of overhead. 6

Answer:

Cost sheet showing the Works Cost/ Total Cost of product P, Q and R

Particulars	P ₹	Q ₹	R ₹
Materials (600 x 36, 300 x 60, 60 x 440)	21,600	18,000	26,400
Labour (600 x 48, 300 x 40, 60 x120)	28,800	12,000	7,200
Prime Cost	50,400	30,000	33,600
Factory Overhead	25,000	25,000	10,000
Works Cost / Cost of Product	75,400	55,000	43,600

Working:

Allocation of overhead:

1 R equivalent to 4 P, so , 600 P = 600x1/4 R = 150 R

1 R equivalent to 2 Q , so, 300 Q = 300x1/2 =150 R

And actual production of R =60

Therefore, ratio between P : Q :R = 150:150:60 = 5:5:2

Therefore allocation of overhead:

P : 5/12x ₹ 60,000= ₹ 25,000, Q : 5/12 x ₹ 60,000 = ₹ 25,000 and R : 2/12 x ₹ 60,000 =10,000

3. (A) ABC Ltd presents the following data for the month of December, 2017:

Direct labour cost ₹16,000 (160% of factory overhead)

Cost of goods sold ₹ 56,000

Inventory accounts showed these opening and closing balances:

Particulars	December 1 ₹	December 31 ₹
Raw materials	**8,000**	**8,600**
Work-in-progress	**8,000**	**12,000**
Finished goods	**14,000**	**18,000**

Other information:

Selling expenses ₹ 3, 400, General Administrative expenses ₹ 2,600, Sales for the month ₹ 75, 000.

You are required to prepare statement showing cost of goods manufactured and sold and profit earned.

Answer:

(A) **Statement showing Cost and Profit**

For the month of December, 2017

Particulars	₹
Opening stock of raw materials	8,000
Add: Purchases of Raw Materials (Working Note-01)	36,000
	44,000
Less: Closing Stock of Raw Materials	8,600
Materials Consumed	***35,400***
Add: Direct labour cost	16,000
Prime Cost	***51,400***
Add: Factory Overhead (16,000x100/160)	10,000
Manufacturing cost	***61,400***
Add: Opening Work-In- progress	8,000
	69,400
Less: Closing Work – In-Progress	12,000
Works Cost	***57,400***
Add :General Administrative expenses	2,600
Cost of Production	***60,000***
Add: Opening Finished goods	14,000
	74,000
Less: Closing Finished Goods	18,000
Cost of Goods sold	***56,000***
Add: selling Expenses	3,400
Cost of Sales	***59,400***
Profit	***15,600***
Sales	***75,000***

Working Note: 1.

Calculation of purchases of raw materials:

Particulars	₹
Cost of Goods sold	56,000
Add: Closing stock of finished goods	18,000
	74,000
Less: Opening stock of finished goods	14,000
Cost of production	60,000
Less: General administration expenses	2,600
Works cost	57,400
Add: Closing work-in-progress	12,000
	69,400
Less: Opening work-in-progress	8,000
Manufacturing cost	61,400
Less: Factory overheads	10,000
Prime cost	51,400
Less: Direct Labour	16,000
Material consumed	35,400
Add: closing stock of raw materials	8,600
	44,000
Less: Opening stock of materials	8,000
Purchase of materials	36,000

3. (B) A factory uses job costing method. The following cost data is obtained from its books for the year ended 31st December, 2017:

Particulars	₹
Direct materials	**90,000**
Direct Labour	**75,000**
Selling and distribution overheads	**52,500**
Administrative overheads	**42,000**
Factory overheads	**45,000**
Profit	**60,900**

(i) Prepare a job Cost sheet indicating the Prime cost, work cost, production cost, cost of sales and sales value.

(ii) In 2018 the factory receives an order for a number of jobs. It is estimated that direct materials required will be ₹ 1, 20,000 and direct labour will cost ₹ 75,000. What should be the price for these jobs if the factory intends to earn the same rate of profit on sales assuming that the selling and distribution overheads have gone up by 15%? The factory recovers factory overheads as a percentage of direct wages and administration, selling and distribution overheads as a percentage of works cost, based on cost rates prevailing in the previous year.

Answer:

(B) (i)

Job Cost Sheet

Period: Year ended 31.12.17

Particulars	₹
Direct materials	90,000
Add: Direct wages	75,000
Prime cost	***1,65,000***
Add: Factory overheads	45,000
Works cost	***2,10,000***
Add: Administration overheads	42,000
Cost of production	***2,52,000***
Add: Selling and distribution overheads	52,500
Cost of sales	***304500***
Profit	***60,900***
Sales	***3,65,400***

Answer:

(B) (ii) **Estimated cost sheet and Price of Jobs for 2018**

Particulars	₹
Direct materials	1,20,000
Add: Direct wages	75,000
Prime cost	***1,95,000***
Add: Factory overheads (60% of direct wages, see W.N-1)	45,000
Works cost	***2,40,000***
Add: Administration overheads (20% of works cost, see W.N-2)	48,000
Cost of production	***2,88,000***
Add: Selling and distribution overheads (28.75% of works cost, see W.N-3)	69,000
Cost of sales	***3,57,000***
Add: Profit (16.666% on sales i,e 20% on cost, see W.N – 4)	***71,400***
Selling price	4,28,400

Working:

W.N-1:

% of factory overheads on direct wages: 45,000/75,000x100 = 60%.

W.N-2

% of administration overheads on works cost: 42,000/2,10,000 x100 = 20%

W.N-3

% of selling and distribution overheads on works cost: (52,500+15% on 52,500) = ₹ 60,375 / 2,10,000 x 100 = 28.75%.

W.N – 4:

Percentage of profit:

(i) On cost : 60,900/3,04500 x 100 = 20%

(ii) On sales : 60,900/3,65,000 x 100 = 16.667%

(6+5+4 =15)

4. (A) (i) What are the types of accounting followed in cost book?

(ii) Explain the most important types of cost ledger.

(iii) What are the different important Accounts in Cost Ledger?

Answer:

(i) Basically there are two systems of accounting followed in cost book, Namely:

- Non-integral or cost ledger accounting (where cost and financial transactions are kept separately) and
- Integral or integrated accounting (where cost and financial transactions are integrated).

(ii) The most important cost ledger are:

- Cost Ledger
- Store Ledger
- Work – in- Progress Ledger
- Finished Goods Ledger.

(iii) The different important Accounts in Cost Ledger are-

- General Ledger Adjustment Account
- Stores Ledger Control Account
- Wages Control Account

- Works/Manufacturing Overhead Account
- Work-in-Progress Control Account
- Administration Overhead Account
- Finished Goods Ledger Control Account
- Selling and Distribution Overhead Account
- Cost of Sales Account
- Sales Account
- Costing Profit and Loss Account.

4. (B) Pass journal entries for the following transactions in a double entry cost accounting system:

		₹
(a)	Issued Materials:	
	Direct	5, 50,000
	Indirect	1, 50,000
(b)	Allocation of wages and salaries:	
	Direct	2, 00,000
	Indirect	40,000
(c)	Overhead absorbed in jobs:	
	Factory	1, 50,000
	Administration	50,000
	Selling	30,000
(d)	Under/Over-absorbed overheads:	
	Factory (over)	20,000
	Administration (Under)	10,000

Answer.

Cost Journal

Particulars		L.F	Debit. ₹	Credit. ₹
(a) Work-In-Progress Control A/c	Dr.		5,50,000	
Factory Overhead Control A/c	Dr.		1,50,000	
To, Store Ledger Control A/c				7,00,000
(Direct and Indirect Material Issued)				
(b) Work-In-Progress Control A/c	Dr.		2,00,000	
Factory Overhead Control A/c	Dr.		40,000	
To, Wages Control A/c				2,40,000
(Direct and Indirect wages & salaries charged)				
(c) i. Work-In-Progress Control A/c	Dr.		1,50,000	
To, Factory Overhead Control A/c				1,50,000
(Factory overhead charged)				
(c) ii. Finished Goods Control A/c	Dr.		50,000	
To, Administration Overhead Control A/c				50,000
(Administration overhead charged)				
(c) iii. Cost of Sales A/c	Dr.		30,000	
To, Selling Overhead Control A/c				30,000
(Selling overhead recovered from sales)				
(d) i. Factory Overhead Control A/c	Dr.		20,000	
To, Overhead Adjustment A/c				20,000
(Or, Costing Profit & Loss A/c)				
(Over-recovered factory overhead transferred)				
(d) ii. Overhead Adjustment A/c	Dr.		10,000	
(Or, Costing Profit & Loss A/c)				10,000
To, Administration Overhead Control A/c				
(Under recovered administration overhead transferred)				

(1+2+5+7=15)

5. (A) A company operates on historic job cost accounting system, which is not integrated with the financial accounts. At the beginning of a month, the operating balances in cost ledger were:

Particulars	₹ (in lakhs)
Store Ledger Control Account	80
Work-in-Progress Control account	20
Finished Goods Control Account	430
Building Construction Account	10
Cost Ledger Control Account	540
During the month, the following transactions took place:	
Materials:	
Purchased	40
Issued to production	50
Issued to general maintenance	06
Issued to building construction	04
Wages:	
Gross wages paid	150
Indirect wages	40
For building construction	10
Works Overheads:	
Actual amount incurred (excluding items shown above)	160
Absorbed in building construction	20
Under absorbed	08
Royalty paid	05
Selling, distribution and administration overheads	25
Sales	*450*

At the end of the month, the stock of raw material and Work-in-progress was ₹ 55 lakhs and ₹ 25 lakhs respectively. The loss arising in the raw material account is the treated as factory overheads. The building under construction was completed during the month. Company's gross profit margin is 20% on sales.

Prepare the relevant control accounts to record the above transactions in the cost ledger of the company.

Answer:

(A)

Dr. **Cost Ledger Control Account** **Cr.**

Particulars	₹	Particulars	₹
To, Costing Profit & Loss A/c	450	By, Balance b/d	540
To, Building Construction A/c	44	By, Store Ledger Control A/c	40
To, Balanced c/d	483	By, Wages Control A/c	150
		By, Works Overhead Control A/c	160
		By, Royalty A/c	05
		By, Selling, Distribution and Administration Overhead A/c	25
		By, Costing Profit & Loss A/c	57
	977		977

Dr. **Store Ledger Control Account** **Cr.**

Particulars	₹	Particulars	₹
To, Balance b/d	80	By, WIP Control A/c	50
To, Cost Ledger Control A/c	40	By, Works Overhead Control A/c	06
		By, Building Construction A/c	04
		By, Works Overhead Control A/c (Loss)	05
		By, Balance c/d	55
	120		120

Dr. **Work–in-Progress Control Account** **Cr.**

Particulars	₹	Particulars	₹
To, Balance b/d	20	By, Finished Goods Control A/C	333
To, Store Ledger Control A/C	50	By, Balance c/d	25
To, Wages Control A/C	100		
To, Works Overhead Control A/c	183		
To, Royalty A/c	05		
	358		358

Dr. **Finished Goods Control Account** **Cr.**

Particulars	₹	Particulars	₹
To, Balance b/d	430	By, Cost of Goods sold A/c (WN-1)	360
To, Work –in-Progress Control A/c	333	By, Balance c/d	403
	763		763

Dr. **Cost of Sales Account** **Cr.**

Particulars	₹	Particulars	₹
To, Cost of Goods sold A/c To, Selling, Dist. & Admn. Overhead A/c	360 25	By, Costing Profit & Loss A/c	385
	385		385

Dr. **Costing Profit & Loss Account** **Cr.**

Particulars	₹	Particulars	₹
To, Cost of Sales A/c To, Works Overhead Control A/c To, Cost Ledger Control A/c	385 08 57	By, Cost Ledger Control A/c	450
	450		450

Dr. **Building Construction Account** **Cr.**

Particulars	₹	Particulars	₹
To, Balance b/d To, Store Ledger Control A/c To, Wages Control A/c To, Works Overhead Control A/c	10 04 10 20	By, Cost Ledger Control A/c	44
	44		44

Dr. **Works Overhead Control Account** **Cr.**

Particulars	₹	Particulars	₹
To, Store Ledger Control A/c To, Wages Control A/c To, Cost Ledger Control A/c To, Store Ledger Control A/c (Loss)	06 40 160 05	By, Building Construction A/c By, Work-in-Progress Control A/c By, Costing Profit & Loss A/c (Bal)	20 183 08
	211		211

Dr. **Wages Control Account** **Cr.**

Particulars	₹	Particulars	₹
To, Cost Ledger Control A/c	150	By, Works Overhead Control A/c By, Building Construction A/c By, Work-in-Progress Control A/c	40 10 100
	150		150

Dr. **Royalty Account** **Cr.**

Particulars	₹	Particulars	₹
To, Store Ledger Control A/c	05	By, Work-in-Progress Control A/c	05
	05		05

Dr. **Cost of Goods Sold Account** **Cr.**

Particulars	₹	Particulars	₹
To, Finished Goods Control A/c	360	By, Cost of Sales A/c	360
	360		360

Dr. **Selling, Distribution and Admn. Overhead Account** **Cr.**

Particulars	₹	Particulars	₹
To, Cost Ledger Control A/c	25	By, Cost of Sales A/c	25
	25		25

Trial Balance **Dr.** **Cr.**

Particulars	**Amount (₹)**	**Amount (₹)**
Store Ledger Control A/c Work-in-Progress Control A/c Finished Goods Control A/c Cost Ledger Adjustment A/c	55 25 403 ----	----- ----- ---- 483
	483	483

WN-1:

Sales = 450

GP on sales = 20%

Therefore, cost of sales = 450 × 80% = 360

5. (B) Journalise the following transactions assuming that cost and financial accounts are integrated:

	₹
01. Raw materials purchased	**1,80,000**
02. Direct material issued to production	**1,12,500**
03. Wages paid (40% Indirect)	**1,80,000**
04. Wages charged to production	**80,000**
05. Manufacturing expenses incurred	**60,000**
06. Manufacturing overhead charged to production	**60,000**
07. Selling and distribution costs	**15,000**
08. Finished product at cost	**1,80,000**
09. Sales	**2,50,000**
10. Receipts from customers	**50,000**
11. Paid to creditors	**60,000**
12. Closing stock	**Nil**

Answer. B. **Journal Entries**

Sl. No	Particulars		Debit ₹	Credit ₹
01.	Store Ledger Control A/c To, Creditors A/c (Being Raw Materials Purchased on credit)	Dr.	1,80,000	 1,80,000
02.	Work-in –Progress Control A/c To, Store Ledger Control A/c (Being material issued for production)	Dr.	1,12,500	 1,12,500
03.	Wages Control A/c Factory Overhead Control A/c To, Bank A/c (Being direct & Indirect wages paid)	Dr. Dr.	1,08,000 72,000	 1,80,000
04.	Work-in-Progress Control A/c To, Wages Control A/c (Being wages charged to production)	Dr.	80,000	 80,000
05.	Factory Overhead Control A/c To, Bank A/c (Being Manufacturing expenses paid)	Dr.	60,000	 60,000
06.	Work-in-Progress Control A/c To, Factory Overhead Control A/c (Being Overhead charged to production)	Dr.	60,000	 60,000

07.	Selling & Distribution Overhead Control A/c To, Bank A/c (Being Selling & Distribution Overhead incurred)	Dr.	15,000	 15,000
08.	Finished Stores Control A/c To, Work-in-Progress Control A/c (Being cost of production completed)	Dr.	1,80,000	 1,80,000
09.	Cost of Sales A/c To, Finished Stores Control A/c To, Selling & Distribution Overhead Control A/c (Being the value of cost product sold)	Dr.	1,95,000	 1,80,000 15,000
10.	Sales Ledger Control A/c To, Sales A/c (Being goods sold)	Dr.	2,50,000	 2,50,000
11.	Bank A/c To, Sales Ledger Control A/c (Being amount received from customers	Dr.	50,000	 50,000
12.	Creditors A/c To, Bank A/C (Being amount paid to creditors)	Dr.	60,000	 60,000

(10+5=15)

6. (A) A firm of Sports Equipment Commenced business on 1.4.13 for manufacturing two varieties of bat, "Senior" and "Sub-Junior". The following information has been extracted from the accounts records for the half – year period ended 30.9.13:

Particulars	₹
Average material cost per piece of "Senior " Bat	**80**
ii. Average material cost per piece of " Sub-Junior" Bat	**60**
iii. Average cost of labour per piece of 'Senior" Bat	**140**
iv. Average cost of labour per piece of "Sub-Junior" Bat	**110**
v. Finished goods sold:	
Senior 300 pieces	
Sub-Junior 700 pieces	
vi. Sale price:	
Per piece of "Senior" Bat	**500**
Per piece of "Sub-Junior" Bat	**390**
vii. Works expenses incurred during the period	**1,20,000**
viii. Office expenses	**68,000**

You are required to prepare a statement showing:

1. **The profit per each brand –pieces of bat; charge labour and material at actual average cost, work on cost 100% on labour cost and office cost at 25% of works cost**
2. **Financial profit for the half-year ending 30.9.13**
3. **Reconciliation between profit as shown by cost accounts and financial accounts.**

Answer:

Statement Showing Cost and Profit, As per Cost records

Particulars	Senior Bat (300 Units Sold)		Sub- Junior Bat (700 units)		Grand Total
	Per unit ₹	Total ₹	Per unit ₹	Total ₹	₹
Material	80	24,000	60	42,000	66,000
Add: Labour	140	42,000	110	77,000	1,19,000
Prime Cost	220	56,000	170	1,19,000	1,85,000
Add: Work on Cost (100% of labour)	140	42,000	110	77,000	1,19,000
Works Cost	360	1,08,000	280	1,96,000	3,04,000
Add: Office Cost (25% on works cost)	90	27,000	70	49,000	76,000
Total cost	450	1,35,000	350	2,45,000	3,80,000
Profit	50	15,000	40	28,000	43,000
Sales	500	1,50,000	390	2,73,000	4,23,000

Profit & Loss A/C, As per Financial Books
For the Year ending on 31.9.2013

Dr. **Cr.**

Particulars	₹	Particulars	₹
To, Material:		By, Sales:	
Senior Bat 24,000		Senior Bat 1,50,000	
Sub-Junior Bat 42,000	66,000	Sub-Junior Bat 2,73,000	4,23,000
To, Labour:			
Senior Bat 42,000			
Sub-Junior Bat 27,000	1,19,000		
To, Works Expenses	1,20,000		
To, Office Expenses	68,000		
To, Net Profit	50,000		
	4,23,000		4,23,000

Reconciliation Statement

	₹	₹
Profit as per costing record		43,000
Add: Over – recovery of Office expenses (76,000 --- 68,000)		8,000
		51,000
Less: Under recovery of works overhead (1,20,000 --- 1,19,000)		1,000
Profit as per Financial Records		50,000

6. (B) GM Ltd. Showed a net loss of ₹6, 30,000 as per Financial Accounts for the year ended31st March 2015. The Cost accountants, however, disclosed a loss of ₹ 5, 00,000 for the same period. On scrutiny of the two accounts the following are available:

Details	₹
Factory overhead under-recovered	**70,000**
Administration overhead over-recovered	**30,000**
Depreciation charged in Financial Accounts	**1,50,000**
Depreciation charged in Cost Accounts	**1,20,000**
Interest on investment not included in Cost Accounts	**30,000**
Income tax provided in Financial Accounts	**1,00,000**
Stores adjustments (credit in Financial Accounts)	**10,000**

Prepare a Memorandum Reconciliation Account.

Answer:

Memorandum Reconciliation Account

For the year ended 31st March, 2015

Particulars	₹	Particulars	₹
To, Net loss as per Financial Accounts	6,30,000	By, Factory Overhead under-recovered	70,000
To, ADM. Overhead over-recovered	30,000	By, Depreciation undercharged in Cost Accounts (!,50,000 – 1,20,000)	30,000
To, Interest on Investment	30,000	By, Provision for Income Tax not considered in Cost Accounts	1,00,000
To, Store Adjustment	10,000	By, Balance c/d (Net loss as per Cost Accounts)	5,00,000
	7,00,000		7,00,000

(10+5=15)

7. The following Figures are extracted from the Financial Accounts of Vikas Textitle Ltd. Manufacturing a standard product for the year ended March 31, 2014.

Particulars		₹
Sales (24,000 units)		**24,00,000**
Material Consumed		**10,96,000**
Wages		**6,04,000**
Factory Overheads		**3,32,000**
Administrative Overheads		**1,52,960**
Selling & Distribution Overheads		**1,80,000**
Preliminary expenses		**14,000**
Interest on loan		**10,000**
Stock of finished goods (800 units)		**64,000**
Work in progress 31.3.2014	₹	
Materials	**33,600**	
Wages	**14,400**	
Factory Overheads	**8,000**	**56,000**
Dividend received		**7,200**

In the cost accounts, Factory overheads have been charged to the production at 20% on prime cost; Administrative Overhead at ₹ 6 per unit on total units produced.

Selling and Distribution overheads at ₹ 8 per unit on total units sold.

Required:

i. Prepare Costing and Financial Profit and Loss Accounts for the year ended March 31, 2014 and

ii. Reconcile the differences in the Profit in the two sets of accounts.

Answer:

(i)

Vikas Textitle Ltd

Costing Profit & Loss Account

Dr. **For the year ended 31.3.14** **Cr.**

Particulars	Amount ₹	Particulars	Amount ₹
To, Material Consumed	10,96,000	By, Sales	24,00,000
To, Wages	6,04,000		
Prime Cost	17,00,000		
To, Factory overheads (20% on Prime cost)	3,40,000		
Gross works cost	20,40,000		
Less: Closing stock of WIP:			
Materials 33,600			
Wages 14,400			
Factory overhead 9,600 (20% of ₹48,000)	57,600		
Works cost	19,82,400		
To, Administrative overhead (24,000+800) x 6	1,48,800		
Cost of production	21,31,200		
Less: Closing stock of finished goods	68,748		
(21,31,200/24,800x800)	20,62,452		
Cost of Goods Sold	1,92,000		
To, Selling & Distribution Overheads (2400x8)			
Cost of Sales	22,54,452		
To, **Profit (Bal-fig)**	1,45,548		
	24,00,000		**24,00,000**

Financial Profit & Loss Account

Dr. **For the year ended 31.3.14** **Cr.**

Particulars	Amount ₹	Particulars	Amount ₹
To, Material consumed	10,96,000	By, Sales	24,00,000
To, Wages	6,04,000	By, Closing Stock:	
To, Factory Overheads	3,32,000	--- Finished Stock	64,000
To, Administrative overheads	1,52,960	--- Work-in-Progress:	
To, Selling & Distribution	1,80,000	Materials 33,600	
overheads		Wages 14,400	
To, Preliminary expenses	14,000	Factory overhead 8,000	
To, Interest on loan	10,000		56,000
To, Profit (Bal-fig)	1,38,240	By, Dividend received	7,200
	25,27,200		**25,27,200**

Answer:

(ii) **Reconciliation Statement, As on 31.03.2014**

Particulars	₹	₹
Profit as per cost Accounts		1,45,548
Add: i. Dividend Received	7,200	
ii.Over absorption of Factory overheads	8,000	
(3,40,000 --- 3,32,000)		
i. Over absorption of selling & distribution overhead	12,000	27,200
(192,000 – 1,80,000)		
		1,72,748
Less : i. Preliminary expenses excluded from cost accounts	14,000	
ii. Interest on loan	10,000	
iii. Under absorption of administrative overhead (1,52,960 – 1,48,800)	4,160	
ii. Over valuation of closing stock of finished stock in cost accounts (68,748 – 64,000)		
iii. Over valuation of WIP in cost accounts (57,600 – 56,000)	4,748	
	1,600	34,508
Profit as per Financial Accounts		
		1,38,240

(9+6=15)

Study Note – 5

METHODS OF COSTING

JOB, BATCH AND CONTRACT COSTING

Learning Objective: ***This chapter explains the purpose and application of Job-Order Costing, purpose and application of Process Costing, joint and by products. It also describes equivalent units, Operating costing or Service Costing***

METHODS OR TYPES OF COSTING

A costing method [*Cost Accumulation Process*] is designed to suit the way goods are processed or manufactured or the way services are provided. Each organization's costing method will therefore have unique features but costing methods of firms in the same line of business will more than likely have common aspects.

Costing is the technique and process of ascertaining costs. In order to do the same, it is necessary to follow a particular *method of ascertaining cost*. Different methods of costing are applied to different industries depending upon the type of manufacture and their nature. Broadly the costing methods are classified into the following:

1. Specific Order Costing (Job or Terminal Costing).

> 'basic cost accounting method applicable if work consists of separately identifiable batches, contracts or jobs' CIMA *Official Terminology*

2. Operation Costing or Process Costing

JOB COSTING

Job costing is the costing method used where work is undertaken to customers' special requirements and each order is of comparatively short duration.

The work relating to a job is usually carried out within a factory or workshop and moves through processes and operations as a continuously identifiable unit.

✓

> A **job** is a 'customer order or task of relatively short duration'.
>
> **Job costing** is a 'form of specific order costing where costs are attributed to individual jobs'.

- ✓ Costs are collected and accumulated according to jobs, contracts, products or work orders.
- ✓ Each job or unit of production is treated as a separate entity for the purpose of costing. Job costing is carried out for the purpose of ascertaining cost of each job

BATCH COSTING

Batch Costing is a form of *specific order costing.* It is adopted in such cases to calculate the cost of each such batch. Cost per unit is ascertained by dividing the total cost of a batch by number of items produced in that batch. In order to do that a Batch Cost Sheet is prepared

CONTRACT COSTING

Contract costing is a form of *specific order costing* where job undertaken is relatively large and normally takes period longer than a year to complete.

Some specific terms:

1. Work-in-Progress in contract costing refers to the work which is not complete on the reporting date.

   Value of the work-in-progress = the cost of work completed, both certified and uncertified + the cost of work not yet completed + amount of estimated/ notional profit.

   [amount received from the contractee is subtracted from the WIP in the Balance Sheet]

   In the *Balance Sheet* (prepared for management), the work-in-progress is usually shown under two heads, viz., certified and uncertified. The cost of work completed and certified and the profit credited will appear under the head 'certified' work-in- progress, while the completed work not yet certified, cost of material, employee and other expenses which has not yet reached the stage of completion are shown under the head "uncertified" work-in-progress.

2. Cost of Work Certified or Value of Work Certified: A contract is a continuous process and to know the cost or value of the work completed as on a particular date; assessment of the completion of work is carried out by an expert (it may be any professional like surveyor, architect, engineer etc.). The expert, based on his assessment, certifies the work completion in terms of percentage of total work. The cost or value of certified portion is calculated and is known as Cost of work certified or Value of work certified respectively.

   Value of Work Certified = Value of Contract × Work certified (%)
   Cost of Work Certified = Cost of work to date – (Cost of work uncertified + Material in hand + Plantatsite)

3. Cost of Work Uncertified: It represents the cost of the work which has been carried out by the contractor but has not been certified by the expert. It is always shown at cost price.

4. Retention Money: In a contract, a contractee generally keeps some amount payable to contractor with himself as security deposit. To ensure that the work carried out by the contractor is as per the plan and specifications, it is monitored periodically by the contractee. To have a cushion against any defect or undesirable work the contractee upholds some money payable to contractor. This security money upheld by the contractee is known as retention money.

5. Notional Profit: It represents the difference between the value of work certified and cost of work certified. It is determined: Notional profit = Value of work certified - (Cost of work to date - Cost of work not yet certified)
6. Estimated Profit: It is the excess of the contract price over the estimated total cost of the contract. [can be calculated and feasible to calculate only in case of contracts whose end has neared].
7. Cost-plus contract is a contract where the value of the contract is determined by adding an agreed percentage of profit to the total cost. These types of contracts are entered into when it is not possible to estimate the contract cost with reasonable accuracy due to unstable condition of factors that affect the cost of material, employees, etc.
8. Escalation clause in a contract empowers a contractor to revise the price of the contract in case of increase in the prices of inputs due to some macro-economic or other agreed reasons.
9. Profit on Incomplete contract.

For the purpose of finding out the portion of the profit out of notional profit to be transferred to Profit and Loss Account, the contracts are divided in the following manner: -

A. Contracts which have *just commenced*: In this case no portion of the notional profit shall be transferred to Profit and Loss Account and the entire amount is kept as reserve.

B. Contracts which have reasonably advanced: In this case the profit to be transferred to Profit and Loss Account out of notional profit is based on the *degree of completion* of the contract. The degree of completion of the contract can be found out by comparing work certified and the contract price. *(refer to study note for details).*

C. Contracts which are almost complete: In this case the portion of the profit to be transferred to Profit and Loss Account is calculated by using the estimated total profit which is ascertained by subtracting the total cost to date and the additional cost to complete the contract from the contract price. (*refer to study note for details*).

SECTION A

1. Choose the correct answer from given four alternatives. [one mark each]

i. Which of the following costing methods is most likely to be used by a company involved in the construction of hotels?

a. Batch costing

b. Contract costing

c. Job costing

d. Process costing

ii. Which of the following item is not contained in a typical job cost?

a. Actual material cost

b. Actual manufacturing overheads

c. Absorbed manufacturing overheads

d. Actual labour cost

iii. Which of the following is a feature of job costing?

a. Production is carried out in accordance with the wishes of the customer

b. Associated with continuous production of large volumes of low-cost items

c. Establishes the cost of services rendered

d. Costs are charged over the units produced in the period

iv. Which of the following statements is/are correct?

1. A materials requisition note is used to record the issue of direct material to a specific job

2. A typical job cost will contain actual costs for material, labour and production overheads, and non-production overheads are often added as a percentage of total production cost

3. The job costing method can be applied in costing batches

a. (1) only

b. (1) and (2) only

c. (1) and (3) only

d. (2) and (3) only

v. A job is budgeted to require 3,300 productive hours after incurring 25% idle time. If the total labour cost budgeted for the job is ₹ 36,300, what is the labour cost per hour? 108

a. ₹ 8.25

b. ₹ 8.80

c. ₹ 11.00

d. ₹ 14.67

vi. The main points of distinction between job and contract costing includes

a. Length of time to complete

b. Big jobs

c. Activities to be done outside the factory area

d. All of the above

vii. Which of the following would best describe the characteristics of contract costing?

1. Homogeneous products;

2. Customer driven production;

3. Short period of time between the commencement and completion of the cost unit

a. (1) and (2i) only

b. (2) and (3) only

c. (1) and (3i) only

d. (2) only

viii. Which of the following statements about contract costing are correct?

1. Work is undertaken to customers' special requirements

2. Work is usually undertaken on the contractor's premises

3. Work is usually of a relatively long duration

a. (1) and (2) only

b. (1) and (3) only

c. (2) and (3) only

d. All of them

ix. Assignment number 652 took 86 hours of a senior consultant's time and 220 hours of junior time. What price should be charged for assignment number 652? The following information is also given;

Overhead absorption rate per consulting hour	₹ 12.50
Salary cost per consulting hour (senior)	₹ 20.00
Salary cost per consulting hour (junior)	₹ 15.00

The firm adds 40% to total cost to arrive at a selling price

a. ₹ 7028

b. ₹ 8845

c. ₹ 12383

d. ₹ 14742

x. **Contract number 145 commenced on 1st March and plant from central stores was delivered to the site. The book value of the plant delivered was ₹ 420,000. On 1 July further plant was delivered with a book value of ₹ 30,000. Company policy is to depreciate all plant at a rate of 20% of the book value each year. The depreciation to be charged to contract number 145 for the year ending 31 December is;**

a. ₹ 37000

b. ₹ 57000

c. ₹ 73000

d. ₹ 89000

Answer:

i	ii	iii	iv	v	vi	vii	viii	ix	x
b	b	a	c	a	d	d	c	c	c

2. Match the following

[one mark each]

A	**Specific order costing**	**a**	**Basically is of the same character as the job order production, the difference being mainly one in the size of different orders.**
B	**Stores requisition**	**b**	**A clause in a contract which empowers a contractor to revise the price of the contract in case of increase in the prices of inputs due to some macro-economic or other agreed reasons.**
C	**Batch production**	**c**	**Each Batch is treated as a cost unit and costs are accumulated and ascertained separately for each batch**
D	**Cost-plus contract**	**d**	**The optimum quantity of batch which should be produced at a point of time determined after achieving a tradeoff between set up costs and carrying costs**
E	**Escalation Clause**	**e**	**Is applied to jobs using a predetermined factory overhead absorption rate.**
F	**Batch Costing**	**f**	**the work-in-progress is usually shown under two heads, viz. certified and uncertified**
G	**Economic Batch Quantity**	**g**	**A clause in a contract which empowers a contractor to revise the price of the contract in case of decrease in the prices so that the benefit may be passed on to the contractee.**
H	**Factory overhead**	**h**	**helps segregation of material cost by jobs or work order for each particular job**

I	De-escalation/ Reverse Clause	i	includes job costing consisting batch costing and contract costing
J	In the Balance Sheet of the contractor	j	A contract where the value of the contract is determined byadding an agreed percentage of profit to the total cost.

Answer:

A	B	C	D	E	F	G	H	I	J
i	h	a	j	b	c	d	e	g	f

3. State whether the following statements are True' or 'False': [one mark each]

(a) Job costing is also known as specific order costing, production order costing, and lot costing

(b) Contract Costing which is also known as Terminal Costing is a variant of the job costing system

(c) Cost of such rectification for defective work should not be charged to the Contract Account but shown separately

(d) Sub-contracting is necessary for work of a specialized nature for which facilities are not internally available within the concern.

(e) In Contract Accounts, the value of the work-in-progress consists of the cost of work completed, both certified and uncertified and the cost of work not yet complete.

Answer:

(a) True

(b) True

(c) False

(d) True

(e) False

4. Fill in the blanks: [one mark each]

(a) _____ is applicable to engineering concerns, construction companies, ship-building, furniture making, hardware and machine manufacturing industries, repair shops, automobile garages and several such other industries.

(b) While job-costing systems assign costs to distinct units of a product or service_____ assign costs to masses of identical or similar units and compute unit costs on an average basis. Thus these two costing systems represent opposite ends of a continuum.

(c) Job costing is similar to that under Batch costing except with the difference that a _____

(d) _____ and _____ are examples of industries where batch costing is applied.

(e) In order for job costs to be available on a timely basis, it is customary to apply factory overhead by using a _____

Answer:

(a) Job Order Costing

(b) Process Costing system

(c) Job becomes a cost unit

(d) Toys Manufacturing Industries, Tyre and Tubes Manufacturing Industries, Read made Garments Manufacturing Industries, Pharmaceutical/ Drug Industries, Spare parts and Components Manufacturing Industries (any two).

(e) Predetermined factory overhead rate

SECTION B

[Working notes should form part of the answer]

5. Answer both the questions:

(i) AL Company operates a job costing system. The company's standard net profit margin is 20 per cent of sales value.

The estimated costs for job B124 are as follows.

Direct materials 3 kg @ ₹ 5 per kg

Direct labour 4 hours @ ₹ 9 per hour

Production overheads are budgeted to be ₹ 240,000 for the period, to be recovered on the basis of a total of 30,000 labour hours.Other overheads, related to selling, distribution and administration, are budgeted to be ₹ 150,000 for the period. They are to be recovered on the basis of the total budgeted production cost of ₹ 750,000 for the period.

Calculate the price to be quoted for the job B 124

(ii) A firm makes special assemblies to customers' orders and uses job costing.

The data for a particular period are;

Particulars	Job Number AA10 (₹)	Job Number BB15 (₹)	Job number CC20 (₹)
Opening work in progress	26,800	42,790	0
Material added in period	17,275	0	18,500
Labour for period	14,500	3,500	24,600

The budgeted overheads for the period were ₹ 126000.

(a) Calculate the overhead to be added to job number CC20 for the period?

(b) Job number BB15 was completed and delivered during the period and the firm wishes to earn 33% profit on sales. What is the selling price of job number BB15?

(c) What was the approximate value of closing work-in-progress at the end of the period?

[8 +7 =15]

Answer:

(i) Production overhead absorption rate = ₹ 240,000/30,000 = ₹ 8 per labour hour

Other overhead absorption rate = (₹ 150,000/₹ 750,000) × 100% = 20% of total production cost

Direct materials	3 kgs * 5	15.00
Direct labour	4 hours * 9	36.00
Production Overhead	4 hours * 8	32.00
		83.00
Other overhead	20% * 83	16.60
Total Cost		99.60
Profit Margin (20% of Sales)	20/80	24.90
Price to be quoted		124.50

(ii)

(a) The most logical basis for absorbing the overhead job costs is to use a percentage of direct labour cost.

Overhead (absorbed on the basis of direct labour hours)

= 24600/(14500 + 3500 + 24600) × 126000 = 72761

If materials cost is used as the basis for overhead absorption, would give erroneous result as this would not be equitable because job number BB15 incurred no material cost and would therefore absorb no overhead. If Prime cost (material plus labour) is used as the basis for overhead absorption the same disadvantage would arise. Thus it is best to use direct labour hour as the basis for overhead absorption.

(b) Calculation of Selling Price to be quoted for Job BB15

Particulars	₹
Opening WIP	42,790
Labour for the period	3,500
Overheads (3500/42600) × 126000	10,352
Total Cost	56,642
Profit (33 1/3 on sales = 50% on Cost)	28,321
	84,963

(c) Calculation of Closing WIP (Considering point ii which states that Job BB 15 has been delivered).

Job Number	Workings	WIP (₹)
AA 10	(26800 + 17275 + 14500) + (14500/42600) × 126000	1,01,462
CC 20	(18500 + 24600 + 72761 [as calculated in ii])	1,15,861
Total closing WIP		2,17,323

6. Answer all questions:

(i) A company calculates the prices of jobs by adding overheads to the prime cost and adding 30% to total costs as a profit margin. Job number Y256 was sold for ₹ 1,690 and incurred overheads of ₹ 694. What was the prime cost of the job?

(ii) Contract number 789 obtained some plant and loose tools from central stores on 1 January year 3. The book values of the plant and tools at that date were ₹ 380,000 and ₹ 4,000 respectively. On 30 June year 3 some plant was removed from the contract site. The written down value of this plant at that date was ₹ 120,000. On 31 December year 3 the plant and tools remaining on site had written down values of ₹ 180,000 and ₹ 2,500 respectively.

Calculate the depreciation cost of the equipment to be charged to contract 789 for year 3

(iii) A road building company has the following data concerning one of its contracts.

	₹
Contract Price	**1,12,00,000**
Cost of Work Certified to date	**37,63,200**
Estimated cost to completion	**29,56,800**
[No difficulties are foreseen on the contract	

Calculate the profit to be recognised on the contract to date

(iv) A construction company has the following data concerning one of its contracts.

	₹
Contract price	**4,00,000**
Value certified to date	**18,000**
Cash received to date	**16,200**
Costs incurred to date	**10,800**
Cost of work certified to date	**9,900**

Calculate the profit to be recognised on the contract to date. **[4 ½ + 4 ½ + 3+3 =15]**

Answer:

(i)

Prime Cost + Overhead = TC (Total Cost) + P (Profit) = SP (Sale price)

⇒ Prime Cost + Overhead = TC + 0.3 × TC = SP (1690)

⇒ Prime Cost + Overhead = 1.3 TC = SP (1690)

⇒ Prime Cost + 694 = 1.3 TC = 1690

⇒ Prime Cost = 606

(ii)

Particulars	₹	₹
Equipment delivered to site (January 1)		
Plant	3,80,000	
Tools	4,000	3,84,000
Plant transferred from site (June 30)		-1,20,000
Equipment at site (December 31)		
Plant	-1,80,000	
Tools	-2,500	-1,82,500
Depreciation of Equipment (Year 3)		81,500

(iii)

Total contract cost, to completion = ₹ 37,63,200 + ₹ 29,56,800 = ₹ 67,20,000

Approximate degree of completion = (37,63,200 ÷ 67,20,000) × 100 =

Since the contract is 56% complete and no difficulties are foreseen, a profit can reasonably be taken.

Profit to be taken = 56% × final contract profit = 56% × (112,00,000 – 67,20,000) = 25,08,800

(iv)

Since the contract is in its early stages, no profit should be recognised. Profit should only be taken when the outcome of the contract can be assessed with reasonable accuracy.

7. Answer both the questions:

	(figures in ₹)	
	Department A	**Department B**
Direct Material	**25,000**	**5,000**
Direct Labour	**x**	**30,000**
Factory Overhead	**40,000**	**y**

(i) Thunderbird use a job-order cost system and applies factory overhead to production orders on the basis of direct labour costs. The overhead rates for 2017 are 200 per cent for Department A and 50 per cent for Department B. Job 123, started and completed during 2017, were charged with the following costs:

Determine the total manufacturing costs assigned to Job 123.

(ii) The contract was for ₹ 20,00,000 and it commenced on January 1, 2017. The value of the work completed and certified upto 31st December, 2017 was ₹13,00,000 of which ₹10,40,000 was received in cash, the balance being held back as retention money by the contractee. The value of work completed subsequent to the architect's certificate but before 31st December, 2017 was ₹60,000. There were also lying on the site materials of the value of ₹40,000. It was estimated that the value of plant as at 31st December, 2017 was ₹30,000.

You are required to compute value of work certified, cost of work not certified and notional profit on the contract till the year ended 31st December, 2017.

Particulars	₹
Materials purchased	**6,00,000**
Material drawn from stores	**1,00,000**
Wages	**2,25,000**
Plant issued	**75,000**
Chargeable expenses	**75,000**
Apportioned indirect expenses	**25,000**

Answer:

(i)

	Department A	Department B	Total
Direct Material	25,000	5,000	30,000
Direct Labour	20,000	30,000	50,000
Factory Overhead	40,000	15,000	55,000
	85,000	50,000	1,35,000

w/n 1.

Factory overhead is 200 per cent of labour therefore for department A, Direct labour (x) is half of factory overhead x = 40,000 × 1/2 = 20,000 and for department B, factory overhead is 50 per cent of Direct Labour, therefore for department B, factory overhead (y) is half of direct labour y = 30,000 × 1/2 = 15,000

(ii)

Particulars		(₹)	Particulars		(₹)
To	Material purchased	6,00,000	By	Work-in-progress:	
To	Stores issued	1,00,000		Value of work certified	13,00,000
To	Wages	2,25,000		Cost of work uncertified	60,000
To	Plant	75,000	By	Material unused	40,000
To	Chargeable expenses	75,000	By	Plant less depreciation	30,000
To	Indirect expenses	25,000			
To	Costing P&L A/c (Notional profit) (bal. figure)	3,30,000			
		14,30,000			**14,30,000**

Analternative method of presentation can be to deduct the balance of profit to be carried down (₹1,54,000 in the above case) from the work certified before it is entered in the contract account. It will be ₹11,46,000 in the solution. Of course, the reserve to be so deducted from the work certified will have to be first ascertained by considering the value of the work certified.

8. Answer both the questions:

(i) Camp Company uses a job-order costing system. The company has two departments through which most jobs pass. Selected budgeted and actual data for the past year follow:

	Department A	Department B
Budgeted Overhead	₹ 1,00,000	₹ 5,00,000
Actual Overhead	₹ 1,10,000	₹ 5,20,000
Expected activity (Direct Labour hours)	50000	10000
Expected Machine hours	10000	50000
Actual Direct Labour hours	51000	9000
Actual Machine hours	10500	52000

During the year, several jobs were completed. Data pertaining to one such job follows:

Particulars	Job 310
Direct Materials	₹ 20,000
Direct Labour Cost:	
Department A (5000 hours @ ₹ 6)	₹ 30,000
Department B (1000 hours @ ₹ 6)	₹ 6,000
Machine Hours Used:	
Department A	100
Department B	1200
Units Produced	10000

Camp Company uses a plant-wide predetermined overhead rate to assign overhead to jobs. Direct labor hours (DLH) is used to compute the predetermined overhead rate.

Compute the predetermined overhead rate.

(a) Compute the predetermined overhead rate.

(b) Using the predetermined rate, compute the per-unit manufacturing cost of Job 310.

(c) Recalculate the unit manufacturing cost for Job310 using departmental overhead rates. Use direct labour hours for Department A and machine hours for Department B.

(ii) Dakuti Ltd.is committed to supply 24,000 bearings per annum to Mosaki Ltd on a steady basis. It is estimated that it costs 10 paise as inventory holding cost per bearing per month and that the set-up cost per run of bearing manufacture is ₹ 324.

(a) What would be the optimum run size for bearing manufacture?

(b) What is the minimum inventory holding cost at optimum run size?

(c) Assuming that the company has a policy of manufacturing 6000 bearing per run, how much extra cost would the company be incurring as compared to the optimum run suggested in (a)?

[9+6 =15]

Answer:

(i) Predetermined overhead rate = ₹ 600000/60000 = ₹ 10 per DLH. Add the budgeted overhead for the two departments and divide by the total expected direct labour hours (DLH =50000 + 10000).

	(Figures in ₹)
Particulars	**Job 310**
Direct Materials	20,000
Direct Labour Cost	36,000
Overhead (₹ 10 × 6000 DLH)	60,000
	1,16,000
Units Cost (₹ 116000 ÷ 10000)	**11.6**

(ii) Predetermined rate for Department **A:** ₹ 100,000/50,000 = ₹ 2 per DLH. Predetermined rate for Department **B:** ₹ 500,000/50,000 = ₹ 10 per machine hour.

(Figures in ₹)

Particulars	**Job 310**
Direct Materials	20,000
Direct Labour Cost	36,000
Overhead :	
Department A: ₹ 2 × 5000	10,000
Department B: ₹ 10 × 1200	12,000
	78,000
Units Cost (₹ 78000 ÷ 10000)	**7.8**

Overhead assignment using departmental rates is more accurate because there is a higher correlation with the overhead assigned and the overhead consumed. Notice that Job 310 spends most of its time in Department A, the least overhead-intensive of the two departments. Departmental rates reflect this differential time and consumption better than plant-wide rates do.

(ii) (a) Optimum Production Run Size (Q) = $\sqrt{\frac{2AS}{C}}$

A = No. of units to be produced within a year

O = Set-up cost per production run

C= Carrying Cost per unit per annum

Optimum Production Run Size (Q) = $\sqrt{\frac{2 \times 24000 \times 324}{0.10 \times 12}}$ = 3600 Units

a. Minimum inventory Holding Cost, if run size is 3600 bearings

= Average inventory × carrying cost per unit

= (3,600/2) x (0.10 x 12) = ₹ 2,160

b. Statement showing Total Cost at Production Run sizes of 3600 and 6000 bearings

	Particulars	Run size 3600 units (optimum)	Run size of 6000 units
a	Annual Requirement	24000	24000
b	Run Size	3600	3600
c	No of Runs (a ÷ b)	6.667	4.00
d	Set up cost per run	324	324
e	Total set up cost (c × d)	2160	1296
f	Average Inventory (b ÷ 2)	1800	3000
g	carrying cost per unit p.a.	1.20	1.20
h	Total Carrying cost (f × g)	2160	3600
i	Total Cost (e + h)	**4320**	**4896**

Extra cost incurred, if run size is of 6000 = ₹ 4896 – ₹ 4320 = ₹ 576

9. Answer both the question:

(i) A contractor prepares his accounts for the year ending 31st December each year. He commenced a contract on 1st April, 2017.

The following information relates to the contract as on 31st December, 2017:

Particulars	₹
Materialissued	**2,51,000**
Wages	**5,65,600**
Salary to Foreman	**81,300**

A machine costing ₹ 2,60,000 has been on the site for 146 days, its working life is estimated at 7 years and its final scrap value at ₹15,000. A supervisor, who is paid ₹8,000 pm., has devoted one-half of his time to this contract.

All other expenses and administration charges amount to ₹1,36,500.

Material in hand at site costs ₹ 35,400 on 31st December, 2017.

The contract price is ₹20,00,000. On 31st December, 2017 two-third of the contract was completed. The architect issued certificates covering 50% of the contract price, and the contractor had been paid ₹7,50,000 on account.

Prepare Contract A/c and show the notional profit or loss as on 31st December, 2017.

(ii) From the following calculate the Notional profit. How much of the notional profit should be transferred to Costing P/L Account

Contract price 2,000,000

Value of work certified 1,300,000

Cash received 1,200,000

Costs incurred till date 1,050,000

Cost of work certified 1,000,000

[10 +5 = 15]

Answer 9 (i)

Contract Account					
Particulars		₹	**Particulars**		₹
To	Material issued	2,51,000	By	Machine(Working note i)	2,46,000
”	Wages	5,65,600	”	Material (in hand)	35,400
”	Foreman’s salary	81,300	”	Cost C/d (balancing figure)	10,49,000
”	Machine	2,60,000			
”	Supervisor’s salary	36,000			
	(₹ 8,000 × 9)/2				
”	Administrative charges	1,36,500			
		13,30,400			13,30,400
”	Cost b/d	10,49,000	”	Value of work certified	10,00,000
”	Costing P&L A/c (Notional profit)	2,13,250	”	Cost of work uncertified (Working Note ii)	2,62,250
		12,62,250			**12,62,250**

Working Note:

i. $\frac{2,60,000-15,000}{7 \text{ years}} \times \frac{146 \text{ days}}{365 \text{ days}}$ = ₹ 14000

Hence value of machine at site on 31 December = 260000 -14000 = 246000

ii. Cost of work uncertified

Cost of 2/3rd work = 1049000 (as calculated)

Therefore, cost of total work = 1049000 × 3/2 = 1573500

Given that 50% work has been certified = 50% work is uncertified = 50% of 1573500 = 786750. Of which 2/3 has been = 1/3 work is not certified = 1/3 × 786750 = 262250.

Answer 9 (ii)

Notional profit = Value of work certified to date – the cost of the work certified

Notional profit = ₹ (1,300,000 – 1,000,000)

Notional profit = ₹ 300,000

2/3rd of the notional profit should be transferred to the Costing Profit and Loss Account since more than 50% of the Contract has been completed.

10. Answer both the questions

(i) A contractor has entered into along term contract at an agreed price of ₹ 17,50,000 subject to ane scalation clause for materials and wages as speltout in the contract and subsequently the actuals are found out to be asfollows:

	Standard		Actual	
Materials	**Qty. (tons)**	**Rate (₹)**	**Qty. (tons)**	**Rate (₹)**
A	**5000**	**50**	**5050**	**48**
B	**3500**	**80**	**3450**	**79**
C	**2500**	**60**	**2600**	**66**
Wages	**Hours**	**Hourly Rate (₹)**	**Hours**	**Hourly Rate (₹)**
X	**2000**	**70**	**2100**	**72**
Y	**2500**	**75**	**2450**	**75**
Z	**3000**	**65**	**3100**	**66**

Reckoning the full actual consumption of material and wages the company has claimed a final price of ₹ 7,73,600. Give your analysis of admissible escalationclaimandindicatethe final price payable. Also state the reasons on justification of the given answer.

(ii) The following data relates to contract A520.

Particulars	₹
Contract price	**86,250**
Value of work Certified	**57,900**
Cash received	**54,000**
Cost of Work Certified	**65,625**
Cost to be incurred to complete contract	**29,375**

Calculate the total cost of sales and value of work certified.

[10+ 5 = 15]

Answer 10 (i)

Statement showing final claim

	Standard Qty./Hrs.	Standard Rate (₹)	Actual Rate (₹)	Variation in Rate (₹)	Escalation Claim (₹)
	(a)	(b)	(c)	(d) = (c)–(b)	(e) =(a) × (d)
Materials					
A	5000	50	48	(–) 2.00	(–) 10,000
B	3500	80	79	(–) 1.00	(–) 3,500
C	2500	60	66	(+) 6.00	15,000
	Materials escalation claim: (A)				1,500
Wages					
X	2000	70	72	(+) 2.00	4,000
Y	2500	75	75	—	—
Z	3000	65	66	(+) 1.00	3,000
	Wages escalation claim: (B)				7,000
	Final claim: (A + B)				**8500**

Statement showing Final Price of Contract [with Escalation]

Particulars	₹	₹
Agreed price		17,50,000
Agreed escalation :		
Material cost	1,500	
Labour cost	7,000	8,500
Final price payable		**17,58,500**

The claim of ₹ 1773600 isnotadmissiblebecauseescalationclausecoversonlythatpartof increasein cost, which has been caused by inflation.

Increase or decrease of quantity of material labour hours (actual) is not a matter for which contractor can claim 'Escalation' and thus the same is to be excluded from the calculation.

It is fundamental principle that the contractee would compensate the contractor for the increase in costs which are caused by factors beyond the control of contractor and not for increase in costs which are caused due to inefficiency or wrong estimation.

Answer 10 (ii)

The contract is forecast to make a loss and the total expected loss should be taken into account assoon as it is recognised.

Particulars	₹
Value of work certified (till date)	57,900
Less Cost of wok certified (till date)	65,625
Loss incurred on contract (till date)	(7,725)

Particulars	₹	₹
Total Contract Price		86,250
Less : Total Cost of the Contract		
Cost of wok certified (till date)	65,625	
Add: Cost to be incurred	29,375	
Total loss on the contract		95,000
Expected future loss (8750 – 7725)		8,750
		1,025

Thus, Total Cost of sales = Cost incurred till date + Expected future loss

= 65625 + 1025 = 66650

And value of the work certified ₹ 57,900.

Therefore notional profit = loss to be taken to profit and loss account

= (57900 – 66650) = 8750 (which is the total loss on the contract)

11. Rupayan Realty Ltd. commenced a contract of construction of a flat named Sucasa Woods on April 1, 2016. The total contract was for ₹ 49,21,875. It was decided to estimate the total profit on the contract and to take to the credit of Costing Profit and Loss Account that proportion of estimated profit on cash basis, which work completed bore to total contract.

Actual expenditure for the period April 1, 2016 to March 31, 2017 and estimated expenditure for April 1, 2017 to September 30, 2017 are given below:

Particulars	April 2016 to March 2017	April 1, 2017 to Sept 30 2017
	Actual (₹)	Estimated (₹)
Materials issued	7,76,250	12,99,375
Wages: Paid	5,17,500	6,18,750
Prepaid	37,500	-
Outstanding	12,500	5,750
Plant purchased	4,00,000	-
Expenses: Paid	2,25,000	3,75,000
Outstanding	25,000	10,000
Prepaid	15,000	-
Plant returned to store (historical cost)	1,00,000 (on September 30 2016)	3,00,000 (on September 30 2017)
Work Certified	22,50,000	Full
Work Uncertified	25,000	-
Cash Received	18,75,000	-
Material at site	82,500	42,500

The plantis subject to annual depreciation @ 25% on written down value method. The contract is likely to be completed on September 30, 2017.

Required: **Prepare the Contract A/c for the year ended 31st March, 2017 and determine the estimated profit on the contract till the completion of the contract.**

Answer:

Contract Account (01.04.2016 to 31.03.2017)

Particulars	₹	₹	Particulars	₹	₹
To Material issued		7,76,250	By Plant returned to store on 30.09.2016	1,00,000	
To Wages	5,17,500		Less depreciation [w/n 1]	-12,500	87,500
Less: Prepaid	-37,500				
Add: Outstanding	12,500	4,92,500	By Plant at site on 31.03.2017	3,00,000	
To Plant purchased		4,00,000	Less depreciation [w/n 2]	-75,000	2,25,000
To Expenses	2,25,000		By Materials at Site c/d		82500
Less: Prepaid	-15,000		By Work-in-Progress c/d		
Add: Outstanding	25,000	2,35,000	Work certified		22,50,000
			Work uncertified		25,000
To Notional Profit		7,66,250			
		26,70,000			**26,70,000**

Computation of Estimated Profit

Contract A/c (01.4.2017 to 30.9.2017)			
Particulars	₹	**Particulars**	₹
To Material issued (,776,250 +12,99,375)	20,75,625	By Material at Site	42,500
To Wages (4,92,500 + 6,18,750 +37,500-12,500+ 5,750)	11,42,000	By Plant returned to store on 30.09.2016 (1,00,000 – 12,500)	87,500
To Plant purchased	4,00,000	By Plant returned to store on 30.09.2017 (4,00,000 – 1,00,000 - 1,03,125)	1,96,875
To Expenses (2,35,000 + 3,75,000 - 25,000+ 15,000 +10,000)	6,10,000		
		By Contractee A/c	49,21,875
To Estimated Profit	10,21,125		
	52,48,750		**52,48,750**

Workings: [w/n 1,w/n 2,w/n 3]	
Calculation of Written down Value of Plant on 30.09.2017	
Particulars	₹
Plant Purchased on 01.04.2016	4,00,000
Less: Plant returned to store on 30-9-2016 (₹ 1,00,000 × 25/100 × 6/12 -- **w/n1**)	1,00,000
	3,00,000
Less: Depreciation on Balance of the Plant (3,00,000 × 25/100) -- **w/n 2**	75,000
W.D.V of Plant on 01.04.2017	2,25,000
Less: depreciation for the year 01.04.2017 to 30.09.2017 (2,25,000 × 25/100 × 6/12) - **w/n 3**	28,125
Calculation of Written down Value of Plant on 30.09.2017	1,96,875

PROCESS COSTING AND JOINT PRODUCT & BY-PRODUCT

PROCESS COSTING

Process costing is applied when output consists of a continuous stream of **identical units**. It is a costing method used where it is not possible to identify separate units of production, or jobs, usually because of the continuous nature of the production processes involved.

> **Process costing** is a 'form of costing applicable to continuous processes where process costs are attributed to the number of units produced. This may involve estimating the number of equivalent units in stock at the start and end of the period under consideration.' CIMA *Official Terminology*

Losses and their treatment

Losses may occur in process. If a certain level of loss is expected, this is known as normal loss. If losses are greater than expected, the extra loss is abnormal loss. If losses are less than expected, the difference is known as abnormal gain.

a. In an abnormal loss account, the debit entry shows the units (and their value) from the process account. The credit entry shows the impact on the income statement.

> Normal loss is 'expected loss, allowed for in the budget, and normally calculated as a percentage of the good output, from a process during a period of time. Normal losses are generally either valued at zero or at their disposal values.'
>
> Abnormal loss is 'any loss in excess of the normal loss allowance'.
>
> Abnormal gain is 'improvement on the accepted or normal loss associated with a production activity'.
>
> CIMA *Official Terminology*

b. In an abnormal gain account, the debit entry shows the effect on the income statement, while the credit entry shows the units (and their value) from the process account.

JOINT PRODUCTS are two or more products separated in a process each of which has a *significant value*compared to the other products: Joint Products;

i. Are produced in the **same process**

ii. Are **indistinguishable** from each other until the **separation point**

iii. Have a **substantial sales value** (after further processing, if necessary)

iv. **May require further processing** after the separation point.

On the other, a **by-product** is not important as a saleable item, and whatever revenue it earns is a 'bonus' for the organization.

> **Joint products** are 'two or more products produced by the same process and separated in processing, each having a sufficiently high saleable value to merit recognition as a main product'.
>
> CIMA *Official terminology*
>
> A **by-product** is 'output of some value produced incidentally while manufacturing the main product'.

It is not worth costing by-products separately, because of their relative insignificance. It is therefore equally irrelevant to consider a by-product's profitability. The only question is how to account for the 'bonus' net revenue that a by-product earns.

Split-off point and allocation of joint cost.

The point at which joint and by-products become separately identifiable is known as the **split-off point** or **separationpoint**. Costs incurred up to this point are called **common costs** or **joint costs**.

Joint cost needs to be allocated to joint products

a. To put a value to closing inventories of each joint product.

b. To record the costs and therefore the profit from each joint product. This is of limited value however, because the costs and therefore profit from one joint product are influenced by the share of costs assigned to the other joint products. Management decisions would be based on the apparent relative profitability of the products which has arisen due to the arbitrary apportionment of the joint costs.

Methods for allocation of joint cost are:

i. Physical Unit method:

ii. Net Realizable Value at Split- off Point Method:

iii. Using Technical Estimates:

iv. Other Methods

- ✓ In case of By Product the separation of Joint cost is done generally on the following basis;

The **net realizable value of the by-product may be deducted from the cost of production of the main product.** The net realizable value is the final saleable value of the by-product minus any post-separation costs [this method is the same as the accounting treatment of a **normal loss which is sold for scrap**.

Accounting for By-Product

ByProducts are defined as "products recovered from material discarded in a main process, or from the production of some major products , where the material value is to be considered at the time of severance from the main product." Thus by- products emerge as a result of processing operation of another product or they are produced from the scrap or waste of materials of a process. In short a by-product is a secondary or subsidiary product which emanates as a result of manufacture of the main product.

The point at which they are separated from the main product or products is known as split-off point.The expenses of processing are joint till the split–off point.

SECTION A

1. Choose the correct answer from given four alternatives: [one mark each]

i. Which of the following is not a stepin the analysis of process costing;

a. compute output in terms of equivalent units, summarize the total costs to be accounted for by cost categories

b. compute the unit costs per equivalent unit

c. apply total costs to units completed

d. allocate overhead on the equivalent units

ii. An abnormal gain in a process occurs in which of the following situations?

a. When the actual output is greater than the planned output.

b. When actual loss is more than the expected.

c. When actual loss is less than the expected loss

d. When normal loss is equal to actual loss.

iii. The value of abnormal loss is equal to

a. Total cost of materials

b. Total process cost less realizable value of normal loss

c. Total process cost less cost of scrap

d. Total process cost less realizable value of normal loss less value of transferred out goods.

iv. What is an equivalent unit?

a. A unit of output which is identical to all others manufactured in the same process

b. Notional whole units used to represent uncompleted work

c. A unit of product in relation to which costs are ascertained

d. The amount of work achievable, at standard efficiency levels, in an hour

v. Process B had no opening inventory. 13,500 units of raw material were transferred in at ₹ 4.50 per unit. Additional material at ₹ 1.25 per unit was added in process. Labour and overheads were ₹ 6.25 per completed unit and ₹ 2.50 per unit incomplete.

If 11,750 completed units were transferred out, what was the closing inventory in Process B?

a. ₹ 6,562.50

b. ₹ 12,250.00

c. ₹ 14,437.50

d. ₹ 25,375.00

vi. In process costing, a joint product is

a. a product which is later divided into many parts

b. a product which is produced simultaneously with other products and is of similar value to at least one of the other products

c. a product which is produced simultaneously with other products but which is of a greater value than any of the other products

d. a product produced jointly with another organisation

vii. In process costing by-product is defined as;

a. A product produced at the same time as other products which has no value

b. A product produced at the same time as other products which requires further processing to put it in a saleable state

c. A product produced at the same time as other products which has a relatively low volume compared with the other products

d. A product produced at the same time as other products which has a relatively low value compared with the other products

viii. In process costing, where losses have a positive scrap value, when an abnormal gain arises the abnormal gain account is;

a. debited with the normal production cost of the abnormal gain units and debited with the scrap value of the abnormal gain units

b. debited with the normal production cost of the abnormal gain units and credited with the scrap value of the abnormal gain units

c. **credited with the normal production cost of the abnormal gain units and debited with the scrap value of the abnormal gain units**

d. **credited with the normal production cost of the abnormal gain units and credited with the scrap value of the abnormal gain units**

ix. **The following information is available for SM Co for last month.**

Conversion costs ₹105,280

Completed during the period 18,000 units

Closing work in progress 2,000 units (40% complete as to conversion costs)

The conversion cost per unit of production is;

a. **₹. 6.50**

b. **₹. 5.60**

c. **₹. 7.20**

d. **₹. 5.90**

x. **A food manufacturing process has a normal wastage of 10% of input. In a period, 3,000 kg of material were input and there was an abnormal loss of 75 kg. No inventories are held at the beginning or end of the process.**

What is the quantity of good production achieved?

a. **2625 Kg.**

b. **2700 kg.**

c. **2925 kg**

d. **None of the above**

Answer:

i	ii	iii	iv	v	vi	vii	viii	ix	x
d	c	d	b	c	b*	d**	c	b	a

* CIMA terminology defines joint products as 'Two or more products produced by the same process and separated in processing, each having a sufficiently high saleable value to merit recognition as a main product"

** CIMA terminology defines By products as "Output of some value produced incidentally whilemanufacturing the main product"

2. Match the following: **[one mark each]**

A.	**After the Split off point**	**a**	**is not possible to trace the identity of any particular lot of output to any lot of input materials**
B.	**Joint cost**	**b**	**only under FIFO method.**
C.	**Process Costing**	**c**	**no equivalent unit is calculated**
D.	**The amount realised from the sale of normal process loss units**	**d**	**as 100% complete in respect of all cost elements irrespective of percentage of completion**
E.	**Equivalent units for Opening WIP is calculated**	**e**	**Normal output**
F.	**For normal loss**	**f**	**the joint products or byproducts gain individual identity.**
G.	**Abnormal Gain/ Yield is treated**	**g**	**should be credited to the process account**
H.	**Cost of normal loss is borne by**	**h**	**Costing Profit and Loss Account**
I.	**Abnormal loss is transferred to**	**i**	**is the inherent feature of processing industries**
J	**Work in progress**	**j**	**is the pre separation cost of commonly used input factors for the productionof multiple products**

Answer:

A	B	C	D	E	F	G	H	I	J
f	j	a	g	b	c	d	e	h	i

3. State whether the following statements are True' or 'False': **[one mark each]**

a. FIFO methods are followed for evaluation of equivalent production when prices are fluctuating.

b. Work in progress is the inherent feature of processing industries.

c. The process cost is derived by dividing the process cost by number of units produced in the process during the period

d. Chemical works, soap making and Milk dairy production are examples of process costing.

e. Split-off point is a point beyond input factors are commonly used for production of multiple products, which can be either joint products or by-products. After this point, the joint products or by-products gain individual identity.

Answer:

(a) False

(b) True

(c) False

(d) True

(e) False

4. Fill in the blanks: [one mark each]

i. Process costing is appropriate for companies that produce a continuous mass of _____ through a series of _____

ii. When there are no beginning _____ inventories, equivalent units produced are the sameas _____

iii. In process costing, 100 units that are 60 percent completed are the equivalent of _____ completed units in terms of conversion costs.

iv. There are two ways to treat the costsof the beginning inventory:_____ and _____

v. _____ are those that have a relatively significant sales value, while _____ are those whose sales value is relatively minor in comparison with the value of the main, or joint, products.

Answer:

i. Like units, operations or processes.

ii. Work in process, the current equivalent units.

iii. 60 units

iv. weighted average costing, first-in, first-out (FIFO)

v. Joint product, By product

SECTION B

[Working notes should form part of the answer]

5. Answer all three questions

i. A product passes two processes, Process–I and Process-II. Materials issued to Process-I amounted to ₹ 80,000, Wages ₹60,000 and manufacturing overheads were ₹ 54000. Normal loss anticipated was 5% of input. 9500 units of output were produced and transferred from Process-I. There were no opening stocks. Input raw material issued to Process I were10000 units. Scrap has realisable value of ₹ 4 per unit.

You are required to show Process-I account, value of normal loss and units transferred to Process-II.

ii. A product passes from Process-I and Process-II. Materials issued to Process-I amounted to ₹ 80,000, Wages ₹60,000 and manufacturing overheads were ₹ 54,000.Normal loss anticipated was 5% of input. 9100 units of output were produced and transferred from Process-I. There were no opening stocks. Input raw material issued to Process I were10,000 units. Scrap has realisable value of ₹ 4 per unit.

You are required to show Process-I account, value of normal loss, abnormal loss and units transferred to Process-II.

iii. Process B had no opening inventory. 13,500 units of raw material were transferred in at ₹4.50 per unit. Additional material at ₹1.25 per unit was added in process. Labour and overheads were ₹6.25 per completed unit and ₹2.50 per unit incomplete.

If 11,750 completed units were transferred out, what is the value of the closing inventory of WIP in Process B? [5+5+5 =15]

Answer:

(i)

Process-I Account

Particulars	Units	(₹)	Particulars	Units	(₹)
To Material	10,000	80,000	By Normal	500	2,000
			Loss (5%) [*]		
To Wages	-	60,000			
To Overhead	-	54,000	By Process II	9,500	1,92,000
	10,000	**194000**		**10,000**	**1,94,000**

***** Value of normal loss = 500 units ×₹ 4 = ₹ 2,000

****** Value of units transferred to Process II =

$$\text{Value of Abnormal loss} = \frac{\text{Total Cost of production} - \text{Normal Loss (Scrap Value)}}{\text{Total Units introduced} - \text{Normal Loss (Units)}} \times \text{Units Transferred}$$

$$= \frac{1,94,000 - 2,000}{10,000 - 500} \times 9,500 = 1,92,000$$

(ii)

Process I Account

Particulars	Units	(₹)	Particulars	Units	(₹)
To Material	10,000	80,000	By Normal loss (5%) [*]	500	2000
To Wages	-	60,000	By Abnormal Loss (Qty.-Bal. Fig)	400	-
To Overhead	-	54,000	By Process II	9,100	-
	10,000	1,94,000		10,000	1,94,000

* Value of normal loss = 500 units ×₹ 4 = ₹ 2,000

$$\text{Value of Abnormal loss} = \frac{\text{Total Cost of production} - \text{Normal Loss (Scrap Value)}}{\text{Total Units introduced} - \text{Normal Loss (Units)}} \times \text{abnormal loss units}$$

$$= \frac{1,94,000 - 2,000}{10,000 - 500} \times 400 = 8,084$$

$$\text{Value of units transferred to Process II} = \frac{\text{Total Cost of production} - \text{Normal Loss (Scrap Value)}}{\text{Total Units introduced} - \text{Normal Loss (Units)}} \times \text{Units Transferred}$$

$$= \frac{1,94,000 - 2,000}{10,000 - 500} \times 9,100 = 1,83,916$$

(iii)

Cost per unit in closing inventory = ₹(4.50 + 1.25 + 2.50) = ₹8.25

Number of units in closing inventory = 13,500 – 11,750 = 1,750 units

Value of closing inventory = 1,750 units ×₹8.25 = ₹14,437.50

The work in progress should bevalued at the **rate per incomplete unit** in respect of labour and overheads

6. Answer both the questions:

i. A company makes a product, which passes through a single process.

Details of the process for the last period are as follows.

Materials 10,000 kg at 0.50paise per kg

Labour ₹1,000

Production overheads 200% of labour

Normal losses are 10% of input in the process, and without further processing any losses can be sold as scrap for 0.20paiseper kg.

The output for the period was 8,400 kg from the process.

There was no work in progress at the beginning or end of the period.

Calculate the value of the abnormal loss for the period

ii. A chemical is manufactured in two processes, X and Y. Data for process Y for last month is as follows.

Material transferred from process X - 2,000 litres @ ₹ 4 per litre

Conversion costs incurred ₹ 12,250

Output transferred to finished goods 1,600 litres

Closing work in progress 100 litres

Normal loss is 10% of input. All losses are fully processed and have a scrap value of ₹ 4 per litre.

Closing work in progress is fully complete for material, but is only 50 per cent processed.

Calculate the value of the completed output and the value of the closing work in progress.

Answer:

(i)

Process Account

Particulars	Units	(₹)	Particulars	Units	(₹)
To Material	10,000	5,000	By Normal Loss (5%)	1000	200
To Wages	-	1,000	By Abnormal Loss (Qty.- Bal. fig)	600	
To Overhead (200% of Labour)	-	2,000	By Process II	8,400	
	10,000	**8,000**		**10,000**	**8,000**

$$\frac{\text{Total Cost of production} - \text{Normal Loss (Scrap Value)}}{\text{Total Units introduced} - \text{Normal Loss (Units)}} \times \text{abnormal loss units}$$

(8000 - 200) / (10000 - 1000) × 600 = 520 units

(ii)

Statement of Equivalent Production

Input	Particulars	Output	Material		Conversion Cost	
Units		Units	Percent	Units	Percent	Unit
2000	Finished Units	1600	100	1600	100	1600
	Normal Loss	200				
	Abnormal Loss (Balancing Figure)	100	100	100	100	100
	Closing Inventory	100	100	100	50	50
2000		**2000**		**1800**		**1750**

Calculation of cost per unit of output and WIP

Particulars	Cost (₹)	Equivalent Units	Cost per Equivalent Units (₹)
Cost of Material [Input from Process X]	7200	1800	4
Conversion Cost	12250	1750	7
			11

Cost of Completed Production [1600 liters × 11] ₹ **17600**

Cost Element	No of Equivalent Units	Cost per Equivalent Units	Total
Material	100	4	400
Conversion Cost	50	7	350
Value of Work in Progress			₹ 750

7. Answer both the questions

i. RST Limited processes Product Z through two distinct processes – Process-I and Process- II. On completion, it is transferred to finished stock. From the following information for the year 2017, prepare Process-I, Process-II and Finished Stock A/c:

Particulars	Process- I	Process- II
Raw materials used	7,500 units	--
Raw materials cost per unit	₹ 60	--
Transfer to next process/finished stock	7,050 units	6,525 units
Normal loss (on inputs)	5%	10%
Direct wages	₹ 1,35,750	₹ 1,29,250
Direct Expenses	60% of Direct wages	65% of Direct wages
Manufacturing overheads	20% of Direct wages	15% of Direct wages
Realisable value of scrap per unit	₹ 12.50	₹ 37.50

6,000 units of finished goods were sold at a profit of 15% on cost. Assume that there was no opening or closing stock of work-in-process.

ii. **Opening work-in-process 1,000 units (60% complete); Cost ₹1,10,000. Units introduced during the period 10,000 units; Cost ₹19,30,000. Transferred to next process-9,000 units.**

Closing work-in-process-800 units (75% complete), Normal loss is estimated at 10% of total input including units in process at the beginning. Scraps realise ₹ 10 per unit. Scraps are100% complete.

Using FIFO method, compute equivalent production and cost per equivalent unit. Also evaluate the output. [9 + 6 =15]

Answer:

(i)

Process I Account

Particulars	Units	(₹)	Particulars	Units	(₹)
To Raw material used (₹60 × 7,500 units)	7,500	4,50,000	By Normal loss (5%) × 12.50	375	4,688
To Direct wages	--	1,35,750	By Process- II A/c	7,050	6,82,403
			By Abnormal loss	75	7,259
To Direct expenses	--	81,450			
To Manufacturing Overhead		27,150			
	7,500	**6,94,350**		**7,500**	**6,94,350**

Cost per Unit of transfer and Abnormal Loss = (694350 - 4688) ÷ (7500 - 375) =96.795

Process II Account

Particulars	Units	(₹)	Particulars	Units	(₹)
To Raw material used	7,050	6,82,403	By Normal loss (10%) × 37.50	705	26,438
To Direct wages	--	1,29,250	By Process- II A/c	6,525	913824
To Direct expenses	--	84,013			
To Manufacturing Overhead		19,387			
To Abnormal Gain (bal fig)	180	25,209			
	7,230	**9,40,262**		**7,230**	**9,40,262**

Cost Per Unit of transfer and Abnormal Loss = (915053 - 26438) ÷ (7050 - 705) 140.0497

Finished Goods Account

Particulars	Units	(₹)	Particulars	Units	(₹)
To Process- II A/c	6,525	9,13,824	By Cost of Sales (6000×140.0496)	6000	8,40,298
			By Balance c/d	525	73,526
	6,525	**9,13,824**		**6,525**	**9,13,824**

Costing Profit and Loss Account

Particulars	(₹)	Particulars	(₹)
To Cost of Sales (6000×140.0496)	8,40,298	By Sales (840298 × 115%)	9,66,343
To Abnormal Loss 75 units × [96.795 - 12.50]	6,322	By Abnormal Gain 180 units × [140.0496 - 37.50]	18,459
To Net profit (Balancing Figure)	1,38,182		
	9,84,802		**9,84,802**

(ii)

Statement of Equivalent Production

Input	Particulars	Output	Equivalent Production	
Units		Units	Percent	Unit
1000	From opening W-I-P	1,000	40	400
10000	From fresh inputs	8,000	100	8000
	Units completed (Transferred to next process)	9,000		
	Normal Loss (10%)	1,100		
	Closing W-I-P	800	75	600
	Abnormal loss	100	100	100
	(Balancing figure)			
11000		11000		9100

Statement of Cost per Equivalent Unit

Particulars	₹
Cost of Materials introduced	1930000
Less Scrap Value of Normal Loss (10% of 11000) ×₹ 10	-11000
Total Process Cost	1919000
Cost per Equivalent Unit = 1919000 ÷ 9100 = 210.88	

Statement of Calculation of Cost

Particulars	E. Units	Rate	Total
Cost of opening WIP b/f (from previous year)			110000
Opening WIP (finished during the year)	400	210.88	84352
			194352
Abnormal Loss	100	210.88	21088
Units finished and transferred	8000	210.88	1687040
Closing WIP	600	210.88	126528

8. Answer both the questions:

i. Q Co makes one product using process costing. Weighted average costing method is used for valuation purpose. For the last month the following information is available.Opening work-in-progress - 1,000 units.

Value of opening WIP

Material ₹122,500

Conversion costs ₹ 67,000

During September 2,250 units were added and the following costs were incurred.

Material ₹495,000

Conversion costs ₹546,750

Closing work-in-progress was 1,250 units

Material 100% complete

Conversion costs 90% complete

What is the value of completed output for the period?

ii. Kajiul Ltd. furnished you the following information relating to process B for the month of October, 2017.

Opening work-in-progress- NIL

Units introduced - 10,000 units @ ₹3 per unit

Expenses debited to the process; Direct materials ₹ 14,650; Labour ₹21,148; Overheads ₹ 42,000

Finished output - 9,500 units

Closing work-in-progress 350 units; Degree of completion: Material 100%; Labour and overheads 50%

Normal loss in process- One (01) per cent of input

Degree of completion of abnormal loss: Material 100%; Labour and Overheads 80%

Units scrapped as normal loss were sold at Re1 per unit

All the units of abnormal loss were sold at ₹2.50 per unit.

Prepare:

a. Statement of Equivalent Production

b. Statement of Cost

c. Process - B Account

Answer:

(i)

Statement of Equivalent Production

Particulars	Output	Material		Conversion Cost	
	Units	Percent	Units	Percent	Unit
Finished Units	2000*	100	2000	100	1600
Closing WIP	1250	100	1250	90	1125
	3250		3250		3125

Statement of Cost per equivalent units

Particulars	Material Cost (₹)	Conversion Cost (₹)
Opening WIP	1,22,500	67,000
Cost Incurred	4,95,000	5,46,750
	6,17,500	6,13,750
Equivalent Units	3,250	3,125
Cost per Equivalent Units	**190.0**	**196.4**

Total (190.00 + 196.40) = ₹ **386.40**

Value of Completed Units = 2000 units ×₹ 386.40 = ₹ **7,72,800**

(ii)

Statement of Equivalent Production

Input	Output	Units	Material		Labour		Overheads	
10000	Normal Loss	100	%	Units	%	Units	%	Units
	Finished Units	9500	-	-	-	-	-	-
	Closing Stock	350	100	9500	100	9500	100	9500
	Abnormal Loss	50	100	350	50	175	50	175
			100	50	80	40	80	40
10000		**10000**		**9900**		**9715**		**9715**

Statement of Cost

Particulars	Cost (₹)	Equivalent units	Cost per unit (₹)
Material			
(30000+14650)-100	44,550	9,900	4.5000
Labour	21,148	9,715	2.1768
Overhead	42,000	9,715	4.3232

Value of Closing Stock

Element	Units	Cost per unit	Total Cost
Material	350	4.5000	1575.00
Labour	175	2.1768	380.94
Overhead	175	4.3232	756.56

Value of Closing Stock

Element	Units	Cost per unit	Total Cost
Material	50	4.5000	225.00
Labour	40	2.1768	87.07
Overhead	40	4.3232	172.93
			485.00

Process Account

Particulars	Units	₹	Particulars	Units	₹
To, Material	10000	30000	By, Normal Loss A/c	100	100
Introduced			By, Abnormal Loss A/c	50	485
To, Material A/c		14650	By, Closing Stock A/c	350	2,713
To, Labour A/c		21148	By, Transfer to Next		
To, Overheads A/c		42000	Process @ ₹ 11 per unit	9500	1,04,500
	10000	**107798**		**10000**	**1,07,798**

9. Answer both the questions:

i. The following information is obtained in respect of process 3 of the month of August

Opening Stock:	1,000 units
Value of Opening Stock	Direct Material A₹ 390; Direct material B:₹ 75;
	Direct Labour - ₹ 112; Production overhead - ₹ 118.
Process 2	transfer 6,000 units at ₹ 2,360
Process 4	transfer 4,700 units.
Direct material added in process	₹ 520
Direct labour employed	₹ 1,036
Production Over Heads	₹ 1,541
Units scrapped	300
Degree of completion	Direct material 100%,
	Direct labour 80%
	Production overhead 60%
Closing stock	2,000 units
Degree of completion:	Direct material 60%
	Direct labour 50%
	Production overhead 40%

Normal loss: 5% of production units scrap realised 0.20 each.

Prepare Process Account on weighted Average method.

ii. Describebriefly,howjointcostsuptothepointofseparationmaybeapportioned amongst the joint products under the following methods:

a. Average unit cost method

b. Contribution margin method

c. Market value at the point of separation

d. Market value after further processing

e. Net realizable value method.

Answer:

(i)

Statement of Equivalent Production

Input	Particulars	Output	Material A		Material B		Labour		Overhead	
Units		Units	Percent	Units	Percent	Units	Percent	Units	Percent	Unit
1000	**Opening WIP**									
6000	transfer from Process II									
	Finished Units	4700	100	4700	100	4700	100	4700	100	4700
	Normal Loss	250								
	Abnormal Loss (Balancing Figure)	50	100	50	100	50	50	40	6	30
	Closing Inventory	2000	100	2000	60	1200	50	1000	40	800
7000		7000		6750		5950		5740		5530

Statement of Cost per Equivalent Unit

Particulars	Material A	Material B	Labour	Overheads
	(₹)	(₹)	(₹)	
Opening WIP	390	75	112	118
Add: Input during the year	2360	520	1036	1541
	2750	595	1148	1659
Less Normal Loss (Scrap)	50			
	2700	595	1148	1659
Equivalent Units (units)	6750	5950	5740	5530
Cost per Equivalent Unit (₹)	0.4	0.1	0.2	0.3
<u>Value of Closing Stock</u>				
2. Equivalent Units (units)	2000	1200	1000	800
Total Cost (1 × 2) (₹)	800	120	200	240
= ₹ 1360				
<u>Value of Abnormal Loss</u>				
3. Equivalent Units (units)	50	50	40	30
Total Cost (1 × 3) (₹)	20	5	8	9
= ₹ 170				

Process 2 Account

Particulars	Units	(₹)	Particulars	Units	(₹)
To Opening WIP	1,000	695	By Normal	250	50
To Transfer from Process 2	6000	2360	By Abnormal Loss	50	42
To Material	-	520	By Closing WIP	2,000	1360
To Labour	-	1,036	By Process 4 [4700 × (0.40+0.10+0.20+0.30)]	4,700	4,700
To Overhead		1,541			
	7,000	6,152		7,000	6,152

(ii)

Physical Unit method: This method is based on the assumption that the joint products are capable ofbeing measured in the same units. Accordingly, joint costs here are apportioned on the basis of somephysical base, such as weight, numbers etc. In other words, the basis used for apportioning joint cost over the joint productsis the physical volume material present in the joint products at the point of separation. Any loss arises during thejoint production processis also apportioned over the products on the same basis. This method cannot be applied if the physical units of the two joint products are different. The main defect of this method is that it gives equal importance and value to all the joint products.

Net Realisable Value at Split- off Point Method: In this method of joint cost apportionment the followings are deducted from the sales value of joint products at final stage i.e. after processing: Estimated profit margins,Selling and distribution expenses,if any, andpost-split-offcosts.

The resultant figure so obtained is known as net realisable value of joint products. Joint costs are apportioned in the ratio of net realisable value.

Using Technical Estimates:

This method uses technical estimates to apportion the joint costs over the joint products. This method is use when the result obtained by the above methods does not match with the resources consumed by joint products or the realisable values of the joint products are not readily available.

Other Methods

The followings are the methods which are used by management for taking managerial decisions:

Market value at the point of separation: This method is used for the apportionment of joint costs to joint products up to the split off point.It is difficult to apply this method if the market value of the products at the point of separation is not available. It is a useful method where further processing costs are incurred disproportionately.

To determine the apportionment of joint costs over joint products, a factor known as multiplying factor is determined. This multiplying factor on multiplication with the sales values of each joint product gives rise to the proportion of joint cost.

10. Answer both the question

i. Total Mining Company produces two products from ore, copper and zinc. The following events took place in October 2017.

Particulars	Copper	Zinc	Total
Units Produced	40,000	60,000	1,00,000
Unit Selling Price	₹ 2.00	₹ 2.00	

Joint cost incurred were ₹ 110000

a. Allocate joint cost amongst the two products using physical quantity method.

b. Allocate joint cost amongst the two products using relative sales value method.

c. Explain the difference in Unit costs using the two methods

d. Which method do you think better allocates joint costs? Why?

ii. A chemical process yields 60% of the material introduced as main Product - A and 15% as By-Product B,and 20% as By - Product - C and 5% being the wastage.

The ratio of absorption of Raw material and Labour in the process products is as follows:

(i) One unit of product C requires half the raw material required for one unit of product - B, one unit of product - A requires 1 ½ time the raw material required for product - B.

(ii) Product A requires double the time needed for the production of one unit of B and one unit of C

(iii) Product C requires half the time required for the production of one unit of product B

(iv) Overheads are to be absorbed in the ratio of 6:1:1

(v) Cost Data: Input 1,000 units of cost ₹ 4,600

Direct labour ₹ 4,100

Overheads ₹6,000

[8+7 =15]

Answer:

(i)

a. Physical quantity method

	Units	Ratio	Allocated Joint Costs
Copper	40000	0.4	44000
Zinc	60000	0.6	66000
	100000		110000

b. Relative Sales Value method

	Sales Value at Split-off	Ratio	Allocated Joint Costs
Copper	₹ 80,000	0.571429	62857.14
Zinc	₹ 60,000	0.428571	25714.29
	₹ 1,40,000		110000.00

c. Both the physical measures method and the relative sales value method are acceptable ways to allocate joint costs. Under the physical measures method, joint costs are allocated based on the relative number of units produced. The product with the most units will be allocated the most costs. Under the relative sales value method, joint costs are allocated based on the relative sales value of the units produced. Since copper has a higher relative sales value, it will be allocated more of the joint costs under the relative sales value method even though fewer units are produced.

d. The major advantage of the relative sales value method is that it allocates joint costs according to the relative revenue-generating ability of the individual products. This can avoid wide swings in gross margin percentagesof the two products.

(ii)

A = 1,000 x 60% = 600 units

B = 1,000 x 15% = 150 units

C = 1,000 x 20% = 200 units

Waste-age = 1,000 x 5% = 50 units

Statement showing apportionment of Joint Cost

Element	Basis of Apportionment	Total	Main Product A	By Product B	By Product C
Material	18:3:2	4600	3600	600	400
Labour	36:3:2	4100	3600	300	200
Overheads	6:1:1	6000	4500	750	750
		14700	**11700**	**1650**	**1350**

Material:

A: B: C = 3 × 600: 2 ×150: 1 ×200

= 1800: 300: 200

= 18: 3: 2

Labour:

A: B: C = 6 × 600: 2 × 150: 1 × 200

= 3600: 300: 200

= 36: 3: 2

11. Answer both the questions

i. Robinson Ltd. produces and sells the following products:

Products	Units	Selling price at at Split Off (₹)	Selling price after further processing (₹)
A	**200000**	**17**	**25**
B	**30000**	**13**	**17**
C	**25000**	**8**	**12**
D	**20000**	**10**	**-**
E	**75000**	**14**	**20**

Raw material costs ₹ 35,90,000 and other manufacturing expenses cost ₹ 5,47,000 in the manufacturing process which are absorbed on the products on the basis of their 'Net realisable value'. The further processing costs of A, B, C and E are ₹ 12,50,000; ₹ 1,50,000; ₹ 50,000 and ₹ 1,50,000 respectively. Fixed costs are ₹ 4, 73,000.

You are required to prepare the following in respect of the coming year:

a. **Statement showing income forecast of the company assuming that none of itsproducts are to be further processed.**

b. **Statement showing income forecast of the company assuming that products A, B, C and E are to be processed further.**

c. **Can you suggest any other production plan whereby the company can maximise its profits? If yes, then submit a statement showing income forecast arising out of adoption of that plan.**

ii. **Discuss the treatment of by-product cost in Cost Accounting.** **[10+5 =15]**

Answer:

(i)

Apportionment of joint costs on the basis of Net Realisable Value method

Products	Sales Value (₹)	Post separation Cost (₹)	Net Realisable Value (₹)	Apportioned Cost (₹)
A	50,00,000 (2,00,000 units × ₹25)	12,50,000	37,50,000	26,25,000
B	5,10,000 (30,000 units × ₹17)	1,50,000	3,60,000	2,52,000
C	3,00,000 (25,000 units × ₹12)	50,000	2,50,000	1,75,000
D	2,00,000 (20,000 units× ₹ 10)	—	2,00,000	1,40,000
E	15,00,000 (75,000 units× ₹ 20)	1,50,000	13,50,000	9,45,000
			59,10,000	**41,37,000**

Total joint cost = Rawmaterial costs + Manufacturing expenses

= ₹ 35,90,000 + ₹ 5,47,000 = ₹ 41,37,000

$$\text{Apportioned join tcost} = \frac{\text{Total joint cost}}{\text{Total netrealisable value}} \times \text{Net realisable value of each product}$$

$$\text{Apportioned joint cost for Product A} = \frac{₹\ 41,37,000}{59,10,000} \times ₹\ 37,50,000$$

= ₹ 26,25,000

Similarly, the apportioned joint cost for products B, C, D and E are ₹2,52,000, ₹1,75,000, ₹1,40,000 and ₹ 9,45,000 respectively.

(a) Statement showing in come forecast of the company assuming that none of its products are further processed

Products	A (₹)	B (₹)	C (₹)	D (₹)	E (₹)	Total (₹)
Sales revenue	34,00,000 (₹17×2,00,000)	3,90,000 (₹13×30,000)	2,00,000 (₹8×25,000)	2,00,000 (₹10×20,000)	10,50,000 (₹14×75,000)	52,40,000
Less: Apportioned Costs	26,25,000	2,52,000	1,75,000	1,40,000	9,45,000	41,37,000
	7,75,000	1,38,000	25,000	60,000	1,05,000	11,03,000
Less: Fixed Cost						4,73,000
Profit						6,30,000

(b) Statement showing income forecast of the company: assuming that products A, B, C and E are further processed (Refer to working note)

Products	A (₹)	B (₹)	C (₹)	D (₹)	E (₹)	Total (₹)
A. Sales revenue	50,00,000	5,10,000	3,00,000	2,00,000	15,00,000	75,10,000
B. Apportioned Costs	26,25,000	2,52,000	1,75,000	1,40,000	9,45,000	41,37,000
C. Further processing cost	12,50,000	1,50,000	50,000	-	1,50,000	16,00,000
D. Total processing cost (B+ C)	38,75,000	4,02,000	2,25,000	1,40,000	10,95,000	57,37,000
E. Excess of sales revenue (A-D)	11,25,000	1,08,000	75,000	60,000	4,05,000	17,73,000
F. Fixed Cost						4,73,000
G. Profit (E - F)						13,00,000

Suggested production plan for maximising profits:

On comparing the figures of excess of revenue over cost of manufacturing in the above statements one observes that the concern is earning more after further processing of A, C and E products but is losing a sum of ₹30,000 in the case of product B (if it is processed further). Hence the best production plan will be to sell A, C and E after further processing and B and D at the point of split off. The profit statement based on this suggested production plan is as below:

	Products	A (₹)	B (₹)	C (₹)	D (₹)	E (₹)	Total (₹)
A.	Sales revenue	50,00,000	3,90,000	3,00,000	2,00,000	15,00,000	73,90,000
B.	Apportioned Costs	26,25,000	2,52,000	1,75,000	1,40,000	9,45,000	41,37,000
C.	Further processing cost	12,50,000	-	50,000	-	1,50,000	14,50,000

D.	Total processing cost (B+C)	38,75,000	2,52,000	2,25,000	1,40,000	10,95,000	55,87,000
E.	Excess of sales revenue (A- D	11,25,000	1,38,000	75,000	60,000	4,05,000	18,03,000
F.	Fixed Cost						4,73,000
G.	Profit (E - F)						13,30,000

Answer 11 (ii)

By-Products are defined as "products recovered from material discarded in a main process, orfrom the production of some major products, where the material value is to be considered at the time of severance from the main product." Thus by-products emerge as a result of processing operation of another product or they are produced from the scrap or waste of materials of a process. In short a by-product is a secondary or subsidiary product which emanates as a result of manufacture of the main product.

The point at which they are separated from the main product or products is known as split-off point. The expenses of processing are joint till the split–off point.

OPERATING/SERVICE COSTING

Meaning of Operating Costing

Operating costing is a process and technique of accumulating and ascertainment of cost for providing a standardized service to the public or to an undertaking.

Definition of Operating Costing

Operating costing is unit costing as applied to the costing of services.

> *Operating costing is that form of operation costing which applies where standardized services are provided either by an undertaking or by a service cost center within an undertaking.* ***CIMA Terminology***

What are service organizations?

- ✓ Profit-seeking service organizations include accountancy firms, law firms, management consultants, transport companies, banks, insurance companies and hotels.
- ✓ Almost all not-for-profit organizations - hospitals, schools, libraries and so on – are also service organizations. Service organizations also include charities and the public sector.

Specific characteristics of services

i. Services are **intangible**

ii. The production and consumption of a haircut are **simultaneous.**

iii. Services are p**erishable**

iv. Services are **heterogeneous**.

Cost units and service costing

One main problem with service costing is being able to define a **realistic cost unit** that represents a suitable measure of the service provided. If the service is a function of two activity variables, a **composite cost unit** may be more appropriate. A particular problem with service costing is the difficulty in defining a realistic cost unit that represents a suitable measure of the service provided. Frequently, a **composite cost unit** may be deemed more appropriate if the service is a function of two activity variables. Hotels, for example, may use the **'occupied bed-night'** as an appropriate unit for cost ascertainment and control. Each organization will need to ascertain the Composite Cost Unit most appropriate to its activities

Simple and weighted average

Some time two measurement units are combined together to know the cost of service or operation. These are called composite cost units. For example, a public transportation undertaking would measure the operating cost per passenger per kilometer. This can be calculated in two basic ways;

i. Absolute (Weighted Average) basis – It is summation of the products of qualitative and quantitative factors

ii. Commercial (Simple Average) basis. – It is the product of average qualitative and total quantitative factors. For example, in case of goods transport, Commercial Ton-Km is arrived at by multiplying total distance km., by average load quantity.

SECTION A

1. Choose the correct answer from given four alternatives: [one mark each]

i. State which of the following are characteristics of service costing.

1. High levels of indirect costs as a proportion of total costs

2. Use of composite cost units

3. Use of equivalent units

a. (1) only

b. (1) and (2) only

c. (2) only

d. (2) and (3) only

ii. Which of the following organisations should *not* be advised to use service costing?

a. Distribution service

b. Hospital

c. Maintenance division of a manufacturing company

d. A light engineering company

iii. Which of the following would be appropriate cost units for a transport business?

1. Cost per tonne-kilometre

2. Fixed cost per kilometre

3. Maintenance cost of each vehicle per kilometre

a. (1) only

b. (1) and (2) only

c. (1) and (3) only

d. All of them

iv. Cost of service under operating costing is ascertained by preparing:

a. Cost sheet

b. Process account

c. Job cost sheet

d. Production account

v. Operating costing is applicable to:

a. Hospitals

b. Cinemas

c. Transport undertaking

d. All of the above

vi. In Transport Companies, Cost of diesel and lubricants is an example of:

a. Operating cost

b. Fixed charges

c. Semi-variable cost

d. None of the above

vii. Which of the following would be appropriate cost units for a private taxi company?

a. Total operating cost per passenger-kilometre

b. Maintenance cost per vehicle per kilometre

c. Fixed cost per passenger

d. Fuel cost per kilometre

viii. Which of the following are characteristics of service costing?

a. High levels of indirect costs as a proportion of total cost

b. Cost units are often intangible

c. Use of composite cost units

d. Use of equivalent units

ix. Which of the following would be suitable cost units for a hospital?

a. Patient/day

b. Operating theatre hour

c. Ward

d. Outpatient visit

x. Cost units used in power sector is:

a. Kilo meter (K.M)

b. Kilowatt-hour (kWh)

c. Number of electric points

d. Number of hours

Answer:

i	ii	iii	iv	v	vi	vii	viii	ix	x
b	d	c	a	d	a	a	c	a	b

2. Match the following: **[one mark each]**

A	Significance of Operating or Running Costs in Transport Company	a	the cost of direct materials consumed will be relatively small compared to the labour, direct expenses and overheads cost
B	Maintenance Charges in Transport Company	b	a measure of relative efficiency

C	In hospital the cost unit is	c	Patient per day
D	In Day care medical centre the cost unit is	d	Bed per day
E	In electricity companies, the cost unit is	e	quality of performance is ignored.
F	In most services organisation	f	These costs are in the nature of semi-variable nature includes expenditure
G	The output of most service organisations	g	that represents a suitable measure of the service provided
H	Realistic cost unit is one	h	Kilowatt
I	Unit cost measures in not-for-profit organisations is flawed as	i	Facilitates quotation of hiring rates to outside parties who ask for the transport service
J	one limitations of using unit costs in service organisation	j	is often intangible and hence difficult to define. It is therefore difficult to establish a measurable cost unit.

Answer:

A	B	C	D	E	F	G	H	I	J
i	f	d	c	h	a	j	g	a	e

3. State whether the following statements are True' or 'False': [one mark each]

a. According to CIMA [London] operating costing is, 'that form of costing which applies where standardized services are provided either by an undertaking or by a service cost centre within an undertaking'.

b. Operating Costing is a special case of specific order costing.

c. Operating costing is applied to ascertain the cost of products

d. Cost of operating the service is ascertained by preparing job account

e. Costs of a transport organisation can be classified and accumulated as Fixed or stand-by costs, Maintenance Charges and Operating and Running costs

Answer:

(a) True

(b) True

(c) False

(d) False

(e) True

4. Fill in the blanks: [one mark each]

a. The main objective of operating costing is to compute the _____ offered by the organization

b. The method of costing used in undertaking like gas companies, cinema houses, hospitals etc is known as _____.

c. In motor transport costing two example of fixed cost are _____ and _____.

d. To calculate cost or pricing of two more different grade of services which uses common resources, each grade of service is assigned a weight and converted in to_____ .

j. One main problem with service costing is being able to define a _____ that represents a suitable measure of the service provided. If the service is a function of two activity variables, a _____ may be more appropriate.

Answer:

a. Cost of Services

b. Operating costing

c. Insurance and Depreciation

d. Equivalent units

e. realistic cost unit, composite cost unit

SECTION - B

[Working notes should form part of the answer]

5. Manar lodging home is being run in a small hill station with 50 single rooms. The home offers concessional rates during six off- season months in a year. During this period, half of the full room rent is charged. The management's profit margin is targeted at 20% of the room rent. The following are the cost estimates and other details for the year ending on 31st March 2017. [Assume a month to be of 30 days].

(a) Occupancy during the season is 80% while in the off- season it is 40% only.

(b) Expenses:

i. Staff salary [Excluding room attendants] ₹2,75,000

ii. Repairs to building ₹1,30,500

iii. Laundry and linen ₹ 40,000

iv. Interior and tapestry ₹87,500

v. Sundry expenses ₹95,400

(c) Annual depreciation is to be provided for buildings @ 5% and on furniture and equipment @ 15% on straight-line basis.

(d) Room attendants are paid ₹5 per room day on the basis of occupancy of the rooms in a month.

(e) Monthly lighting charges are ₹120 per room, except in four months in winter when it is ₹30 per room and this cost is on the basis of full occupancy for a month.

(f) Total investment in the home is ₹100 lakhs of which ₹80 lakhs relate to buildings and balance for furniture and equipment.

You are required to work out the room rent chargeable per day both during the season and the off-season months on the basis of the foregoing information. [15]

Answer:

(i) Computation of Estimated Cost for the year ending 31st March, 2017

Particulars	**Amount** ₹
Salary	2,75,000
Repairs	1,30,500
Laundry and linen	40,000
Interior decoration	87,500
Depreciation: 5% on ₹ 80 lakhs: ₹ 4,00,000 15% on ₹ 20 lakhs: ₹ 3,00,000	7,00,000
Sundry expenses	95,400
Total costs	13,28,400

(ii) Number of room days in a year:

Occupancy during season for 6 months @ 80% (50 x 0.80 x 6 x 30) = 7,200

Off-season occupancy for 6 months @ 40% (50 x 0.40 x 6 x 30) = 3,600

Total number of room days during a year = 10,800

(iii) Attendant's salary

For 10,800 room days @ ₹5 per day = ₹54,000

(iv) Light charges for 8 months @ ₹ 120 per month i.e. ₹120/30 = ₹ 4 per room day.

Light charges for 4 months @ ₹ 30 per month, i.e. ₹30/30 = ₹1 per room day

Total lighting charges:

During season @ ₹4 for 7200 days = ₹ 28,800

During off season 2 months @ ₹4 for 1200 days (2/6 x 3600) = ₹4,800

During 4 months of winter @ Re. 1 for 2,400 days (4/6 x 3600) = ₹2,400

Note: It is given in the example that during four months of winter, the lighting is ₹ 30 per room, which is 1/4th of the lighting charges during the remaining period of the year. Hence the rate of room day which is ₹ 4 will also be 1/4th for winter period and so it is taken as Re. 1 per room day.

Statement of Total Estimated Cost

Particulars	Amount (₹)
Expenses as shown in (i) above	13,28,000
Attendant's salary as shown in (iii) above	54,000
Lighting charges as shown in (iv) above	36,000
Total cost	**14,18,400**

Computation of total Full Room Days

During season: 7,200

Off-season: 1,800 (Equivalent to 50% rate of 3,600 days)

Total Full Room Days: **9,000**

Computation of Room Rent

Cost per room day: ₹14, 18,400 / 9,000 = ₹157.60

Add: Profit margin at 20% of rent or 25% of cost = ₹39.40

Room Rent = ₹ **197.00**

Therefore, during season, room rent of ₹197 is to be charged while in the off-season room rent of ₹ 98.50 is to be charged.

6. Answer all questions

i. Composite unit can be calculated in two ways; 'Absolute (weighted average)' basis and 'Commercial (simple average)' basis – explain.

ii. Lorry starts with a load of 20 MT of Goods from Station 'A'. It unloads 8 MT in Station 'B' and balance goods in Station 'C'. On return trip, it reaches Station 'A' with a load of 16 MT, loaded at Station 'C'. The distance between A to B, B to C and C to A are 80 Kms, 120 Kms and 160 Kms, respectively. Compute "Absolute MT- Kilometer" and "Commercial MT – Kilometer".

MT = Metric Ton or Ton).

iii. Calculate the most appropriate unit cost for a distribution division of a multinational company using the following information.

Miles travelled	**636500**
Tonnes carried	**2479**
Number of drivers	**20**
Hours worked by drivers	**35520**
Tonne-miles carried	**375200**
Costs incurred	**₹ 5,62,800**

iv. State the specific characteristics of services. **[4 +2 + 4 + 5 =15]**

Answer:

7. Carry Company operates a small fleet of delivery vehicles. Expected costs are as follows.

Loading	**1 hour per tonne loaded**
Loading costs:	
Labour (casual)	**₹ 2 per hour**
Equipment depreciation	**₹ 80 per week**
Supervision	**₹ 80 per week**
Drivers' wages (fixed)	**₹ 100 per man per week**
Petrol	**10 paise per kilometre**
Repairs	**5 paise per kilometre**
Depreciation	**₹ 80 per week per vehicle**
Supervision	**₹ 120 per week**
Other general expenses (fixed)	**₹ 200 per week**

There are two drivers and two vehicles in the fleet.

During a slack week, only six journeys were made. The details are given below;

Journey	Tonnes carried (one way)	One-way distance of journey (Kilometers)
1	5	100
2	8	20
3	2	60
4	4	4 50
5	6	200
6	5	300

Answer 6 (i)

Sometime two measurement units are combined together to know the cost of service or operation. These are called composite cost units. For example, a public transportation undertaking would measure the operating cost per passenger per kilometer.

Examples of Composite units are Ton-km., Quintal-km, Passenger-km., Patient-day etc. Composite unit may be computed in two ways.

(i) Absolute (Weighted Average) basis

(ii) Commercial (Simple Average) basis.

In both bases of computation of service cost unit, weightage is also given to qualitative factors rather quantitative (which are directly related with variable cost elements) factors alone.

Weighted Average or Absolute basis– It is summation of the products of qualitative and quantitative factors.

Simple Average or Commercial basis–It is the product of average qualitative and total quantitative factors. For example, in case of goods transport, Commercial Ton-Km is arrived at by multiplying total distance km., by average load quantity.

In both the example, variable cost is dependent of distance and is a quantitative factor. Since, the weight carried does not affect the variable cost hence and is a qualitative factor.

Answer 6 (ii)

Absolute basis: MT-Kilometer:

= (20MT×80 Kms) + (12 MT×120 Kms) + (16 MT×160 Kms)

= 1,600 + 1,440 + 2,560 = 5,600 MT-Kilometer

Commercial basis: MT-Kilometer:

= [{(20+12+16)/3} MT × {(80+120+160) Kms]

= 16 MT×360 Kms = 5,760 MT–Kilometer

Answer 6 (iii)

The most appropriate cost unit is the tonne-mile.

Therefore the cost per unit = 562800 ÷ 375200* = ₹ 1.50

* The Cost per tonne-mile, combines the distance travelled and the load carried, both of which affect cost and is the most appropriate composite unit.

Answer 6 (iv)

The specific characteristics of Service are (a) Intangibility (b) Simultaneity (c) Perishability (d)Heterogeneity.

Answer:

Workings

Journey	1	2	3	4	5	6
	₹	₹	₹	₹	₹	₹
Loading labour	10	16	4	8	12	10
Petrol (both ways)	20	4	12	10	40	60
Repairs (both ways)	10	2	6	5	20	30
	40	22	22	23	72	100

Total Costs	
	₹
Variable Costs (total for journeys 1 to 6)	279
Loading equipment depreciation	80
loading supervision	80
Drivers Wages	200
Vehicles depreciation	160
Drivers Supervision	120
Other Costs	200
	1,119

Journey	Tonnes	One-way distance (Km)	Tonne-Kilomters
1	5	100	500
2	8	20	160
3	2	60	120
4	4	50	200
5	6	200	1200
6	5	300	1500
			3680

Cost per tonne-Kilometer = $\frac{₹1,119}{3680 \text{ tonne kilometer}}$ = ₹ 0.304

[Note that the large element of fixed costs may distort this measure but that a variable cost per tonne-kilometre of ₹ 279/3,680 = ₹ 0.076 may be useful for budgetary control.]

8. Answer both the questions

(i) BHG Toll Plaza Ltd built a 60 km. Long highway and now operates a toll plaza to collect tolls from passing vehicles using the same. The company has invested ₹600 crore to build the road and has estimated that a total of 60 crore vehicles will be using the high way during the 10 years toll collection tenure. Toll Operating and Maintenance cost for the month of April 2017 are as follows:

Salary to–

i. Collection Personnel (3 Shifts and 4 persons per shift) – ₹ 150 per day per person

ii. Supervisor (2 Shifts and 1 person per shift) – ₹ 250 per day per person

iii. Security Personnel (3 Shifts and 2 persons per shift) – ₹ 150 per day per person

iv. Toll Booth Manager (2 Shifts and 1 person per shift) – ₹ 400 per day per person

Electricity–₹ 80,000

Telephone–₹40,000

Maintenance cost– ₹ 30 Lacs

The company needs 25% profit over total cost to cover interest and other costs.

Required:

a. Calculate cost per kilometre.

b. Calculate the toll rate per vehicle (assume there is only one type of vehicle).

(ii) State the limitations of using unit costs in service organisations. [10+ 5 = 15]

Answer:

(i)

Statement of Cost

Particulars	Details	(₹)	(₹)
A. Apportionment of capital cost	(₹ 600 Crore / 10 years) × 1/12		5,00,00,000
B. Operating Cost			
Salary to Collection Personnel	(3 Shifts × 4 persons per shift × 30 days × ₹150 per day)	54,000	
Salary to Supervisor	(2 Shifts × 1 persons per shift × 30 days × ₹250 per day)	15,000	
Salary to Security Personnel	(3 Shifts × 2 persons per shift × 30 days × ₹ 150 per day)	27,000	
Salary to Toll Booth Manager	(2 Shifts × 1 person per shift × 30 days × ₹ 400 per day)	24,000	
Electricity		80,000	
Telephone		40,000	
			2,40,000
C. Maintenance cost			30,00,000
Total (A + B + C)			**5,32,40,000**

a. Calculation of Cost per Kilometer: = $\frac{\text{Total Cost}}{\text{Total Km}} = \frac{₹\,5,32,40,000}{60\,\text{Km}}$ = ₹ 8,87,333.33

b. Calculation of toll rate per vehicle = $\frac{\text{Total Cost} + \text{25\% profit}}{\text{Vehicles per month}}$

$= \frac{₹\,5,32,40,000 + ₹\,1,33,10,000}{5000000 \text{ vehicles}}$

= ₹ 13.31

Working:

No. of vehicles using the highway per month

(Total estimated vehicles ÷ 10 years) × 1/12 month

= (60 crore ÷ 10 years) × 1 month/ 12 month = 50 lakhs

(ii)

1. Quality of performance is ignored. Cost per patient day tells us nothing about the quality of the care provided, whether the patients are cured and so on.
2. The input mix will vary. For example, the average cost per patient in a intensive care ward is likely to be higher than the average cost per patient in a post-operative recovery ward.
3. Inputs rather than objectives are measured. Inputs might be the number of eye operations carried out in a hospital but cost per eye operation does not give any indication of the objective of the eye department in a hospital, which might be something along the lines of improving the quality of life of people with eye problems.
4. Regional differences are not taken into consideration. For example, the cost of refuse collection in rural areas will probably be higher than in towns and cities because of the distance to be travelled.

9. Julien Day School is a public school having five buses, each plying indifferent directions for the transport of its school students. In view of a larger 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 work-load 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 the 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 8 km. The school works 25 days in a month and remains closed for vacation in May, June and December. Bus fee, however, is payable by the students for all 12 months in a year.

The details of expenses for a year are as under:

Driver's salary	**₹ 4,500 per month per driver**
Cleaner's salary	**₹ 3,500 per month**
(Salary payable for all 12 months)	
(One cleaner employed for all the five buses)	
Licence fee, taxes, etc.	**₹ 8,600 per bus per annum**
Insurance	**₹ 10,000 per bus per annum**
Repairs & maintenance	**₹ 35,000 per bus per annum**
Purchase price of the bus	**₹ 15,00,000 each**

Life of each bus	**12 years**
Scrap value of buses at the end of life	**₹ 3,00,000**
Diesel cost	**₹ 45.00 per litre**

Each bus gives an average mile age of 4 km. Per litre of diesel. Seating capacity of each bus is 50 students.

The seating capacity is fully occupied during the whole year.

Students picked up and dropped with in arrange upto 4 km. Of distance from the school are charged half fare and fifty per cent of the students travelling in each trip are in this category. Ignore interest. Since the charges are to be based on average cost you are required to:

a. Prepare a statement showing the expenses of operating a single bus and the fleet of five buses for a year.

b. Work out the average cost per student per month in respect of–

(i) Students coming from a distance of up to 4 km. From the school and

(ii) Students coming from a distance beyond 4 km. From the school.

Answer:

a. Statement of Expenses of operating bus/buses for a year

Particulars		**Rate (₹)**	**Per Bus per annum (₹)**	**Fleet of 5 buses p.a. (₹)**
A	Standing Charges			
	Driver's Salary	4500 p.m	54,000	2,70,000
	Cleasner's Salary	3500 p.m	8,400	42,000
	Licence fee, taxes etc.	8600 p.a	8,600	43,000
	Insurance	10000 p.a	10,000	50,000
	Depreciation (15,00,000 – 3,00,000) ÷ 12 years	100000 p.a	1,00,000	5,00,000
B	Maintenance Charges:			
	Repairs & maintenance	35,000 p.a.	35,000	1,75,000
C	Operating Charges:			0
	Diesel (Working Note 1)		1,62,000	8,10,000
Total Cost (A+B+C)			**3,78,000**	**18,90,000**
	Cost per month		31,500	1,57,500
	Total no. of equivalent students		150	750
	Total Cost per half fare equivalent student		210	210

b. Average cost per student per month

i. Students coming from distance of upto 4 km from school

$$= \frac{\text{Total Cost per month}}{\text{Total no. of equvalent students}} = \frac{₹\ 31{,}500}{150 \text{ students}} = ₹\ 210$$

ii. Students coming from a distance beyond 4 km from school

= Cost of per half fare student × 2 = ₹ 210 × 2 = ₹ 420

Working notes:

(1) Calculation of Diesel cost per bus:

Distance travelled in a year: (8 round trip × 8 km × 25 days × 9 months) = 14400 km.

Cost of Diesel (per bus p.a) = *** × ₹ 45 = ₹ 162000

(2) **Calculation of equivalent number of students per bus:**

Seating capacity of a bus	50 students
Half fare students (50% of 50 students)	25 students
Full fare students (50% of 50 students)	25 students

Total number of students equivalent to half fare students

Full fare students (25 ×25 students)	50 students
Add: Half fare students	25 students
Total equivalent number of students in a trip	75 students
Total number of equivalent students in two trips (senior + junior)	150 students

10. Answer both the questions.

i. Tengiwaly transport Co. is operating (running buses) on a route 20 km. long. The company has a fleet of 10 buses each costing ₹ 50,000 and having a life of 5 years without any scrap value.

From the following estimated expenditure and other details calculate the bus fare to be charged from each passenger.

(a) Insurance charges 3 % p.a.

(b) Annual tax for each bus ₹ 1,000

(c) Total garage charges ₹ 1,000

(d) Drivers' salary for each bus ₹ 150 p.m conductor's salary for each bus ₹ 100 p.m

(e) Annual repairs to each bus ₹ 1,000

(f) Commission to be shared by the driver and conductor equally: 10% of the takings

(g) Cost of stationary ₹500 p.m.

(h) Manager's salary ₹2,000 p.m.

(i) Accountant's salary ₹1,500 p.m.

(j) Petrol and oil ₹ 25 per 100 km

Each bus will make 3 round trips carrying on an average 40 passengers on each trip. The bus will run on an average for 25 days in a month. Assuming 15% profit on takings, calculate, the bus fare to be charged from each passenger.

ii. The following data of XYZ Thermal Power Station is available for year ended 31.03.2017.

Total units generated10,00,000 kWh.

	(₹)
Operating labour	**15,00,000**
Repairs & maintenance	**5,00,000**
Lubricants, spares and stores	**4,00,000**
Plant supervision	**3,00,000**
Administration overheads	**20,00,000**

5 kWh. of electricity generated per kg. of coal consumed @ ₹ 4.25 per kg.

Depreciation charges @ 5% on capital cost of ₹2,00,00,000.

Prepare a cost statement showing the cost of electricity generated per kwh. [8 + 7 =15]

Answer:

(i)

Particulars	Amount (₹)
Insurance (50,000 x 3% x 10/12)	1,250
Tax (1,000 x 10/12)	833.33
Garage charges	1,000
Drivers salary (150 x 10)	1,500
Conductor salary (100 x 10)	1,000
Repairs (1,000 x 10/12)	833.33
Cost of stationary	500
Managers salary	2,000
Accountant salary	1,500
Depreciation (50,000 x 10/5 x 1/12)	8333.33
Petrol ** (30,000/100) x 25	7,500
Commission of conductor & driver 35,000 x (10/100)	3,500
	29,750
(+) Profit @ 15% on takings (35,000 × 15/100)	5,250
	35,000

Working note 1

** 10 x 20 x 3 x 2 x 25 = 30,000

Let 'A' be the takings

A = 26,250 + (10/100 A) + (15/100 A)

100 A = 26, 25,000 + 25 A

A = 35000

Fare per passenger Km = 35,000 / (30,000 × 40) = 0.0292 = 0.03

(ii)

Cost Statement of XYZ Thermal Power Station

Total units generated		10,00,000 kWh.
Particulars	**Per annum (₹)**	**Per kWh. (₹)**
A. Fixed costs :		
Plant supervision	3,00,000	
Administration overheads	20,00,000	
Depreciation (5% of ₹ 2,00,00,000 p.a.)	10,00,000	
Total fixed cost: (A)	33,00,000	3.3
B. Variable costs:		
Operating labour	15,00,000	
Lubricants, spares and stores	4,00,000	
Repairs & maintenance	5,00,000	
Coal cost (w/n 1)	8,50,000	
Total variable cost: (B)	32,50,000	3.25
Total cost [(A) + (B)]	65,50,000	6.55

w/n 1

Coal cost (10,00,000 kWh. ÷ 5 kWh) × ₹ 4.25 per kg. = ₹ 850000

11. Answer all the questions

i. There are two warehouses for storing finished goods produced in a factory. Warehouse 'A' is at a distance of 10 kms. and Warehouse 'B' is at a distance of 15 kms from the factory. A fleet of 5 tonne lorries is engaged in transporting the finished goods from the factory. The records show that the lorries average a speed of 30 kms. per hour when running and regularly take 40 minutes to load at the factory. At warehouse 'A' unloading takes 30 minutes per load while at warehouse 'B' it takes 20 minutes per load. Drivers' Wages, depreciation, insurance and taxes amount to ₹18 per hour operated. Fuel oil, tyres, repairs and maintenance cost ₹ 2.40 per kilometer.

You are required to draw up a statement showing the cost per tonne kilometer of carrying the finished goods to the two warehouses.

ii. State the limitations of using Unit Costs in Service organisations.

iii. Briefly describe cost units that are appropriate to a transport business. [7+4+4 = 15]

Answer:

(i)

Statement showing computation of total cost per tonne kilometer for carrying finished goods to warehouses

Particulars	**A**	**B**
Time for travelling	40 Min	60 Min
Time for loading	40 Min	40 Min
Time for unloading	30 Min	20 Min
	110 Min	120 Min
	₹	₹
Cost of Insurance, wages, tax, etc. [(110/60) x 18]	33	
[(120/60) x 18]		36
Fuel & oil etc. (20 x 2.4) (30 x 2.4)	48	72
Total Cost	81	108
Tonne Kilometers (5 x 10)// (5 x 15)	50	75
Cost per tonne KM	₹ 1.62	₹ 1.44

(ii)

The limitations of using Unit Cost in service organisations are;

i. Quality of performance is ignored. Cost per patient day tells us nothing about the quality of the care provided, whether the patients are cured and so on.

ii. The input mix will vary. For example, the average cost per patient in a intensive care ward is likely to be higher than the average cost per patient in a post-operative recovery ward.

iii. Inputs rather than objectives are measured. Inputs might be the number of eye operations carried out in a hospital but cost per eye operation does not give any indication of the objective of the eye department in a hospital, which might be something along the lines of improving the quality of life of people with eye problems.

iv. Regional differences are not taken into consideration. For example, the cost of refuse collection in rural areas will probably be higher than in towns and cities because of the distance to be travelled.

(iii)

The cost unit is the basic measure of control in an organisation, used to monitor cost and activity levels. The cost unit selected must be measurable and appropriate for the type of cost and activity. Possible cost units which could be suggested are as follows.

Cost per kilometre

- Variable cost per kilometre
- Fixed cost per kilometre – however this is not particularly useful for control purposes because it will tend to vary with the kilometres run.
- Total cost of each vehicle per kilometre – this suffers from the same problem as above
- Maintenance cost of each vehicle per kilometre

Cost per tonne-kilometre

This can be more useful than a cost per kilometre for control purposes, because it combines the distance travelled and the load carried, both of which affect cost.

Cost per operating hour

Once again, many costs can be related to this cost unit, including the following.

- Total cost of each vehicle per operating hour
- Variable costs per operating hour
- Fixed costs per operating hour – this suffers from the same problems as the fixed cost per kilometre in terms of its usefulness for control purposes.

Study Note – 6

COST ACCOUNTING TECHNIQUES

MARGINAL COSTING

Learning Objective: ***This chapter deals with Marginal Costing, Standard Costing & Variance Analysis and Budget and Budgetary Control.***

MARGINAL COSTING

Marginal costing, also known as direct costing and variable costing, is defined as "*the ascertainment of marginal costs and of the effect on profit of changes in volume or type of output by differentiating between fixed costs and variable costs.*"

It is an alternative method of costing to absorption costing. In marginal costing, only variable costs are charged as a cost of sale and a contribution is calculated. Closing inventories of work in progress or finished goods are valued at marginal (variable) production cost. Fixed costs are treated as a period cost, and are charged in full against profit in the accounting period in which they are incurred.

> **Marginal** (or **variable**) **costing** 'assigns only variable costs to cost units while fixed costs are written off as period costs' CIMA *Official Terminology*

Costs are classified on time (period cost) [within the relevant range] or volume of production (product cost). Period cost are the fixed costs while the product costs are the variable cost. If an extra unit is sold;

i. Revenue will increase by the sales value of the item sold.

ii. Costs will increase by the variable cost per unit (product cost).

iii. Profit will increase by the difference between sales value per unit and variable cost per unit (contribution).

- ✓ To reflect the above issue only variable costs are charged to the cost of sales and Contribution is calculated. Fixed costs are deducted from total contribution (the difference between sales revenue and the cost of sales) to derive profit for the period.
- ✓ When a unit of product is made, the extra costs incurred in its manufacture are the variable production costs. Fixed costs are unaffected – no extra fixed costs are incurred when output is increased within the relevant range. The valuation of units of output and hence closing inventory is therefore at variable production cost because these are the only costs properly attributable to the product[1].

[1] Students should take up numerical example on calculation of profit under Absorption costing and marginal costing to understand the implications of this technique before proceeding with the particular sums of Marginal costing.

IMPORTANT ISSUES OF MARGINAL COSTING

1. Marginal costing system is simple to operate than absorption costing because they do not involve the problems of overhead apportionment and recovery.
2. Fluctuations in profit are easier to explain because they result from cost volume interactions and not from changes in inventory valuation
3. Marginal costing is essentially useful to management as a technique in cost analysis and cost presentation
4. Marginal costing is used in short term decision making like; Make or buy decisions, Accept an order or not, Optimum utilization of labour or machine hours [Limiting factor] Evaluation of alternative choices, Subcontract some of the production processes or not, Expand the business or not, Shutdown or continue.

CVP ANALYSIS

- ***Cost-volume-profit (CVP) analysis*** deals with how profit and costs change with a change in volume. CVP analysis looks at the effects on profits of changes in such factors as variable costs, fixed cost, selling prices**,** volume, and mix of products sold. It ***[****along with* cost behaviour information], helps managers perform many useful analyses for decision making.
- ***Break-even analysis***, a branch of CVP analysis, determines the break-even sales, which is the level of sales at which total Cost equals total revenue.

MANAGERIAL USE OF DIRECT COSTING

- ✓ It is important to realize that direct costing is used for *internal purposes only*. It highlights the concept of contribution margin and focuses on the *costs by behaviour rather than by function*. Its managerial uses include:
  - relevant cost analysis;
  - break-even and cost-volume-profit (CVP) analyses; and
  - short-term decision making.
- ✓ An understanding of cost behaviour is extremely useful for managerial planning and decision-making purposes. It allows managerial accountants to perform short-term planning analysis, such as break-even analysis. Cost-volume-profit analysis is useful as a frame of reference, as a vehicle for expressing overall managerial performance, and as a planning device via break-even techniques and what-if scenarios. Breaking down the costs by behaviour, which is reflected in a contribution (direct costing) income statement, facilitates the use of various short-term profit-planning tools on the part of managerial accountants.
- ✓ Direct costing, however, is not acceptable for external reporting or for income tax reporting. Companies that use direct costing for internal reporting must convert to absorption costing for external reporting.

Section - A

1. Choose the correct answer from given four alternatives. [one mark each]

i. Marginal Cost is

a. the amount at any given volume of output by which aggregate costs are changed if the volume of output is increased or decreased by one unit.

b. Prime Cost plus Fixed Overheads

c. a variable ratio which may be expressed in terms of an amount per unit of output

d. not normally traceable to particular unit

ii. Marginal costing is

a. A cost accounting technique where valuation of stocks such as finished goods, work-in-progress is made at Total Cost.

b. A cost accounting technique where there is no need to segregate between Fixed Cost and Variable Cost.

c. the ascertainment of marginal costs and of the effect on profit of changes in volume or type of output by differentiating between fixed costs and variable costs.

d. A simple cost accounting technique as fixed cost need not be considered as period cost and can be apportioned on each unit of goods produced.

iii. A private hospital has a budgeted annual overhead cost for cleaning of ₹12,50,000. There are 300 beds in the hospital and these are expected to be in use 95% of the year. The hospital uses a composite cost unit of occupied bed per night. What is the overhead absorption rate for cleaning? (Assume a year has 365 days).

a. ₹ 10.36

b. ₹ 11.54

c. ₹ 12.02

d. ₹ 16.04

iv. A technical writer is to set up her own business. She anticipates working a 40-hour week and taking four weeks' holiday per year. General expenses of the business are expected to be ₹ 10,000 per year, and she has set herself a target of ₹ 40,000 a year salary. Assuming that only 90% of her time worked will be chargeable to customers, her charge for each hour of writing (to the nearest Rupee) should be;

a. ₹ 32.04 per hour

b. ₹ 35.06 per hour

c. ₹ 28.94 per hour

d. ₹ 27.20 per hour

v. A company makes a single product and incurs fixed costs of ₹ 30,000 per month. Variable cost per unit is ₹ 5and each unit sells for ₹ 15. Monthly sales demand is 7,000 units. The breakeven point in terms of monthly sales units is:

a. 2,000 units

b. 3,000 units

c. 4,000 units

d. 6,000 units

vi. Which of the following statements is/are correct?

(i) The incremental cost of buying a larger quantity of material might be a negative cost, which is a cost reduction

(ii) If a company reduces its selling price by 20% so that sales volume increases by 25%, total profit will remain unchanged

(iii) A direct cost need not be a variable cost, but might be a fixed cost

a. (i) only

b. (i) and (ii) only

c. (ii) and (iii) only

d. (i) and (iii) only

vii. If the selling price and variable cost increase by 20% and 12% respectively by how much must sales volume change compared with the original budgeted level in order to achieve the original budgeted profit for the period?

a. 24.2% decrease

b. 24.2% increase

c. 39.4% decrease

d. 39.4% increase

viii. Which of the following statements about profit/volume graphs are correct?

(i) The profit-volume line starts at the origin

(ii) The profit-volume line crosses the x axis at the breakeven point

(iii) Any point on the profit-volume line above the x axis indicates the profit (as measured on the vertical axis) at that level of activity

a. (i) and (ii) only

b. (ii) and (iii) only

c. (i) and (iii) only

d. All of them

ix. A company's single product has a contribution to sales ratio of 20%. The unit selling price is ₹ 12. In a period when fixed costs were ₹ 48,000 the profit earned was ₹ 5,520. Direct wages were 30% of total variable costs, and so the direct wages cost for the period was;

a. ₹ 64,224

b. ₹ 22,624

c. ₹ 44,226

d. ₹ 75,000

x. A company produces and sells a single product whose variable cost is ₹ 15 per unit. Fixed costs have been absorbed over the normal level of activity of 500,000 units and have been calculated as ₹ 5 per unit. The current selling price is ₹ 25 per unit.

Profit made under marginal costing if the company sells 625,000 units would be;

a. 25,00,000

b. 37,00,000

c. 42,50,000

d. None of the above

Answer:

i	ii	iii	iv	v	vi	vii	viii	ix	x
a	b	c note 1	c note 2	b	d note 3	a	b note 4	a note 5	d

Note 1

Budgeted number of occupied beds per night = 300 beds x 365 x 95% = 104,025 occupied bed nights.

Overhead absorption rate for cleaning = ₹ 1,250,000/104,025 = ₹ 12.02.

Note 2

Charge for each hour of writing (to the nearest Rupee) should be ₹ 28.94

Weeks worked per year = 52 – 4 = 48

Hours worked per year = 48 × 40 hrs. = 1,920

Hours chargeable to clients = 1,920 × 90% = 1,728

Total expenses = ₹ 10,000 + ₹ 40,000 = ₹ 50,000

Hourly rate = 1728 ÷ ₹ 50 000 = ₹ 28.94 per hour

Note 3

Statement (i) can be correct when there are bulk discounts on larger quantities.

Note 4

The starting point of the profit-volume line is the point on the y axis representing the loss at zero activity, which is the fixed cost incurred. Thus (a) is incorrect.

Note 5

Contribution earned for the period = ₹ 48,000 +₹ 5,520 = ₹ 53,520

Therefore, Sales value = ₹ 53,520/0.2 = ₹ 267,600

Variable cost = ₹ (267,600 – 53,520) = ₹ 214,080

Direct wages cost = ₹ 214,080 ×0.3 = ₹ 64,224

2. Match the following: [one mark each]

A.	**Break Even Point**	**a**	**Denotes the exact moment when a company's revenue is equal to its variable costs.**
B.	**The shutdown point**	**b**	**anything which limits the activity of an entity**
C.	**Margin of Safety**	**c**	**Is the volume of production or sales where total costs are equal to total revenue**
D.	**Angle of Incidence**	**d**	**indicates the percentage by which forecast revenue exceeds or falls short of that required to break even.**
E.	**Differential Cost**	**e**	**is a measure of how much contribution is earned from each Re 1 of sales.**
F.	**Profit volume ratio**	**f**	**is the change in the costs which results from the adoption of an alternative course of action.**
G.	**The optimum combination of sales price and sales volume is**	**g**	**approximate profit or loss at different levels of sales volume within a limited range.**
H.	**A breakeven chart is a chart that indicates**	**h**	**To give a visual display of breakeven arithmetic**
I.	**Breakeven charts are used**	**i**	**arguably the combination which maximises total contribution**
J	**A key factor is**	**j**	**Depicts growth of Profitability**

Answer:

A	B	C	D	E	F	G	H	I	J
c	a	d	j	f	e	i	g	h	b

3. State whether the following statements are True' or 'False': [one mark each]

i. Differential costs compare favourably with the economist's definition of marginal cost, viz. that marginal cost is the amount which at any given volume of output is changed if output is increased or decreased by one unit.

ii. When closing stock is more than opening stock: In other words, when production during a period is more than sales, then profit as per absorption approach will be more than that by marginal approach.

iii. Absorption costing system is simple to operate than marginal costing because they do not involve the problems of overhead apportionment and recovery

iv. One of the limitations of marginal costing is that the separation of costs into fixed and variable present's technical difficulties and no variable cost is completely variable nor is a fixed cost completely fixed.

v. Though for short-term assessment of profitability marginal costs may be useful, long term profit is correctly determined on full costs basis only

Answer:

i. True

ii. True

iii. False

iv. True

v. True

4. Fill in the blanks: [one mark each]

i. _____ are not assigned to the product but are recognized as expenses in the period incurred. All nonmanufacturing costs are period costs

ii. Only difference between variable costing and absorption costing is the classification of _____

iii. Under marginal costing the difference in the magnitude of_____ does not affect the unit cost of production.

iv. _____ compare favourably with the economist's definition of marginal cost, viz. that marginal cost is the amount which at any given volume of output is changed if output is increased or decreased by one unit.

v. If the contribution margin is 20% of sales and the Variable cost is ₹ 10,00,000 then Sales would be _____ .

Answer:

i. Period Cost

ii. fixed factory overhead

iii. opening stock and closing stock

iv. Differential costs

v. ₹ 12,50,000

Section - B

[Working notes should form part of the answer]

5. Answer both the questions.

i. The following information relates to a management consultancy organisation.

Overhead absorption rate per consulting hours	**25.00**
Salary cost per consulting hour (senior)	**₹ 40.00**
Salary cost per consulting hour (junior)	**₹ 30.00**

The organisation adds 35% to total cost to arrive at the selling price.

Assignment number 3036 took 172 hours of a senior consultant's time and 440 hours of junior time.

What would be the price that should be charged for assignment number 3036?

ii. E Co manufactures a single product, P. Data for the product are as follows.

	₹ per unit
Selling price	**20**
Direct material cost	**4**
Direct labour cost	**3**
Variable production overhead cost	**2**
Variable selling overhead cost	**1**
Fixed overhead cost	**5**
Profit per unit	**5**

a. Calculate the Contribution to Sales ratio.

b. Briefly explain why fixed overhead cost is not considered and also state the implications of taking fixed overhead cost at ₹ 5 per unit. **[6+ (4+5) = 15]**

Answer:

(i)

Particulars	₹
Salary costs: Senior consultant (172 × ₹ 40)	6,880
Junior time (440 × ₹ 30)	13,200
Overhead absorbed (612 × ₹ 25)	15,300
Total cost	35,380
Mark up (35%)	12,383
Selling price (Total cost + mark-up)	47,763

The price that should be charged for assignment number 3036 is ₹ 47,763

(ii)

a. The profit/volume ratio (P/V ratio) or contribution/sales ratio (C/S ratio)

= [(Selling price per unit- Contribution per unit) ÷ Sales] × 100

= ₹ (20 – 4 -3 -2-1) /20 × 100% = 50%

b. All nonmanufacturing costs in the value chain (such as research and development and marketing), whether variable or fixed, are period costs and are recorded as expenses when incurred. These costs are not considered for calculating contribution or contribution margin. But these have to be accounted for in calculation of gross margin. This is being done by allocating these costs on the basis of some suitable absorption rate. In the given example if total units produced in the 'period' is 25000 (for example) then total fixed overhead cost = 25,000 × 5 = ₹ 1,25,000.

6. Answer all the questions.

i. A single product company has a contribution to sales ratio of 40%. Fixed costs amount to ₹90,000 per annum. The number of units required to break even is _____.

ii. Z plc makes a single product which it sells for ₹ 16 per unit. Fixed costs are ₹ 76,800 per month and the product has a contribution to sales ratio of 40%. In a period when actual sale was ₹ 224,000, Z plc's margin of safety, in units, was _____ .

iii. A company's breakeven point is 6,000 units per annum. The selling price is ₹ 90 per unit and the variable cost is ₹ 40 per unit. What are the company's annual fixed costs?

iv. H Company sells product V, for which data is as follows.

Selling price ₹ 108 per unit

Variable cost ₹ 73 per unit

Period fixed costs amount to ₹ 196,000, and the budgeted profit is ₹ 476,000 per period.

If the selling price and variable cost per unit increase by 10% and 7% respectively, the sales volume will need to _____ to _____ units in order to achieve the original budgeted profit for the period.

[4 + 4 + 3+4 = 15]

Answer:

(i) Breakeven quantity = Fixed costs ÷ Contribution per unit

Since we do not know the contribution per unit, and we cannot determine it from the information available, it is not possible to calculate the breakeven point in terms of units.

We can determine the value of breakeven sales as ₹ 90,000/0.4 = ₹ 225,000, but this does not tell us the number of units required to break even.

(ii) Breakeven point = Fixed costs ÷ C/S ratio = 76800 ÷ 0.40 = ₹ 1,92,000

Actual sales = ₹ 2 24,000

Therefore Margin of safety in terms of sales value = ₹ 32,000

Margin of safety in units 2,000. [Margin of safety in terms of sales value ÷ selling price per unit (₹16)

(iii) Contribution per unit = ₹ 90 – ₹ 40 = ₹ 50. The sale of 6,000 units just covers the annual fixed costs, therefore the fixed costs must be ₹ 50 × 6,000 = ₹ 3,00,000.

(iv) If the selling price and variable cost per unit increase by 10% and 7% respectively, the sales volume will need to <u>decrease</u> to <u>16,515 units</u> in order to achieve the original budgeted profit for the period.

Current contribution per unit = ₹ (108 – 73) = ₹35

Current sales volume = (1,96,000 + 4,76,000) ÷ 35 = 19,200

Revised contribution per unit:

Selling price ₹ 108 × 1.10 = ₹ 118.80

Variable cost ₹ 73 × 1.07 = ₹ <u>(78.11)</u>

Contribution ₹ 40.69

Required sales volume = ₹ (1,96,000 + 4,76,000) ÷ ₹ 40.69
= 16,515 units

7. Answer both the questions

i. Cost and selling price details for product Z are as follows.

Direct materials	**6.00**
Direct labour	**7.50**
Variable overhead	**2.50**
Fixed overhead absorption rate	**<u>5.00</u>**
	<u>21.00</u>
Profit	**9.00**
Selling price	**30.00**

Budgeted production for the month was 5,000 units although the company managed to produce 5,800 units, selling 5,200 of them and incurring fixed overhead costs of ₹ 27,400.

a. What was the marginal costing profit for the month?

b. What was the absorption costing profit for the month?

ii. The overhead absorption rate for product T is ₹ 4 per machine hour. Each unit of T requires 3 machine hours.

Inventories of product 'T' in the last period were:	**Units**
Opening inventory	**2,400**
Closing inventory	**2,700**

You are to calculate the difference between the marginal costing profit for the period and the absorption costing profit for product T. which will be higher?

[10 + 5 = 15]

Answer:

(i)

Particulars		₹	₹
Sales	(5,200 × ₹ 30)		1,56,000
Direct materials	(5,800 ×₹ 6)	34,800	
Direct labour	(5,800 × ₹ 7.50)	43,500	
Variable overhead	(5,800 × ₹ 2.50)	14,500	
		92,800	
Less closing inventory	(600 × ₹16)	9,600	
			-83,200
Contribution			72,800
Less fixed costs			27,400
Profit (Marginal Costing)			**45,400**

Particulars		₹	₹
Sales	(5,800 × ₹ 30)		1,56,000
Materials	(5,800 × ₹ 6)	34,800	
Labour	(5,800 × ₹ 7.50)	43,500	
Variable overhead	(5,800 × ₹ 2.50)	14,500	
Fixed costs	(5,800 × ₹ 5)	29,000	
Less closing inventories	(600 × ₹ 21)	-12,600	
			-1,09,200
Over-absorbed overhead (w/n 1)			1,600
Profit (Absorption costing)			**48,400**

w/n 1

Overhead absorbed	(5,800 x ₹ 5)	29,000
Overhead incurred		27,400
Over-absorbed overhead		1,600

(ii)

Difference in profit = Change in inventory level x fixed overhead per unit
= (2,400 - 2,700) x (₹4 x 3) = ₹3,600

Absorption profit is higher because the inventories have increased.

8. Answer both the questions

i. Badley Company has been approached by two customers to provide 2,000 units of product X by a certain date. Company can only fulfil one of these orders. Customer X is a long-standing customer and the contribution on customer X's order would be ₹ 50,000. Badley Company has not dealt with customer Y before and so they do not receive the discount given to customer X. The contribution on customer Y's order will be ₹ 60,000. Badley Company decides to fulfil customer X's order. The marginal cost of the 2,000 units is ₹ 25,000. What is the economic cost of customer X's order?

ii. A company has a capacity of producing 1 lakh units of a certain product in a month. The sales department reports that the following schedule of sales prices is possible

VOLUME OF PRODUCTION	SELLING PRICE PER UNIT
%	₹
60	0.90
70	0.80
80	0.75
90	0.67
100	0.61

The variable cost of manufacture between these levels is 15 paise per unit and fixed cost ₹ 40,000.

Prepare a statement showing incremental revenue and differential cost at each stage. At which volume of production will the profit be maximum?

[6 + 9 = 15]

Answer:

(i)

The economic cost is the marginal cost (₹25000) plus the lost contribution of ₹10,000 from choosing customer X instead of customer Y.

(ii)

Statement showing computation of differential cost, incremental revenue and determination of capacity at which profit is maximum

Capacity %	Units	Sales (₹)	V. Cost @ (₹) 0.15	Fixed Cost	Total Cost	Differential Cost (₹)	Incremental Revenue (₹)
60%	60000	54,000	9,000	40000	49000		
70%	70000	56,000	10,500	40000	50500	1,500	2,000
80%	80000	60,000	12,000	40000	52000	1,500	4,000
90%	90000	60,300	13,500	40000	53500	1,500	300
100%	100000	61,000	15,000	40000	55000	1,500	700

From the above computation it was found that the incremental revenue is more that the differential cost up to 80% capacity, the profit is maximum at that capacity.

9. Answer all the questions.

i. X Co generates a 12 per cent contribution on its weekly sales of ₹ 280,000. A new product, Z, is to be introduced at a special offer price in order to stimulate interest in all the company's products, resulting in a 5per cent increase in weekly sales of the company's other products. Product Z will incur a variable unit costof ₹ 2.20 to make and ₹ 0.15 to distribute. Weekly sales of Z, at a special offer price of ₹ 1.90 per unit, areexpected to be 3,000 units.

Calculate the effect of the special offer in terms of the increase of the company's weekly profit.

ii. How can CVP analysis assist managers?

iii. How can managers incorporate income taxes into CVP analysis?

iv. what can managers do to cope with uncertainty or changes in underlying assumptions?

[6+3+3+3 = 15]

Answer:

(i)

Currently weekly contribution = 12% × ₹280,000 = ₹33,600

Extra contribution from 5% increase in sales = 5% × ₹33,600 = ₹1,680

Loss on product Z each week 3,000 × ₹ (1.90 – 2.20 – 0.15) = ₹(1,350)

Weekly increase in profit = ₹330

(ii)

CVP analysis assists managers in understanding the behaviour of a product's or service's total costs, total revenues, and operating income as changes occur in the output level, selling price, variable costs, or fixed costs.

(iii)

Income taxes can be incorporated into CVP analysis by using target net income to calculate the corresponding target operating income. The breakeven point is unaffected by income taxes because no income taxes are paid when operating income equals zero.

(iv)

Sensitivity analysis, a "what-if" technique, examines how an outcome will change if the original predicted data are not achieved or if an underlying assumption changes. When making decisions, managers use CVP analysis to compare contribution margins and fixed costs under different assumptions. Managers also calculate the margin of safety equal to budgeted revenues minus breakeven revenues.

10. Answer all the questions.

i. Lurvey Men's Clothing's revenues and cost data for 2011 are as follows:

Particulars	₹	₹
Revenues		6,00,000
Cost of goods sold		3,00,000
Gross margin		3,00,000
Operating costs:		
Salaries (fixed)	1,70,000	
Sales commissions (10% of sales)	60,000	
Depreciation of equipment and fixtures	20,000	
Store rent (4,500 per month)	54,000	
Other operating costs	45,000	3,49,000
Operating income (loss)		-49,000

Mr. Lurvey, the owner of the store, is unhappy with the operating results. An analysis of other operating costs reveals that it includes ₹ 30,000 variable costs, which vary with sales volume, and ₹ 15,000 (fixed) costs.

a. Compute the contribution margin of Lurvey Men's Clothing.

b. Compute the contribution margin percentage.

c. Mr. Lurvey estimates that he can increase revenues by 15% by incurring additional advertising costs of ₹ 13,000. Calculate the impact of the additional advertising costs on operating income.

ii. The sales turnover and profit during two periods were as follows:

Period	Sales (₹)	Profit (₹)
1	2,00,000	3,00,000
2	20,000	40,000

What would be probable trading results with sales of ₹ 1, 80,000? What amount of sales will yield a profit of ₹ 50,000?

[10+5 = 15]

Answer:

(i)

Particulars	₹	₹
Revenues		6,00,000
Deduct variable costs:		
Cost of goods sold	3,00,000	
Sales commissions	60,000	
Other operating costs	30,000	3,90,000
Contribution margin		2,10,000
Contribution margin percentage =	210000/600000	= 0.35

Particulars	Details	₹
Incremental revenue	(15% × 600,000) =	90000
Incremental contribution margin	(35% × 90,000) =	31,500
Incremental fixed costs (advertising)		13,000
Incremental operating income		18,500

If Mr Lurvey spends ₹ 13000 more on advertising, the operating income will increase by ₹ 18,500, decreasing operating loss from ₹ 49000 to an operating loss of ₹ 30,500.

Check (optional)

Particulars		₹	₹
Revenues	(115% × 6,00,000)		6,90,000
Cost of goods sold	(50% of sales)		3,45,000
Gross margin			3,45,000
Operating costs:			
Salaries and wages		1,70,000	
Sales commissions	(10% of sales)	69,000	
Depreciation of equipment and fixtures		20,000	
Store rent		54,000	
Advertising		13,000	
Other operating costs:			
Variable	(30,000 × 6,90,000) ÷ 6,00,000	34,500	
Fixed		15,000	3,75,500
Operating income			30,500

Answer 10 (ii)

P/V ratio = (Change in profit / Change in sales) x 100= (20,000 / 1, 00,000) x 100 = 20%

Fixed cost = (Sales x P/V ratio) – Profit= (2, 00,000 x 0.2) – 20,000 = ₹ 20,000

Sales required to earn desired profit = (Fixed cost + desired profit) ÷ P/V ratio

= (20,000 + 50,000) / 20% = ₹ 3,50,000

11. Answer all the questions

i. The product mix of a Gama Ltd. is as under:

Particulars	Product M	Product N
Units	**54000**	**18000**
Selling Price	**₹ 7.50**	**₹ 15.00**
Variable Cost	**₹ 6.00**	**₹ 4.50**

Find the break-even points in units, if the company discontinues product 'M' and replace with product 'O'. The quantity of product 'O' is 9,000 units and its selling price and variable costs respectively are ₹ 18 and ₹ 9. Fixed Cost is ₹ 15,000.

ii. AB Co makes two products, the Ay and the Be. Unit variable costs are as follows.

Particulars	Ay (₹)	Be (₹)
Direct materials	1	3
Direct labour (₹ 3 per hour)	6	3
Variable overhead	1	1
	8	7

The sales price per unit is ₹ 14 per Ay and ₹ 11 per Be. During July 2017 the available direct labour is limited to 8,000 hours. Sales demand in the month is expected to be 3,000 units for Ay and 5,000 units for Be.

Determine the profit-maximizing production mix, assuming that labour is in short supply.

iii. A company manufactures scooters and sells it at ₹ 3,000 each. An increase of 17% in cost of materials and of 20% of labour cost is anticipated. The increased cost in relation to the present sales price would cause a 25% decrease in the amount of the present gross profit per unit.

At present, material cost is 50%, wages 20% and overhead is 30% of cost of sales.

You are required to:

a. Prepare a statement of profit and loss per unit at present and;

b. Compute the new selling price to produce the same percentage of profit to cost of sales as before.

Answer:

(i)

N = 18,000 units

O = 9,000 units

Ratio (N:O) = 2:1

Let, t = No. of units of 'O' for BEP and N = 2t No. of units for BEP

Contribution of 'N' = ₹ 10.5perunit

Contribution of 'O' = ₹ 9perunitAt Break Even Point:

⇒ 10.5 × (2t) +9 × t -15,000=0

⇒ 30t =15,000

⇒ t = 500 units

BEP of 'N'= 2t = 1,000 units

BEP of 'O'= t = 500 units

(ii)

Statement showing contribution per unit of the limiting factor

Particulars	Ay (₹)	By (₹)
Sales Price	14	11
Variable Cost	8	7
Unit Contribution	6	4
Labour hours per unit	2 hrs.	1 hr.
Contribution per labour hour (limiting factor)	₹ 3	₹ 4

Although Ay have a higher unit contribution than Be, two Bes can be made in the time it takes to make one Ay. Because labour is in short supply it is more profitable to make Bes than Ays.

Optimum Production Plan

Product	Demand	Hours Required	Hours assigned	Priority of manufacture
Be	5000	5000	5000	1st
Ay	3000	6000	3000 (Balance)	2nd
		11000	8000	

Statement of Profit (optimum production plan)

Product	Units	Hours needed	Contribution per unit (₹)	Total (₹)
Be	5000	5000	4	20,000
Ay	1500	3000	3	9,000
		8000		29,000
Less: Fixed Cost				20,000
Profit				**9,000**

(iii)

Let Cost of Sales be X and Profit be Y, then the cost structure would be given as follows;

Particulars	Present	After increase of Cost
Material	0.5 X	0.585 X
Labour	0.2 X	0.24 X
Overhead	0.3 X	0.3 X
Cost of sales	X	1.125 X
Profit	Y	0.75 Y
Sales	3000 (given)	3000*

*Sale price is to remain same as is given in the sum.

Thus, form the present and 'after increase' cost structure

X + Y = 3000 ------ Eq (1)

1.125 X + 0.75 Y = 3000 ------ Eq (2)

Solving equation (1) and (2) we get X= 2000 and Y = 1000

i. Statement of Profit and loss at present

Particulars	Present (₹)
Material	1000
Labour	400
Overhead	600
Cost	2000
Profit	1000
Sales	3000

ii. Calculation of new sale price to give the same percentage of profit

Particulars	After increase of Cost	(₹)
Material	0.585 X	1170
Labour	0.24 X	480
Overhead	0.3 X	600
Cost of sales	1.125 X	2250
Profit	0.75 Y	1125 **
Sales	3000	3375

** Profit is 50% of cost (as in the present cost structure which is to be maintained in the 'increased cost' scenario.

STANDARD COSTING

Standard costing has a variety of uses but its two principal ones are as follows:

i. To value inventories and cost production for cost accounting purposes. It is an alternative method of valuation to methods like FIFO and LIFO.

ii. To act as a control device by establishing standards (planned costs), highlighting (via variance analysis which we will cover in the next chapter) activities that are not conforming to plan and thus alerting management to areas which may be out of control and in need of corrective action.

> A **standard cost** is a 'planned unit cost of a product, component or service'. CIMA *Official Terminology*

For the purpose of control, Standard costing involves the following steps;

i. The establishment of predetermined estimates of the costs

ii. Cost accumulation process.

iii. Comparison of the actual costs with the predetermined estimates.

✓ The predetermined costs are known as *standard costs* and the difference between standard and actual cost is known as a *variance*. The process by which the total difference between standard and actual results is analysed is known as *variance analysis*.

Variances measure the difference between actual results and expected results. The process by which the total difference between standard and actual results is analysed is known as variance analysis.

When actual results are better than expected results, we have a favourable variance (F). If, on the other hand, actual results are worse than expected results, we have an adverse variance (A).

> A **variance** is 'the difference between a planned, budgeted, or standard cost and the actual cost incurred. The same comparisons may be made for revenues'.
>
> **Variance analysis** is defined as the 'evaluation of performance by means of variances, whose timely reporting should maximise the opportunity for managerial action'. CIMA *Official Terminology*

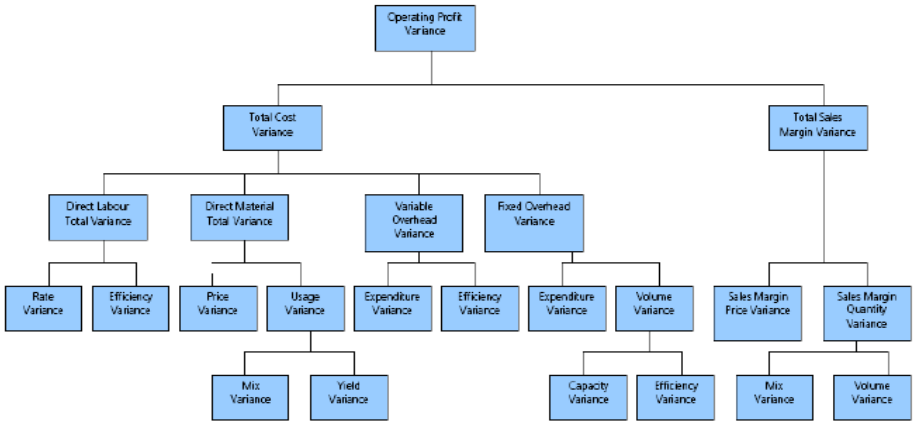


Chart of common variances. Adapted from Lucey, T. (1996). Costing, 5th ed. p. 432

Section - A

1. Choose the correct answer from given four alternatives. [one mark each]

i. Under standard cost system the cost of the product determined at the beginning of production is its:

a. Direct cost

b. Pre-determined cost

c. Historical cost

d. Actual cost

ii. Which of the following variance arises when more than one material is used in the manufacture of a product?

a. Material price variance

b. Material usage variance

c. Material yield variance

d. Material mix variance

iii. Standard price of material per kg 20, standards consumption per unit of production is 5 kg. Standard material cost for producing 100 units is;

a. 20,000

b. 12,000

c. 8,000

d. 10,000

iv. Favourable variance is when;

a. The standard cost is equal to actual cost

b. Standard cost is greater than actual cost

c. Standard cost is less than actual cost

d. None of the above

v. Product A required 25 kg of material at a rate of `11 per kg. The actual consumption of material for the manufacturing product A comes to 30 kg of material at the rate of `11.25 per kg. The Material Cost Variance is;

a. 62.5 (Favourable)

b. 62.5 (Adverse)

c. 7.5 (Favourable)

vi. 55 (Adverse) Product A required 25 kg of material at a rate of ₹11 per kg. The actual consumption of material for the manufacturing product A comes to 30 kg of material at the rate of ₹ 11.25 per kg. The Material Cost Variance comprise of Material Price Variance and Material Usage Variance, which are;

a. 7.5 (Adverse) and 55 (Adverse) respectively

b. 7.5 (Favourable) and 55 (Adverse) respectively

c. 7.5 (Adverse) and 55 (Favourable) respectively

d. 7.5 (Favourable) and 55 (Favourable) respectively

vii. Standard price of material per kg is 20, standard usage per unit of production is 5 kg. Actual usage of production 100 units is 520 kgs, all of which was purchase at the rate of 22 per kg. Material cost variance is

a. 2,440 (A)

b. 1,440 (A)

c. 1,440 (F)

d. 2,300 (F)

viii. Standard price of material per kg is ` 20, standard usage per unit of production is 5 kg. Actual usage of production 100 units is 520 kgs, all of which was purchase at the rate of ` 22 per kg. Material usage variance is The Material Cost Variance comprise of Material Price Variance and Material Usage Variance, which are;

a. 1040 (Adverse) and 400(Adverse) respectively

b. 1040 (Favourable) and 400 (Adverse) respectively

c. 1040 (Adverse) and 400 (Favourable) respectively

d. 400 (Favourable) and 1040 (Favourable) respectively

ix. The standard operating capacity of Vermont Manufacturing, Inc., is 2,000 units. It should take three hours of direct labour time to produce one unit of product, at a standard rate of 15 per hour. It actually took 6,500 direct labour hours to produce the 2,000 units, at an actual wage rate of 16 per hour. Based on the information above, the labour cost variance is

a. 7500 (Adverse)

b. 6500 (Adverse)

c. 14000 (Favourable)

d. 14000 (Adverse)

x. The standard operating capacity of Vermont Manufacturing, Inc., is 2,000 units. It should take three hours of direct labour time to produce one unit of product, at a standard rate of 15 per hour. It actually took 6,500 direct labour hours to produce the 2,000 units, at an actual wage rate of 16 per hour. The labour cost variance comprises of labour rate variance and labour efficiency variance which are;

a. 6500 (Adverse) and 7500 (Adverse) respectively

b. 14000 (Adverse) and 14000 (Favourable) respectively

c. 6500 (Favourable) and 7500 (Favourable) respectively

d. None of the above

Answer:

i	ii	iii	iv	v	vi	vii	viii	ix	x
b	d	d	c	b	a	b	a	d	a

2. Match the following: [one mark each]

A. Change in quality or specification of material purchased	**a. Cause of Materials Usage Variance**
B. Yield from materials in excess of or less than that provided as the standard yield.	**b. Cause of Material Price Variance**
C. Change in basic wage structure or change in piece-work rate. These will give rise to a variance till such time the standards are not revised	**c. Cause for Labour Efficiency Variance**
D. Basic inefficiency of workers due to low morale, insufficient training, faulty instructions, incorrect scheduling of jobs, etc.	**d. Cause of Direct Labour Rate Variances**
E. Direct Labour rate variance	**e. (Standard rate x Actual hours paid for) minus (Standard rate x Actual hours worked)**
F. Direct labour yield variance	**f. (Standard Rate minus Actual Rate) x Actual hour**
G. Direct Labour efficiency variance	**g. (Actual Hours at standard rate of standard gang) minus (Actual Hours at standards Rate of Actual Gang)**
H. Labour Gang variance	**h. (Standard hour for actual production minus Actual hours) x Standard Rate**
I. Ideal time variance	**i. Standard cost per unit x (Standard output for actual mix – Actual output)**

Answer:

A	B	C	D	E	F	G	H	I
a	b	c	a	d	e	g	h	i

3. State whether the following statements are True' or 'False':[one mark each]

i. A standard is a norm against which the actual performance can be measured.

ii. Fixing standards is the work of industrial engineer or the production people and not of cost accountant.

iii. Standard Cost is also termed as Scientific Cost.

iv. The purpose of standard cost accounting is to control costs and promote efficiency.

v. Any deviation from the standards can be quickly detected and responsibility pinpointed so that the company can take appropriate action to eliminate inefficiencies or take advantage of efficiencies. This is termed as management by exception.

Answer:

(i) True

(ii) True

(iii) True

(iv) True

(v) True

4. Fill in the blanks: [one mark each]

i. materials cost standard is based on estimates of the quantity of materials required for a unit of product and the _____ to purchase the materials used

ii. A labour cost standard is based on estimates of the _____ to produce a unit of product and the cost of labour per unit.

iii. Variances measure _____ or_____ in usage (quantity of materials used or number of labour hours worked) and price (cost of materials and wage rates).

iv. Companies also use nonfinancial performance measures to evaluate operations. This is recognised through and approach called the _____

v. Standard Cost is defined as _____.

Answer:

i. unit cost

ii. labour hours required

iii. efficiencies,inefficiencies

iv. balanced scorecard approach

v. the predetermined cost that is calculated at the management's standards of efficient operations and the relevant necessary expenditure

Section - B

[Working notes should form part of the answer]

5. Answer both questions

i. NXE Manufacturing Concern furnishes the following information:

Standard:	**Material for 70 kg finished products**	**100 kg.**
	Price of material	**₹. 1 per kg**
Actual:	**Output**	**2,10,000 kg.**
	Material used	**2,80,000 kg.**
	Cost of Materials	**₹. 2,52,000**

Calculate: (a) Material usage variance, (b) Material price variance, (c) Material cost variance

ii. The standard cost of a chemical mixture is as follows:

40% material A at ₹ 20 per kg.

60% material B at ₹ 30 per kg.

A standard loss of 10% of input is expected in production. The cost records for a period showed the followingusage:

90 kg material A at a cost of ₹18 per kg.

110 kg material B at a cost of ₹ 34 per kg.

The quantity produced was 182 kg. of good product.

Calculate (a) Material usage variance, (b) Material price variance, (c) Material cost variance

[7 + 8 =15]

Answer:

A. Actual Quantity [AQ] × Actual Price [AP] or AQAP = ₹ 2,52,000 (given)

B. Actual Quantity [AQ]× Standard Price [SP] or AQSP = 28000 Kgs (material used) × ₹ 1 = ₹ 2,80,000

C. NIL (as only one material is used in production)

D. Standard Material Cost for Actual yield = [(100 kgs × ₹1) ÷ 70 kgs] × 210000 kgs = ₹ 3,00,000

Material Cost Variance = A – D = ₹ 48,000 (Favourable)

Material Price Variance = A – B = ₹ 28,000 (Favourable)

Material Usage Variance = B –D = ₹ 20,000 (Favourable)

Students have to be careful in calculating [D] ie. [Standard Material Cost for Actual Yield.

For every 100 kgs of input only 70 kgs is the output or actual yield. Thus standard cost for one kg of actual yield = [(100 kgs × Re 1) ÷ 70 kgs = ₹ 1.42857 and for total actual yield [210000 kgs] standard cost of actual yield = 210000 kgs × ₹ 1.42857 = ₹ 3,00,000

If students are using formulas

Material Usage Variance = (SQ – AQ) × SP

Material Price Variance = (SP – AP) × AQ and Material Cost Variance = (SQ × SP) – (AQ × AP)

Then the following calculations are required to be made before proceeding with the formulas

Standard Quantity of input for actual output (SQ) = 2, 10,000 kg × (100kg ÷ 70 kg) = 3, 00,000 kg.

Actual Price (AP) = (₹ 2, 52,000 ÷ 2, 80,000 kg) = ₹ 0.90 per kg. And the calculations would be

Material Usage Variance = (300000 – 280000) × Re 1 = 20000 (F)

Material Price Variance = (Re 1 – ₹ 0.90) × 280000 = 28000 (F)

Material Cost Variance = (300000 × Re 1) – (280000 × ₹ 0.90) = 48000 (F)

6. Answer both questions

i. The standard material cost for 100 kg of chemical D is made up:

Chemical A 30 kg. @ ₹ 4 per kg

Chemical B 40 kg. @ ₹ 5 per kg

Chemical C 80 kg. @ ₹ 6 per kg

In a batch 500 kg.of chemical D were produced from a mix of

Chemical A 140 kg. @ ₹ 588

Chemical B 220 kg. @ ₹ 1,056

Chemical C 440 kg. @ ₹2,860

How do yield mix and price of factors contribute to the variance in the actual cost per 100 kg.Of chemical D over the standard cost?

ii. Differentiate between Controllable and un-controllable variances.

Answer:

(i)

A. Actual Quantity [AQ] × Actual Price [AP] or AQAP

(Material A: [90× 18] = 1620 + Material B: [110 ×34] = 3740) = 5360

B. Actual Quantity [AQ] × Standard Price [SP] or AQSP

(Material A: [90 × 20] = 1800 + Material B: [110 ×30] = 3300) = 5100

C. Actual Quantity in Standard Mix × Standard Price [SP] or [RSQSP]

[Not required as Material Mix variance is not required in the problem]

D. Standard material cost for actual yield.

$$\frac{200\text{ kg} \times 40\% \times 20 + 200\text{ kg} \times 60\% \times 30}{180\text{ kg}} \times 182\text{ kg}\ \frac{5200}{180} \times 182 = 5257.78$$

Material Cost Variance = A – D = ₹ 102.22 (A)

Material Price Variance = A – B = ₹ 260 (A)

Material Usage Variance = B –D = ₹ 157.78 (F)

Answer 6 (i)

W/N 1

It is given in the problem that in a batch 500 kg. of chemical D were produced from a mix of

Chemical A 140 kg. @ ₹ 588

Chemical B 220 kg. @ ₹ 1,056

Chemical C 440 kg. @ ₹ 2,860

Thus for 100 kg (as required in the problem)

Chemical A = 28 kg (140 ÷ 5), Chemical B = 44 kg (220÷ 5), and Chemical C = 88 kg (440 ÷ 5) and

Actual price of Chemical A = 4.2 (588 ÷ 140), Actual price of Chemical B = 4.8 (1056 ÷ 220) and Actual price of Chemical C= 6.5 (2860 ÷ 440).

W/N 2

Total actual Qty = 800 kg (140 + 220 + 440) / 5 = 160kg (for 100 kg, as required in the sum)

Revised Actual Qty (in Standard Mix)

Chemical A = 160 × 3 /15 = 32 kg

Chemical B = 160 × 4/15 = 42.67 kg

Chemical C = 160 × 8/15 = 85.33 kg

A. Actual Quantity [AQ] × Actual Price [AP] or AQAP

(Material A: [28 × 4.2] = 117.6 + Material B: [44 ×4.8] = 211.2+ Material C: [88 ×6.5] =572) = 900.80

B. Actual Quantity [AQ] × Standard Price [SP] or AQSP

(Material A: [28 × 4] = 112 + Material B: [44 ×5] = 220+ Material C: [88 ×6] =528) = 860

C. Actual Quantity in Standard Mix × Standard Price [SP] or [RSQSP]

[(Material A: [32 × 4] = 128 + Material B: [42.67 ×5] = 213.33 + Material C: [58.33 ×6] =512) = 853.33

D. Standard material cost for actual yield.

(30× 4 + 40 × 5 + 80 × 6) = (120+200+480) = 800

Material Cost Variance = A – D = ₹ 100.80 (A)

Material Price Variance = A – B = ₹ 40.80 (A)

Material Mix Variance = B – C = ₹ 6.67 (A)

Material Usage Variance = B – D = ₹ 60 (A)

Material Yield Variance = C – D = ₹ 53.33 (A)

(ii)

The purpose of the standard costing reports is to investigate the reasons for significant variances so as to identify the problems and take corrective action. Variances are broadly of two types, namely, controllable and uncontrollable. Controllable variances are those which can be controlled by the departmental heads whereas uncontrollable variances are those which are beyond their control. Responsibility centres are answerable for all adverse variances which are controllable and are appreciated for favourable variances. Controllability is a subjective matter and varies from situation to situation. If the uncontrollable variances are of significant nature and are persistent, the standard may need revision

7. Answer both the questions

i. From the data given below

Calculate Material price variances for the two materials X and Y assuming that price variances are calculated at the time of purchase. Also calculate material usage variances the two material X and Y.

Particulars	Material X		Material Y	
	Qty (Kg)	Value (₹)	Qty (Kg)	Value (₹)
Raw material purchased	2000	4000	5000	6250
Issues to Works	2150	-	3950	-
Works stocks of Material				
Opening	300	-	1000	-
Closing	200	-	1250	-

Standard Price: Material X: ₹ 1.9 per Kg

Material Y: ₹ ₹ 1.30 per Kg

Standard usage	Material X	Material Y
Product A Product B	1 Kg 0.5 Kg	1 Kg 1 Kg

ii. **From the following compute Material variances**

Name of the material	Standard		Actual	
	Qty (Units)	Price (₹)	Qty (Units)	Price (₹)
Zee Wee Tee	3500 1500 1000	10 21 33	3700 1650 1250	12 20 36

[9+6 = 15]

Answer:

(i)

Material Price Variance is to be calculated at the point of purchase

A. Actual Quantity (purchase) × Actual Price

X: 2000 × 2 = 4000

Y: 5000 × 1.25 = 6250 **10250**

B. Actual Quantity (purchase) × Standard Price

X : 2000 × 1.9 = 3800

Y: 5000 × 1.30 = 6500 **10300**

Material Price Variance = 10250 – 10300 = 50 (F)

Material Price variance is calculated at the point of purchase as it is specifically required in the Question.

Material Usage Variance

B. Actual Quantity (Material Consumed w/n1) × Standard Price

X: 2250 × 1.90 = 4275.00

Y: 3700 × 1.30 = 4810.00 **9085.00**

C. (There is no need to calculate C as Mix variance is not required to be calculated)

D. Standard Material Cost for actual yield w/n 2.

Product A: 1130 units × 3.20 = 3616.00

Product B: 2550 units × 2.25 = 5737.50 **9353.50**

Material Usage Variance = 9085 – 9353.50 = 268.5 (F)

[**D** can also be calculated in terms of Material in which case

D would be:

Material X = [1130 × 1 kg + 2550 × 0.5 kg] × 1.9 = 4569.5

Material Y = [1130 × 1 kg + 2550 × 1 kg] × 1.30 = 4784.0 = **9353.50**

w/n 1: Material Consumed = Material issued + opening stock – closing stock

Material X = 2150+300 – 200 = 2250

Material Y = 3950 + 1000 – 1250 = 3700

w/n 2: Standard material cost for 1 unit of product A and Product B

	Material X		**Material B**		**Total**
	Usage	Rate	Usage	Rate	
Product A	1kg	1.90	1 kg	1. 30	3.20 (1.90+1.30)
Product B	0.50 kg	1.90	1 kg	1.30	2.25 (0.95 +1.30)

(ii)

A. Actual Qty × Actual Price

Zee: 3700 × 12 = 44400

Wee: 1650 × 20 = 33000

Tee: 1250 × 36 = 45000 **122400**

B. Actual Qty × Standard Price

Zee: 3700 × 10 = 37000

Wee: 1650 × 21 = 34650

Tee: 1250 × 33 = 41250 **112900**

C. Actual Qty (in standard mix) × Standard Price

Zee: 6600 × 35/60 × 10 = 38500

Wee: 6600 × 15/60 × 21 = 34650

Tee: 6600 × 10/60 × 33 = 36300 **109450**

D. Standard Material Cost of actual yield**.

[3500 × 10 + 1500 × 21 + 1000 × 33] = 99500

[** since actual yield is not given it may be reasonably assumed that actual yield is same as standard yield]

Material Cost Variance = A – D = ₹ 22900 (A)

Material Price Variance = A – B = ₹ 9500 (A)

Material Mix Variance = B – C = ₹ 3450 (A)

Material Usage Variance = B – D = ₹ 13400 (A)

Material Yield Variance = C – D = ₹ 9950 (A)

8. Answer all questions

i. The standard quantity and standard price of raw material required for one unit of product A are given below;

	Quantity (kg.)	Standard Price (₹)
Material X	**2**	**3**
Material Y	**4**	**2**

The actual production and relevant data are as;

Material X: 1,100 kgs. @ ₹ 3,410

Material Y: 1,800 kgs. @ ₹ 3,960

Calculate Variances. Actual production was 500 units.

ii. From the following particulars you are required to calculate (a) Material Usage Variance (b) Material Price Variance (c) Material Cost Variance

Quantity of material purchased	**3,000 units**
Value of material purchased	**₹ 9,000**
Standard quantity of material required for one tonne of finished product	**25 units**
Standard rate of material	**₹ 2 per unit**
Opening stock of material	**NIL**
Closing stock of material	**500 units**
Finished production during the period	**80 tonnes**

iii. The standard direct labour cost of product X is as follows.

2 hours of grade Z labour at ₹ 5 per hour = ₹ 10 per unit of product X.

During a particular period 1000 units of product X were made, and the direct labour cost of grade Z labour was ₹ 8900 for 2300 hours of work. Calculate the following variances.

(a) The direct labour total variance

(b) The direct labour rate variance

(c) The direct labour efficiency variance

Answer:

(i)

A. Actual Qty × Actual Price

Material X: 1100 × 3.10 = 3410

Material Y: 1800 × 2.20 = 3960 **7370**

B. Actual Qty × Standard Price

Material X: 1100 × 3.00 = 3300

Material Y: 1800 × 2.00 = 3600 **6900**

C. Actual Qty (in standard mix) × Standard Price

Material X: 2900 ×2/6 × 3.00 = 2900

Material Y: 2900× 4/6 × 2.00 = 3867 **6767**

D. Standard Material Cost of actual yield

Standard cost for one unit of finished product (2 × 3 + 4 × 2) × actual yield (500 units)
= **7000**

Material Cost Variance = A – D = ₹ 370 (A)

Material Price Variance = A – B = ₹ 470 (A)

Material Mix Variance = B –C = ₹ 133 (A)

Material Usage Variance = B –D = ₹ 100 (F)

Material Yield Variance = C –D = ₹ 233 (F)

Material Yield Variance is the second sub-component of the material usage variance and is also known as material sub-usage variance. The material yield variance focuses solely on the relationship between total input(ignoring the question of 'mix') and total output.

(ii)

A. Actual Qty × Actual Price

2500 × 3[w/n 1] = 7500

B. Actual Qty × Standard Price

2500 ×2 = 5000

C. [not required as there is only one product]

Material Price variance is not calculated at the point of purchase as is calculated in Q 4 (a) as the question is not specific about it. Students are advised to calculate material price variance if it is not specifically asked for in the question.

D. Standard Material Cost of actual yield w/n 2

2000 units × ₹ 2 (standard price) = 4000

Material Cost Variance = A – D = ₹ 3500(A)

Material Price Variance = A – B = ₹ 2500 (A)

Material Usage Variance = B –D = ₹ 1000 (A)

w/n 1: actual price = Total cost of purchase (9000)÷ Quantity purchased (3000) = ₹ 3

w/n 2: Standard material required for 80 tonnes @ 25 units per tonne = (80 × 25) = 2000 units

(iii)

A. Actual Hours × Actual Rate

2300 hrs× 3.8696 = 8900

B. Actual Hours × Standard Rate

2300 hrs×5 = 11500

C. Cannot be calculated as there is only one labour.

D. Cannot be calculated as there is no idle time.

E. Standard labour cost for actual yield. 10000

(1000 units [product A] × 2 hours for each unit of yield of product A × standard hourly rate [₹ 5])

Labour cost variance = A – E = 1100 (F)

Labour rate variance = A – B = 2600 (F)

Labour efficiency variance = B – E = 1500 (A)

> The direct labour total variance 'indicates the difference between the standard direct labour cost of the output which has been produced and the actual direct labour cost incurred'. [CIMA *official terminology*]
>
> The direct labour rate variance 'indicates the actual cost of any change from the standard labour rate of remuneration'. [CIMA *Official Terminology*]
>
> The direct labour efficiency variance is the 'standard labour cost of any change from the standard level of labour efficiency'. [CIMA *Official Terminology*]

9. The following was the composition of a gang of workers in a factory during a particular month in one of the production departments. The standard composition of workers and wage rate per hour were as below;

Skilled : Two workers at a standard rate of ₹ 20 per hour each

Semi-skilled : Four workers at a standard rate of ₹ 12 per hour each

Unskilled : Four workers at a standard rate of ₹ 8 per hour each

The standard output of the gang was four units per hour, of the product

During the month of January, the actual compositions of the gang and hourly rates paid were as under;

Nature of the worker	No. of workers	Wage rate paid per worker per hour engaged
Skilled	2	₹ 20
Semi-skilled	3	₹ 14
	5	₹ 10

The gang was engaged for 200 hours during the month, which included 12 hours when no production was possible, due to machine break down, 810 units of the product were recorded as output of the gang during the month.

You are required:

i. To compute the standard unit labour cost of the product;

ii. To compute the total variance in labour cost during the month and

iii. Analyse the variance in (ii) above into sub variances and reconcile.

Answer:

A. Actual Hours Worked (Actual Gang) × Actual Rate

Skilled : (2 × 200) × 20 = 8000

Semi-Skilled : (3 × 200) × 14 = 8400

Unskilled : (5 × 200) × 10 = 10000 26400

B. Actual Hours Worked (Actual Gang) × Standard Rate

Skilled : (2 × 200) × 20 = 8000

Semi-Skilled :(3 × 200) × 12 = 7200

Unskilled : (5 × 200) × 8 = 8000 23200

C. Actual Hours Worked (Standard Gang) × Standard Rate

Skilled : (2 × 200) × 20 = 8000

Semi-Skilled : (4 × 200) × 12 = 9600

Unskilled : (4 × 200) × 8 = 6400 24000

D. Actual Hours Worked (Standard Gang) [excluding idle time] × Standard Rate

Skilled : (2 × 188) × 20 = 7520

Semi-Skilled : (4 × 188) × 12 = 9024

Unskilled : (4 × 188) × 8 = 6016 22560

E. Standard labour cost for actual output

$$\frac{\text{Standard labour Cost for one unit } [2\times20) + (4\times12) + (4\times9)]}{\text{Standard production for one gang (4 unit)}} \times \text{Total output (810)} = \boxed{24300}$$

Labour cost variance = A – E = 2100 (A)

Labour rate variance = A – B = 3200 (A)

Labour efficiency variance = B – E = 1100 (F)

Labour gang variance = B – C = 800 (F)

Labour idle time Variance = C – D = 1440 (A)

Labour Yield Variance = D – E = 1740 (F)

Summary of Labour Variances

Particulars	₹	₹
Labour Rate Variance		3200 (A)
Labour Efficiency Variance		
Gang variance	800 (F)	
Idle Time variance	1440 (A)	
Yield variance	1740 (F)	1100 (F)
Labour Cost Variance		2100 (A)

Reconciliation Statement

Particulars	**Labour Variance**		**Total**
	Adverse	**Favourable**	
Standard Labour Cost for actual output			24300
Labour Variance			
Labour Rate Variance	3200		
Gang variance		800	
Idle Time variance	1440		
Yield variance		1740	
	4640	2540	2100 (A)
Actual Labour Cost			26400

10. Answer both the questions.

i. Growler Co is planning to make 100000 units per period of product AA. Each unit of AA should require 2 hours to produce, with labour being paid ₹ 11 per hour. Attainable work hours are less than clock hours, so 250000 hours have been budgeted in the period.

Actual data for the period was:

Units produced 1,20,000

Direct labour cost ₹ 32,00,000

Clock hours 280000

Calculate (i) labour rate variance (ii) The labour efficiency variance (iii) idle time variance and (iv) Labour yield variance.

ii. In a period 4,800 units were made and there was an adverse labour efficiency variance of ₹ 26,000. Workers were paid ₹ 8 per hour, total wages were ₹ 2, 94,800 and there was a nil rate variance. Calculate the standard hours per unit.

Answer:

(i)

A. Actual Hours Worked × Actual Rate = 32,00,000

B. Actual Hours Worked × Standard Rate = 280000 hrs × ₹ 11 = 30,80,000

C. Actual Hours Worked (Standard Gang) × Standard Rate

= [not required as there is one type of worker]

D. Actual Hours Worked (Standard Gang) [excluding idle time] × Standard Rate

280000 hrs× 80% [20% idle time w/n 1] × ₹ 11 = 24,64,000

E. Standard labour cost for actual output,

[Actual output (120000 units) × 2 hrs (each unit require 2 hours) × ₹ 11] = 2,640000

Labour rate variance = A – B = 1,20,000 (A)

Labour efficiency variance = B – E = 440000 (A)

Labour idle time Variance = B – D = 6,16,000 (A)

Labour yield Variance = D – E = 1,76,000 (F)

w/n 1:

Information given in the problem implies that clock hours have to be multiplied by (80%) in order to arrive at a realistic efficiency / yield variance. The budgeted hours (250000) is only required to calculate the idle time and shall have no implication for calculation of labour variances.

(ii)

A. Actual Hours Worked × Actual Rate = **294800** [total wages is given in the problem]

B. Actual Hours Worked × Standard Rate = **294800**w/n 1

C. Actual Hours Worked × Standard Rate **not required as there is one single worker**

D. Actual Hours Worked [excluding idle time] × Standard Rate **not required as there is no idle time**

E. Standard labour cost for actual output = 4800 units × standard hours per unit × ₹ 8 (standard hourly rate)

Labour Efficiency variance = 26000 (A) [given in the problem]

We know, Labour Efficiency variance = B – E

⇒ Labour Efficiency variance = [Actual Hours Worked × Standard Rate]-Standard labour cost for actual output

⇒ 26000= 294800 - [4800 units × standard hour for one unit × ₹ 8]

⇒ 4800 units × standard hoursper unit × ₹ 8 = 268800

⇒ Standard hoursper unit = 268800 ÷ (4800 ×8) = ₹ 7.

w/n 1: Rate variance is nil ⇒ [Actual Hours Worked × Actual Rate] = [Actual Hours Worked × Standard Rate] ⇒ Actual Rate =× Standard Rate (as Actual hours worked is same in both sides of the equation).

11. Answer both the questions

i. From the following data of XYZ company Ltd relating to budgeted and actual cost performance for the month of December 2017, compute the Direct Material and Direct Labour Cost Variances

ii.

Budgeted data for Dec 2017		
Units to be manufactured		**150000**
Units of direct material required (based on standard rates)		**495000**
Planned Purchase of Raw materials (units)		**540000**
Average unit cost of Direct Material		**₹ 8**
Direct Labour Hours per unit of finished goods		**3/4 hr**
Direct Labour Cost (Total)		**₹ 2992500**
Actual data at the end of Dec 2017		
Units actually manufactured	**160000**	
Direct Material Cost (Based on units on actually issued)	**₹ 4341900**	
Direct Material Cost (Based on units on actually purchased)	**₹ 4510000**	
Average unit cost of Direct Material	**₹ 8.20**	
Total Direct Labour hours for December	**125000**	
Total Direct Labour Cost for December	**₹ 3375000**	

iii. State the two most important uses of standard costing

[10+5 = 15]

Answer:

(i)

A. Actual Quantity[Note 1] × Actual Price

= **43,41,900**

B. Actual Quantity[Note 2] × Actual Price

= 529500 × 8 = **42,36,000**

C. ------ (as there is only one material)

D. Standard material cost for actual yield.

= [actual units] 160000 × Standard price per unit of Standard yield [Note 3]

= 160000 × 26.4 = 4224000

Material Price Variance = A – B = 105900 (A)

Material Usage Variance = B – D =12000 (A)

Note 1: In the problem, Average unit cost of direct material is given implies that the Actual quantity is of materials issued and not of materials purchased. Thus the material price variance is to be calculated at the point of issue.

Note 2: Actual Qty issued = $\frac{\text{Direct material cost (issue) [4341900]}}{\text{average unit cost [8]}}$ = 529500

Note 3: Standard Price per Unit (yield) =

$$\frac{\text{Standard requirement of material [495000]} \times \text{standard rate (average unit cost) [8]}}{\text{Standard Yield [150000]}} = 26.4$$

A. Actual Hours Worked × Actual Hourly Rate = **3375000**

B. Actual Hours Worked× Standard Hourly Rate[note 4]

125000 × 26.60 = **3325000**

C. – [no gang of workers]

D. – [no idle time]

E. Standard labour cost of actual yield

$\frac{\text{Standard labour cost [2992500]}}{\text{Standard output [150000]}}$ × Actual output [160000] = **3192000**

Note 4: Standard Hourly Rate = $\frac{2992500}{150000 \times 3/4}$ = 26.6

Labour rate variance = A – B = 50000 (A)

Labour efficiency variance = B – E = 133000 (F)

(ii)

Though standard costing has a variety of uses but its two principal ones are as follows.

i. To value inventories and cost production for cost accounting purposes. It is an alternative method of valuation to methods like FIFO and LIFO which is often followed in cost accounting.

ii. To act as a control device by establishing standards (planned costs), highlighting (via variance analysis) activities that are not conforming to plan and thus alerting management to areas which may be out of control and in need of corrective action.

BUDGET AND BUDGETARY CONTROL

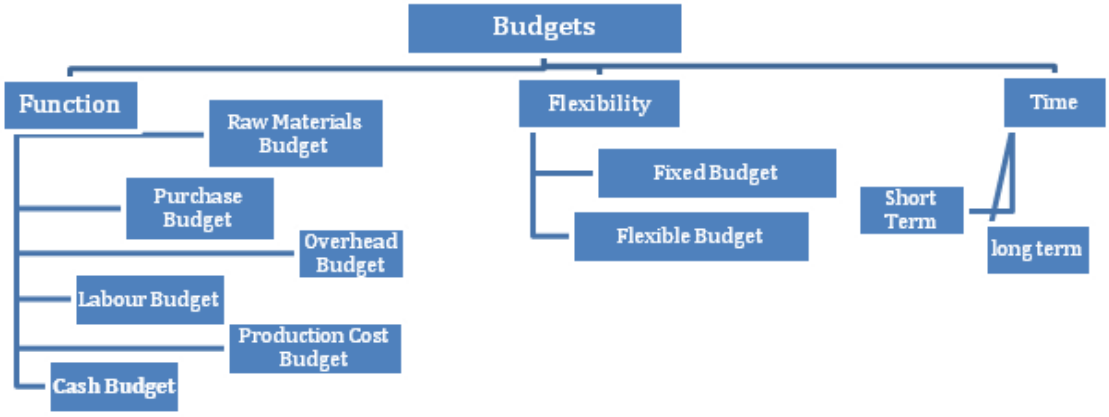
Budgetary Control is a method of managing costs through preparation of budgets. Budgeting is thus only a part of the budgetary control.

> "Budgetary control is the establishment of budgets relating to the responsibilities of executives of a policy and the continuous comparison of the actual with the budgeted results, either to secure by individual action, the objective of the policy or to provide a basis for its revision." ---- *CIMA Official Terminology*

> A **budget** is a "quantitative expression of a plan for a defined period of time. It may include planned sales volumes and revenues; resource quantities, costs and expenses; assets, liabilities and cash flows."
> ---- CIMA *Official Terminology*

Classification of Budget

The extent of budgeting activity varies from firm to firm. Budgets can be classified into different ways from different points of view. The following are the important basis for classification.



> Budgets Reports:
> Ascertaining budget in itself is of no use unless there is a constant flow of budget reports showing assessment of the actual and the budget figures.

Master Budget is a review budget which combines all functional budgets and it may take the form of Financial Statements at the end of budget period. It is also called the operating budget. It embraces the impact of both operating decisions and financing decisions.

Performance budgeting is a budgeting system, which involves the assessment of the performance of the business, and both its specific and overall objectives.

Zero –Based Budgeting - The 'Zero-Base' refers to a 'nil-budget' as the starting point. It starts with a presumption that the budget for the next period is 'zero' until the demand for a function, process, or project is not justified for single penny.

Section - A

1. **Choose the correct answer from given four alternatives[one mark each]**

   i. **Budgetary Control involves mainly**

      a. **establishment of budgets,**

      b. **continuous compassion of actual with budgets**

      c. **revision of budgets.**

      d. **All of the above**

   ii. **Which of the following is not a major step in preparing the master budget?**

      a. **Prepare a standard cost card**

      b. **Estimate manufacturing costs and operating expenses.**

      c. **Determine cash flow and other financial effects.**

      d. **Formulate projected financial statements.**

   iii. **Which of the following is a long-term budget?**

      a. **Master Budget**

      b. **Flexible Budget**

      c. **Cash Budget**

      d. **Capital Budget**

   iv. **Principles of responsibility accounting are as follows:**

      a. **A target is fixed for each department or responsibility center.**

      b. **Actual performance is compared with the target.**

      c. **The variances from plan are analyzed so as to fix the responsibility.**

      d. **Operating budget is prepared to carry out responsibility.**

   v. **The classification of fixed and variable cost is useful for the preparation of**

      e. **Master budget**

      f. **Flexible budget**

      g. **Cash budget**

      h. **Capital budget**

   vi. **If a company wishes to establish a factory overhead budget system in which estimated costs can be derived directly from estimates of activity levels, it should prepare a**

      a. **Master budget**

      b. **Cash budget**

c. Flexible budget

d. Fixed budget

vii. The basic steps to effective zero-base budgeting are:

a. Describe each organization's activity in a "decision" package.

b. Analyze, evaluate, and rank all these packages in priority on the basis of cost-benefit analysis.

c. Allocate resources accordingly.

d. All of the above

viii. Sales budget is a …

a. expenditure budget

b. functional budget

c. Master budget

d. None of these

ix. Flexible budget requires a careful study of

a. Fixed, semi-fixed and variable expenses

b. Past and current expenses

c. Overheads, selling and administrative expenses.

d. None of these.

x. The basic difference between a fixed budget and flexible budget is that a fixed budget…….

a. is concerned with a single level of activity, while flexible budget is prepared for different levels of activity

b. Is concerned with fixed costs, while flexible budget is concerned with variable costs.

c. is fixed while flexible budget changes

d. None of these.

Answer:

i	ii	iii	iv	v	vi	vii	viii	ix	x
d	a	d	d	b	c	b	a	a	d

2. Match the following: **[one mark each]**

A	Traditional budgeting	a	Serves as a final check on the mathematical accuracy of all the other budgets.
B	zero-base budgeting,	b	It aids in avoiding unnecessary idle cash and possible cash shortages
C	The budgeted income statement	c	is a forecast of total sales, expressed in terms of money or quantity
D	The budgeted balance sheet	d	Summarizes the various component projections of revenue and expenses for the budgeting period.
E	The cash budget	e	cost estimates are built up from scratch, from the zero level, and must be justified
F	The sales budget	f	establishes the quantity and value of the various items of materials to be purchased for delivery at specified points of time
G	Optimum utilization of plant capacity	g	Tends to concentrate on the incremental change from the previous year.
H	The material budget	h	Incorporates all the subsidiary functional budgets and the budgeted Profit and Loss Account and Balance Sheet.
I	The purchase budget	i	Is taken by eliminating or reducing the limiting factors and thereby effective production planning is made.
J	The master budget	j	Includes quantities of direct materials; the quantities of each raw material needed for each finished product in the budget period.

Answer:

A	B	C	D	E	F	G	H	I	J
d	e	f	c	b	i	a	j	g	h

3. State whether the following statements are True' or 'False': **[one mark each]**

i. A Budget may be expressed either in quantitative form or qualitative form.

ii. Budgetary Control may be defined as the process of continuous comparison of actual costs and performance with the pre-established.

iii. Performance Budgeting is synonymous with Responsibility Accounting.

iv. Cash budgets should include noncash charges such as depreciation:

v. Operating budgets would include cash budgets:

Answer:

(i) False

(ii) True

(iii) True

(iv) False

(v) False

4. Fill in the blanks: [one mark each]

i. A flexible budget is geared toward _____ rather than a single level of activity.

ii. _____is a system for reporting revenue and cost information to the individual responsible for the revenue-causing and/or cost-incurring function.

iii. Budgets are useful for _____ the operating activities and _____ of a business enterprise.

iv. The _____ is the starting point in preparing the master budget.

v. Responsibility Accounting is a system of accounting that recognizes various_____ throughout the organization.

Answer:

i. A range of activity

ii. Responsibility accounting

iii. Forecasting, financial position

iv. Sales Budget

v. responsibility centers

Section - B

[Working notes should form part of the answer]

5. Answer both the question

i. The Barker Company manufactures two models of adding machines, A and B. The following production and sales data for the month of June are given for 2017.

Particulars	A	B
Estimated inventory (units) June 1	4,500	2,250
Desired inventory (units) June 30	4,000	2,500
Expected sales volume (units)	7,500	5,000
Unit sales price	₹ 75	₹ 120

Prepare a sales budget and a production budget for June 2017

ii. The following data pertain to the budget of K-Mart Industries, Inc.:

Particulars	Case 1 (units)	Case 2 (units)
Beginning inventory	30,000	10,000
Planned sales	100,000	50,000
Desired ending inventory	20,000	5,000

Compute the production volume required for each of the above two cases. **[9+6 = 15]**

Answer:

(i)

BARKER COMPANY

Sales Budget (for June 2017)

Product	Sales Volume (units)	Unit Selling Price (₹)	Total Sales (₹)
A	7,500	75	5,62,500
B	5,000	120	6,00,000
			11,62,500

BARKER COMPANY

Production Budget (for June 2017)

Particulars	Product A (units)	Product B (units)
Expected sales	7,500	5,000
Ending inventory, desired	4,000	2,500
Total	11,500	7,500
Less: Beginning inventory	4,500	2,250
Total production (in units)	7,000	5,250

(ii)

Particulars	Case 1 (Units)	Case 2 (Units)
Planned sales	1,00,000	50,000
Add: Desired ending inventory	20,000	5,000
Total need	1,20,000	55,000
Less: Beginning inventory	30,000	10,000
Production required	90,000	45,000

6. Answer both the question

i. The following data on production, materials required for products X and Y, and inventory pertain to the budget of LMN Company:

Particulars	Product X	Product y
Production (Units)	2000	3000
Material (Units)		
A	3.0	1.0
B	4.0	6.5

Particulars	Beginning	Desired Ending	Price/unit
Material inventory:			
A	2000	3000	₹ 2
B	6000	6000	₹ 1.2

a. Determine the number of material units needed to produce products X and Y

b. Calculate the cost of materials used for production.

c. Determine the number of materials units to be purchased.

d. Calculate the cost of materials to be purchased.

ii. Explain in brief the Principal Budget Factor. **(10 + 5 = 15)**

Answer:

(i)

(a) Number of material units needed to produce products X and Y

Particulars	Material A	Material B
Number of product X to be produced	2000	2000
Number of material units needed per product X	3.0	4.0
Material required (a × b)	6000	8000

Particulars	Material A	Material B
Number of product Y to be produced	2000	2000
Number of material units needed per product Y	1.0	6.5
Material required (a × b)	2000	19500

Particulars	Material A	Material B
Total number of material units needed for production of Product X and Product Y		
(6000+3000)	9000	
(8000+19500)		27500

(b) Cost of materials used for production

Particulars	Material A	Material B
Total number of material units	9,000	27,500
Unit Price	₹ 2	₹ 1.20
Cost of material used for production	₹ 18,000	₹ 33,000

(c) Number of materials units to be purchased.

Particulars	Material A	Material B
Total number of material units required for production	9000	27500
Add: Desired ending inventory	3000	6000
	9000	33500
Less: Beginning inventory	2000	6000
Material to be purchased	10000	27500

(d) Cost of materials to be purchased

Particulars	Material A	Material B
Materials to be purchased	10000	27500
Unit Price	₹ 2.00	₹ 1.20
Material to be purchased	₹ 20000	₹ 33000

(ii)

Budgets covers all the functional areas of the organization. For the effective implementation of the budgetary system, all the functional areas are to be considered which are interlinked. Because of these interlinks, certain factors have the ability to affect all other budgets. Such factor is known as principle budget factor. Principal Budget factor is the factor the extent of influence of which must first be assessed in order to ensure that the functional budgets are reasonably capable of fulfillment. A principal budget factor may be lack of demand, scarcity of raw material, non-availability of skilled labour, inadequate working capital etc. If for example, the organization has the capacity to produce 2500 units per annum. But the production department is able to produce only 1800 units due to non-availability of raw materials. In this case, non-availability of raw materials is the principal budget factor (limiting factor). If the sales manager estimates that he can sell only 1500 units due to lack of demand. Then lack of demand is the principal budget factor. This concept is also known as key factor, or governing factor. This factor highlights the constraints with in which the organization functions.

7. Answer both the question.

i. A sales budget for the first five months of 2017 is given for a particular product line manufactured by Kaehler Co. Ltd.:

Month	Budgeted Sales (Units)
January	10800
February	15600
March	12200
April	10400
May	9200

The inventory of finished products at the end of each month is to be equal to 25 per cent of the sales estimate for the next month. On January 1, there were 2700 units of product in hand. No work is in process at the end of any month

Each unit of product requires two types of materials in the following qualtities:

- **Material A : 4 units**
- **Material B : 5 units**

Material equal to one half of the next month's requirements are to be in hand at the end of each month. This requirement was met on January 1, 2017.

Prepare budget showing the quantities of each type of material to be purchased each month for the first quarter of 2017.

ii. State five advantages of Budgetary Control. [10+5 =15]

Answer:

(i)

KAEHLER CO.LTD.

Production Budget for the Quarter ended March 2017
and for the month April, 2017

(Figures in units)

Particulars	January	February	March	April
Budgeted Sales	10800	15600	12200	10400
Add: Closing Inventory	3900	3050	2600	2450
	14700	18650	14800	12850
Less: Opening Inventory	2700	3900	3050	2600
Required Monthly Production	12000	14750	11750	10250

KAEHLER CO.LTD.

Direct Material Usage and Purchase Budget
for the Quarter ended March 2017

Material A

Particulars	January (Units)	February (Units)	March (Units)
Production Requirement – 4 units of Material A for each unit of finished Product	48000	59000	47000
Add: Closing Inventory	29500	23500	20500
	77500	82500	67500
Less: Opening Inventory	24000	29500	23500
Budgeted Purchase	53500	53000	44000

Material B

Particulars	January (Units)	February (Units)	March (Units)
Production Requirement – 5 units of Material B for each unit of finished	60000	73750	58750
Add: Closing Inventory	36875	29375	25625
	96875	103125	84375
Less: Opening Inventory	30000	36785	29375
Budgeted Purchase	66875	66250	55000

(ii)

1. Budgetary control aims at maximization of profits through optimum utilization of resources.
2. It is a technique for continuous monitoring of policies and objectives of the organisation.
3. It helps in reducing the costs, thereby helps in better utilisation of funds of the organisation.
4. All the departments of the organisation are closely coordinated through establishment of plans resulting in smooth functioning of the organisation.
5. Since budgets fix the responsibilities of the executives, they act as a plan of action for them there by reducing some of their work.
6. It facilitates analysis of variances, thereby identifying the areas where deficiencies occur and proper remedial action can be taken.
7. It facilitates the management by exception.

8. Answer both the question.

i. Long Beach Tools Corporation has the following direct labour requirements for the production of a machine tool set:

Direct Labour	Required Time	Hourly Rate
Machining	**6**	**10**
Assembly	**10**	**8**

Forecasted sales for June, July, August and September are 6000, 5000, 8000,7000 units respectively. On June 1 beginning inventory of the tool set was 1500. The Closing inventory (desired) each month is one-half of the forecasted sales for the following month.

a. Prepare a production budget for the months of June, July and August.

b. Develop a direct labour budget for the months of June, July and August and for each type of direct labour.

ii. Each unit of product Alpha requires 3 kg of raw material. Next month's production budget for product Alpha is as follows.

Opening inventories:

Raw materials	**15,000 kg**
Finished units of Alpha	**2,000 units**
Budgeted sales of Alpha	**60,000 units**

Planned closing inventories:

Raw materials	**7,000 kg**
Finished units of Alpha	**3,000 units**

Calculate the number of kilograms of raw materials that should be purchased in next month.

iii. 'Performance Budgeting is synonymous with Responsibility Accounting' – explain.

Answer:

(i) (a)

Long Beach Tool Corporation

Production Budget

Particulars	June (Units)	July (units)	August (units)
Forecasted Sales	6000	5000	8000
Add: Closing Inventory (Desired)	2500	4000	3500
Total Requirement	8500	9000	11500
Less: Opening Inventory	1500	2500	4000
Number of Units to be produced	7000	6500	7500

(i) (b)

Long Beach Tool Corporation
Direct Labour Budget

Particulars	June	July	August
Machining:			
a. Budgeted Production	7000 units	6500 Units	7500 Units
b. Direct Labour Hours per unit	6 hours	6 hours	6 hours
c. Total direct Labour hours required (a × b = c)	42000 hrs.	39000 hrs.	45000 hours
d. Direct Labour Cost [c (as calculated) × ₹ 10]	₹ 4,20,000	₹ 3,90,000	₹ 4,50,000

Particulars	June	July	August
Assembly:			
Budgeted Production	7000 units	6500 Units	7500 Units
Direct Labour Hours per unit	10 hours	10 hours	10 hours
Total direct Labour hours required (a × b = c)	70000 hrs.	65000 hrs.	75000 hours
Direct Labour Cost [c (as calculated) × ₹ 8]	₹ 5,60,000	₹ 5,20,000	₹ 6,00,000

(ii)

Particulars	Units
Required increase in finished goods inventory	1,000
Budgeted sales of Alpha	60,000
Required production	**61000 kg**

Particulars	Kg
Raw materials usage budget (× 3 kg)	183000
Budgeted decrease in raw materials inventory	(8,000)
Raw materials purchase budget	**175,000**

Therefore, Number of kilograms of raw materials to be purchased in next month = **175000 Kg**

(iii)

Performance Budgeting is synonymous with Responsibility Accounting which means thus the responsibility of various levels of management is predetermined in terms of output or result keeping in view the authority vested with them. The main concepts of such a system are enumerated below:

a. It is based on a classification of managerial level for the purpose of establishing a budget for each level. The individual in charge of that level should be made responsible and held accountable for its performance over a given period of time.

b. The starting point of the performance budgeting system rests with the organisation chart in which the spheres of jurisdiction have been determined. Authority leads to the responsibility for certain costs and expenses which are forecast or present in the budget with the knowledge of the manager concerned.

c. The costs in each individual's or department's budget should be limited to the cost controllable by him.

The person concerned should have the authority to bear the responsibility

9. ABC Ltd. is currently operating at 75% of its capacity. In the past two years, the levels of operations were 55% and 65% respectively. Presently, the production is 75,000 units. The company is planning for 85% capacity level during 2016-2017. The cost details are as follows:

	55%	65%	75%
	(₹)	(₹)	(₹)
Direct Materials	11,00,000	13,00,000	15,00,000
Direct Labour	5,50,000	6,50,000	7,50,000
Factory Overheads	3,10,000	3,30,000	3,50,000
Selling Overheads	3,20,000	3,60,000	4,00,000
Administrative Overheads	1,60,000	1,60,000	1,60,000
	24,40,000	28,00,000	31,60,000

Profit is estimated @ 20% on sales.

The following increases in costs are expected during the year:

	In percentage
Direct Materials	8
Direct Labour	5
Variable Factory Overheads	5
Variable Selling Overheads	8
Fixed Factory Overheads	10
Fixed Selling Overheads	15
Administrative Overheads	10

Prepare flexible budget for the period 20X3-20X4 at 85% level of capacity. Also ascertain profit and contribution. [15]

Answer:

ABC Ltd.

Budget for 85% capacity level for the period 2016-17

Budgeted production (units) 85,000		
	Per Unit (₹)	**Amount (₹)**
Direct Material (note 1)	21.6	18,36,000
Direct Labour (note 2)	10.5	8,92,500
Variable factory overhead (note 3)	2.1	1,78,500
Variable selling overhead (note 4)	4.32	3,67,200
Variable cost	38.52	32,74,200
Fixed factory overhead (note 3)		2,20,000
Fixed selling overhead (note 4)		1,15,000
Administrative overhead		1,76,000
Fixed cost		5,11,000
Total cost (Variable Cost + Fixed Cost)		37,85,200
Add: Profit 20% on sales or 25% on total cost		946300
Sales		47,31,500
Contribution (Sales – Variable cost)		14,57,300

Working Notes:

(a) Direct Materials :

75% Capacity ₹ 15,00,000 65% Capacity ₹ 13,00,000

65% Capacity ₹ 13,00,000 55% Capacity ₹ 11,00,000

10% change in capacity 2,00,000 10% change in capacity 2,00,000

For 10% increase in capacity, i.e., for increase by 10,000 units, the total direct material cost regularly changes by ₹ 2,00,000

Direct material cost (variable) = ₹ 2,00,000 ÷ 10,000 = ₹ 20

After 8% increase in price, direct material cost per unit = ₹ 20 × 1.08 = ₹ 21.60 Direct material cost for 85,000 budgeted units = 85,000 ×₹ 21.60 = ₹ 18,36,000

(b) Direct Labour :

75% Capacity	750000	65% Capacity	650000
65% Capacity	650000	55% Capacity	550000
10% change in capacity	100000	10% change in capacity	100000

For 10% increase in capacity, direct labour cost regularly changes by ₹ 1,00,000. Direct labour cost per unit = ₹ 1,00,000 ÷ 10,000 = ₹ 10

After 5% increase in price, direct labour cost per unit = ₹ 10 × 1.05 = ₹ 10.50 Direct labour for 85,000 units

= 85,000 units × ₹ 10.50 = ₹ 8,92,500.

(c) Factory overheads are semi-variable overheads:

75% Capacity	350000	65% Capacity	330000
65% Capacity	330000	55% Capacity	310000
10% change in capacity	20000	10% change in capacity	20000

Variable factory overhead =₹ 20,000 ÷ 10,000 = ₹ 2

Variable factory overhead for 75,000 units = 75,000 × ₹ 2 =₹ 1,50,000 Fixed factory overhead = ₹ 3,50,000 – ₹ 1,50,000 = ₹ 2,00,000.

Variable factory overhead after 5% increase = ₹ 2 × 1.05 = ₹ 2.10

Fixed factory overhead after 10% increase = ₹ 2,00,000 × 1.10 = ₹ 2,20,000.

(d) Selling overhead is semi-variable overhead :

75% Capacity	400000	65% Capacity	360000
65% Capacity	360000	55% Capacity	320000
10% change in capacity	40000	10% change in capacity	40000

Variable selling overhead = ₹ 40,000 ÷ 10,000 units = ₹ 4

Variable selling overhead for 75,000 units = 75,000 × ₹ 4 = ₹ 3,00,000.

Fixed selling overhead = ₹ 4,00,000 – ₹ 3,00,000 = ₹ 1,00,000

Variable selling overhead after 8% increase = ₹ 4 × 1.08 = ₹ 4.32

Fixed selling overhead after 15% increase = ₹ 1,00,000 × 1.15 = ₹ 1,15,000

(e) Administrative overhead is fixed:

After 10% increase = ₹ 1,60,000 × 1.10 = ₹ 1,76,000

10. Answer all the questions.

i. The following sales budget is given for Van Dyke Sales Company for the second quarter of 19x1:

Particulars	April	May	June	Total
Sales Budget (₹)	45000	50000	60000	155000

Credit sales are collected as follows:

70 percent in month of sale, 20 percent in month following sale, 8 percent in second month following sale, and 2 percent uncollectible. The accounts receivable balance at the beginning of the second quarter is ₹ 18,000, ₹ 3,600 of which represents uncollected February sales, and ₹ 14,400 uncollected March sales.

a. Calculate the total sales for February and March.

b. Compute the budgeted cash collections from sales for each month. (Without prejudice to the answer to part 1, assume that February sales equal ₹ 40,000 and March sales equal ₹ 50,000.)

ii. A company manufactures a single product and has produced the following flexed budget for the year.

Particulars	Level of activity		
	70%	80%	90%
	₹	₹	₹
Turnover	2,10,000	2,40,000	2,70,000
Direct Material	17,780	20,320	22,860
Direct labour	44,800	51,200	57,600
Production overhead	30,500	32,000	33,500
Administrative Overhead	17,000	17,000	17,000
Total Cost	1,10,080	1,20,520	1,30,960
Profit	99,920	1,19,480	1,39,040

Calculate the (a) Direct material Cost and (b) Direct labour cost and (c) Production overhead, if the budget is flexed at 45% level of activity.

iii. An extract from T Co's sales budget shows the following sales values.

Month	₹
June	80,000
July	70,000
August	90,000

50% of T's sales are for cash. Of the credit sales, 60% are expected to pay in the month after sale and take a 2% discount; 39% are expected to pay in the second month after sale, and the remaining 1% are expected to be bad debts.

Calculate the value of sales receipts from credit customers to be shown in the cash budget for August.

[7+4 +4]

Answer:

(i)

i. February Sales (1 – 0.7 – 0.2) = ₹ 3600 = 3600 ÷ (1 -0.9) = ₹ 36000

March Sales (1 -0.7) = ₹ 14400 = ₹ 14400 ÷ 0.3 = ₹ 48000

ii.

Details	April	May	June
Cash Collection			
February: 40000 (8%)	3200		
March: 50000 (20%)	10000		
50000 (8%)		4000	
April: 45000 (70%)	31500		
45000 (20%)		9000	
45000 (8%)			3600
May: 50000 (70%)		35000	10000
50000 (20%)			
June: 60000 (70%)			42000
Total Cash Collections	44700	48000	55600

(ii)

Direct materials cost is variable cost.

Check:

Cost per %

70%: 17,780/70 = 254

80%: 20,320/80 = 254

90%: 22,860/90 = 254

Therefore Direct materials at 45% level of activity = 254 × 45 = 11,430

Direct labour is a variable cost.

Check:

Cost per %

70%: 44,800/70 = 640

80%: 51,200/80 = 640

90%: 57,600/90 = 640

Therefore Direct labour at 45% level of activity = 640 × 45 = 28,800

Production overhead is a semi-variable cost.

Check:

Cost per %

70%: 30,500/70 = 436

80%: 32,000/80 = 400

90%: 33,500/90 = 372

Variable cost of (90% – 70%) activity = (33,500 – 30,500)

Therefore Variable cost portion in Production overhead of 20% = 3,000

Therefore Variable cost of 1% change in activity = 3,000/20 = 150

Therefore Fixed cost portion in Production overhead = 33,500 – (90 × 150) = 20,000

Therefore Total Production overhead cost at 45% level of activity = 20,000 + (45 × 150) = 26,750

(iii)

The value of sales receipts from credit customers to be shown in the cash budget for August is

Particulars	₹
60% of July Credit Sales less 2% discount (70000 × 50% × 60% × 98%)	20580
39% of June Credit Sales (80000 × 50% × 39%)	15600
	36180

11. Prepare a Cash Budget for the three months ending 30th June, 2017 from the information given below:

MONTH	SALES (₹)	MATERIALS (₹)	WAGES (₹)	OVERHEAD (₹)
February	14,000	9,600	3,000	1,700
March	15,000	9,000	3,000	1,900
April	16,000	9,200	3,200	2,000
May	17,000	10,000	3,600	2,200
June	18,000	10,400	4,000	2,300

Credit terms are:

Sales / Debtors: 10% sales are on cash, 50% of the credit sales are collected next month and the balance in the following month.

Creditors: Materials 2 months

Wages 1/4 month

Overheads 1/2 month.

i. Cash and bank balance on 1st April, 2017 is expected to be ₹ 6,000.

ii. Other relevant information are:

a. Plant and machinery will be installed in February 2017 at a cost of ₹ 96,000. The monthly installment of ₹ 2,000 is payable from April onwards.

b. Dividend @ 5% on preference share capital of ₹ 2,00,000 will be paid on 1st June.

c. Advance to be received for sale of vehicles ₹ 9,000 in June.

d. Dividends from investments amounting to ₹ 1,000 are expected to be received in June.

[15]

Answer:

Cash Budget for the 3 Months Ending 30th June 2017 **(Amount in ₹)**

Particulars	April	May	June
Opening Balance	6,000	3,950	3,000
Add: Receipts:			
Cash Sales	1,600	1,700	1,800
Collection from debtors [see note (1)]	13,050	13,950	14,850
Advance for sale of vehicles	-	-	9,000
Dividends from Investments	-	-	1,000
Total (A+B)	20,650	19,600	29,650
Less: Payments			
Materials	9,600	9,000	9,200
Wages (see note2)	3,150	3,500	3,900
Overheads	1,950	2,100	2,250
Installment of Plant & Machinery	2,000	2,000	2,000
Preference Dividend	-	-	10,000
Total (C)	16,700	16,600	27,350
Closing Balance (A+B-C)	3,950	3,000	2,300

W/n 1:

Computation of Collection from Debtors **(Amount in ₹)**

Month	Total Sales	Credit Sales	Feb	Mar	Apr	May	June
Feb	14,000	12,600	-	6,300	6,300	-	-
march	15,000	13,500	-	-	-	7,200	7,200
April	16,000	14,400	-	-	-	-	7,650
may	17,000	15,300			13,050	13,950	14,850

W/n 2:

Wages payment in each month is to be taken as three-fourths of the current month plus one-fourth of the previous month.

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