Paper-8 : COST AND MANAGEMENT ACCOUNTING

Q. 1. (a) Match the statement in Column 1 with the most appropriate statement in Column 2 :

Column I	*Column II*
Liquidity	Value of benefit lost by choosing alternative course of action
Value analysis	Analyzing the role of every part at the design stage
Pareto distribution	Indicator of profit earning capacity
Opportunity cost	Supervisors' salaries
Value engineering	ABC analysis
By-product cost accounting	Single output costing
Brick making	Basis for remunerating employees
Merit rating	Technique of cost reduction
Angle of incidence	Reverse cost method
Stepped cost	Current ratio

Q. 1. (b) State whether the following statements are True (T) or False (F) :

(i) The cost of drawings, design and layout is an example of production cost.

(ii) Cost accounting is a government reporting system for an organistaion.

(iii) Internal instruction to buy the specified quantity and description is called stores requisition note.

(iv) The stock turnover ratio indicates the slow moving stocks.

(v) The flux rate method of labour turnover considers employees replaced.

(vi) An automobile service unit uses batch costing.

(vii) Ash produced in thermal power plant is an example of co-product.

(viii) The marginal costing method conforms with the accounting standards.

(ix) An increase in variable cost reduces contribution.

(x) The use of actual overhead absorption may be suitably applied in small firms which are manufacturing a single product.

Q. 1. (c) In the following cases one out of four answers is correct. You are required to indicate the correct answer and give reasons for answer :

(i) If the minimum stock level and average stock level of raw material "A" are 4,000 and 9,000 units respectively, find out its reorder quantity.

A. 8,000 units
B. 11,000 units
C. 10,000 units
D. 9,000 units

(ii) 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. His total wages including Rowan bonus for the week is

A. ₹ 792
B. ₹ 820
C. ₹ 840
D. ₹ 864

(iii) A company manufactures two products using common handling facility. The total budgeted material handling cost is ₹ 60,000. The other details are :

Particulars	Product X	Product Y
Number of units produced	30	30
Material moves per product line	5	15
Direct labour hours per unit	200	200

Under Activity Based Costing System, the material handling costs to be allocated to Product X (per unit) would be :

A. ₹ 1,000
B. ₹ 500
C. ₹ 1,500
D. ₹ 2,500

(iv) A company maintains a margin of safety of 25% on its current sales and earns a profit of ₹ 30 lakhs per annum. If the company has a profit volume (P/V) ratio of 40%, its current sales amount to

A. ₹ 200 lakhs
B. ₹ 300 lakhs
C. ₹ 325 lakhs
D. None of the above

(v) Depreciation charged in costing books is ₹ 12,500 and in financial books is ₹ 11,200. What will be the financial profit when costing profit is ₹ 5,000?

A. ₹ 5,000
B. ₹ 3,700
C. ₹ 6,300
D. None of the above

(vi) A bus carries 25 passengers daily for 25 days and its mileage per month is 2,000 kms. Its passenger kms. are

A. 60,000
B. 25,000
C. 40,000
D. 50,000

(vii) Sale for two consecutive months, of a company are ₹ 3,80,000 and ₹ 4,20,000. The company's net profits for these months amounted to ₹ 24,000 and ₹ 40,000 respectively. There is no change in contribution/sales ratio or fixed costs. The contribution/sales ratio of the company is

A. 1/3
B. 2/5
C. ¼
D. None of the above

(viii) A chemical is manufactured by combining two standard items of input A(standard price ₹ 60 /kg.) and B (Standard price ₹ 45/kg.) in the ratio 60 % : 40%. 10% of input is lost during processing. If during a month 1,200 kg of the chemical is produced incurring a total cost of ₹ 69,600, the total material cost variance will be

A. ₹ 2,400 (A)
B. ₹ 2,400 (F)
C. ₹ 3,000 (A)
D. ₹ 2,000 (F)

(ix) A Limited has fixed costs of ₹ 6,00,000 per annum. It manufactures a single product which it sells for ₹ 200 per unit. Its contribution to sales ratio is 40%. A Limited's break-even in units is

A. 7,500
B. 8,000
C. 3,000
D. 1,500

(x) The current liabilities of Akash Ltd. is ₹ 30,000. If its current ratio is 3:1 and Quick ratio is 1:1, the value of stock-in-trade will be

A. ₹ 20,000
B. ₹ 30,000
C. ₹ 60,000
D. Insufficient information

Q. 1. (d) Fill in the blanks suitably :

(i) Under Taylor's differential piece rate system, a worker whose production is higher than the standard will get _____ of normal piece rate.

(ii) The cost of abnormal waste should be excluded from the total cost and charged to _____ .

(iii) Under ABC System, the aggregate of closely related tasks is called _____ .

(iv) In _____ contract with escalation clause, the contractor can claim for increase in prices of inputs to the agreed extent.

(v) _____ arises when the actual process loss is less than the normal predetermined process loss.

(vi) In accounting of joint products under market value method, joint costs will be apportioned to the products in the ratio of _____ of the respective individual products.

(vii) _____ Costing reduce the possibility of under pricing.

(viii) Budgetary control becomes more effective in a business with the use of _____ costing.

(ix) No distinction is made between direct and indirect materials in _____ costing.

(x) _____ of overheads occur when absorbed overheads exceed actual overheads.

Answer 1. (a)

Column I	*Column II*
Liquidity	Current ratio
Value analysis	Technique of cost reduction
Pareto distribution	ABC analysis
Opportunity cost	Value of benefit lost by choosing alternative course of action
Value engineering	Analyzing the role of every part at the design stage
By-product cost accounting	Reverse cost method
Brick making	Single output costing
Merit rating	Basis for remunerating employees
Angle of incidence	Indicator of profit earning capacity
Stepped cost	Supervisors' salaries

Answer 1. (b)

(i) **False –** The cost of drawing, design and layout is an example of direct expense and not of production cost.

(ii) **False** – Cost accounting is an internal reporting system for an organistaion.

(iii) **False** – Internal instruction to buy the specified quantity and description is called purchase requisition note.

(iv) **True** – The statement is correct.

(v) **False** – The flux rate method of labour turnover considers employees joined and left.

(vi) **False** – An automobile service unit uses job costing.

(vii) **False** – Ash produced in thermal power plant is an example of by-product.

(viii) **False** – The absorption costing method conforms with the accounting standards.

(ix) **True** – Contribution = Sales – Variable cost.

(x) **True** – The statement is correct.

Answer 1. (c)

(i) C- 10,000 units

Average stock level = Minimum stock level + ½ Reorder quantity

9,000 units = 4,000 units + ½ Reorder quantity

½ Reorder quantity = 9,000 units – 4,000 units

Reorder level = 5, 000 units / 0.5 = 10,000 units

(ii) D – ₹ 864.

$$\text{Standard time} = \frac{5\,\text{times} \times 720\,\text{units}}{60\,\text{minutes}} = 60\,\text{hours}$$

Time taken = 48 hrs.

Time saved = 12 hrs.

Total earning of a worker under Rowan plan

$$= (48 \text{ hrs.} \times ₹ 15) + \left(\frac{12 \text{ hrs.}}{60 \text{ hrs.}} \times 48 \text{ hrs.} \times \text{Rs. } 15 \right)$$

= ₹ 720 + ₹ 144 = ₹ 864

(iii) B - ₹ 500

Total moves in material handling = 5 + 15 = 20

Percentage move for Product A = 5/20 = 25%

Material handling cost to be allocated to Product A

= ₹ 60,000 × 25/100 = ₹ 15,000

or, = ₹ 15,000/30 units = ₹ 500 p.u.

(iv) B - ₹ 300 lakhs

Margin of safety = Profit/ P/V Ratio

= 30/0.40 = ₹ 75 lakhs

0.25 of sales = ₹ 75 lakhs

Hence, Sales = 75/0.25 = ₹ 300 lakhs

(v) C – ₹ 6,300

Financial profit = ₹ 5,000 + ₹ (12,500 – 11,200)

= ₹ 5000 + ₹ 1,300 = ₹ 6,300

(vi) D- 50,000

Passengers carried in a day = 25

Kms. covered in a day = 2,000 kms. / 25 days

Bus passenger kms. per month = 25 days × 80 kms. per day × 25 passengers

= 50,000 passenger kms.

(vii) B-2/5

Contribution / sales = Increase in profit / Increase in sales

= (40,000 – 24,000) / (4,20,000 – 3,80,000)

= 16,000/40,000 = 2/5

(viii) B – ₹ 2,400 (F)

A – 60 kgs. @ ₹ 60/- = ₹ 3,600

B – 40 kgs. @ ₹ 45/- = ₹ 1,800

Process lost @ 10 % = 10 kgs.

Therefore, output = 90 kgs.

Therefore, standard cost of output = ₹ 5,400/ 90 kgs.

= ₹ 60/kg.

Material cost variance = ₹ 1,200 × 60 – ₹ 69,600

= ₹ 2,400 (F)

(ix) A – 7,500 units

Break-even units = Fixed cost / contribution per unit

= ₹ 6,00,000/ 40% of ₹ 200

= 7,500

(x) C- ₹ 60,000

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = 3:1$$

Current Assets = ₹ 30,000 × 3 = ₹ 90,000

$$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Quick Liabilities}} = 1:1$$

Liquid assets = ₹ 30,000 × 1 = ₹ 30,000

Hence, value of stock-in-trade : CA – LA = ₹ (90,000 – 30,000)
= ₹ 60,000

Answer 1. (d)

(i) 120%.

(ii) Costing profit and loss account.

(iii) Activity.

(iv) Fixed price.

(v) Abnormal gain.

(vi) Sale price.

(vii) Absorption.

(viii) Standard.

(ix) Process.

(x) Overabsorption.

Q. 2. Write short notes on :

(i) Cost benefit analysis

(ii) Material transfer note

(iii) Cost plus contract

(iv) Role of costs in pricing

(v) Value analysis

Answer 2. (i)

In order to create more wealth by reducing costs, it is absolutely essential to be able to differentiate between necessary and unnecessary costs. If you try to reduce the necessary costs, you almost certainly reduce the benefits created by the resources being consumed. This kind of cost reduction leads to lower than required quality, extended delivery periods, increased rejections from inadequate materials and so on. The only really effective way of increasing the wealth created by the company is to search out and eliminate all unnecessary costs.

There are five steps involved in establishing the benefits created by resources consumed in the business.

Step 1 – Cost Analysis

This involves an analysis of all costs and activities. This can usually be done from any reasonably designed accounting system.

Step 2 – Contribution Analysis

Analyzing the value of what each activity contributes in terms of income or benefits is important in establishing the real wealth-creating activities of the business.

Step-3 – Benefit Analysis

Trying to decide on the benefits provided by the service and control activities is no easy matter. It is very much an attitude of mind, based on asking questions. It is vital to break down costs on the basis of the reasons why they are incurred, and then to assess the benefits.

Step 4 – Cost Reduction

Develop a cost-reduction programme by establishing those reasons for incurring cost which :

(a) Do not contribute to an activity's earning potential

(b) Do not contribute adequately to the activity's earning potential.

(c) Do not create benefits.

(d) Do not create adequate benefits for the level of cost.

Step 5 – Profit Improvement

Develop a profit improvement programme by determining those areas which can create additional income from existing and new resources, based on rationalization and reduced costs of existing activities.

Answer 2. (ii)

When excess material remains in one department, and another neighboring department need the same, it becomes easier and economical to transfer the material rather than receiving back in stores, and again issue them. Transfers are made for the document known as a Material Transfer Note (MTN). This document is used to record the transfer of materials from one department, job, stores, cost centre, or cost unit to another.

Valuation of Material Transfer Note (MTN) is done at the original price of issue but if this is not practicable, the current stores ledger rate is adopted for valuation as in the case of Material Return Notes. However, the MTN should be prepared correctly to avoid incorrect accounting. It is preferable to use pre-numbered forms for better control.

Circulation of Material Transfer Note :

(a) Receiving department

(b) Cost department

(c) Stores

(d) Issuing department.

Answer 2. (iii)

CIMA defines Cost plus Contract as one where the contractor is reimbursed allowable or otherwise defined cost plus a percentage of these costs or a fixed fee towards profit. The customer has a right to verify the actual costs as these forms the basis for calculation of profit. Cost plus contracts are usually entered into during times of emergency such as war when there is no time to go through detailed tender formalities for settlement of a contract. It is also resorted when it is not possible to estimate the cost of the work with any degree of accuracy especially when prices are subject to wide fluctuations.

The advantage to the contractor in such contracts is that he is protected from fluctuations in prices of material, labour and services and he is assured of his profit as per the terms of the agreement. Moreover

he need not go through tender formalities and he can even take up works which cannot be exploited by the contractor. To the contractee or customer the execution of work at a reasonable cost is assured. Thus the contractor and the customer are both benefited by this agreement.

The disadvantage of such contracts is that the contractor has no motivation to effect cost savings, as it will indirectly bring down his profit also. The customer has no clear idea of his liability until after completion of the entire work. Unless the contract agreement provides clearly for definition of cost elements allowable wastage, if any, mode of charging depreciation on assets, settlement of disputes etc. Cost plus contracts may lead to dissatisfaction for both the contractor and the customer.

Answer 2. (iv)

Cost data constitute the fundamental element in the price setting process. Higher costs including promotional expenses involved in connection with advertising or personal selling as well as taxation may necessitate an upward adjustment of price. If costs go up, price rise can be quite justified. However, their relevance to the pricing decision must neither be under –estimated nor exaggerated. No company should charge prices below full costs unless such a policy appears necessary or expedient in the short period. Costs are just one of the several factors to be considered in a pricing decision and for pricing purposes, costs are best regarded as floor below which a company will not normally price its products. Costs determine the profit consequences of the various pricing alternatives. Cost calculations may also help in determining whether the product whose price is determined by its demand is to be included in the product line or not.

Though in the long run, all costs have to be covered for managerial decisions. In the short run direct costs are more relevant. In a single product firm, all costs are direct costs with respect to the product. In multi product firm, for pricing decisions, relevant costs are those costs that are directly traceable to an individual product. In addition, it must contribute to the common costs and to the realization of profit.

Answer 2. (v)

A value analysis is a systematic analysis and evaluation of the techniques and functions in the various spheres of an organization with a view to exploring channels of performance improvement, so that value in a particular product or service can be bettered. It enables the maximum possible value to be achieved for given cost.

The concept of value analysis calls for a complete rethinking on all aspects of an industrial and commercial activity. This concept goes beyond perfecting an existing pattern. Existing practices of materials used, process employed, machines used, types of operations, types of packaging, marketing methods etc. are reviewed, alternative approaches for product mix, labour operations, machinery and methods available are considered. This helps to achieve the better economics of production, sales and distribution through modification of incorporation in/elimination of some of the factors and items.

Value analysis is a team effort – a team representing design, production control, purchasing, distribution etc. staff.

Steps in the value analysis are –

(a) Identification of problem and definition of problem.
(b) Collection of information.
(c) Exploring and evaluation of alternatives.
(d) Development and planning.
(e) Recommendation of the final proposal for implementation.

It is an important tool for cost reduction.

Basic Aspects of Cost Accounting :

Q. 3. (a) Explain 'Cost centre' and 'Cost unit'.

(b) A company manufactures a product from a raw material, which is purchased at ₹ 54 per kg. The company incurs a handling cost of ₹ 350 plus freight of ₹ 400 per order. The incremental carrying cost of inventory of raw material is Re. 0.50 per kg per month. In addition, the cost of working capital finance on the investment in inventory of raw material is ₹ 8 per kg per annum. The annual production of the product is 94,500 units and 2 units are obtained from one kg of raw material.

Required :

(i) Calculate the economic order quantity of raw materials.

(ii) Advise, how frequently should orders for procurement be placed.

(iii) If the company proposes to rationalize placement of orders on quarterly basis, what percentage of discount in the price of raw materials should be negotiated ?

(c) A large consignment of materials of various types of makes was purchased for ₹ 40,000. Later on these were sorted into the following categories :

Category A	**6,000 units**	**Market price ₹ 4 per unit**
Category B	**4,000 units**	**Market price ₹ 3 per unit**
Category C	**7,000 units**	**Market price ₹ 2 per unit**

You are required to calculate the purchase price for each of the materials presuming that percentage of profit in each case is the same.

Answer 3. (a)

CIMA defines Cost Centre as "a production or service, function, activity or item of equipment whose costs may be attributed to cost units. A cost centre is the smallest organisational sub-unit for which separate cost allocation is attempted". A cost centre is an individual activity or group of similar activities for which costs are accumulated. For example in production departments, a machine or group of machines within a department or a work group is considered as cost centre. Any part of an enterprise to which costs can be charged is called as 'cost centre'.

A cost centre can be :

(i) Geographical i.e. an area such as production department, stores, sales area.

(ii) An item of equipment e.g. a lathe, forklift, truck or delivery vehicle.

(iii) A person e.g. a sales person.

CIMA defines Cost Unit as "a quantitative unit of product or service in relation to which costs are ascertained". A 'cost unit' is a unit of product or unit of service to which costs are ascertained by means of allocation, apportionment and absorption. It is a unit of quantity of product, service or time or a combination of these in relation to which costs are expressed or ascertained. For example, specific job,

contract, unit of product like fabrication job, road construction contract, an automobile truck, a table, 1000 bricks etc. The cost units which pass through the cost centre, the direct and indirect costs of the cost centre are charged to the units of production by means of an absorption rate. The unit of output in relation to which cost incurred by a cost centre is expressed is called 'cost unit'. Cost units can be developed for all kinds of organizations, whether manufacturing, commercial or public utility services.

Answer 3. (b)

(i) $EOQ = \sqrt{\frac{2AB}{CS}}$

A = Annual consumption $= \frac{94,500\text{ units}}{2\text{ units}} \times 1\text{ kg.} = 47,250$ kgs.

B = Cost of placing order = Handling cost + Freight

= ₹ 350 + ₹ 400 = ₹ 750

CS = Carrying cost per unit

Carrying cost (Re. 0.50 × 12)	=	6
Finance charges on investment in inventory	=	8
		14

$EOQ = \sqrt{\frac{2 \times 47,250 \times 750}{14}} = 2,250$ kgs.

(ii) Frequency of orders = 47,250 kgs./ 2,250 kgs. = 21 orders

Frequency in placing orders = 365 days / 21 orders = 17 days

(iii) If company places orders on quarterly basis, percentage of discount in price of raw material to be negotiated :

Cost under EOQ :

		₹
Ordering cost	21 orders × ₹ 750	15,750
Carrying cost	2,250 kgs. × ½ × ₹ 14	15,750
Total cost		31,500

Cost under Ordering on Quarterly Basis :

Ordering cost	4 orders × ₹ 750	3,000.00
Carrying cost	11,812.50 kgs. × ½ × ₹ 14	82,687.50
Total cost		85,687.50

Incremental cost if orders are placed on quarterly basis = 85,687.50 – 31,500.00

= ₹ 54,187.50

Reduction in purchase price to be negotiated = ₹ 54,187.50/47,250 kgs.

= ₹ 1.15 per kg.

Percentage of discount to be negotiated $= \frac{₹ 1.15}{₹ 54} \times 100 = 2.13\%$

Answer 3. (c)

Presuming that all units were sold away, the percentage of profit will be as follows :

Category A	6,000 units x ₹ 4	24,000
Category B	4,000 units x ₹ 3	12,000
Category C	7,000 units x ₹ 2	14,000
	Total sales	**50,000**
	Total Cost ₹	**40,000**
	Profit ₹	**10,000**

Percentage of profit on sales $= \frac{10,000 \times 100}{50,000} = 20\%$

Computation of the purchase price :

Material	S.P. per unit	Profit per unit	Cost per unit	Total Cost
A	₹ 4	₹ 0.80	₹ 3.20	₹ 19,200
B	3	0.60	2.40	9,600
C	2	0.40	1.60	11,200
				40,000

Q. 4. (a) State the circumstances in which time rate system of wage payment can be preferred in a factory. What are the advantages of this system?

(b) Components for an assembly are produced under the control of the production manager. These are assembled and sold under the supervision of the sales manager. The production manager is entitled for a bonus payment for himself at 1/8th and the workers 7/8th of the difference between the notional value and cost of production of the delivered components. The notional value is assessed at ₹ 5,18,500 for the components issued to assembly. The sales manager is entitled to a bonus of 2-1/2% of the profits for himself and 12-1/2% is distributed among his sales staff. The sales during a period amount to ₹ 65,000.

From the under mentioned particulars, detail the calculations involved in arriving at the bonus for both managers and the staff. Find also the impact of such bonus as a percentage of sales.

	₹
Raw materials at the beginning of the period	**22,800**
Raw materials at the end of the period	**16,400**
Purchases during the period	**2,48,600**
Wages – Production	**46,200**
Wages – Assembly	**18,100**
Overheads – Production	**2,12,500**
Overheads – Sales	**45,200**
Credit for scrap realized pertaining to components	**8,700**
Work-in-progress of production at the beginning	**12,500**
Work-in-progress of production at the end	**18,200**
Completed assemblies at the beginning	**36,000**
Completed assemblies at the end	**24,030**
Net realization on assemblies sold	**6,50,000**

Answer 4. (a)

In time based wage payment plans, standard time is predetermined and the efficiency of each individual worker is assessed to compensate them for higher efficiency in work as compared to standard time set. These plans can be suitably applied in the following circumstances :

(i) Where the output of an individual worker cannot be measured reasonably.
(ii) Where the work is required to be closely supervised.
(iii) Where the quality of work is more important.
(iv) Where output of an individual worker is not in his control.
(v) Where increase in output is negligible compares to the incentive.

The advantages of time rate remuneration plans are as follows :

(i) It is commonly recognized by all trade unions as well as worker
(ii) It is a guaranteed income assured to the worker
(iii) It is very easy to understand and simple to calculate the earnings of worker
(iv) It involves less clerical work and detailed records are not necessary.
(v) Since the production is not the criteria for calculation of wages, tools and materials are handled carefully. Wastage is also minimized.

Answer 4. (b)

Cost of Production of the Components :

		₹
Work-in-progress (opening)		12,500
Raw materials consumed (Opening stock + Purchases – Closing stock)		2,55,000
Wages – Production		46,200
Overhead – Production		2,12,500
Total		5,26,200
Less : Credit for scrap realized		8,700
		5,17,500
Less : Work-in-progress (closing)		18,200
Cost of production excluding bonus	(a)	4,99,300
Notional value		5,18,500
Difference between notional value and cost of production		19,200
Bonus of Production Manager (19,200 x 1/8)		2,400
Bonus to workers (19,200 x 7/8)		16,800
Total bonus	(b)	19,200
Cost of the components delivered	(a + b)	5,18,500

Cost of sales of the Components :

Cost of the components delivered		5,18,500
Wages – Assembly		18,100
Overheads – Sales		45,200
Completed assembly (opening)		36,000
Total		6,17,800
Less : Completed assembly (closing)		24,030
Cost of sales excluding bonus	(a)	5,93,770
Selling price		6,50,000
Profit (before bonus)		56,230
Bonus to sales manager (56,230 x 2.5/100)		1,406
Bonus to sales staff (56,230 x 12.5/100)		7,029
Total bonus (sales)	(b)	8,435
Cost of sales including bonus	(a + b)	6,02,205
Profit (net)		47,795
Selling price		6,50,000

Impact of Bonus on Sales :

Bonus – Production	19,200
Bonus – Sales	8,435
Total bonus	27,635
Bonus as a % of sales $\left(\frac{27,635}{6,50,000}\right)\times 100$	4.25%

Q. 5. (a) How do you deal with the following in Cost Accounts?

i. Fringe benefits

ii. Data processing cost.

(b) The cost sheet of a company based on a budget volume of sales of 4,00,000 units per quarter is as under :

(₹ Per unit)

Direct materials	**6.00**
Direct wages	**3.00**
Factory overheads (50% fixed)	**8.00**
S/ Adm. Overheads (1/3 variable)	**4.50**
Selling price	**24.00**

When the budget was discussed it was felt that the company would be able to achieve only a volume of 3,00,000 units of production and sales per quarter. The company therefore decided that an aggressive sales promotion campaign should be launched to achieve the following improved operations :

Proposal I :

- **Sell 5,00,000 units per quarter by spending ₹ 2,50,000 on advertising.**
- **The factory fixed costs will increase by ₹ 4,00,000 per quarter.**

Proposal II :

Sell 6,00,000 units per quarter subject to the following conditions :

- **An overall price reduction of ₹ 2 per unit is allowed on all sales.**
- **Variable selling and administration costs will increase by 6%.**
- **Direct material costs will be reduced by 1.5% due to purchase price discounts.**
- **The fixed factory costs will increase by ₹ 2,50,000 more.**

You are required to prepare a Flexible Budget at 3,00,000, 5,00,000 and 6,00,000 units of output per quarter and calculate the profit at each of the above levels of output.

Answer 5. (a)

The treatment will be as follows :

(i) Fringe benefits : The employees are paid additional benefits like leave with pay, contributions to the schemes like provident fund, E.S.I., medical reimbursement, subsidized canteen facility, leave travel concession, group insurance, etc. These benefits are called 'fringe benefits'. If these benefits are provided for the factory personnel, they are treated as Production Overhead and are apportioned to all cost centres, including both production and service cost centres on the basis of number of employees in each centre. The fringe benefits provided to the office staff, sales staff and distribution staff should be treated as Administration, Selling and Distribution Overheads respectively.

(ii) In the environment of processing information with the help of computers, the data processing cost represents the cost incurred for processing data relating to accounts, secretarial, personnel, finance, marketing, sales etc. This may be done either utilizing in house facilities or hiring outside facilities. The costs incurred is accumulated for separate service centre if in-house facilities are made available. Where the costs of data processing centre or hiring charges are identifiable to a particular department or activity it should be charged with its portion of cost. In case of common costs incurred for service of all departments, the data processing cost should be apportioned to different departments on equitable basis.

Answer 5. (b)

Flexible budget for the quarter ended… ₹

Units produced and sold		3,00,000	5,00,000	6,00,000
Sales revenue				
(3,00,000 × ₹ 24); (5,00,000 × ₹ 24); (6,00,000 × ₹ 22)	(a)	72,00,000	1,20,00,000	1,32,00,000
Variable costs :				
Direct materials				
(3,00,000 × ₹ 6); (5,00,000 × ₹ 6); (6,00,000 × 5.91)		18,00,000	30,00,000	35,46,000
Direct labour (@ ₹ 3 per unit)		9,00,000	15,00,000	18,00,000
Factory overheads (@ ₹ 4 per unit)		12,00,000	20,00,000	24,00,000
Selling and Administration overheads				
(3,00,000 × ₹ 1.5); (5,00,000 × ₹1.5); (6,00,000 × ₹ 1.59)		4,50,000	7,50,0000	9,54,000
Total variable costs	(b)	43,50,000	72,50,000	87,00,000
Contribution	(c) = (a) – (b)	28,50,000	47,50,000	45,00,000
Fixed costs :				
Factory overhead		16,00,000	16,00,000	16,00,000
Selling and administration overheads		12,00,000	12,00,000	12,00,000
Increase in fixed factory costs		-	4,00,000	6,50,000
Advertisement costs		-	2,50,000	-
Total fixed costs	(d)	28,00,000	34,50,000	34,50,000
Profit	(c) – (d)	50,000	13,00,000	10,50,000

Q. 6. (a) What are the implications of Economic Order Quantity in proper inventory management?

(b) Development Company Ltd. manufacture three products A,B and C and sells them direct through own sales force in three zones X, Y and Z. The overall control of distribution and sales is taken care of by the Headquarters, responsible also for sales promotion.

You are presented with the following data for the year ended 31st March 2010.

₹

			Sales	Direct Selling and Distribution Expenses
Zone X :	Product	A	3,00,000	20,400
		B	2,00,000	21,000
		C	1,00,000	10,600
			6,00,000	**52,000**
Zone Y :	Product	A	4,00,000	28,400
		B	4,00,000	37,600
		C	2,00,000	21,000
			10,00,000	**87,000**
Zone Z :	Product	A	1,00,000	8,400
		B	80,000	6,800
		C	2,20,000	28,800
			4,00,000	**44,000**

Selling and Sales promotion expenses at the Headquarter are as follows :

Selling expenses	**₹ 36,000**
Advertisement expenses	**₹ 40,000**
Other expenses	**₹ 48,000**

While advertisement expenses are allocated to zones and products on the basis of sales, the other two types of expenses are allocated equally to zones and products.

Cost of sales should be taken as following percentage of sales :

Product	**A**	**80%**
	B	**75%**
	C	**70%**

You are required to tabulate the above information to present comparative profit and loss statements for each zone and for each product.

Answer 6. (a)

The prime objective of inventory management is to find out and maintain optimum level of investment in inventory to minimize the total costs associated with it. Economic Order Quantity is the size of the order for which both ordering and carrying cost are minimum. Economic Order Quantity forms the very basis of inventory management. It refers to the size of each purchase order quantity for each item, which gives the maximum economy in purchase of that raw material or finished goods or stores materials. While placing any order for purchase of any item, it must be ensured that the order quantity is neither too large nor too small. A large order, no doubt, shall also mean the lower ordering cost but it shall mean a higher and sometimes prohibitive carrying costs. On the other hand, a small order may reduce the inventory carrying cost but the ordering costs would increase as the company may have to place a new order every now and

then, besides, it may result in occasional production halts also. Therefore, a proper balance has to be struck between these two factors and the Economic Order Quantity shall be fixed at a point, where the aggregate cost of the two is minimum i.e., the total cost associated with the inventory management is minimum.

Answer 6. (b)

Statement showing Profit and Loss for each Zone for the year ended 31st March 2010 :

₹

Particulars	Zone X	Zone Y	Zone Z	Total
Sales	6,00,000	10,00,000	4,00,000	20,00,000
Cost of sales :				
Product A (3:4:1)	2,40,000	3,20,000	80,000	6,40,000
Product B (5:10:2)	1,50,000	3,00,000	60,000	5,10,000
Product C (5:10:11)	70,000	1,40,000	1,54,000	3,64,000
Total	4,60,000	7,60,000	2,94,000	15,14,000
Gross margin	1,40,000	2,40,000	1,06,000	4,86,000
Less : Selling & Distribution Expenses				
Direct	52,000	87,000	44,000	1,83,000
Indirect :				
Advertisement	12,000	20,000	8,000	40,000
Selling	12,000	12,000	12,000	36,000
Others	16,000	16,000	16,000	48,000
Net profit	48,000	1,05,000	26,000	1,79,000

Note : Normally cost of sales includes cost of goods sold and non-production overheads like administration and selling and distribution. But here it is presumed that cost of sales does not include selling and distribution expenses.

Statement showing Profit and Loss for each Product for the year ended 31st March 2010 :

₹

Particulars	Product A	Product B	Product C	Total
Sales :				
Zone X	3,00,000	2,00,000	1,00,000	6,00,000
Zone Y	4,00,000	4,00,000	2,00,000	10,00,000
Zone Z	1,00,000	80,000	2,20,000	4,00,000
	8,00,000	6,80,000	5,20,000	20,00,000
Less : Cost of Sales	6,40,000	5,10,000	3,64,000	15,14,000
(Product A-80%, B-75%, C-70% of sales)				
Gross margin	1,60,000	1,70,000	1,56,000	4,86,000
Less : Selling & Distribution Expenses				
Direct	57,200	65,400	60,400	1,83,000
Indirect :Advertisement	16,000	13,600	10,400	40,000
Selling	12,000	12,000	12,000	36,000
Others	16,000	16,000	16,000	48,000
Profit	58,800	63,000	57,200	1,79,000

Q. 7. (a) What is an idle capacity? What are the costs associated with it? How are these treated in product costs?

(b) Sunshine Ltd. buy and sell finished goods after carrying out some operations. They began the year with 3,000 units valued at ₹ 3 per unit. During the year they sold 25,000 units for an average sale price of ₹ 10 per unit. Purchases were as follows :

4,000 units	**@ ₹ 5 per unit**
16,000 units	**@ ₹ 6 per unit**
6,000 units	**@ ₹ 7 per unit**

The current replacement cost of the unit is ₹ 8 and the Company's Taxation Manager advises that there may be significant tax advantages of purchasing at year-end at this price, as the company uses the LIFO method and has got the acceptance of the tax authorities for consistently using this method in its assessments. The corporate tax averages 30%.

Bearing in mind that the warehouse space is limited to 10,000 units, work out the tax advantages and the cost of year-end purchasing under this situation given that the operating expenses for the year are ₹ 37,000.

Answer 7. (a)

Idle Capacity : Idle capacity is that part of the capacity of a plant, machine or equipment which cannot be effectively utilised in production. In other words, it is the difference between the practical or normal capacity and capacity of utilisation based on expected sales. For example, if the practical capacity of production of a machine is to the tune of 10,000 units in a month, but is used only to produce 8,000 units, because of market demand of the product, then in such a case, 2,000 units will be treated as the idle capacity of the machine.

The idle capacity may arise due to lack of product demand, non-availability of raw-material, shortage of skilled labour, absenteeism, shortage of power, fuel or supplies, seasonal nature of product, etc.

Idle Capacity Costs: Costs associated with idle capacity are mostly fixed in nature. These include depreciation, repairs and maintenance charges, insurance premium, rent, rates, management and supervisory costs. These costs remain unabsorbed or unrecovered due to under-utilisation of plant and service capacity. Idle capacity cost can be calculated as follows :

$$\text{Idle capacity cost} = \frac{\text{Aggregate overhead related to plant}}{\text{Normal plant capacity}} \times \text{Idle Capacity}$$

Treatment of Idle capacity cost: Idle capacity costs can be treated in product costing, in the following ways :

(i) If the idle capacity cost is due to unavoidable reasons such as repairs, maintenance, change over of job, etc, a supplementary overhead rate may be used to recover the idle capacity cost. In this case, the costs are charged to the production capacity utilised.

(ii) If the idle capacity cost is due to avoidable reasons such as faulty planning, power failure etc., the cost should be charged to profit and loss account.

(iii) If the idle capacity cost is due to seasonal factors, then, the cost should be charged to the cost of production by inflating overhead rates.

Answer 7. (b)

Statement showing closing stock at the year end

	Total purchases during the year	26,000	units
	Opening stock	3,000	
		29,000	
Less :	Units sold during the year	25,000	
	Total closing stock	4,000	

Storage capacity is 10,000 units, year-end purchases can be up to 6,000.

Profit statement without making year-end purchases

(LIFO Method)

Sales (25,000 x 10)		₹ 2,50,000
Less : Cost of goods sold		
	6,000 x 7 = ₹ 42,000	
	16,000 x 6 = ₹ 96,000	
	3,000 x 5 = ₹ 15,000	1,53,000
Gross profit		97,000
Less : Operating expenses (given)		37,000
Taxable income		60,000
Less : Income Tax @ 30%		18,000
Profit after tax		42,000

Profit statement after year-end purchases of 6,000 units at current replacement cost

Sales (25,000 × 10)		2,50,000
Less : Cost of goods		
	6,000 × 8 = 48,000	
	6,000 × 7 = 42,000	
	13,000 × 6 = 78,000	1,68000
Gross profit		82,000
Less : Operating expenses		37,000
Taxable income		45,000
Less : income tax @ 30%		13,500
Profit after tax		31,500

Tax advantage : By accepting the advice of Taxation Manager of Sunshine Ltd. will be able to effect a tax saving of ₹ 4,500 i.e. ₹ 18,000 – ₹ 13,500 = ₹ 4,500.

Cost of year-end purchases : 6,000 units @ ₹ 8 =	48,000
Less : Tax advantage	4,500
Effective cost of closing inventory	43,500

Effective cost per unit of year-end purchase ₹ 43,500 ÷ 6,000 = ₹ 7.25.

Cost accounting methods and systems :

Q. 8. A company within the chemical industry mixes powdered ingredients in two different processes to produce one product. The output of Process I becomes the input of Process 2 and the output of Process 2 is transferred to the packing department.

From the information given below, you are required to open accounts for Process 1, Process 2, abnormal loss and packing department and to record the transactions for the week ended 11th June, 2010.

Process 1
Input :

Material A	**6,000 kilograms at ₹ 1 per kilogram**
Material B	**4,000 kilograms at ₹ 2 per kilogram**
Mixing Labour	**430 hours at ₹4 per hour**
Normal Loss	**5% of weight input, disposed off at 32 paise per kilogram**
Output	**9,200 kilograms.**

No work in process at the beginning or end of the week.

Process 2
Input :

Material C	**6,600 kilograms at ₹ 2.50 per kilogram**
Material D	**4,200 kilograms at Re. 1.50 per kilogram**
Flavouring Essence	**₹ 600**
Mixing Labour	**370 hours at ₹ 4 per hour**
Normal Waste	**5% of weight input with no disposal value**
Output	**18,000 kilograms.**

No work in process at the beginning of the week but 1,000 kilograms in process at the end of the week and estimated to be only 50% complete so far as labour and overhead were concerned.

Overhead of ₹ 6,400 incurred by the two processes to be absorbed on the basis of mixing labour hours.

Answer 8.

Process 1 Account

	Kg.	Per kg.			Kg.	Per kg.	
		₹	₹			₹	₹
To Material A	6,000	1.00	6,000	By Normal Loss	500	0.32	160
To Material B	4,000	2.00	8,000	By Abnormal Loss (See Note 2)	300	2.00	600
To Mixing Labour (430 hours @ ₹4.00 per hour)			1,720	To Transfer to Process 2	9,200	2.00	18,400
To Overhead			3,440				
	10,000		**19,160**		**10,000**		**19,160**

Process 2 Account

	Kg.	Per kg.			Kg.	Per kg.	
		₹	₹			₹	₹
To Process 1	9,200	2.00	18,400	By Normal Waste	1,000		
To Material C	6,600	2.50	16,500	By Work	1,000		2,320
To Material D	4,200	1.50	6,300	in-process			
To Flavouring Essence			600	(See Note 3)			
To Mixing Labour (370 hours @ 4.00 per hour)			1480	By Packing Deptt.	18,000	2.44	43,920
To Overhead (See Note 1)			2,960				
	20,000		46,240		20,000		46,240

Abnormal Loss Account

	Kg.	Per kg.			Kg.	Per kg.	
		₹	₹			₹	₹
To Process 1 A/c	300	2.00	600	By Sale A/c	300	0.32	96
				By Balance to P/L A/c			504
			600				600

Packing Department Account

	Kg.	Per kg.			Kg.	Per kg.	
		₹	₹			₹	₹
To Process 2 A/c	18,000	2.44	43,920	By Balance			43,920
			43,920				43,920

Notes :

1. Total overhead expenses : ₹ 6,400

   Total labour hours in Process 1 and 2 = 800

   Overhead absorption rate = ₹ 6,400/800 hours = ₹ 8 per labour hour

   Overhead under Process 1 = 430 × ₹ 8 = ₹ 3,440

   Overhead under Process 2 = 370 × ₹ 8 = ₹ 2,960

2. Cost of 9,500 Kg. of output is = (₹ 19,160 – ₹ 160) i.e., ₹ 19,000

   Hence cost per kg. of output is Re. 2.00

3. **Equivalent Units Statement of Output**

	Output Units	Equivalent Units		
		Material	Labour	Overhead
Completed	18,000	18,000	18,000	18,000
WIP (100% Material, 50% Labour and Overhead)	1,000	1,000	500	500
Normal Waste	1,000			
	20,000	19,000	18,500	18,500

Cost Statement for the week ending 11th June 2010

	₹
Material (Process 1)	18,400
Material C	16,500
Material D	6,300
Flavouring Essence	600
Total Material Cost	41,800
Total Mixing Labour Cost	1,480
Total Overhead Cost	2,960

Cost per Equivalent Unit

Material = ₹ 41,800 / 19,000 = ₹ 2.20

Labour = ₹ 1,480 / 18,500 = 0.08 P

Overhead = ₹ 2,960 / 18,500 = 0.16 P

W.I.P.

Material = 1,000 × ₹ 2.20 = ₹ 2,200

Labour = 500 × 0.08 P = ₹ 40

Overhead = 500 × 0.16 P = ₹ 80

= ₹ 2,320

Q. 9. (a) Explain briefly the procedure for the valuation of Work-in-process.

(b) Palace Hotel has three types of suites for its customers, viz. single room, double room and three rooms respectively. State the rent to be charged for each type of suite on the basis of following information :

(i) The number of suites of each type are :

(a) Single room suites	**100**
(b) Double room suites	**30**
(c) Three room suites	**20**

(ii) The rent of double room suite is to be fixed as 1 ½ times the single-room suite and that of three room as twice the single room suite.

(iii) The occupancy of each type of suite is as follows :

	Summer	Winter
(a) Single room suites	**90%**	**50%**
(b) Double room suites	**80%**	**20%**
(c) Three room suites	**60%**	**20%**

(iv) The annual expenses are as follows :

(a) Staff salaries ₹ 2,20,000

(b) Room attendant's wages when occupied :

	Summer	Winter
Single room suites	₹ 2	₹ 3.00
Double room suites	3	4.50
Three room suites	4	6.00

(c) Lighting, heating and power for full month, when occupied

	Lighting	Power
Single room suites	₹ 40	₹ 20
Double room suites	60	30
Three room suites	80	40

(d) Repairs and renovation ₹ 42,000
Linen etc. 45,000
Interior decoration 50,000
Sundries 31,550

(e) Depreciation :
Building @ 5% on ₹ 14,00,000
Furniture & Fixtures @10% on ₹ 1,00,000
Air-conditioner @ 10% on ₹ 2,00,000.

(v) Summer may be assumed for 7 months and winter for 5 months in a year. A month may be taken as of 30 days.

(vi) Profit including interest on investment @ 25% on cost.

Answer 9. (a)

Valuation of Work-in process :

The valuation of work-in-process can be made in the following three ways, depending upon the assumptions made regarding the flow of costs.

- First-in-first out (FIFO) method
- Last-in-first out (LIFO) method
- Average cost method

A brief account of the procedure followed for the valuation of work-in-process under the above three methods is as follows;

FIFO method: According to this method the units first entering the process are completed first. Thus the units completed during a period would consist partly of the units which were incomplete at the beginning of the period and partly of the units introduced during the period.

The cost of completed units is affected by the value of the opening inventory, which is based on the cost of the previous period. The closing inventory of work-in-process is valued at its current cost.

LIFO method: According to this method units last entering the process are to be completed first. The completed units will be shown at their current cost and the closing-work in process will continue to appear at the cost of the opening inventory of work-in-progress along with current cost of work in progress if any.

Average cost method: According to this method opening inventory of work-in-process and its costs are merged with the production and cost of the current period, respectively. An average cost per unit is determined by dividing the total cost by the total equivalent units, to ascertain the value of the units completed and units in process.

Answer 9. (b)

In this problem total services rendered should be expressed in single room days to determine the rent for one day for single room. Rent for double and three rooms should be charged accordingly based on weight age given.

Operating Cost Statement

		Total cost per annum (₹)
Staff salaries		2,20,000
Attendants' wages (working note 2)		93,150
Repairs and renovation		42,000
Lighting (working note 3)		55,400
Power (working note 4)		27,700
Linen		45,000
Interior decoration		50,000
Sundries		31,550
Depreciation :		
Building	₹ 70,000	
Furniture and fixture	10,000	
Air-conditioner	20,000	1,00,000
Total cost for the year		6,64,800
Profit 25% on cost		1,66,200
Total rent to be charged		8,31,000
Total single room days (working note 1)		41,550 days
Rent for one day	₹ 20	
Rent for single room suite	20	
Rent for double room suite (20 × 3/2)	30	
Rent for three room suite (20 × 2)	40	

Working notes :

1. Room days :
   (a) Single room suite :

Summer : 100 rooms × 90% × 30 days × 7 months =	18,900
Winter : 100 rooms × 50% × 30 days × 5 months =	7,500
Total single room days	26,400

   (b) Double room suite :

Summer : 30 rooms × 80% × 30 days × 7 months =	5,040
Winter : 30 rooms × 20% × 30 days × 5 months =	900
Total double room days	5,940

(c) Three room suite :

Summer : 20 rooms × 60% × 30 days × 7 months =	2,520
Winter : 20 rooms × 20% × 30 days × 5 months =	600
Total three room days	3,120

Total single room days

The rent of a double room suite is 1 ½ times and that of a three room suite as twice the single room suite.

		Single room days
Single room suite (26,400 days × 1)	=	26,400
Double room suite (5,940 days × 3/2)	=	8,910
Three room suite (3,120 days × 2)	=	6,240
		41,550

2. Room attendants' wages

Summer		
Single room suite (18,900 days × ₹ 2)	=	₹ 37,800
Double room suite (5,040 days × ₹ 3)	=	15,120
Three room suite (2,520 days × ₹ 4)	=	10,080
Winter		
Single room suite (7,500 days × ₹ 3)	=	22,500
Double room suite (900 days × ₹ 4.5)	=	4,050
Three room suite (600 days × ₹6)	=	3,600
The room attendants wages	=	93,150

3. Lighting for full year

Single room suite (26,400 days × ₹ 40)/30 days	35,200
Double room days (5,940 days × ₹ 60)/30 days	11,880
Three room suite (3,120 days × ₹ 80)/30 days	8,320
	55,400

4. Power for full year

Single room suite (26,400 days × ₹ 20)/30 days	17,600
Double room days (5,940 days × ₹ 30)/30 days	5,940
Three room suite (3,120 days × ₹ 40)/30 days	4,160
	27,700

Q. 10. (a) What do you understand by Operating Costs? Describe its essential features and state where it can be usefully implemented.

(b) A contractor, who prepares his account on 31st December each year, commenced a contract on 1st April 2009. The costing records concerning the said contract reveal the following information on 31st December, 2009;

	₹
Materials charged to site	**2,58,100**
Labour engaged	**5,60,500**
Foremen's salary	**79,300**

Plants costing ₹ 2,60,000 had been on site for 146 days. Their working life is estimated at 7 years and their final scrap value at ₹ 15,000. A supervisor, who is paid ₹ 4,000 p.m. has devoted approximately three-fourths of his time to this contract. The administrative and other expenses amount to ₹ 1,40,000. Materials in hand at site on 31st December, 2009 cost ₹ 25,400. Some of the material costing ₹ 4,500 was found unsuitable and was sold for ₹ 4,000 and a part of the plant costing ₹ 5,500 (on 31.12.2009) unsuited to the contract was sold at a profit of ₹ 1,000.

The contract price was ₹ 22,00,000 but it was accepted by the contractor for ₹ 20,00,000. On 31st December, 2009, two thirds of the contract was completed. Architect's certificate had been issued covering 50% of the contract price and ₹ 7,50,000 had so far been paid on account. Prepare contract account and state how much profit or loss should be included in the financial accounts to 31st December, 2009. Workings should be clearly given. Depreciation is charged on time basis.

Also prepare the Contractee's account and show how these accounts should appear in the Balance Sheet as on 31st December, 2009.

Answer 10. (a)

Operating Costs are the costs incurred by undertakings which do not manufacture any product but provide a service. Such undertakings for example are — Transport concerns, Gas agencies; Electricity Undertakings; Hospitals; Theatres etc. Because of the varied nature of activities carried out by the service undertakings, the cost system used is obviously different from that followed in manufacturing concerns.

The essential features of operating costs are as follows :

(1) The operating costs can be classified under three categories. For example in the case of transport undertaking these three categories are as follows :

(a) *Operating and running charges.* It includes expenses of variable nature. For example expenses on petrol, diesel, lubricating oil, and grease etc.

(b) *Maintenance charges.* These expenses are of semi-variable nature and includes the cost of tyres and tubes, repairs and maintenance, spares and accessories, overhaul, etc.

(c) *Fixed or standing charges.* These includes garage rent, insurance, road licence, depreciation, interest on capital, salary of operating manager, etc.

(2) The cost unit used is a double unit like passenger-mile; Kilowatt-hour, etc.

It can be implemented in all firms of transport, airlines, bus-service, etc., and by all firms of Distribution Undertakings.

Answer 10. (b)

Contract Account
(for the period: between 1st April and 31st Dec. 2009)

Dr. **Cr.**

	₹		₹
To Materials	2,58,100	By Materials at site	25,400
To Labour engaged	5,60,500	By Materials sold	4,000
To Foremen's salary	79,300	By Profit & Loss A/c	500
To Supervisor's salary (*See working note 1*)	27,000	(Loss on material sale)	
To Depreciation of plant (*See working note 2*)	14,000	By Cost of work done c/d	10,49,000
To Administrative and other expenses	1,40,000		
	10,78,900		**10,78,900**

	`		`
To Cost of work done b/d	10,49,000	By Work-in-Progress	
To Notional Profit c/d	2,13,250	Work certified	10,00,00
		Work uncertified	2,62,250
		(*See Working Note 3*)	
	12,62,250		**12,62,250**
To Profit & Loss A/c	1,06,625	By Notional Profit b/d	2,13,250
(*See Working Note 4*)			
To Profit Reserve	1,06,625		
	2,13,250		**2,13,250**

Contractee's Account

Dr. **Cr.**

	₹		₹
To Balance c/d	7,50,000	By Cash	7,50,000

Balance Sheet
(as on 31st December, 2009)

	₹		₹	₹
Profit & Loss A/c	1,07,125	*Work-in-Progress*		
(*See Working Note 4*)		Work Certified	10,00,000	
		Work Uncertified	2,62,250	
			12,62,250	
		Less : Reserve	1,06,625	
			11,55,625	
		Less: Cash Received	7,50,000	4,05,625
		Material at site		25,400
		Plant at site		2,40,000
		(*See Working Note 5*)		

Working Notes :

1. *Supervisor's Salary* = $\frac{3}{4}$ (9 months × ₹ 4,000) = ₹ 27,000

2. *Depreciation of Plant* = $\frac{\text{Rs. } 2,60,000 - \text{Rs. } 15,000}{7 \text{ years}} \times \frac{146}{365} = \text{Rs. } 14,000$

3. *Cost of Work Uncertified*

Cost of 2/3rd of the Contract is ₹ 10,49,000

Hence the Cost of the Contract is ₹ 10,49,000 × $\frac{3}{2}$ = ₹ 15,73,500.

The cost of 50% of the Contract, which has been completed and certified by the Architect is ₹ 7,86,750 (₹ 15,73,500 ÷ 2).

The Cost of 1/6th of the contract, which has been completed but not certified by the Architect is ₹ 2,62,250 (` *10,49,000* – ` *7,86,750*).

4. Profit & Loss A/c

	₹		₹
To Contract A/c	500	By Contract A/c	1,06,625*
(Loss on the sale of material)		(*Profit transferred*)	
To Balance c/d	1,07,125	By Profit on the Sale of Plant	1,000
	1,07,625		**1,07,625**

*Profit transferred to P & L A/c = $\frac{2}{3}$ × ₹ 2,13,250 × Cash received / Work Certified

= $\frac{2}{3}$ × ₹ 2,13,250 × ₹ 7,50,000/₹ 10,00,000

= ₹ 1,06,625

5. Plant A/c

	₹		₹
To Balance b/d	2,60,000	By Current A/c (Depreciation)	14,000
To P & L A/c	1,000	By Cash Sale	6,500
(*Profit on Sale of Plant*)		By Balance c/d	2,40,500
	2,61,000		**2,61,000**

Note : Plant A/c can also form part of Contract A/c.

Q. 11. (a) Discuss briefly the principles to be followed while taking credit for profit on incomplete contracts.

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

		₹ (in lakhs)
Stores 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:

Material	**Purchased**	**40**
	Issued to production	**50**
	Issued to general maintenance	**6**
	Issued to building construction	**4**
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	**8**
Royalty paid		**5**
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 & ₹ 25 lakhs respectively. The loss arising in the raw material account is treated as factory overhead. 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 company.

Answer 11. (a)

Under Contract Accounting it may be noticed that certain contracts are completed, while others are still in progress at the end of a financial year. These incomplete contracts may require a few more years for their completion. The figures of profit made (the excess of credit over the debit items in a contract) on completed contracts can be safely taken to the credit of Profit and Loss Account, but this practice is not being followed in the case of incomplete contracts.

In the case of incomplete contracts the entire profit is not being credited to Profit and Loss Account because some provision is to be made for meeting contingencies and unforeseen losses. There are no hard and fast rules regarding the calculation of figure of profit to be taken to the credit of profit and loss account. However, the following principles may be followed :

i. Profit should be considered in respect of work certified and uncertified work should be valued at cost.

ii. If the amount of work certified is less than 1/4th of the contract price, no profit should be taken to Profit and Loss Account. The entire amount in such contracts should be kept as reserve for meeting out contingencies.

iii. If the amount of work certified is 1/4th or more but less than 1/2 of the contract price, then 1/3rd of the profit disclosed as reduced by the percentage of cash received from the contractee should be taken to the Profit and Loss Account. The balance should be allowed to remain as a reserve.

iv. If the amount of work certified is 1/2 or more of the contract price, then 2/3rd of the profit disclosed as reduced by the percentage of cash received from the contractee, should be taken to the Profit and Loss Account. The balance should be treated as reserve.

v. If the contract is near completion, the total cost of completing the contract may be estimated if possible. By deducting the total estimated cost from the contract price, the estimated total profit of the contract should be calculated. The proportion of total estimated profit on cash basis, which the work certified bears to the total contract price should be credited to profit and loss account.

vi. The entire loss, if any, should be transferred to the Profit and Loss Account.

Answer 11. (b)

Cost Ledger Control A/c

(` In lakhs)

Dr.			*Cr.*
	₹		₹
To Costing P & L A/c	450	By Balance b/d	540
To Stores Ledger Control A/c	55	By Stores Ledger Control A/c	40
To WIP Control A/c	25	By Wages Control A/c	150
To Building Const. A/c	44	By Works Overhead Control A/c	160
To Finished Goods Control A/c	403	By Royalty A/c	5
		By Selling Distribution and Administration Overheads A/c	25
		By Costing Profit & Loss A/c	57
	977		**977**

Stores Ledger Control A/c

Dr.			*Cr.*
	₹		₹
To Balance b/d	80	By WIP Control A/c	50
To Cost Ledger Control A/c	40	By Works Overhead Control A/c	6
		By Building Const. A/c	4
		By Closing Balance	55
		By Work Overhead Control A/c (Loss)	5
	120		**120**

Work-in-Progress Control A/c

Dr.			*Cr.*
	₹		₹
To Balance b/d	20	By Finished Goods Control A/c	333
To Stores Ledger Control A/c	50	By Closing Balance	25
To Wage Control A/c	100		
To Works Overhead Control A/c	183		
To Royalty A/c	5		
	358		**358**

Finished Goods Control A/c

Dr. *Cr.*

	₹		₹
To Balance b/d *(Refer Working Note)*	430	By Cost of Goods Sold A/c	360
To WIP Control A/c	**333**	**By Balance**	**403**
	763		**763**

Cost of Sales A/c

Dr. *Cr.*

	₹		₹
To Cost of Goods Sold A/c	360	By Costing P & L A/c	385
To Selling, Distribution and Administration Overheads A/c	25		
	385		**385**

Costing P & L A/c

Dr. *Cr.*

	₹		₹
To Cost of Sales A/c	385	By Cost Ledger Control A/c	450
To Works Overhead Control A/c	8		
To Cost Ledger Control A/c (Profit)	57		
	450		**450**

Building Construction A/c

Dr. *Cr.*

	₹		₹
To Balance b/d	10	By Cost Ledger Control A/c	44
To Stores Ledger Control A/c	4		
To Wage Control A/c	10		
To Works Overhead Control A/c	20		
	44		**44**

Works Overhead Control A/c

Dr. *Cr.*

	₹		₹
To Stores Ledger Control A/c	6	By Building Construction A/c	20
To Wage Control A/c	40	By WIP Control A/c	183
To Cost Ledger Control A/c	160	By Balance (Costing P & L A/c)	8
To Stores Ledger Control A/c (Loss)	5		
	211		**211**

Wages Control A/c

Dr. *Cr.*

	₹		₹
To Cost Ledger Control A/c	150	By Works Overhead Control A/c	40
		By Building Const. A/c	10
		By WIP Control A/c	100
	150		**150**

Royalty A/c

Dr. *Cr.*

	₹		₹
To Cost Ledger Control A/c	5	By WIP Control A/c	5
	5		**5**

Cost of Goods Sold A/c

Dr. *Cr.*

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

Selling, Distribution and Administration Overheads A/c

Dr. *Cr.*

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

Trial Balance

` In (lakhs)

	Dr.	***Cr.***
To Stores Ledger Control A/c	55	
To WIP Control A/c	25	
To Finished Goods Control A/c	403	
To Cost Ledger Adjustment A/c		483
	483	**483**

Working Note :

If S.P. is ₹ 100 then C.P. = ₹ 80

If S.P. is ₹ 450 then C.P. = ₹ $\frac{80}{100}$ × ₹ 450 = 360 lakhs.

Q. 12. (a) What are the advantages of integrated accounting?

(b) The financial books of a company reveal the following data for the year ended 31st March, 2010:

Opening Stock :	₹
Finished goods 875 units	**74,375**
Work-in-process	**32,000**
1.4.09 to 31.3.2010	
Raw materials consumed	**7,80,000**
Direct Labour	**4,50,000**
Factory overheads	**3,00,000**
Goodwill	**1,00,000**
Administration overheads	**2,95,000**
Dividend paid	**85,000**
Bad Debts	**12,000**
Selling and Distribution Overheads	**61,000**
Interest received	**45,000**
Rent received	**18,000**
Sales 14,500 units	**20,80,000**
Closing Stock: Finished goods 375 units	**41,250**
Work-in-process	**38,667**

The cost records provide as under:

- **Factory overheads are absorbed at 60% of direct wages.**
- **Administration overheads are recovered at 20% of factory cost.**
- **Selling and distribution overheads are charged at ₹ 4 per unit sold.**
- **Opening Stock of finished goods is valued at ₹ 104 per unit.**
- **The company values work-in-process at factory cost for both Financial and Cost Profit Reporting.**

Required :

(i) Prepare statements for the year ended 31st March, 2010 show
- **the profit as per financial records**
- **the profit as per costing records.**

(ii) Present a statement reconciling the profit as per costing records with the profit as per Financial Records.

Answer 12. (a)

Advantages of Integrated Accounting : Integrated Accounting is the name given to a system of accounting whereby cost and financial accounts are kept in the same set of books. Such a system will have to afford full information required for Costing as well as for Financial Accounts. In other words, information and data should be recorded in such a way so as to enable the firm to ascertain the cost (together with the necessary analysis) of each product, job, process, operation or any other identifiable activity. For instance, purchases are analysed by nature of material and its end-use. Purchases account is eliminated and direct postings are made to Stores Control Account, Work-in-Progress account, or Overhead Account. Payroll is straightway analysed into direct labour and overheads. It also ensures the ascertainment of marginal cost, variances, abnormal losses and gains. In fact all information that management requires from a system of Costing for doing its work properly is made available. The integrated accounts give full

information in such a manner so that the profit and loss account and the balance sheet can be prepared according to the requirements of law and the management maintains full control over the liabilities and assets of its business.

The main advantages of Integrated Accounting are as follows:

(i) Since there is one set of accounts, thus there is one figure of profit. Hence the question of reconciliation of costing profit and financial profit does not arise.

(ii) There is no duplication of recording of entries and efforts to maintain separate set of books.

(iii) Costing data are available from books of original entry and hence no delay is caused in obtaining information.

(iv) The operation of the system is facilitated with the use of mechanized accounting.

(v) Centralization of accounting function results in economy.

Answer 12. (a)

(i) **Statement of Profit as per financial records**

OR

Profit & Loss Account of the company

(for the year ended March 31, 2010)

	₹		₹
To Opening stock of Finished goods	74.375	By Sales	20,80,000
To Work-in-process	32,000	By Closing stock of finished goods	41250
To Raw materials consumed	7,80,000	By Work-in-Process	38,667
To Direct labour	4,50,000	By Rent received	18,000
To Factory overheads	3,00,000	By Interest received	45,000
To Goodwill	1,00,000		
To Administration overheads	2,95,000		
To Selling & distribution overheads	61,000		
To Dividend paid	85,000		
To Bad debts	12,000		
To Profit	33,542		
	22,22,917		**22,22,917**

Statement of Profit as per costing records

(for the year ended March 31,2010)

	₹
Sales revenue (A)(14,500 units)	20,80,000
Cost of sales:	
Opening stock(875 units x ₹ 104)	91,000
Add: Cost of production of 14,000 units(Refer to working note 2)	17,92,000
Less: Closing stock $\left(\frac{\text{Rs. } 17,92,000 \times 375 \text{ units}}{14,000 \text{ units}}\right)$	48,000
Production cost of goods sold (14,500 units)	18,35,000

Selling & distribution overheads(14,500 units x ₹ 4)	58,000
Cost of sales: (B)	18,93,000
Profit: {(A) – (B)}	1,87,000

(ii) Statement of Reconciliation
(Reconciling the profit as per costing records with the profit as per financial records)

	₹	₹
Profit as per Cost Accounts		1,87,000
Add: Administration overheads over absorbed (₹ 2,98,667 – ₹ 2,95,000)	3,667	
Opening stock overvalued(₹ 91,000 – ₹ 74,375)	16,625	
Interest received	45,000	
Rent received	18,000	83,292
		2,70,292
Less: Factory overheads under recovery (₹ 3,00,000 – ₹ 2,70,000)	30,000	
Selling & distribution overheads under recovery(₹ 61,000 – ₹ 58,000)	3,000	
Closing stock overvalued(₹ 48,000 – ₹ 41,250)	6,750	
Goodwill	1,00,000	
Dividend	85,000	
Bad debts	12,000	2,36,750
Profit as per financial accounts		33,542

Working notes :

1. Number of units produced

	Units
Sales	14,500
Add: Closing stock	375
Total	14,875
Less: Opening stock	875
Number of units produced	14,000

2. Cost Sheet

	₹
Raw materials consumed	7,80,000
Direct labour	4,50,000
Prime cost	12,30,000
Factory overheads(60% of direct wages)	2,70,000
Factory cost	15,00,000
Add: Opening work-in-process	32,000
Less: Closing work-in-process	38,667
Factory cost of goods produced	14,93,333
Administration overheads(20% of factory cost)	2,98,667
Cost of production of 14,000 units(Refer to working note 1)	17,92,000

Cost of production per unit :

$$= \frac{\text{Total Cost of Production}}{\text{No. of units produced}} = \frac{\text{Rs. } 17,92,000}{14,000 \text{ units}} = \text{Rs. } 128$$

Q. 13. Following data are available for a product for the month of July, 2010.

	Process I	Process II
Opening work-in-progress	**NIL**	**NIL**
	₹	₹
Cost Incurred during the month :		
Direct materials	**60,000**	**–**
Labour	**12,000**	**16,000**
Factory overheads	**24,000**	**20,000**
Units of production:		
Received in Process	**40,000**	**36,000**
Completed and transferred	**36,000**	**32,000**
Closing work-in-progress	**2,000**	**?**
Normal loss in process	**2,000**	**1,500**

Production remaining in Process has to be valued as follows :

Materials	**100%**
Labour	**50%**
Overheads	**50%**

There has been no abnormal loss in Process II

Prepare process accounts after working out the missing figures and with detailed workings.

Answer 13.

Statement of equivalent production units (Process – I)

TABLE 1

Particulars	Units Introduced	Units Out	Equivalent Production			
			Material		Labour and Overhead	
			% Completion	Units	% Completion	Units
Units in introduced	40,000					
Units completed and transferred to Process-II		36,000	100	36,000	100	36,000
Normal loss		2,000	—	—	—	—
Closing work-in-progress		2,000	100	2,000	50	1,000
Total	**40,000**	**40,000**		**38,000**		**37,000**

Computation of cost per equivalent unit for each cost element

TABLE 2

	Total Cost Rs.	EquivalentUnits	Cost per Equivalent Unit Rs.
Direct materials	60,000	38,000	1.5780
Labour	12,000	37,000	0.3243
Factory overheads	24,000	37,000	0.6487
Total			**2.5519**

Process –1 Account

	Units	₹		Units	₹
To Units introduced *(Direct materials)*	40,000	60,000	By Normal Loss	2,000	NIL
To Labour		12,000	By Process – III transferred *(Refer to Working Note-1)*	36,000	91,869
To Factory overheads		24,000			
			By Work in-process *(Refer to Working Note 2)*	2,000	4,131
	40,000	**96,000**		**40,000**	**96,000**

Statement of equivalent production units (Process – II)

TABLE 3

Particulars	Units Introduced	Units Out	Equivalent Production			
			Material		Labour and Overhead	
			% Completion	Units	% Completion	Units
Units transferred from process-I	36,000	32,000	100	32,000	100	32,000
Normal loss	–	1,500	–	–	–	–
Closing work-in-process	–	2,500	100	2,500	50	1,250
	36,000	**36,000**		**34,500**		**33,250**

Computation of cost per equivalent unit for each cost element

TABLE 4

	Total Cost ₹	EquivalentUnits	Cost per Equivalent Unit ₹
Cost of 36,000 units transferred from Process – I	91,869	34,500	2.6629
Labour	16,000	33,250	0.4812
Factory overheads	20,000	33,250	0.6015
Total			**3.7456**

Process-II Account

	Units	₹		Units	₹
To Units introduced *(Transferred from Process-I)*	36,000	91,869	By Normal Loss	1,500	–
			By Finished stock transferred	32,000	1,19,859
To Labour		16,000	*(Refer to Working Note 3)*		
To Factory overheads		20,000	By Work-in-process *(Refer to Working Note 4)*	2,500	8,010
	36,000	1,27,869		36,000	1,27,869

Working Notes :

1. **Cost of 36,000 completed units in Process – I :**
   - = 36,000 × Cost per unit *(Refer to Table 2)*
   - = 36,000 × ₹ 2.5519 = ₹ 91,869.

2. **Cost of 2,000 units under work-in-process in Process-I :**
   - = Cost of 2,000 equivalent units of material + Cost of 1,000 equivalent units of labour and overheads *(Refer to Tables 1 and 2).*
   - = 2,000 × ₹ 1.5789 + 1,000 × ₹0.3243 + 1,000 × ₹ 0.6487
   - = ₹ 4,131

3. **Cost of 32,000 units of finished stock in Process-II :**
   - = 32,000 × Cost per unit *(Refer to Table 3)*
   - = 32,000 × ₹ 3.7456 = ₹ 1,19,589

4. **Cost of 2,500 units under work-in-process in Process-II :**
   - = Cost of 2,500 equivalent units of material + Cost of 1,250 equivalent units of labour and overhead *(Refer to Tables 3 and 4)*
   - = 2,500 × ₹ 2.6629 + 1,250 × ₹ 0.4812 + 1,250 × ₹ 0.6015
   - = ₹ 6657.25 + ₹ 601.50 + ₹ 751.88
   - = ₹ 8,010.63.

Decision Making Tools :

Q. 14. (a) Mention the different methods of by-product cost accounting.

(b) Z Ltd. makes a range of five products to which the following standards apply :

	Per unit (₹)				
	A	B	C	D	E
Sales price	50	60	70	80	90
Direct materials	9	10	17	12	21
Direct wages	16	20	24	28	32
Variable production overhead	8	10	12	14	16
Variable selling and distribution overheads	5	6	7	8	9
Fixed overhead	4	5	6	7	8
	42	51	66	69	86

The direct labour wage rate is ₹ 4 per hour. Fixed overheads have been allocated on the basis of direct labour hours. The Company has commitments to produce a minimum of 400 units of each product per month. Direct labour hours cannot exceed 13,000 per month due to restriction of space. The Board is now considering an offer of a new three-year contract to produce an additional 400 units of product B per month at a selling price of ₹ 58 per unit. The contract would involve an outlay of ₹ 1,00,000 on the lease of additional factory premises and purchases of new plant and equipment. There would be no residual value at the end of the contract. Variable production costs would be in accordance with existing standards, variable selling and distribution costs would be one-half of the existing rate and cash outflows on fixed costs would be ₹ 20,000 per annum. An outside supplier has offered to supply 400 units of product B per month at a price of ₹ 48 per unit. If purchased externally cash flows on additional fixed costs will be ₹ 25,000 per annum.

Required :

(i) Give recommendations, supported by calculations, to show how direct labour hours in the existing factory should be utilized in order to maximize profits.

(ii) Show the budgeted trading results on the basis of your recommendation in (i).

(iii) Give calculations to show whether or not the proposed contract for product B should be accepted and, if so whether it should be purchased externally or manufactured in the new premises. The Company's cost of capital is 10% (the present value of an annuity of Re. 1 for three years at 10% is ₹ 2.49). Ignore taxation and inflation.

Answer 14. (a)

The different methods of by-product cost accounting are as follows :

(i) **Opportunity or replacement cost method :** This method is used when by-products are consumed in the same factory as raw material in place of existing material is in use. The cost of material replaced is considered as replacement or opportunity cost of the by-product and is credited to cost of production of main products. The opportunity cost or replacement cost which otherwise would have been incurred if the by-product were to be purchased from outside suppliers, then such product will be valued at market value of like material.

(ii) **Standard cost method :** The by-products are valued at a predetermined standard rate for each product which may be based on technical assessment. Standard cost of by-product is credited to the Process Account of the main product. This method makes it convenient to ascertain the cost of main product due to operational difficulties in computation of value of by-product.

(iii) **Joint cost proration method :** Where the by-products are having considerable commercial value or importance or where adoption of normal methods for by-product accounting may not be fair or reasonable to the main product or to the by-product, then the by-products will be treated as equal footing with the main products both for valuation and accounting of costs. The joint costs may be divided over joint products and by-products by using physical unit method (at the split-off point) or ultimate selling price (if sold).

Answer 14. (b)

i. Statement showing optimum product mix

Product	**A**	**B**	**C**	**D**	**E**
Hours per unit	4	5	6	7	8
Particulars (per unit) (₹)					
Selling price	50	60	70	80	90
Less : Variable cost					
Direct material	9	10	17	12	21
Direct wages	16	20	24	28	32
Variable production overhead	8	10	12	14	16
Variable selling & distribution overhead	5	6	7	8	9
Contribution per unit	12	14	10	18	12
Contribution per labour hour	3.00	2.80	1.67	2.57	1.50
Ranking	I	II	IV	III	V
Labour hours spent in producing minimum units p.a. 400 × 12 = 4,800 units	19,200	24,000	28,800	33,600	38,400
Total hours for producing minimum units			1,44,000		

Hours remaining (13,000 × 12) – 1,44,000 = 12,000 hours.

Product to be manufactured - A

Units of A will be produced = 12,000 ÷ 4 = 3,000 units

So the labour hours should be utilized as under during the year to maximize the profit :

A – 19,200 + 12,000 = 31,200 hours for 7,800 units

B - = 24,000 hours for 4,800 units

C - = 28,800 hours for 4,800 units

D - = 33,600 hours for 4,800 units

E - = 38,400 hours for 4,800 units

1,56,000

Maximum available hours during the year (13,000 x 12) = 1,56,000

ii. Fixed overheads :

Absorption rate = Re. 1 per labour hour

Total labour hours in year = 13,000 x 12 = 1,56,000 hours

So, fixed overheads = 1,56,000 x 1 = ₹ 1,56,000

Total contribution :

	Units x Contribution per unit (₹)		
A	7,800 × 12	= 93,600	
B	4,800 × 14	= 67,200	
C	4,800 × 10	= 48,000	
D	4,800 × 18	= 86,400	
E	4,800 × 12	= 57,600	3,52,800
Less :	Fixed overheads		1,56,000
	Profits		1,96,800

iii. Cost-benefit analysis will be done for both the proposals. Benefit in both the proposals will be selling price of 4,800 units of B at price of ₹ 58 i.e. ₹ 2,78,400 for three years. Since costs are incurred at various points of time, the present value will be taken for comparing the alternatives.

Whether or not proposed contract for Product B should be accepted

Proposal – I -if 400 units are manufactured

Selling price per unit	=	₹ 58
Variable cost per unit	=	₹ 43
Contribution per unit	=	15

Contribution during a year (15 x 400 x 12)	₹	72,000
Less : Additional fixed cost		20,000
Annual inflow due to manufacturing in one year		52,000
Present value of inflow in three years at the annuity factor given ₹ 52,000 x ₹ 2.49		1,29,480
Less : Initial cash outflow		1,00,000
Net advantage		29,480

Proposal II – Buying Product B from outside @ ₹ 48 per unit

Cost	
Purchasing cost (4,800 × 48)	2,30,400
Annual cash outlay on fixed cost	25,000
	2,55,400
Present value of cost for 3 years (2,55,400 × 2.49)	6,35,946
Benefit	
Sale volume (4,800 × 58)	2,78,400
Total sales for 3 years (present value) (2,78,400 × 2.49)	6,93,216
Net benefit (6,93,216 – 6,35,946)	57,270

Comments – Product B should be purchased externally. It will minimize the risk and avoid capital outlay.

Q. 15. ABC Ltd. operates a simple chemical process to convert a single material into three separate items, referred to here as X, Y and Z. All three end products are separated simultaneously at a single split-off point.

Product X and Y are ready for sale immediately upon split off without further processing or any other additional costs. Product Z, however, is processed further before being sold. There is no available market price for Z at the split-off point.

The selling prices quoted here are expected to remain the same in the coming year. During 2009-10, the selling prices of the items and the total amounts sold were :

X – 186 tons sold for ₹ 1,500 per ton
Y – 527 tons sold for ₹ 1,125 per ton
Z – 736 tons sold for ₹ 750 per ton

The total joint manufacturing costs for the year were ₹ 6,25,000. An additional ₹ 3,10,000 was spent to finish product Z.

There were no opening inventories of X, Y or Z at the end of the year, the following inventories of complete units were on hand :

X 180 tons
Y 60 Tons
Z 25 tons

There was no opening or closing work-in-progress.

***Required*:**

(i) Compute the cost of inventories of X, Y and Z for Balance Sheet purposes and cost of goods sold for income statement purpose as of March 31, 2010, using:

(a) Net realizable value (NRV) method of joint cost allocation

(b) Constant gross-margin percentage NRV method of joint-cost allocation.

(ii) Compare the gross-margin percentages for X, Y and Z using two methods given in requirement (i)

Answer 15.

(i) (a) Statement of Joint Cost allocation of inventories of X, Y and Z for Balance Sheet purposes
(By using net realisable value method)

	Products			Total
	X ₹	*Y* ₹	*Z* ₹	₹
Final sales value of total production *(Refer to working note 1)*	5,49,000 (366 tons × ₹ 1,500)	6,60,375 (587 tons × ₹ 1,125)	5,70,750 (761 tons × ₹ 750)	17,80,125
Less : Additional cost	—	—	3,10,000	3,10,000
Net realisable value *(at split-off point)*	5,49,000	6,60,375	2,60,750	14,70,125
Joint cost allocated *(Refer to working note 2)*	2,33,398	2,80,748	1,10,854	6,25,000

Cost of goods sold for income statement purpose as of March 31,2010

(By using net realisable value method)

	Products			Total
	X	*Y*	*Z*	
	₹	₹	₹	₹
Allocated joint cost	2,33,398	2,80,748	1,10,854	6,25,000
Additional costs	–	–	3,10,000	3,10,000
Cost of goods available for sale (CGAS)	2,33,398	2,80,748	4,20,854	9,35,000
Less: Cost of ending inventory	1,14,785	28,692	13,846	1,57,323
X : 49.18% Y : 10.22% × (CGAS) Z : 3.29% (*Refer to working note 1*)				
Cost of goods sold	**1,18,613**	**2,52,056**	**4,07,008**	**7,77,677**

Income Statement

(Showing gross margin and gross margin percentage)

(By using net realisable value method)

	Products			Total
	X	*Y*	*Z*	
	₹	₹	₹	₹
Sales revenue (₹)	2,79,000 (186 tons × ₹ 1,500)	5,92,875 (527 tons × ₹ 1,125)	5,52,000 (736 tons × ₹ 750)	14,23,875
Less: Cost of goods sold (₹)	1,18,613	2,52,056	4,07,008	7,77,677
Gross margin (₹)	1,60,387	3,40,819	1,44,992	6,46,198
Gross margin (%)	57.49%	57.49%	26.26%	45.38%

(b) Statement of joint cost allocation of inventories of X, Y and Z for Balance sheet purposes

(By using constant gross margin percentage net-realisable value method)

	Products			Total
	X	*Y*	*Z*	
	₹	₹	₹	₹
Final sales value of total production	5,49,000	6,60,375	5,70,750	17,80,125
Less: Gross margin	2,60,641	3,13,517	2,70,967	8,45,125
(Refer to working note 3)	2,88,359	3,46,858	2,99,783	9,35,000
Less: Additional Cost			3,10,000	3,10,000
Joint cost allocated	2,88,359	3,46,858	(10,217)	6,25,000

Note : The negative joint cost allocation to product Z illustrates one 'unusual' feature of the constant gross margin NRV method.

Cost of goods sold for income statement purpose

(By using constant gross margin percentage net-realisable value method)

	Products			Total
	X ₹	*Y* ₹	*Z* ₹	₹
Allocated joint cost	2,88,359	3,46,858	(10,217)	6,25,000
Additional Costs			3,10,000	3,10,000
Cost of goods available for sale (CGAS)	2,88,359	3,46,858	2,99,783	9,35,000
Less: Cost of ending inventory	1,41,815	35,449	9,863	1,87,127
X: 49.18%				
Y: 10.22% × CCGS				
Z: 3.29%				
Cost of goods sold	1,46,544	3,11,409	2,89,920	7,47,873

Income Statement

(Showing gross margin and gross margin percentage by using constant gross margin percentage NRV method)

	Products			Total
	X ₹	*Y* ₹	*Z* ₹	₹
Sales revenue (₹)	2,79,000	5,92,875	5,52,000	14,23,875
Less: Cost of goods sold (₹)	1,46,544	3,11,409	2,89,920	7,47,873
Gross margin (₹)	1,32,456	2,81,466	2,62,080	6,76,002
Gross margin (%)	47.475%	47.475%	47.478%	47.478%

(ii) **Comparative statement of gross percentage for X, Y and Z**

(Using net realisable value and Constant gross margin percentage NRV methods)

Method	Product gross margin percentage		
	X	*Y*	*Z*
Net realisable value	57.49	57.49	26.26
Constant gross margin percentage NRV	47.48	47.48	47.48

Working notes :

1. Total production of three products for the year 2009-2010 :

Items/Products	Quantity sold in tones	Quantity of ending inventory in tons	Total production	Ending inventory percentage
(1)	(2)	(3)	(4) = [(2) + (3)]	(5) = (3)/ (4)
X	186	180	366	49.18
Y	527	60	587	10.22
Z	736	25	761	3.29

2. Joint cost apportioned to each product :

$$\frac{\text{Total joint cost}}{\text{Total net realisable value}} \times \text{Net realisable value of each product}$$

$$= \text{Total cost of product X} = \frac{₹\ 6,25,000}{₹\ 14,70,125} \times ₹\ 5,49,000$$

Similarly, the joint cost of inventories of products Y and Z comes to ₹ 2,80,748 and Rs 1,10,854 respectively.

3. Gross margin percentage

Final sales value of production	17,80,125
Less: Joint cost and additional costs	9,35,000
(₹ 6,25,000 + ₹ 3,10,000)	
Gross margin	8,45,125
Gross margin percentage	47.4756%
(₹ 8,45,125 / ₹ 17,80,125) × 100	

Q. 16. Prakash & Co. provides you with following data :

Total overhead	₹	**30,10,500**
Total machine hrs.		**2,23,000**
Production :		
Product L	**10,000**	**units**
Product M	**3,000**	**units**
Product N	**2,10,000**	**units**

	Direct cost per unit		Selling price per unit	
Product L	₹	**20**	₹	**50**
Product M		**20**		**45**
Product N		**9**		**40**

The profit of this company is ₹ 38,74,500. The overhead has been distributed at the rate of ₹ 13.50 per machine hour and each unit produced in the company is presumed to have used one machine hour. The Manager Finance has reported that all the units are profit-making.

Direct Finance wants to implement Activity Based Costing. The further information in this regard are as follows :

i. The overhead is caused by following activities :

(a) Set –up – 1,37,600 set-ups to be charged @ ₹ 10 per set-up	**₹ 13,76,000**
(b) Machining – 51,800 machine hours to be charged @ ₹15 per machine hrs.	**7,77,000**
(c) Engineering – 24,750 engineering hrs. to be charged @ ₹ 20 per hr.	**4,95,000**
(d) Organistaion costs cannot be linked with products	**3,62,500**
	30,10,500

ii. Based on the basis of factory records it is established that activities have been assigned to different products as follows :

	Set-up (hrs.)	Machining (hrs.)	Engineering (hrs.)
Product L	8,000	6,000	1,500
Product M	3,600	3,800	2,250
Product N	1,26,000	42,000	21,000
	1,37,600	51,800	24,750

Director Finance expects you to answer following questions :

i. What are the profits made by different products, when conventional costing method of overhead distribution is used and overall profit is ₹ 38,74,500?

ii. (a) What will be the profit of different products, if ABC costing is used presuming that the information given are reliable?

(b) Can we discontinue any product, if discontinuing a loss-making product does not harm the organization otherwise? What will be increase in profit, if loss-making product is discontinued?

(c) Reasons for difference in results shown by conventional costing and Activity – Based Costing system.

Answer 16.

i. Product-wise profit position using conventional costing (i.e. overhead rate per machine hour)

	Product L (10,000 units)		Product M (3,000 units)		Product N (2,10,000 units)		Total
	Per unit	Total	Per unit	Total	Per unit	Total	
Product revenue	50.00	5,00,000	45.00	1,35,000	40.00	84,00,000	90,35,000
Product costs :							
Direct cost	20.00	2,00,000	20.00	60,000	9.00	18,90,000	
Overhead @ 13.50 per unit	13.50	1,35,000	13.50	40,500	13.50	28,35,000	
Total	33.50	3,35,000	33.50	1,00,500	22.50	47,25,000	51,60,500
		1,65,000		34,500		36,75,000	38,74,500

ii. (a) Product wise profit position using Activity – based Costing System

	Product L (10,000 units)		Product M (3,000 units)		Product N (2,10,000 units)		Total
	Per unit	Total	Per unit	Total	Per unit	Total	
Product revenue	50	5,00,000	45	1,35,000	40	84,00,000	90,35,000
Product costs :							
Direct	20	2,00,000	20	60,000	9	18,90,000	
Overhead charges for different activities							
Set-up (refer to note 1)	8	80,000	12	36,000	6	12,60,000	
Machining (refer to note 2)	9	90,000	19	57,000	3	6,30,000	
Engineering (refer to note 3)	3	30,000	15	45,000	2	4,20,000	
Total	40	4,00,000	66	1,98,000	20	42,00,000	47,98,000
Product line income/loss		1,00,000		(63,000)		42,00,000	42,37,000
Organizational costs							3,62,500
							38,74,500

(b) From the table given above it is apparent that Product M can be discontinued, because it is a loss-making product. The suggestion is based on the presumption that there will not be adverse consequences of this decision otherwise. The total profit will increase by ₹ 63,000, if product M is discontinued.

(c) Reasons for difference.

The overhead distribution was not based on activity consumption in conventional costing. Due to this reason Product N's position was poorly shown. Product M was shown as making profit whereas it is making loss of ₹ 63,000. Even position of Product L was not properly shown. It is making a profit of ₹ 1,00,000, whereas in conventional costing, it was shown making a profit of ₹ 1,65,000. Illogical overhead distribution was the main reason for distorted results.

Working Notes :

1.	Set-up :	Product L	=	8,000 x ₹ 10	=	₹ 80,000
		Product M	=	3,600 x 10	=	36,000
		Product N	=	1,26,000 x 10	=	12,60,000
						13,76,000
2.	Machining :	Product L	=	6,000 x ₹ 15	=	₹ 90,000
		Product M	=	3,800 x 15	=	57,000
		Product N	=	42,000 x 15	=	6,30,000
						7,77,000
3.	Engineering :	Product L	=	1,500 x ₹ 20	=	₹ 30,000
		Product M	=	2,250 x 20	=	45,000
		Product N	=	21,000 x 20	=	4,20,000
						4,95,000

Q. 17. **A company in the civil engineering industry has had its tender for a job (Contract – I) accepted at ₹ 2,88,000 and work is due to began in March 2011. However, the company has also been asked to undertake another contract (Contract – II). The price offered for this contract is ₹ 3,52,000. Both of the contracts cannot be taken simultaneously because of constraints of staff, site management personnel and on plant available. An escape clause enable the company to withdraw from Contract– I, provided notice is given before the end of November and an agreed penalty of ₹ 28,000 is paid.**

The following estimates have been submitted by the company's quantity surveyor :

Cost estimates

	Contract – I	Contract – II
Material		
In stock at original cost, Material X	**₹ 21,600**	
In stock at original cost, Material Y		**₹ 24,800**
Firm orders placed at original cost, Material X	**30,400**	
Not yet ordered – current cost, Material X	**60,000**	
Not yet ordered – current cost, Material Z		**71,200**
Labour – hired locally	**86,000**	**1,10,000**
Site management	**34,000**	**34,000**
Staff accommodation and travel for site mgmt.	**6,800**	**5,600**
Plant on site – depreciation	**9,600**	**12,800**
Interest on capital – 8%	**5,120**	**6,400**
Total local contract costs	**2,53,520**	**2,64,800**
Headquarters costs allocated @5% on total Contract cost	**12,676**	**13,240**
	2,66,196	**2,78,040**
Contract price	**2,88,000**	**3,52,000**
Estimated profit	**21,804**	**73,960**

Notes :

i. **X, Y and Z are three building material. Material X is not in common use and would not realize much money if resold. However, it could be used on other contracts but only as a substitutes for another material currently quoted at 10% less than the original cost of X. The price of Y, a material in common use, has doubled since it was purchased: its net realizable value if resold would be its new price less 15% to cover disposal costs. Alternatively it could be kept for use on other contracts in the following financial year.**

ii. **With the construction industry not yet recovered from the recent recession, the company is confident that manual labour, both skilled and unskilled could be hired locally on a sub-contracting basis to meet the needs of each of the contracts.**

iii. **The plant which would be needed for Contract – II has been owned for some years and ₹ 12,800 is the year's depreciation on a straight line basis. If Contract – I is undertaken, less plant will be required but the surplus plant will be hired out for the period of the contract at a rental of ₹ 6,000.**

iv. **It is the company's policy to charge all contracts with notional interest at 8% on estimated working capital involved in contracts. Progress payments would be receivable from the contractor.**

v. **Salaries and general costs of operating the small headquarters amount to labour ₹ 1,08,000 each year. There are usually ten contracts being supervised at the same time.**

vi. Each of the two contracts is expected to last from March 2011 to February 2012 which, coincidentally, is the company's financial year.

vii. Site management is treated as a fixed cost.

You are required, as the management accountant to the company :

(a) To present comparative statements to show the net benefit to the company of undertaking the more advantageous of the two contracts.

(b) To explain the reasoning behind the inclusion (or omission from) your comparative financial statements, of each item given in the estimates and the notes relating thereto.

Answer 17.

(a)

(₹ In thousands)

	Contract – I	Contract – II
Materials :		
X (Note 1)	19,440	–
X (Note 2)	27,360	–
X (Note 3)	60,000	–
	1,06,800	–
Y (Note 4)		49,600
Z (Note 5)		71,200
Labour (Note 6)	86,000	1,10,000
Accommodation and travel for site		
Management (Note 7)	6,800	5,600
Site management (Note 8)	–	–
	1,99,600	2,36,400
Plant rental received (Note 9)	(6,000)	–
Relevant operational cost	1,93,600	2,36,400
Penalty (Note 10)	–	28,000
	1,93,600	2,64,400
Contract price	2,88,000	3,52,000
Profit	94,400	87,600

Decision : Of the two contracts, Contract – I is more advantageous. It will yield a profit of ₹ 94,400. This is ₹ 6,800 higher than that from Contract – II.

(b) Notes :

1. Material X, if not used on this contract, could only, as an alternative, be used on other jobs as a substitute for a cheaper material. By using this stock, company will be obliged to spend money (21,600 × 0.90 = 19,440).
2. The timing of the placing of these orders was unfortunate for the material could now be purchased for ₹ 30,400 x 0.90 = 27,360. This is the cost, which should be charged to the contract. The actual cost of ₹ 30,400 relates to previous purchasing decision and is a committed cost.
3. The cost of material, which has not yet been ordered, will only be incurred if the order is placed, i.e. if the contract is undertaken. The whole of this cost is, therefore, a relevant cost in respect of this contract.

4. The purchase price of material Y has doubled since it was purchased for stock. It is a material in common use and, therefore, if not used in contract, be disposed off at a loss. The relevant cost, therefore, is the cost of replacing the material, which is used i.e. ₹ 24,800 x 2 = ₹ 49,600. It assumed that the cost saved by not to sell and repurchase stock is more than sufficient to compensate for any storage costs associated with holding the stock until eventual stage.
5. It is incremental cost and, therefore, it is relevant.
6. It is incremental cost and, therefore, it is relevant.
7. This cost would be incurred only if the contract is undertaken and, therefore, it is relevant.
8. The site management function is often performed by personnel from headquarters, who are charged to contracts undertaken. Site management costs are, therefore, committed costs, which in short run are not increased due to operation of individual contract.
9. Should Contract – I be undertaken a cash inflow of ₹ 6,000 would result from the hiring out of surplus plant.
10. Should Contract – II be undertaken, the company would be obliged to withdraw from Contract – I thus invoking the penalty clause of ₹ 28,000.
11. Both notional interest and cost of operating the headquarters are not relevant costs. Notional interest does not result in a negative cash flow and any differential financial consequences of the contracts are made by the progress payments. Headquarters costs are fixed or committed cost.

Depreciation has been ignored because it does not involve incremental cash flow.

Q. 18. A large Company is organized into several manufacturing divisions. The policy of the Company is to allow the divisional Managers to choose their sources of supply and when buying from or selling to sister divisions, to negotiate the prices just as they will for outside purchase or sales.

Division X buys all of its requirement of its main raw material R from Division Y. The full manufacturing cost of R for Division Y is ₹ 88 per kg. at normal volume.

Till recently, Division Y was willing to supply R to Division X at a transfer price of RS. 80 per kg. The incremental cost of R for Division Y is ₹ 76 per kg. Since division Y is now operating at its full capacity, it is unable to meet the outside customers' demand for R at its market price of ₹ 100 per kg. Division Y, therefore, threatened to cut off supplies to Division X unless the latter agrees to pay the market price for R.

Division X is resisting the pressure because its budget based on the consumption of 1,00,000 kg. per month at a price of ₹ 80 per kg. is expected to yield a profit of ₹ 25,00,000 per month and so a price increase to ₹ 100 per kg. will bring the Division X close to break-even point.

Division X has even found an outside source for a substitute material at a price of ₹ 95 per kg. Although the substitute material is slightly different from R, it would meet the needs of Division X. Alternatively, Division X is prepared to pay Division Y even the manufacturing cost of ₹ 88 per kg.

Required **:**

i. Using each of the transfer price of ₹ 80, ₹88, ₹ 95 and ₹ 100, show with supporting calculation, the financial results as projected by the :
   (a) Manager of Division X
   (b) Manager of Division Y
   (c) Company

ii. Comment on the effect of each transfer price on the performance of the Managers of Division X and Division Y.

iii. If you were to make a decision in the matter without regard to the views of the individual Divisional Managers, where should Division X obtain its materials from and at what price.

Answer 18.

i. Statement showing the impact of different transfer prices on divisional profits :

(a) Transfer price ₹ 80

Division X	Division Y		For the Company	
Budgeted profit on this price = ₹ 25,00,000	Sales (1,00,000 × 80)	80,00,000	X Division	25,00,000
	Variable Cost (1,00,000 × 76)	76,00,000	Y Division	4,00,000
	Profit	4,00,000	Profit of the Co.	29,00,000

(b) Transfer price ₹ 88

Division X		Division Y		For the Company	
Budgeted profit on this price = ₹ 25,00,000		Sales (1,00,000 × 88)	88,00,000	X Division	17,00,000
Less : Additional Cost		Variable Cost		Y Division	12,00,000
1,00,000 × 8	8,00,000	(1,00,000 × 76)	76,00,000	Profit of the Co.	29,00,000
Profit of X	17,00,000	Profit	12,00,000		

(c) Transfer price ₹ 95

Division X		Division Y		For the Company	
Budgeted profit on this price = ₹ 25,00,000		Sales (1,00,000 × 95)	95,00,000	X Division	10,00,000
Less : Additional Cost		Variable Cost		Y Division	19,00,000
1,00,000×(95-80)	15,00,000	(1,00,000 × 76)	76,00,000	Profit of the Co.	29,00,000
Profit of X	10,00,000	Profit	19,00,000		

(d) Transfer price ₹ 100

Division X		Division Y		For the Company	
Budgeted profit on this price = ₹ 25,00,000		Sales (1,00,000 × 100)	1,00,00,000	X Division	5,00,000
Less : Additional Cost		Variable Cost		Y Division	24,00,000
1,00,000×(100-80)	20,00,000	(1,00,000 × 76)	76,00,000	Profit of the Co.	29,00,000
Profit of X	5,00,000	Profit	24,00,000		

ii. Comments on different prices

(a) Transfer price of ₹ 80 gives good incentive to Manager of X Division, but it discourages the Manager of Y Division, because he can sell outside at ₹ 100 and thus he can show better profit if he is allowed to sell outside.

(b) Transfer price of ₹ 88 reduces the profits of Division X and boosts the performance of Division Y in comparison to existing arrangement. The decision neither increase nor decrease the company's profit.

(c) Transfer price of ₹ 95 further reduces the profit of Division X and correspondingly improve the profit of Division Y. Company's profit again neither increase nor decrease due to this decision.

(d) Price of ₹ 100 puts Manager of X Division to very disadvantageous position, because he is able to get the material from outside source at ₹ 95. Therefore, at this price profit of Division X are unnecessarily decreased by ₹ 5,00,000 i.e. 1,00,000 x (₹ 100 – ₹ 95.00). Since Y can get ₹ 100 from outside customers, this price means loss of company's profit by ₹ 5,00,000

iii. Decision in the matter. The transfer price must motivate the concerned divisional managers maintaining the divisional autonomy. The best course will be :

(a) X Division should buy the material R from outside source at price of ₹ 95.

(b) Y Division should sell entire quantity of R to outside consumer at ₹ 100.

The decision will maximize the company's profits, as is clear from the following analysis :

Division X		Division Y		For the Company	
Budgeted profit on this price = ₹ 25,00,000		Sales (1,00,000 × 100)	1,00,00,000	X Division	10,00,000
				Y Division	24,00,000
Less : Additional Cost		Variable Cost		Profit of the Co.	34,00,000
1,00,000× (95-80)	15,00,000	(1,00,000 × 76)	76,00,000		
Profit of X	10,00,000	Profit	24,00,000		

Q. 19. Choco Food Products is a new entrant in the market for chocolates. It has introduced a new product "Sweets". This is a small rectangular chocolate bar. The bars are wrapped in aluminium foil and packed in attractive cartons containing 50 bars. A carton is, therefore, considered the basic sales unit. Although management had made detailed estimates of costs and volumes prior to undertaking this venture, new projections based on actual cost experience are now required.

Income statements for the last two quarters are each thought to be representative of the costs and productive efficiency we can expect in the next few quarters. There were virtually no inventories on hand at the end of each quarter. The income statements reveal the following :

₹

		First Quarter	Second Quarter
Sales	50,000 × ₹ 24	12,00,000	–
	70,000 × ₹ 24	–	16,80,000
Less :	Cost of Goods Sold	7,00,000	8,80,000
	Gross margin	5,00,000	8,00,000
Less :	Selling and Administration	6,50,000	6,90,000
	Net income (loss) before taxes	(1,50,000)	1,10,000
Less :	Tax (negative)	60,000	44,000
	Net income (Loss)	(90,000)	66,000

The firm's overall marginal and average income tax rate is 40%. This 40% figure has been used to estimate the tax liability arising from the chocolate operations.

***Required* :**

(a) Management would like to know the break-even point in terms of quarterly carton sales for the chocolates.

(b) Management estimates that there is an investment of ₹ 30,00,000 in this product line. What quarterly carton sales and total revenue are required in each quarter to earn an after-tax return of 20% per annum on investment?

(c) The firm's marketing people predict that if the selling price is reduced by ₹ 1.50 per carton (₹ 0.03 off per chocolate bar) and a ₹ 1,50,0000 advertising campaign among school children is mounted, sales will increase by 20% over the second quarter sales. Should the plan be implemented?

Answer 19.

(a) For determining break-even point, it is necessary to find out fixed cost.

$$\text{Variable Cost} = \frac{\text{Change in cost}}{\text{Change in activity}} = \frac{₹\ 1,80,000}{20,000} = ₹\ 9 \text{ per unit}$$

Total manufacturing cost at a level of 50,000 cartons	₹ 7,00,000
Less : Variable manufacturing cost (50,000 x ₹ 9)	4,50,000
Fixed manufacturing cost for the quarter	2,50,000

For Variable and fixed Selling & Administration Costs :

$$\text{Variable S. \& Admn. Cost} = \frac{\text{Change in cost}}{\text{Change in activity}} = \frac{₹\ 6,90,000 - ₹\ 6,50,000}{20,000} = ₹\ 2 \text{ per unit}$$

Total selling & admn. Cost at a level of 50,000 cartons	₹ 6,50,000
Less : Variable Selling & Admn. Cost (50,000 × 2)	1,00,000
Fixed Selling and Admn. Cost	5,50,000

Therefore, Total Variable Cost per unit = ₹ 9 + ₹ 2 = ₹ 11.00

P/V ratio = (₹ 24 – 11)/24 = 13/24

Total fixed cost = ₹ 2,50,000 + ₹ 5,50,000 = ₹ 8,00,000

We know that BES x P/V ratio = Fixed cost

Or, BES x 13/24 = ₹ 8,00,000

Or, BES = ₹ 14,76,923

Or, BES = 14,76,923 ÷ 24 = 61,539 cartons

(b) Management want 20% per annum on investment of ₹ 30,00,000

Expected quarterly profit after tax = ₹ 30,00,000 x 0.20 x (3/12) = ₹ 1,50,000

Expected quarterly profit before tax = (₹ 1,50,000 ÷ 60) x 100 = ₹ 2,50,000

Contribution expected in each quarter = Profit + Fixed cost = ₹ 2,50,000 + ₹ 8,00,000
= ₹ 10,50,000

Therefore, S × P/V ratio = 10,50,000 × 24

Required sales per quarter = $10,50,000 \times \frac{24}{13}$ = ₹ 19,38,461

Therefore, required sales per quarter in units = ₹ 19,38,461 ÷ 24 = 80,769 cartons

(c) New selling price per carton = ₹ 24 – 1.50 = ₹ 22.50

Variable cost remains same = ₹ 11 per carton

Sales as per revised plan (84,000 × ₹ 22.50) =	₹ 18,90,000
Less : Variable cost (84,000 × 11)	9,24,000
Contribution during the quarter as per revised plan	9,66,000
Less : Fixed cost during the quarter	
Existing fixed cost	₹ 8,00,000
Additional advertisement expenditure	1,50,000

	9,50,000
Profit before tax	16,000
Tax (16,000 × 0.40)	6,400
Profit after tax as per proposed plan	9,600

But the existing profit after tax during second quarter is ₹ 66,000. Therefore the plan should not be implemented.

Budgeting :

Q. 20. (a) Gadgets Ltd. manufactures and sells one product only. The budgeted volume of production and sales is 70,000 units per month. The standard selling price is ₹ 4 per unit. The standard costs are as follows :

Variable :	**Materials**	**₹ 1.00**
	Labour	**0.50**
Fixed :	**Overheads**	**2.25**
	Total	**3.75**

The company carries a substantial stock of finished units at all times. The following statement has been prepared covering the first three months' trading of the current year :

	Month 1	Month 2	Month 3
Units produced	**80,000**	**50,000**	**80,000**
Units sold	**80,000**	**70,000**	**60,000**
Sales	**₹ 3,20,000**	**₹ 2,80,000**	**₹ 2,40,000**
Standard cost of production	**3,00,000**	**1,87,500**	**3,00,000**
Stock transfer		**75,000**	**(75,000)**
Standard cost of sales	**3,00,000**	**2,62,500**	**2,25,000**
Standard profit	**20,000**	**17,500**	**15,000**

In the opinion of the Sales Director, sales are likely to continue for the rest of the year at an average rate of 60,000 units per month. The Managing Director, although somewhat disappointed at this figure, says that the company is not likely to suffer with a monthly profit less than ₹ 15,000 and asks you to confirm his view.

You are required to write a brief memorandum to the Managing Director commenting on his view and setting out the position as you see it.

Answer 20.

(a)

From
Mr. X
Management Accountant

To,
The Managing Director,
Gadgets Ltd.
New Delhi

Sub : Effect of reduced sales on profitability

Dear Sir,

This is in response to your request for my opinion on the likely effect of reduced sales level of 60,000 units on company's profits. Accordingly, I am submitting herewith a statement comparing the original monthly budget with the revised budget :

	Original Monthly Budget		Revised Monthly Budget	
	Sales (units)	70,000		60,000
1.	Sales value	₹ 2,80,000		₹ 2,40,000
2.	Less : Variable costs :			
	Material	70,000	60,000	
	Labour	35,000	1,05,000	30,000	90,000
3.	Contribution (1-2)	1,75,000		1,50,000
4.	Fixed overhead	1,57,500		1,57,500
5.	Net profit (loss)	17,500		(7,500)

The above statement shows that due to fall in sales by 10,000 units, the profit gets reduced by ₹ 25,000 resulting in a net loss of ₹ 7,500. This is contrary to the original conclusion that the company would be able to maintain minimum profit of ₹ 15,000. The reason for this discrepancy is due to budgeted fixed overhead being originally apportioned over 70,000 units in order to arrive at a total unit cost. Inclusion of fixed overhead in determining unit cost unfortunately tend to distort profits, when the budgeted sales are not achieved. Therefore, the statement for the first three months has been revised to show the incidence of fixed overhead alongwith a year-end projection as follows :

	Month 1	Month 2	Month 3	Annual projection *
Production (units)	80,000	50,000	80,000	7,50,000
Sales (units)	80,000	70,000	60,000	7,50,000
Sales value @ ₹ 4 per unit	3,20,000	2,80,000	2,40,000	30,00,000
Standard variable cost (₹ 1.50 per unit)	1,20,000	1,05,000	90,000	11,25,000
Contribution	2,00,000	1,75,000	1,50,000	18,75,000
Budgeted fixed overhead	1,57,500	1,57,500	1,57,500	18,90,000
Budgeted net profit (loss)	42,500	17,500	(7,500)	(15,000)

*Total of 3 months = 2,10,000 units
For 9 months (60,000 × 9) = 5,40,000 7,50,000

The revised monthly budget shows a net loss of ₹ 7,500 whereas as per annual projections, the net loss is ₹ 15,000. The B.E. Sales (in units) is 63,000 (Fixed cost 1,57,500 ÷ contribution per unit ₹ 2.50). If there is reduction of 10% in sales volume of 70,000, then company will incur further loss. Therefore efforts should be made to reduce the fixed cost or reduce variable cost. The management should concentrate on investigation of controllable variances. Every possible effort should be made to increase the unit selling price, alternative use of surplus capacity and finding additional markets for existing products. Pricing at marginal cost may be considered for export pricing purpose in the short run. You are, therefore, advised to consider all the above factors before arriving at the final conclusions.

Q. 21. ABC Ltd. makes two types of polish – one for floor and one for cars. It sells both types to industrial users only, in one litre containers. The specifications for the two products per patch of 100 litres are :

Materials	Floor Polish	Car Polish
Delta	120 litres	100 litres
Gamma	20 kg	10 kg
Containers – Cost per 100 ltrs.	₹ 100	₹ 100
Direct labour		
Manufacturing	12 man-hours	16 man-hours
Primary Packing	5 man-hours	5 man-hours

During the six months to end of 30th September the company expects to sell 15,000 litres of floor polish at ₹ 9 per litre and 25,000 litres of car polish at ₹ 7 per litres. Materials are expected to cost Re. 1 a litre for Delta and ₹ 8 a kg. for Gamma.

Manufacturing wages in the industry look like being stable at ₹ 6 per hour and packing wages at ₹ 4 per hour throughout the period.

Flexible overhead expenses budgets are operated for manufacturing and packing departments based on the number of man-hours worked. These budgets for six months to end of September are :

Manufacturing Department		Primary Packing Department	
5,000 man-hour	₹ 40,000	1,700 man-hour	₹ 26,000
6,000 man-hour	₹ 50,000	1,900 man-hour	₹ 28,000
7,000 man-hour	₹ 60,000	2,100 man-hour	₹ 30,000
8,000 man-hour	₹ 80,000	2,300 man-hour	₹ 32,000

General administration overhead are budgeted at ₹ 37,000. At the beginning of the period 1st April packed stocks will be :

Floor Polish	2,000 litres
Car Polish	3,000 litres

By end of the period 30th September, it is desired to maintain the packed stocks of the two products at 3,000 litres and 4,000 litres respectively. The following are required :

i. **A statement of the standard prime cost per 100 litres of each product.**
ii. **A sales and production budget (in quantities) for the six months to 30th September.**
iii. **A profit forecast for the period. Show separate gross profit for the two products but do not attempt to allocate overheads between them. No overheads are included in stock valuation.**

Answer 21.

i. Statement showing standard prime cost of 100 litres of each product

Materials	**Floor Polish**		**Car Polish**	₹
Delta @ Re 1/litre	120		100	
Gamma @ ₹ 8/kg.	160		80	
	280		180	
Container	100		100	
Direct Labour :				
Manufacturing @ ₹ 6/hour	72		96	
Primary packing @₹ 4/hour	20	92	20	116
Standard Prime Cost		472		396

ii. Sales and Production Budgets (in litres) for the six months to 30th September

	Floor Polish	**Car Polish**
Sales (litres)	15,000	25,000
Add : Closing Stock	3,000	4,000
Total	18,000	29,000
Less : Opening stock	2,000	3,000
Production	16,000	26,000

iii. Statement showing profit forecast for the period

	Floor Polish	**Car Polish**	**Total**
Quantity produced	16,000 lts.	26,000 lts.	
Quantity sold	15,000 lts.	25,000 lts.	
	₹	₹	₹
Sales value	1,35,000	1,75,000	3,10,000
Less : Prime Cost (W.N. 1)	70,800	99,000	1,69,800
Gross margin	64,200	76,000	1,40,200
Less : Overheads :			
Manufacturing	50,800 (W.N. 2)		
Packing	30,000 (W.N. 3)		
Administration	37,000		1,17,800
Net profit for the period			22,400

Working Notes :

1. Floor Polish 15,000 x ₹ 4.72 = ₹ 70,800
   Car Polish 25,000 x ₹ 3.96 = ₹ 99,000

2. Overheads for manufacturing

Manhours required :	
Floor polish = (12 hrs. ÷ 100 litres) × 16,000	1,920 hrs.
Car polish = (16 hrs. ÷ 100 litres) × 26,000	4,160 hrs.
	6,080 hrs.
Overheads for 6,000 hrs. (given)	₹ 50,000
Overheads for next 80 hrs. [(₹ 60,000 – 50,000) ÷ (7,000 – 6,000)] × 80	800
Overheads of manufacturing department	50,800

3. Overheads for primary packing manhours required

Floor Polish (5 hrs. ÷ 100 litres) x 16,000 =	800
Car Polish (5 hrs. ÷ 100 litres) x 26,000 =	1,300
	2,100
Overheads for 2,100 hrs. (Packing)	30,000

Note : As given in the question, no overheads are included in stock valuation.

Q. 22. The following budget of PQ Company Limited, a manufacturing organization, has been prepared for the year 2010 :

	(% of sales value)
Raw materials	**40**
Direct wages	**25**
Factory overheads (fixed)	**5**
Factory overheads (variable)	**10**
Administration and selling and Distribution Overheads (variable)	**6**
Administration and selling and distribution overheads (fixed)	**12**
Profit	**2**
Sales Value	**100**

After considering the quarterly performance, it is felt that the budgeted volume of sales would not be achieved. But the company expects to achieve 80% of the budgeted sales (equivalent to a sales value of ₹ 1,60,00,000). At this stage, the company has received an export order for its usual line of products. The estimated prime cost and special export expenses for fulfilling the export order are ₹ 13,00,000 and ₹ 40,000 respectively.

You are required to :

i. **Present the original budget and the revised budget based on 80% achievement of the target sales, showing the quantum of profit (loss) for both .**

ii. **Prepare a statement of budgeted costs for working out the overhead recovery rates (in percentage).**

iii. **Work out the lowest quotation for the export order.**

Answer 22.

i. Statement showing the original budget and the revised budget and the consequential profit /(loss)

Particulars	% of sales value	Original budget (₹ In '00,000)	% of sales value	Revised budget (₹ '00,000)
Sales	100	200.00*	80	160.00
Raw materials	40	80.00		64.00
Direct wages	25	50.00		40.00
Factory overhead (V)	10	20.00		16.00
Adm. And S & D Overhead (V)	6	12.00		9.60
Total variable cost	81	162.00		129.60
Contribution	19	38.00		30.40
Factory overhead (F)	5	10.00		10.00
Adm. And S & D Overhead (F)	12	24.00		24.00
Total fixed costs	17	34.00		34.00
Profit (loss)	2	4		(3.60)

* Sales at 80% level = ₹ 160

Sales at 100% level = ₹ 160/80 × 100 = ₹ 200

ii. Statement showing overhead recovery rates based on original budget

(a) Variable Factory Overheads (based on direct wages) = $\frac{20,00,000}{50,00,000} \times 100$ = 40% of D.W.

(b) Fixed Factory Overheads (based on direct wages) = $\frac{10,00,000}{50,00,000} \times 100$ = 20% of D.W.

(c) Variable Adm. and S & D Overheads (based on works cost)# = $\frac{12,00,000}{1,60,00,000} \times 100$ = 7.5%

(d) Fixed Adm. and S & D Overheads (based on works cost)# = $\frac{24,00,000}{1,60,00,000} \times 100$ = 15%

iii. Statement showing quotation for export order **₹ '00,000**

Prime cost of export order is ₹ 13,00,000	
Raw material content in the prime cost 13 x (40/65) @	8
Direct wages 13 x (25/65) @	5
	13
Variable factory overheads (40% of D.W.)	2
Works cost	15

Works Cost

= (Total variable costs – Variable Adm. And S & D Overheads) + Fixed Factory Overheads

= (₹ 162,00,000 – 12,00,000) + 10,00,000

= ₹ 160,00,000

@ As per original budget = Material is 40% of sales and direct wages 25% of sales.	
Variable Adm. And S & D Overhead (7.5% of works cost)	1.125
Special exports expenses	0.400
Total cost of export order	16.525

Note : The export order can be quoted at any price above ₹ 16,52,500.

Q. 23. Based on the following information prepare a Cash Budget for ABC Ltd. :

₹

	1st quarter	2nd quarter	3rd quarter	4th quarter
Opening cash balance	**10,000**	**–**	**–**	**–**
Collection from customers	**1.25,000**	**1,50,000**	**1,60,000**	**2,21,000**
Payments				
Purchase of materials	**20,000**	**35,000**	**35,000**	**54,200**
Other expenses	**25,000**	**20,000**	**20,000**	**17,000**
Salary and wages	**90,000**	**95,000**	**95,000**	**1,09,200**
Income tax	**5,000**	**–**	**–**	**–**
Purchase of machinery	**–**	**–**	**–**	**20,000**

The company desires to maintain a cash balance of ₹ 15,000 at the end of each quarter. Cash can be borrowed or repaid in multiples of ₹ 500 at an interest of 10% per annum. Management does not want to borrow cash more than what is necessary and wants to repay as early as possible. In any event, loans cannot be extended beyond four quarters. Interest is computed and paid when the principal is repaid. Assume that borrowing take place at the beginning and payments are made at the end of the quarters.

Answer 23.

Cash Budget for ABC Ltd. ₹

	1st quarter	2nd quarter	3rd quarter	4th quarter
Opening cash balance	10,000	15,000	15,000	15,325
Add : Collection from customers	1,25,000	1,50,000	1,60,000	2,21,000
Total cash available (A)	1,35,000	1,65,000	1,75,000	2,36,325
Payments				
Purchase of materials	20,000	35,000	35,000	54,200
Other expenses	25,000	20,000	20,000	17,000
Salary and wages	90,000	95,000	95,000	1,09,200
Income tax	5,000	–	–	–
Purchase of machinery	–	–	–	20,000
Total cash payments (B)	1,40,000	1,50,000	1,50,000	2,00,400
Minimum cash balance required	15,000	15,000	15,000	15,000
Total cash required	1,55,000	1,65,000	1,65,000	2,15,400
Excess (deficit)	(20,000)	–	10,000	20,925
Financing :				
Borrowing	20,000	–	–	–
Repayment	–	–	(9,000)	(11,000)
Interest payment	–	-	(675)*	(1,100)
Total effect of financing (C)	20,000	–	(9,675)	(12,100)
Cash balancing at the end of quarters (A-B+C)	15,000	15,000	15,325	23,825

* 9,000 × 0.10 × 9/12 = ₹ 675. Similarly interest has been calculated for one year @10% per annum on ₹ 11,000.

Standard Costing :

Q. 24. Newlook Enterprises Ltd. has furnished the summary Profit and Loss Account of the firm for the year ended 31st March, 2010 along with that of the previous year, as follows :

Profit and Loss Account (₹ Lakhs)

Particulars	Previous year	Year ended 31-03-2010
Materials consumed	160	231
Wages	100	138
Variable overheads	40	48
Fixed overheads	20	30
Profit	80	93
	400	540

During the year ended 31st March, 2010 there was an average increase of 10% in the cost of materials and 15% in wage rates. To neutralize this cost increase, the firm raised the selling price by 8%.

You are required to analyse the details suitably and prepare a statement indicating the factors responsible for the difference in profit between the two years, together with their respective contributions.

Answer 24.

Factors responsible for difference in profit : There is an increase of ₹ 13 lakhs in profit compared to the previous year. This is explained as follows :

Previous Year's Result Analysis **(₹ Lakhs)**

Sales		400
Materials	(40% of sales)	160
Wages	(25% of sales)	100
Variable overhead	(10% of sales)	40
Contribution	(25% of sales) (Fixed O.H. + Profit)	100
		400

Items affected by price increase reduced to previous year's price level

	Current year	% increase	Amount at base prices	Variance
Sales	540	8%	540 x 100/108 = 500	40 (F)
Materials	231	10%	231 x 100/110 = 210	21 (A)
Wages	138	15%	138 x 100/115 = 120	18 (A)

Computation of variances :

i. Sales Margin Variance = Increase in sales x Contribution % = (500 – 400) x 25% = 25 (F)

ii. Direct Materials Usage = Standard usage – Actual usage = 40% of 500 – 210 = 10 (A)

iii. Direct Labour Efficiency = Std. cost for actual production – Acutal cost of base price
= 25% of 500 – 120= 5 (F) efficiency

iv. Variable Overhead Variance = Standard cost – Actual cost = 10% of 500 – 48 = 2 (F)

v. Fixed Overhead Variance = Increase in fixed cost = 20- 30 = 10 (A)

Summary of Variances (₹ In lakhs)

Particulars	Favourable	Adverse
Sales price	40	–
Sales margin (contribution)	25	–
Materials – price	–	21
Materials – usage	–	10
Labour – rate	–	18
Labour – efficiency	5	–
Variable overheads	2	–
Fixed overheads	–	10
	72	59

Thus, net variance is ₹ 13 lakhs (F).

Q. 25. The details regarding a consumer goods manufactured by XYZ Co. for the last one week are as follows :

Standard cost (For one unit)				**(₹)**
Direct materials	**(10 units @ ₹ 1.50)**			**15**
Direct wages	**(5 hours @ ₹ 8)**			**40**
Production overheads	**(5 hours @ ₹ 10)**			**50**
				105
Actual (For whole activity)				
Direct materials	**₹ 6,435**	**Direct wages**		**₹ 16,324**
Analysis of variances				
Direct materials				
	Price	**₹ 585 (A)**	**Usage**	**₹ 375 (F)**
Direct wages (labour)				
	Rate	**₹ 636 (F)**	**Efficiency**	**₹ 360 (A)**
Production overheads				
	Expenditure	**₹ 400 (F)**	**Volume**	**₹ 750 (F)**

You are required to calculate :

i. **Actual output unit**
ii. **Actual price of material per unit**
iii. **Actual wage rate per labour hour**
iv. **The amount of production overhead incurred**
v. **The production overhead efficiency variance.**

Answer 25.

i. Calculation of Actual Output Units

Direct material cost variance = Price variance + Usage variance
= ₹ 585 (A) + 375 (F)
= 210 (A)

Direct material cost variance	=	(Std. units x Std. price) – (Actual units x Actual price)
210 (A)	=	(Std. units x Std. price) – ₹ 6,435
210 (A)	=	(Std. units x ₹ 15) – ₹ 6,435
6,435 – 210	=	Std. units x 15
Std. units	=	(6,435 – 210)/15= 415 units
Material usage variance	=	Std. price per unit material (Std. qty. – Actual qty.)
₹ 375 (F)	=	₹ 15 (415 units – Actual quantity)
₹ 375 (F)	=	6,225 – 15 x Actual quantity
15 × Actual quantity	=	6,225 – 375 = 5,850/15
Actual output	=	390 units

ii. Calculation of Actual Price of Material per unit

Material cost variance	=	(Std. units x Std. price) – (Actual units x Actual price)
210 (A)	=	(415 x ₹ 15) – (390 x Actual price)
210 (A)	=	6,225 – (390 x Actual price)
390 x Actual price	=	6,225 + 210
Actual price	=	6,435/390 = ₹ 16.50
Actual price of material per unit	=	₹ 16.50

iii. Calculation of Actual Wage Rate per labour hour

Labour efficiency variance	=	Std. rate (Std. time for actual output – Actual time)
₹ 360 (A)	=	₹ 8 [(5 hrs. x 390 units) – Actual time]
₹ 360 (A)	=	₹ 15,600 – 8 x Actual time
8 × Actual time	=	₹ 15,600 + ₹ 360
Actual time	=	15,960/8 = 1,995 hours
Labour cost variance	=	Rate variance + Efficiency variance
	=	₹ 636 (F) + ₹ 360 (A) = ₹ 276 (F)
Labour cost variance	=	(Std. labour hours produced x Std. rate per hour) – (Actual labour hours x Actual rate per hour)
₹ 276 (F)	=	[(390 units x 5 hours) x ₹ 8] – (1,995 hours x Actual rate per hr.)
₹ 276 (F)	=	₹ 15,600 – (1,995 x Actual rate per hr.)
(1,995 × Actual rate per hr.)	=	15,600 – 276
Actual rate per hour	=	15,324/1995 hours = ₹ 7.68

iv. Calculation of the amount of Production Overhead incurred

Production overhead cost variance	=	Expenditure variance + Volume variance
	=	₹ 400 (F) + ₹ 750 (F) = ₹ 1,150 (F)
Production overhead cost variance	=	(Actual output x Std. overhead rate) – Actual overhead
₹ 1,150 (F)	=	(390 units x ₹ 50) – Actual overheads
₹ 1,150 (F)	=	₹ 19,500 – Actual overheads
Actual overhead incurred	=	₹ 19,500 – ₹ 1,150 = ₹ 18,350

v. Calculation of Production Overhead Efficiency Variance

Production overhead efficiency variance = Std. rate (Std. output – Actual output)
= ₹ 50 (415 units – 390 units)
= ₹ 20,750 – ₹ 19,500
= ₹ 1,250 (F)

Q. 26. ABC Ltd. is following a standard costing system. The standard output for a period is 20,000 units. Details relating to standard cost and profit per unit are given below :

	₹
Direct material (3 units @ ₹ 1.50)	4.50
Direct labour (3 hours @ Re. 1.00)	3.00
Direct expenses	0.50
Factory overheads :	
Variable	0.25
Fixed	0.30
Administration overhead	0.30
Total cost	8.85
Profit	1.15
Selling price (fixed by the government)	10.00

The actual production and sales for the period was 14,400 units. There has been no price revision by the government during the period.

The following are the variances worked out at the end of the period :

	Favourable ₹	Adverse ₹
Direct material		
Price		4,250
Usage	1,050	
Direct labour :		
Rate		4,000
Efficiency	3,200	
Factory overheads		
Variable expenditure	400	
Fixed expenditure	400	
Fixed volume		1,680
Administration overheads		
Expenditure		400
Volume		1,680

You are required to ascertain the details of the actual costs and prepare a profit and loss statement for the period showing the actual profit/loss. Show the working clearly.

Answer 26.

Statement showing the actual cost and actual profit of ABC Ltd. ₹

	Standard cost/ sales/ profit	Adjustment of variances		Actual cost/ sales/ profit
		Favourable*	Adverse*	
Direct material (14,400 x 4.50)	64,800			
Material price variance (A)			4,250	
Material usage variance (F)		1,050		
Actual material cost (64,800 + 4,250 – 1,050)				68,000
Direct labour cost (14,400 x 3)	43,200			
Labour rate variance (A)			4,000	
Labour efficiency variance (F)		3,200		
Actual direct labour cost (43,200+4,000-3,200)				44,000
Direct expenses (14,400 x 0.50)	7,200	–	–	7,200
Actual prime cost				1,19,200
Variable factory overhead (14,400 x 0.25)	3,600			
Variable Expenditure variance (F)		400		
Actual variable factory overheads (3,600-400)				3,200
Fixed factory overhead (14,400 x 0.30)	4,320			
Fixed volume variance (A)			1,680	
Fixed expenditure variance (F)		400		
Actual fixed overheads				5,600
Administration overhead (14,400 x 0.30)	4,320			
Volume variance (A)			1,680	
Administration expenditure variance (A)			400	
Actual administration overheads				6,400
Total actual cost				1,34,400
Sales (14,400 x 10)				1,44,000
Actual profit				9,600

* In order to arrive at the actual cost add adverse variances and deduct favourable variances to the standard cost.

Q. 27. Bajaj Auto Ltd. uses standard costing system. The sales data for a period are as under :

Product (units)	Budgeted sales price per unit	Budgeted selling (₹)	Actual sales (units)	Actual sales value (₹)
A	**1,280**	**20**	**650**	**12,350**
B	**3,200**	**12**	**3,900**	**50,700**
C	**1,920**	**16**	**1,950**	**29,250**

The cost data are as under :

	A	B	C
Standard cost p.u.	**16**	**10**	**13**
Actual cost p.u.	**18**	**12**	**13**

You are required to calculate the following for the period :

i. **Gross margin total sales variance**
ii. **Gross margin sales volume variance**
iii. **Gross margin mix variance**
iv. **Gross margin sales quantity variance**
v. **Sales price variance**
vi. **Total cost variance**

Answer 27.

Basic data

Particulars	Products	Sales units	Selling price p.u. (₹)	Cost p.u. p.u. (₹)	Profit p.u. (₹)	Total profit (₹)
Budgeted data :	A	1,280	20	16	4	5,120
	B	3,200	12	10	2	6,400
	C	1,920	16	13	3	5,760
		6,400				17,280
Actual data :	A	650	19	16	3	1,950
	B	3,900	13	10	3	11,700
	C	1,950	15	13	2	3,900
		6,500				17,550

Working notes :

1. Budgeted margin per unit on actual mix

Product	Units	Per unit (₹)	Total (₹)
A	650	4	2,600
B	3,900	2	7,800
C	1,950	3	5,850
	6,500		16,250

= ₹ 16,250/6,500 = ₹ 2.50

2. Budgeted margin per unit on budgeted mix

= ₹ 17,280/6,400 units = ₹ 2.70

Calculation of variances :

i. Gross margin total sales variance = Actual profit – Budgeted profit
= ₹ 17,550 – ₹ 17,280 = ₹ 270 (F)

ii. Gross margin sales volume variance = Budgeted margin p.u. (Actual qty. – Budgeted qty.)

A = ₹ 4 (650 units – 1,280 units) = 2,520 (A)

B = ₹ 2 (3,900 units – 3,200 units) = 1,400 (F)

C = ₹ 3 (1,950 units – 1,920 units) = 90 (F) = ₹ 1,030 (A)

iii. Gross margin sales mix variance

= Total actual qty. (Budgeted margin p.u. on actual mix – Budgeted margin p.u. on budgeted mix)

= 6,500 units (₹ 2.50 – ₹ 2.70) = ₹ 1,300 (A)

iv. Gross margin sales quantity variance

= Budgeted margin p.u. on budgeted mix (Total actual qty. – Total budgeted qty.)

= ₹ 2.70 (6,500 units – 6,400 units) = ₹ 270 (F)

v. Sales price variance = Actual sales volume (Actual selling price – Budgeted selling price)

A = 650 units (₹ 19 – ₹ 20) = 650 (A)

B = 3,900 units (₹ 13 – ₹ 12) = 3,900 (F)

C = 1,950 units (₹ 15 – ₹ 16) = 1,950 (A) = ₹ 1,300 (F)

vi. Total cost variance = Standard Cost – Actual Cost

A = 650 units (₹ 16 – ₹ 18) = 1,300 (A)

B = 3,900 units (₹ 10 – ₹ 12) = 7,800 (A)

C = 1,950 units (₹ 13 – ₹ 13) = – = ₹ 9,100 (A)

Summary of variances :

		₹
Sales price variance		1,300 (F)
Sales volume variance		
a) Gross margin sales mix variance	1300 (A)	
b) Gross margin sales qty. variance	270 (F)	
		1,030 (A)
Gross margin total sales variance		270 (F)
Total cost variance		9,100 (A)

Q. 28. (a) What are the advantages of a Balanced Score-card?

(b) What is the role of a Cost Accountant in Benchmarking?

(c) What are different steps of performance measurement selection process?

Answer 28. (a)

The advantages of a balanced score-card are as under :

(i) Balanced score-card brings together in a single management report, many of the seemingly disparate elements of a company's competitive agenda (i.e., becoming customer oriented, shortening response time, improving quality, emphasizing team-work and reducing new product launch time.)

(ii) Score-card guards against sub-organisation. It forces senior managers to consider all important operational measures together, the balanced score-card lets team see whether an improvement in one area may have been achieved at the expense of another.

(iii) The balanced score-card provides strategic feedback and learning and guards against traditional performance measures which yield sub-optimal results.

(iv) The balanced score-card facilitates communication and understanding.

(v) The balanced score-card brings to focus strategy and vision.

Answer 28. (b)

A Cost Accountant is positioned at the core of benchmarking process as follows :

(i) A key part of benchmarking is understanding how a company's internal systems operate. This is a primary ongoing function of a cost accountant.

(ii) A benchmarking team requires a lot of information relating to current cost and cost accountant renders very valuable assistance in this regard. Internal costing information is most easily accessed by the cost accountant.

(iii) A cost accountant can render useful assistance in obtaining benchmarking information from target companies. Though any one can with proper training and a well-prepared questionnaire can obtain this information, it is better to use cost accountant for this purpose, because a cost accountant can examine weak answer and discover key information, whose absence may not be apparent to any one else.

(iv) A cost accountant can be used to compare the internal and external information.

In short, a cost accountant acts as chief financial analyst on a benchmarking team. Both assembling and reviewing the key information used by the team to arrive at a list of suggested recommendations for improvement.

Answer 28. (c)

The steps of performance measurement selection process are :

(i) Identification of critical success factors (CSFs) for the company.

(ii) Selection of business process or outcome to measure.

(iii) Identification of purpose, for which the performance measurement will be used.

(iv) Identify the desired characteristics of the measure.

(v) Selection of the specific performance measure.

(vi) Establishment of a target or goal for the measure.

(vii) Assessment of actual performance outcomes.

(viii) Adaptation of the performance measurement system for continuous improvement.

Q. 29. (a) What is the role of a Management Accountant in cost control and cost reduction?

(b) What are the limitations of Uniform Costing?

(c) What are life cycle costs of a capital asset?

Answer 29. (a)

Management Accountants role in cost control and cost reduction is perhaps central to his role as a member of the management team. Indeed, for effective cost control, it may be necessary to spend more on the items which will reduce waste and scrap, improve quality, increase productivity or conserve energy. In any large organization the points at which costs are incurred are usually numerous and relatively few line managers have the mechanism of collating and analyzing all the costs they incur, with a view to implementing cost control measures. The Management Accountant is uniquely placed in this respect and it usually falls on him to play a catalytic role in getting the management team to work together to achieve specific cost control objectives.

It is also upto the Management Accountant to channelize the cost control and cost reduction efforts into areas which will give the greater results. Without this direction, cost control and cost reduction can too often degenerate into symbolic actions like reusing envelopes or downgrading the class of air travel, which generally have little impact on the overall cost structure but can substantially harm morale and motivation. it is important for the Management Accountant to guide the company's cost control and cost reduction programme into productive lines and not let it degenerate into a morale damaging axing of petty expenditure.

Answer 29. (b)

Establishing and operating uniform costing is difficult due to the following limitations :

(i) A lack of standardized terminology. This limitation can be overcome by adoption of uniform cost accounting manual. It is difficult to accomplish the standardization of terminology or definitions.

(ii) It would be great difficult in fitting the methods advocated by the system into the framework of each individual business. Many differences exist such as age of plant, investment of project, geographical location, availability of labour and material, degree of mechanisation etc.

(iii) It may cause to incur to high cost of installation during implementation of uniform costing. This may be objectionable to some of the firms, especially small firms. In consideration of the economics of costs and benefits, the bigger firms will be able to take the advantage of the uniform costing to their individual concern than the small firms.

(iv) The main objection for uniform costing is that the business concerns are avert to reveal/ disclose their data/information to the trade association in the belief that confidential information will be disclosed to competitors.

Answer 29. (c)

The life cycle costs of a capital asset are summarized below :

1. If the asset is constructed 'in-house'

(i) Research and development
(ii) Design specifications
(iii) Manufacturing
(iv) Quality control and testing
(v) Design modifications
(vi) Recruitment and training of operating staff and maintenance engineers.

2. If the asset is purchased from the supplier :

(i) Acquisition cost
(ii) Installation
(iii) Commissioning
(iv) Obtaining spares
(v) Recruitment and training of operating staff and maintenance engineers
(vi) Purchase of auxiliary maintenance equipment.

Q. 30. (a) What is the impact of target costing on profitability ? What are the advantages of target costing?

(b) What are the costs of non-conformance?

Answer 30. (a)

Impact of target costing on profitability :

(i) Target costing improves profitability in two ways. First, it places a detailed continuing emphasis on product cost throughout the life cycle of every product. Secondly, it improves profitability through precise targeting of correct prices at which the company feels it can field a profitable product.

(ii) Target costing is really part of a larger concept called concurrent engineering which requires participants from many departments to work together on project team, clustering representatives from many departments on a single design team can be quite a struggle. This problem can be solved by senior management.

(iii) The cost accountant should continue taking lead role in continuing review of suppliers' cost.

(iv) A company which issues a stream of new product should make target costing a central part of its strategy.

Advantages of target costing :

(i) Forced planning. Target costing ensures proper planning well ahead of actual production and marketing.

(ii) Competitive atmosphere. Target costing starts with customer study or market study. It cannot work properly, till a company has got a charged competitive atmosphere. Ways and means are found out to succeed in competition.

(iii) Cohesive team spirit. For success of target costing, a inter-function team is essential. Therefore, it promotes cohesive team spirit in the organization. This spirit impels the team members to attempt higher-level performance.

Answer 30. (b)

Cost of non-conformance encompasses three aspects :

(i) **Cost of internal failure –** This is the cost of correcting products or services which do not meet quality standards prior to delivery to the customer. Examples include scrap and rework. Internal failure costs are those which occur with the organization before delivery to the external customer. The cost arising within the manufacturing organistaion such as scrap, spoilage, reworked material etc. are internal failure costs. These costs are incurred on correcting defects and discovered prior to delivery to the customer.

(ii) **Cost of external failure –** There is the cost of external failure – correcting products or services after delivery to the customer. Examples include warranty costs, installation of field retrofits, customer invoice errors/ adjustments and unplanned field service costs. External failure costs occur when the product or service offered to the customer are found defective.

(iii) **Cost of exceeding requirements –** This is the cost incurred providing information or services which are unnecessary or unimportant, or for which no known requirement has been established. Examples include redundant copies of documents, reports which are not read, detailed analytical effort when scope estimates would suffice, and sales calls which are not required by the customer.

Q. 31. (a) Discuss the various reports provided by Cost Accounting department.

(b) Give three examples of Cost Drivers of following business functions in the value chain :

(i) Research and development

(ii) Design of products, services and processes

(iii) Marketing

(iv) Distribution

(v) Customer service

(c) Write four limitations of inter-firm comparison

Answer 31. (a)

The following are the various Reports provided by Cost Accounting Department:

(i) Cost sheet setting out the total cost, analysed into various elements, giving comparative figure of previous period and other plants under the same management.

(ii) Consumption of material statements.

(iii) Labour utilization statements, details about total number of hours paid for, standard hours for output, idle time and causes thereof.
(iv) Overheads incurred compared with budgets.
(v) Reconciliation of actual profit earned with estimated or budgeted profit.
(vi) Total cost of abnormally spoiled work in the factory and abnormal loss and store.
(vii) Total cost of inventory carried, number of monthly stocks would be sufficient.
(viii) Labour turnover and cost of recruitment and training of new employee.
(ix) Expenses incurred on R & D as compared to budgeted amount.

Answer 31. (b)

A cost driver is any factor whose change causes a change in the total cost of a related cost object. In other words, a change in the level of cost driver will cause a change in the level of the total cost of a related cost object.

The cost drivers for business functions viz. Research & Development; Design of products, services and processes; Marketing; Distribution and Customer service are as follows :

Business functions	Cost Drivers
(i) Research & Development	— Number of research projects — Personnel hours on a project — Technical complexities of the projects
(ii) Design of products, services and processes	— Number of products in design — Number of parts per product — Number of engineering hours
(iii) Marketing	— Number of advertisement run — Number of sales personnel — Sales revenue — Number of products and volume of sales (in quantitative terms)
(iv) Distribution—	— Number of items distributed — Number of customers — Weight of items distributed
(v) Customer service	— Number of service calls — Number of products serviced — Hours spent in servicing of products

Answer 31. (c)

Limitations of Inter-firm comparison :

The following are the limitations in the implementation of a scheme of inter-firm comparison:

(i) Top management feels that secrecy will be lost.
(ii) Middle management is usually not convinced with the utility of such a comparison.
(iii) In the absence of a suitable cost accounting system, the figures supplied may not reliable for the purpose of comparison.

Suitable basis of comparison may not be available.