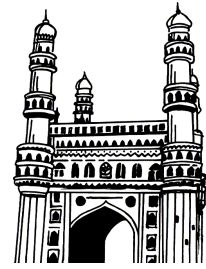


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Important Questions

UNIT - I

1. What are the objectives of Financial Statements.

Ans :

Refer Unit-I, Q.No. 3.

2. State the uses of Financial Statements.

Ans :

Refer Unit-I, Q.No. 5.

3. Explain the Limitations of Financial Statements.

Ans :

Refer Unit-I, Q.No. 6.

4. Discuss the various of Techniques of analysis of financial statements.

Ans :

Refer Unit-I, Q.No. 7.

5. What are the advantages and limitations of ratio analysis?

Ans :

Refer Unit-I, Q.No. 13.

6. You are given Trading and Profit & Loss Account of Mahesh Company limited for the year ended 31st December 1992.

Dr.		Trading and Profit & Loss Account		Cr.	
Particulars	Rs.	Particulars	Rs.		
To Opening Stock	30,000	By Net Sales	1,10,000		
To Purchases	60,000	By Closing Stock	20,000		
To Wages	10,000				
To Gross Profit (c/d)	30,000				
	1,30,000		1,30,000		
To Administrative Expenses	10,000	By Gross Profit (b/d)	30,000		
To Selling & Distribution Expenses	5,000	By Sundry Receipt	5,000		
To Net Profit	20,000				
	35,000		35,000		

Calculate

1. Gross Profit Ratio
2. Net Profit Ratio
3. Operating Ratio
4. Operating Profit Ratio

Ans :

Refer Unit-I, Prob. 2.

7. From the following Trading and Profit & Loss A/c of Rim Zim Limited for the year ended 31st March 1993.

Calculate

(i) Gross Profit Ratio

(ii) Net Profit Ratio

(iii) Operating Ratio

(iv) Operating Profit Ratio.

Dr.

Cr.

Particulars	Amount	Particulars	Amount
To Opening Stock	5,00,000	By Sales	
To Purchases	11,00,000	Cash 3,00,000	
To Wages	3,00,000	Credit 17,00,000	20,00,000
To Factory Overheads	2,00,000	By Closing Stock	6,00,000
To Gross Profit (c/d)	5,00,000		
	26,00,000		26,00,000
To Administration Expenses	75,000	By Gross Profit (b/d)	5,00,000
To Selling & Distribution Exp.	50,000	By Dividend on Investment	10,000
To Interest on Debentures	20,000	By Profit on Sale of Furniture	20,000
To Depreciation	60,000		
To Loss on Sale of Motorcar	5,000		
To Net Profit	3,20,000		
	5,30,000		5,30,000

Ans :

Refer Unit-I, Prob. 3.

8. Calculate

1. Earning Per Share

2. Dividend Yield Ratio and

3. Price Earning Ratio from the following figures :

Net Profit	Rs. 6,00,000
Market Paneer per Equity Shares	Rs. 60
No. of Equity Shares	Rs. 40,000
Provision for Tax	Rs. 1,60,000
Preference Dividend	Rs. 50,000
Deprecation	Rs. 70,000
Bank Overdraft	Rs. 50,000

Ans :

Refer Unit-I, Prob. 7.

9. What is Cash Flow Statement? What are the advantages of Cash Flow Statement?

Ans :

Refer Unit-I, Q.No. 19.

10. From the following profit and loss account and balance sheet relating to Ramesh Company presented as 31st March, 2003 :

Dr. Profit and Loss Account Cr.

Particulars	Rs.	Particulars	Rs.
To Opening Stock	3,000	By Gross Sales Rs. 2,00,000	
To Purchase	1,20,000	Less: Sales Return Rs. 5,000	1,95,000
To Wages (Direct)	7,000	By Closing Stock	5,000
To Gross Profit c/d	70,000		
	2,00,000		2,00,000
To Administrative Expn.	15,000	By Gross Profit b/d	70,000
To Selling and Distribution expenses	20,000	By Dividend Received	10,000
To Loss on sale of Fixed Assets	5,000		
To Net Profit	40,000		
	80,000		80,000

Balance Sheet as on 31st March 2002

Liabilities	Rs.	Assets	Rs.
Equity Share Capital (5000 Equity Shares of 100 each)	5,00,000	Land	1,50,000
General Reserve	50,000	Building	2,00,000
Profit and Loss A/c	70,000	Plan. & Machinery	2,00,000
Sundry Creditors	80,000	Stock	50,000
		Debtors	50,000
		Bank Balance	20,000
	7,00,000		7,00,000

From the above information you are required to calculate :

1. Gross Profit Ratio
2. Operating Ratio
3. Operating Profit Ratio.
4. Net Profit to Capital Employed Ratio
5. Current Ratio
6. Liquid Ratio
7. Stock Turnover Ratio
8. Debtor's Turnover Ratio
9. Debt Collection Period Ratio

Ans. :

Refer Unit-I, Prob. 10.

11. Using the P and L account and Balance Sheet given below, prepare Cash Flow Statement both under direct and indirect method.

Profit and Loss Account for the year ended 31st March, 2005

(Rs. in thousands)

Particulars	Year 2004-05	Year 2003-04
Sales	1,11,780	98,050
Other Income	390	220
Cost of Goods Sold	41,954	39,010
Selling and Administrative Expenses	16,178	12,500
Profit Before Tax	54,038	46,760
Less: Income Tax	21,615	18,704
Profit After Tax	32,423	28,056

Balance Sheet as on 31st March, 2005

(Rs. in thousands)

Liabilities and Shareholder Equity	As on 31-3-05	As on 31-3-04
Equity Share Capital	1,80,000	1,80,000
Retained Earnings	1,34,045	1,01,622
Current Liabilities		
Accounts Payable	3,526	4,330
Income Tax Payable	21,615	—
Dividend Payable	—	25,000
Total Liabilities	3,39,186	3,10,952
Assets		
Fixed Assets	3,93,000	3,70,000
Less: Depreciation	92,400	90,000
Current Assets		
Cash	6,380	6,000
Accounts Receivable: 20,064		
Less: Provision — (972)	19,092	23,568
Inventory : Raw Materials	516	636
Finished Good	598	748
Investments	12,000	—
Total Assets	3,39,186	3,10,952

Ans :

Refer Unit-I, Prob. 18.

UNIT - II

1. Out line the process of Responsibility Accounting.

Ans :

Refer Unit-II, Q.No. 3.

2. Explain the significance of responsibility centre.

Ans :

Refer Unit-II, Q.No. 6.

3. Explain the different types of Responsibility Centre.

Ans :

Refer Unit-II, Q.No. 7.

4. S V Ltd. manufactures a product which is obtained basically from a series of mixing operations. The finished product is packaged in the company made glass bottles and packed in attractive cartons. The company is organized into two independent divisions viz. one for the manufacture of the end- product and the other for the manufacture of glass bottles. The product manufacturing division can buy all the bottle requirements from the bottle manufacturing division. The general manager of the bottle manufacturing division has obtained the following quotations from the outside manufacturers for the supply of empty bottles :

Volume (empty bottles)	Total purchases value (`)
8,00,000	14,00,000
12,00,000	20,00,000

A cost analysis of the bottle manufacturing division for the manufacture of empty bottles reveals the following production costs :

Volume (empty bottles)	Total purchases value (`)
8,00,000	10,40,000
12,00,000	14,40,000

The production cost and sales value of the end-product marketed by the product manufacturing division are as under :

Volume (bottles of end-product)	Total cost of end-product (excluding cost of empty bottles)	Sales Value (packed in bottles)
8,00,000	64,80,000	91,20,000
12,00,000	96,80,000	1,27,80,000

There has been considerable discussion at the corporate level as to the use of proper price for transfer of empty bottles from the bottle manufacturing division to the product manufacturing division. This interest is heightened because a significant portion of the divisional general manager's salary is in incentive bonus based on profit centre results.

Ans :

5. **Home Comforts LTD. deals in three products, Ace, Nice and Grace, which are sold directly through salesmen in three zones, Prime, Extension and Outreach, The responsibility for sales promotion rests with the headquarters and so does the overall control of distribution and sales.**

Details of sales and selling and distribution expenses for the year are as follows:

	Sales	Selling and distribution expenses allocated direct	
		Rs.	Rs.
Prime zone:	Ace	9,00,000	63,990
	Nice	9,00,000	84,465
	Grace	4,50,000	47,160
		22,50,000	1,95,615
Extension zone:	Ace	6,75,000	46,710
	Nice	4,50,000	47,700
	Grace	2,25,000	23,940
		13,50,000	1,18,350
Outreach zone:	Ace	2,25,000	18,900
Nice	1,80,000	15,165	
Grace	<u>4,95,000</u>	<u>66,375</u>	
	9,00,000	1,00,440	

Office expenses	Rs. 94,500
Advertisement	1,35,000
Other Expenses	1,21.500

Advertisement costs are allocated to zones and products on the basis of sales, Office expenses and other expenses are apportioned equally to the zones or the products, while computing the profit or loss for the zones or the products as the case may be.

Prepare comparative profit and loss statements presenting zonal performance as distinct from product performance.

Ans :

Refer Unit-II, Prob. 7.

6. Explain briefly about Market Based Pricing.

Ans :

Refer Unit-II, Q.No. 10.

7. Explain briefly about Cost-based Pricing.

Ans :

Refer Unit-II, Q.No. 11.

8. Explain the rules for successful transfer pricing.

Ans :

Refer Unit-II, Q.No. 14.

UNIT - III

1. What is Inflation Accounting.

Ans :

Refer Unit-III, Q.No. 1.

2. Explain the techniques of Current purchasing power.

Ans :

Refer Unit-III, Q.No. 4.

3. Explain briefly about Current Cost Accounting Method.

Ans :

Refer Unit-III, Q.No. 5.

4. Arjun Ltd. furnishes the following income statement for the year ending 31st December 2007, prepared on the basis of conventional accounting. You are required to adjust the same for price level changes under CPP method.

Particulars		
Sales		90,000
Less : Cost of goods sold :		
Opening inventory	8,000	
(+) Purchases	60,000	
	68,000	
(-) Closing inventory	6,000	
Add	62,000	
Expenses		
Wages & salaries	6,000	
Other expenses	4,500	
Depreciation on building	700	
Interest	300	73,500
Net Income		16,500
Dividends		4,000
Retained Earnings		12,500

Additional Information

➤ Index of general price level:

January 1, 2007	100
December 31, 2007	200
Average Index	150

➤ Interest and dividends are paid on December 31.

➤ Building was purchased when the index was 50.

Ans :

Refer Unit-III, Prob. 5.

5. A machine was purchased on 1.1.2002 at a cost of ₹ 10,00,000 and its useful life was estimated to be 10 years. Its replacement cost was ₹ 18,00,000 on 1.1.2007 and ₹ 20,00,000 on 31.12.2007.

- Calculate the amount of depreciation adjustment.
- Compute the backlog depreciation.

Ans :

Refer Unit-III, Prob. 7.

6. What do you mean by accounting concept of Income. State its procedure.

Ans :

Refer Unit-III, Q.No. 7.

7. Explain the merits and demerits of capital maintenance concept of income.

Ans :

Refer Unit-III, Q.No. 10.

8. Define expenses and their factors.

Ans :

Refer Unit-III, Q.No. 17.

9. Discuss briefly about Measurement and Reporting of Gains and Losses.

Ans :

Refer Unit-III, Q.No. 19.

UNIT - IV

1. Explain the advantages and disadvantages of ROI.

Ans :

Refer Unit-IV, Q.No. 6.

2. Explain the Significance of EVA.

Ans :

Refer Unit-IV, Q.No. 8.

3. Discuss the various techniques of EVA.

Ans :

Refer Unit-IV, Q.No. 11.

4. Explain the Objectives of balance Score Card.

Ans :

Refer Unit-IV, Q.No. 13.

5. Explain the various Perspectives of Balanced Score Card.

Ans :

Refer Unit-IV, Q.No. 15.

6. Explain the Multiple Scorecard measures into a single strategy.

Ans :

Refer Unit-IV, Q.No. 19.

UNIT - V

1. Explain the process of decision making.

Ans :

Refer Unit-V, Q.No. 2.

2. M/s Ball pen LTD, manufactures only Ball pens, marginal cost of each Ball pen is Rs. 3. It has a fixed costs of Rs. 25,000 per annum. Present production and sales of pens is 50,000 and selling price per pen is Rs. 5. Any sale beyond 50,000 pens is possible only if the company reduces 20% of its current selling price. However, the reduced price applies only to the additional units. The company wants a target profit of Rs. 1,00,000. How many pens the company must produce and sell if the target profit is to be achieved?

Ans :

Refer Unit-V, Prob. 3.

3. Discuss the concept of Key or (Limiting) Factor.

Ans :

Refer Unit-V, Q.No. 11.

4. What is product mix? How marginal costing helps a manager in determination or selection of most profitable product mix?

Ans:

Refer Unit-V, Q.No. 14.

5. Explain the various reasons when to make and when to buy of Make or Buy Decision.

Ans :

Refer Unit-V, Q.No. 17.

6. A firm can purchase a separate part from an outside source @ ` 11 per unit. There is a proposal that the spare part be produced in the factory itself. For this purpose a machine costing ` 1,00,000 with annual capacity of 20,000 units and a life of 10 years will be required. A foreman with a monthly salary of ` 500 will have to be engaged. Materials required will be ` 4.00 per unit and wages ` 2.00 per unit. Variable overheads are 150% of direct labour. The firm can easily raise funds @ 10% p.a. Advice the firm whether the proposal should be accepted.

Ans :

Refer Unit-V, Prob. 16.

UNIT I

ANALYSIS OF FINANCIAL STATEMENTS :

Financial Statements – Meaning – Objectives – Types – Uses - Limitations - Analysis of financial statements - Meaning - Techniques (Theory only) - Ratio Analysis: Meaning – Classification of Ratios: Current Ratios, Solvency Ratios, Activity Ratios and Profitability Ratios – DuPont Analysis (Including problems) - Cash Flow Analysis – Meaning - Preparation of Cash Flow Statement as per Ind-AS-7

1.1 FINANCIAL STATEMENTS

1.1.1 Meaning

Q1. What are Financial Statements?

Ans :

(Imp.)

Introduction

Accounting is the process of identifying, measuring and communicating economic information to permit informed judgements and decisions by users of the information. It involves recording, classifying and summarizing various business transactions. The end products of business transactions are the financial statements comprising primarily the position statement or the balance sheet and the income statement or the profit and loss account.

Meaning

A financial statement is a collection of data organized according to logical and consistent accounting procedures. Its purpose is to convey an understanding of some financial aspects of a business firm. It may show a position at a moment in time, as in the case of a balance sheet, or may reveal a series of activities over a given period of time, as in the case of an income statement.' Thus, the term 'financial statements' generally refers to the two statements :

- (i) The position statement or the balance sheet; and
- (ii) The income statement or the profit and loss account.

These statements are used to convey to management and other interested outsiders the profitability and financial position of a firm. Financial statements are the outcome of summarizing process of accounting.

Definitions

- (i) **According to John N. Myer**, "The financial statements provide a summary of the accounts of a business enterprise, the balance sheet reflecting the assets, liabilities and capital as on a certain date and the income statement showing the results of operations during a certain period.'" Financial statements are prepared as an end result of financial accounting and are the major sources of financial information of an enterprise.
- (ii) **According to Smith and Asburne define financial statements as**, "the end product of financial accounting in a set of financial statements prepared by the accountant of a business enterprise-that purport to reveal the financial position of the enterprise, the result of its recent activities, and an analysis of what has been done with earnings."
- (iii) **According to Anthony** "Financial statements, essentially, are interim reports, presented annually and reflect a division of the life of an enterprise into more or less arbitrary accounting period-more frequently a year."

Financial statements are the basis for decision making by the management as well as other outsiders who are interested in the affairs of

the firm such as investors, creditors, customers, suppliers, financial institutions, employees, potential investors, government and the general public.

Q2. Explain the nature of Financial Statements

Ans :

1. Recorded Facts

- The term 'recorded facts' refers to the data taken out from the accounting records. The records are maintained on the basis of actual cost data.
- The original cost or historical cost is the basis of recording various transactions.
- The assets purchased at different times and at different prices are put together and shown at cost prices.

2. Accounting Conventions

- Certain accounting conventions are followed while preparing financial statements. The convention of valuing inventory at cost or market price, whichever is lower, is followed.
- The valuing of assets at cost less depreciation principle for balance sheet purposes is followed. The convention of materiality is followed in dealing with small items like pencils, pens, postage stamps, etc.
- These items are treated as expenditure in the year in which they are purchased even though they are assets in nature.
- The stationery is valued at cost and not on the principle of cost or market price whichever is less.

3. Postulates

- The accountant makes certain assumptions while making accounting records. One of these assumptions is that the enterprise is treated as a going concern.
- The other alternative to this postulate is that the concern is to be liquidated, this, is untenable if management shows an

intention to liquidate the concern. So the assets are shown on a going concern basis.

- Another important assumption is to presume that the value of money will remain the same in different periods.
- Though there is a drastic change in purchasing power of money the assets purchased at different times will be shown at the amount paid for them.
- While preparing profit and loss account, the revenue is treated in the year in which the sale was undertaken even though the sale price may be received in a number of years. The assumption is known as realization postulate.

4. Personal Judgements

- Even though certain standard accounting conventions are followed in preparing financial statements but still personal judgement of the accountant plays an important part.
- For example, in applying the cost or market value whichever is less to inventory valuation the accountant will have to use his judgement in computing the cost in a particular case. There are a number of methods for valuing stock, viz; last in first out, first in first out, average cost method, standard cost, base stock method, etc. The accountant will use one of these methods for valuing materials.
- The selection of depreciation method, to use one of the several methods for estimating uncollectable debts, to determine the period for writing off intangible assets are some of the examples where judgement of the accountant will play an important role in choosing the most appropriate course of action.

1.1.2 Objectives**Q3. What are the objectives of Financial Statements***Ans :*

Financial statements are the sources of information on the basis of which conclusions are drawn about the profitability and financial position of a concern. The primary objective of financial statements is to assist in decision making. The Accounting Principles Board of America (APB) states the following objectives of financial statements:

- (i) To provide reliable financial information about economic resources and obligations of a business firm.
- (ii) To provide other needed information about changes in such economic resources and obligations.
- (iii) To provide reliable information about changes in net resources (resources less obligations) arising out of business activities.
- (iv) To provide financial information that assists in estimating the earning potentials of business.
- (v) To disclose, to the extent possible, other information related to the financial statements that is relevant to the needs of the users of these statements.

1.1.3 Types**Q4. Explain different types of Financial Statements***Ans :*

Financial statements primarily comprise two basic statements: (i) the position statement or the balance sheet; and (ii) the income statement or the profit and loss account. However, Generally Accepted Accounting Principles (GAAP) specify that a complete set of financial statements must include:

- (i) Balance sheet,
- (ii) An income statement,
- (iii) A statement of changes in owners accounts, and
- (iv) A statement of changes in financial position.

Before we discuss the form and contents of these statements, Let us briefly explain the meaning and significance of each of these statements.

(i) Balance Sheet

The American Institute of Certified Public Accountants defines Balance Sheet as, "A tabular statement of summary of balances (debits and credits) carried forward after an actual and constructive closing of books of account and kept according to principles of accounting." The purpose of the balance sheet is to show the resources that the company has, i.e., its assets, and from where those resources come from, i.e. its liabilities and investments by owners and outsiders.

(ii) Income Statement (or) Profit and Loss Account or Statement of Profit and Loss

Income statement is prepared to determine the operational position of the concern. It is a statement of revenues earned and the expenses incurred for earning that revenue. If there is excess of revenues over expenditures it will show a profit and if the expenditures are more than the income then there will be a loss. The income statement is prepared for a particular period, generally a year.

(iii) Statement of Changes in Owners Equity (or) Retained Earnings

The term 'owners equity' refers to the claims of the owners of the business (shareholders) against the assets of the firm. It consists of two elements ;

- (i) Paid-up share capital, i.e. the initial amount of funds invested by the shareholders; and
- (ii) Retained earnings/ reserves and surplus representing undistributed profits.

The statement of changes in owners equity simply shows the beginning balance of. each owner's equity account, the reasons for increases and decreases in each, and its ending balance.

(iv) Statement of Changes in Financial Position

- The basic financial statements, i.e., the balance sheet and the profit and loss account or income statement of a business reveal the net effect of the various transactions on the operational and financial position of the company.
 - The balance sheet gives a static view of the resources of a business and the uses to which these resources have been put at a certain point of time. The profit and loss account in a general way, indicates the resources provided by operations. But there are many transactions that do not operate through profit and loss account.
 - Thus, for a better understanding another statement called statement of changes in financial position has to be prepared to show the changes in assets and liabilities from the end of one period to the end of another point of time.
 - The objective of this statement is to show the movement of funds (working capital or cash) during particular period. The statement of changes in financial position may take any of the following two forms :
- (a) **Funds Flow Statement:** The funds flow statement is designed to analyze the changes in the financial condition of a business' enterprise between two periods. The word 'Fund' is used to denote working capital. This statement will show the sources from which the funds are received and the uses to which these have been put. This statement enables the management to have an idea about the sources of funds and their uses for various purposes. This statement helps the management in policy formulation and performance appraisal.
- (b) **Cash Flow Statement:** A cash flow statement is a statement which describes the inflows and outflows of cash and cash equivalents in an enterprise during a specified period of time. Such a statement enumerates net effects of various transactions on cash and its equivalents and takes into account receipts and disbursements of cash. A cash flow statement summarizes the causes of changes in cash position of a business enterprise between dates of two balance sheets. According to AS-3 (Revised), an enterprise should prepare a cash flow statement and should present it for each period for which financial statements are prepared. The cash flow statement should report cash flows during the period classified by operating, investing and financing activities.

1.1.4 Uses**Q5. Explain the uses of Financial Statements.****(OR)****State the uses of Financial Statements.***Ans :***(Imp.)**

The utility of financial statements to different parties is discussed in detail as follows:

1. Management

The financial statements are useful for assessing the efficiency for different cost centres. The management is able to exercise cost control through these statements. The efficient and inefficient spots are brought to the notice of the management. The management is able to decide the course of action to be adopted in future.

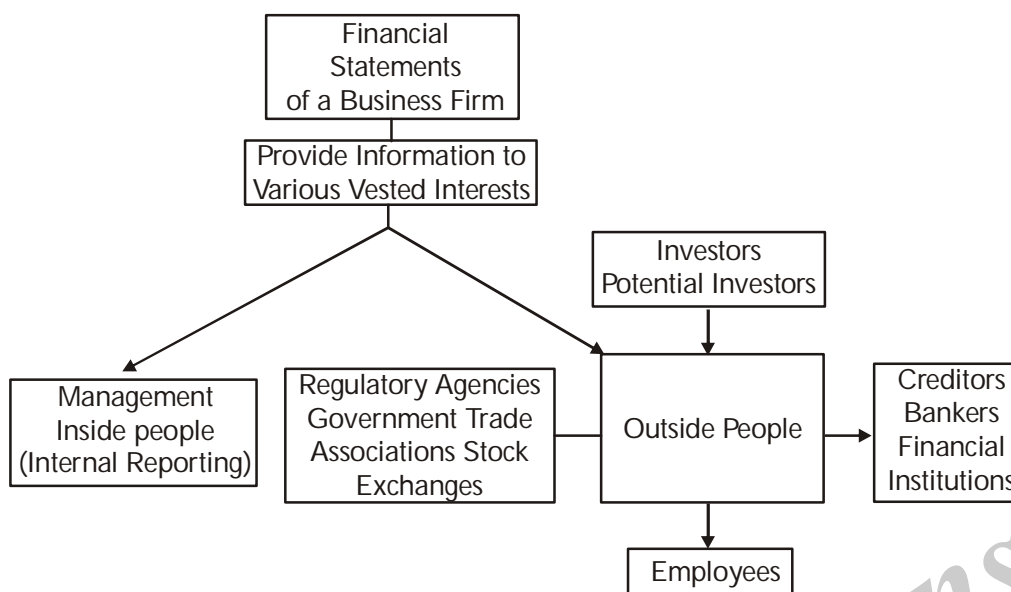


Fig.: Uses of Financial Statements

2. Creditors

The trade creditors are to be paid in a short period. This liability is met out of current assets. The creditors will be interested in current solvency of the concern. The calculation of current ratio and liquid ratio will enable the creditors to assess the current financial position of the concern in relation to their debts.

3. Bankers

The banker is interested to see that the loan amount is secure and the customer is also able to pay the interest regularly. The banker will analyze the balance sheet to determine financial strength of the concern and profit and loss account will also be studied to find out the earning position. A banker has a large number of customers and it is not possible to supervise their business activities. It is through the financial statements that a banker can keep a watch on the business plans and performances of its customers. These statements also help the banker to determine the amount of securities it will ask from the customers as a cover for the loans.

4. Investors

The investors include both short-term and long-term investors. They are interested in the security of the principal amount of loan and regular interest payments by the concern. The investors will study the long-term solvency of the concern with the help of financial statements. The investors will not only analyze the present financial position but will also study future prospects and expansion plans of the concern. The possibility of paying back the loan amount in the face of liquidation of the concern is also taken into consideration.

5. Government

The financial statements are used to assess tax liability of business enterprises. The government studies economic situation of the country from these statements. These statements enable the government to find out whether business is following various rules and regulations or not. These statements also become a base for framing and amending various laws for the regulation of business.

6. Trade Associations

These associations provide service and protection to the members. They may analyze the financial statements for the purpose of providing facilities to these members. They may develop standard ratios and design uniform system of accounts.

7. Stock Exchange

The stock exchanges deal in purchase and sale of securities of different companies. The financial statements enable the stock brokers to judge the financial position of different concerns. The fixation of prices for securities, etc., is also based on these statements.

1.1.5 Limitations**Q6. Explain the Limitations of Financial Statements**

Ans : (Imp.)

Though financial statements are relevant and useful for the concern, still they do not present a final picture of the concern. The utility of these statements is dependent upon a number of factors. The analysis and interpretation of these statements should be done very carefully otherwise misleading conclusions may be drawn. The financial statements suffer from the following limitations :

1. Only Interim Reports

These statements do not give a final picture of the concern. The data given in these statements is only approximate. The actual position can only be determined when the business is sold or liquidated. However, the statements have to be prepared for different accounting periods, generally one year, during the life time of the concern. The costs and incomes be apportioned to different periods with a view to determine profits etc.

2. Do not give Exact Position

The financial statements are expressed in monetary values, so they appear to give final and accurate position. The value of fixed assets in the balance sheet neither represents the value for which fixed assets can be sold nor the amount which will be required to replace these assets. The balance sheet is prepared on the presumption of a going

concern. The concern is expected to continue in the future. So, fixed assets are shown at cost less accumulated depreciation. There are certain assets in the balance sheet such as preliminary expenses, goodwill, discount on issue of shares which will realize nothing at the time of liquidation though they are shown in the balance sheet.

3. Historical Costs

The financial statements are prepared on the basis of historical costs or original costs. The value of assets decreases with the passage of time current price changes are not taken into account. The statements are not prepared keeping in view the present economic conditions. The balance sheet loses the significance of being an index of current economic realities. Similarly, the profitability shown by the income statement may not represent the earning capacity of the concern. The increase in profits may be due to an increase in prices or due to some abnormal causes and not due to increase in efficiency.

4. Impact of Non-monetary Factors Ignored

There are certain factors which have a bearing on the financial position and operating results of the business but they do not become a part of these statements because they cannot be measured in monetary terms. Such factors may include the reputation of the management, credit worthiness of the concern, sources and commitments for purchases and sales, co-operation of the employees, etc.

5. No Precision

The precision of financial statement data is not possible because the statements deal with matters which cannot be precisely stated. The data are recorded by conventional procedures followed over the years. Various conventions, postulates, personal judgements etc. are used for developing the data.

1.2 ANALYSIS OF FINANCIAL STATEMENTS

1.2.1 Meaning, Techniques

Q7. Discuss the various of Techniques of analysis of financial statements

(OR)

State the different techniques of redrafting of Financial Strategy for the purpose of Financial Analysis.

Ans : **(Imp.)**

The following methods of analysis are generally used :

- 1) Comparative statements
- 2) Trend analysis
- 3) Common -size statements
- 4) Ratio analysis
- 5) Cash flow statement
- 6) Funds flow statement
- 7) Cost-volume-profit analysis

1. Comparative Statements

Comparative financial statement is a tool of financial analysis used to study the magnitude and direction of changes in the financial position and performance of a firm over a period of time. The preparation of comparative statements is based on the premise that a statement covering a period of a number of years is more meaningful and significant than for a single year only.

The comparative statement may show :

- (i) Absolute figures (rupee amounts).
- (ii) Changes in absolute figures i.e., increase or decrease in absolute figures.
- (iii) Absolute data in terms of percentages.
- (iv) Increase or decrease in terms of percentages.
- (v) Comparisons expressed in terms of ratios.
- (vi) Percentage of totals.

2. Trend Analysis

The financial statements may be analyzed by computing trends of series of information. This method determines the direction upwards or downwards and involves the computation of the percentage relationship that each statement item bears to the same item in base year. The information for a number of years is taken up and one year, generally the first year, is taken as a base year. The figures of the base year are taken as 100 and trend ratios for other years are calculated on the basis of base year. The analyst is able to see the trend of figures, whether upward (or) downward.

3. Common-size Statement

The common-size statements, balance sheet and income statement, are shown in analytical percentages. The figures are shown as percentages of (statement of profit and loss), (total assets revenue from operations), total liabilities and total sales. The total assets are taken as 100 and different assets are expressed as a percentage of the total. Similarly, various liabilities are taken as a part of total liabilities. These statements are also known as component percentage or 100 per cent statements because every individual item is stated as a percentage of the total 100.

4. Ratio Analysis

A ratio is a simple arithmetical expression of the relationship of one number to another. It may be defined as the indicated quotient of two mathematical expressions.

5. Cash flow statement

Cash Flow Statement is a statement which describes the inflows (sources) and outflows

(uses) of cash and cash equivalents in an enterprise during a specified period of time. Such a statement enumerates net effects of various business transactions on cash and its equivalents and takes into account receipts and disbursements of cash. A cash flow statement summarizes the causes of changes in cash position of a business enterprise between dates of two balance sheets. According to **Ind AS-7 (Existing AS-3)**, an enterprise should prepare a cash flow Statement and should present it for each period for which financial statements are prepared.

6. Funds flow statement

The term 'flow' means movement and includes both 'inflow' and 'outflow'. The term 'flow of funds' means transfer of economic values from one asset of equity to another. Flow of funds is said to have taken place when any transaction makes changes in the amount of funds available before happening of the transaction. If the effect of transaction results in the increase of funds, it is called a source of funds and if it results in the decrease of funds, it is known as an application of funds. Further, in case the transaction does not change funds, it is said to have not resulted in the flow of funds. According to the working capital concept of funds, the term 'flow of funds' refers to the movement of funds in the working capital.

7. Cost-volume-profit (CVP) Analysis

Cost - Volume-Profit analysis is a technique for studying the relationship between cost, volume and profit. Profits of an undertaking depend upon a large number of factors. But the most important of these factors are the cost of manufacture, volume of sales and the selling prices of the products.

The three factors of CVP analysis i.e., costs, volume and profit are interconnected and dependent on one another. For example, profit depends upon sales, selling price to a large extent depends upon cost and cost depends upon volume of production as it is only the variable cost that varies directly with production, whereas fixed cost remains fixed regardless of the volume produced. In cost-volume-profit analysis an attempt is made to analyze the relationship between variations in cost with variations in volume.

Q8. Explain the format of comparative balance sheet

Ans :

Procedure of Preparing a Comparative Balance Sheet

A comparative balance sheet contains the following columns :

- (i) Particulars column.
- (ii) Data of Previous period/year's balance sheet.
- (hi) Data of the current year's balance sheet.
- (iv) Increase or decrease in the absolute data.
- (v) Percentage change of increase or decrease in data.

Format of Comparative Balance Sheet

Comparative Balance Sheet as at 31st March 2015 and 2016

Particulars	Note No	31-3-2015	31-3-2016(4)	Absolute Change (Increase or Decrease)	Percentage Change (Increase or Decrease)
(1)	(2)	(3) A	(4) B	(5) C = B - A	(6) D = C/A x 100 %
II. Equity And Liabilities					
1. Shareholder's Funds					
(a) Share Capital	
(b) Reserve and Surplus	
2. Non Current Liabilities :					
(a) Long term Borrowings	
(b) Long term Provisions	
3. Current Liabilities :					
(a) Short term Borrowings	
(b) Trade Payable	
(c) Other Current Liabilities	
(d) Short-term Provisions	
Total	
II. Assets :					
1. Non-Current Assets:					
(a) Fixed Assets:	
(i) Tangible Assets	
(ii) Intangible Assets	
(b) Non-Current Investment	
(c) Long-term loans and advances	
2. Current Assets:					
(a) Current investment	
(b) Inventories	
(c) Trade Receivables	
(d) Cash and Cash Equivalents	
(e) Short-term loans and advances	
(d) Other Current Assets	
TOTAL	

Q9. Explain the format of comparative Income statement.

Ans :

Procedure for Preparing a Comparative Income Statement

A comparative income statement, like a comparative balance sheet contains the following columns:

- (i) Particulars column
- (ii) Data of previous period/year's statement of profit and loss.
- (iii) Data of current period/year's statement of profit and loss.
- (iv) Increase or decrease in the absolute data
- (v) Percentage change of increase or decrease

Format of Comparative Statement of Profit And Loss

**Comparative Statement of Profit and Loss
for years ended 31st March 2015 and 2016**

Particulars (1)	Note No	31-3-2015 (2) A	31-3-2016 (3) B	Absolute Change (Increase or Decrease) (4) CC = (B - A)	Percentage Change (Increase or Decrease) (5) D = C/A × 100
I. Revenue from Operations	
II. Add : Other Incomes	
III. Total Revenue I + II	
IV. Less : Expenses					
Cost of Materials Consumed	
Purchase of Stock-in Trade	
Changes in Inventories of Finished Goods, Work-in- Progress and Stock-in-Trade	
Employee Benefit Expenses	
Finance Costs	
Depreciation and Amortization Expenses	
Other Expenses	
Total Expenses	
V. Profit before Tax (III – IV)	
VI. Less : Tax	
VII. Profit after Tax (V – VI)	

Q10. Explain the format of common size balance sheet.

Ans :

Format of a Common- size Balance Sheet

Common Size Balance Sheet

as at 31st March, 2015 and 2016

Particular	Note No.	Absolute Amounts		Percentage of Balance Sheet Total	
		31.3.2015	31.3.2016	31.3.2015	31.3.2016
I. Equity And Liabilities					
(1) Shareholder's Funds					
(a) Share Capital	
(b) Reserve and Surplus	
(2) Non Current Liabilities :					
(a) Long term Borrowings	
(b) Long term Provisions	
(3) Current Liabilities :					
(a) Short term Borrowings	
(b) Trade Payables	
(c) Other Current Liabilities	
(d) Short - term Provisions	
Total		100	100
II. Assets :					
(i) Non-Current Assets					
(a) Fixed Assets :					
(i) Tangible Assets	
(ii) Intangible Assets	
(b) Non-current Investments	
(c) Long-term Loans and Advances	
(2) Current Assets :					
(a) Current Investment	
(b) Inventories	
(c) Trade Receivables	
(d) Cash and Cash Equivalents	
(e) Short-term Loans and Advances	
(f) Other Current Assets	
Total	

Q11. Explain the format of common size Income statement.

Ans :

Format of Common Size Statement of Profit and Loss

Common Size Statement of Profit and Loss

for the years ended 31st March, 2015 and 2016

Particular (1)	Note No. (2)	Absolute Amounts		Percentage from Operations (or Net Sales)	
		2015 (3)	2016 (4)	(5)	(6)
I. Revenue from Operations (Net Sales)		100	100
II. Other Income	
III. Total Revenue (I + II)	
IV. Expenses					
(a) Cost of Materials Consumed	
(b) Purchases of Stocks-in-Trade	
(c) Changes in Inventories of Finished Goods, Work-in-Progress and Stock in trade	
(d) Employee Benefits Expenses	
(e) Finance Costs	
(f) Depreciation and Amortisation Expenses	
(g) Other Expenses	
Total Expenses	
V. Profit before Tax (III - IV)	
VI. Less : Income Tax	
VII. Profit after Tax (V - VI)	

1.3 RATIO ANALYSIS

1.3.1 Meaning

Q12. What is meant by Ratio. Explain the nature of Ratio Analysis.

Ans :

Meaning

A ratio is a simple arithmetical expression of the relationship of one number to another. It may be defined as the indicated quotient of two mathematical expressions.

Definitions

- (i) **According to Accountant's Handbook by Wixon, Kell and Bedford**, a ratio "is an expression of the quantitative relationship between two numbers".
- (ii) **In simple language** ratio is one number expressed in terms of another and can be worked out by dividing one number into the other.

Nature

- Ratio analysis is a technique of analysis and interpretation of financial statements. It is the process of establishing and interpreting various ratios for helping in making certain decisions. However, ratio analysis is not an end in itself. It is only a means of better understanding of financial strengths and weaknesses of a firm.
- Calculation of ratios does not serve any purpose, unless several appropriate ratios are analyzed and interpreted. There are a number of ratios which can be calculated from the information given in the financial statements, but the analyst has to select the appropriate data and calculate only a few appropriate ratios from the same keeping in mind the objective of analysis.
- The ratios may be used as a symptom like blood pressure, the pulse rate or the body temperature and their interpretation depends upon the calibre and competence of the analyst.

Steps :

The following are the four steps involved in the ratio analysis :

- (i) Selection of relevant data from the financial statements depending upon the objective of the analysis.
- (ii) Calculation of appropriate ratios from the above data.
- (iii) Comparison of the calculated ratios with the ratios of the same firm in the past, or the ratios developed from projected financial statements or the ratios of some other firms or the comparison with ratios of the industry to which the firm belongs.
- (iv) Interpretation of the ratios.

Q13. What are the advantages and limitations of ratio analysis?

Ans :

(Imp.)

Advantages

- (i) Ratio analysis will help validate or disprove the financing, investment and operating decisions of the firm. They summarize the financial statement into comparative figures, thus helping the management to compare and evaluate the financial position of the firm and the results of their decisions.
- (ii) It simplifies complex accounting statements and financial data into simple ratios of operating efficiency, financial efficiency, solvency, long-term positions etc.
- (iii) Ratio analysis help identify problem areas and bring the attention of the management to such areas. Some of the information is lost in the complex accounting statements, and ratios will help pinpoint such problems.
- (iv) Allows the company to conduct comparisons with other firms, industry standards, intra-firm comparisons etc. This will help the organization better understand its fiscal position in the economy.

Limitations

Though ratio analysis is a powerful tool for analyzing the financial position of a firm, it suffers from the following limitations.

- i) As ratios are calculated based on the historical data or past performance, they may not necessarily provide the correct information that is useful in decision-making.
- ii) As there are no particular standards or rules of thumb for all the ratios, it is difficult to interpret accurate results.
- iii) In order to draw correct interpretations, a single ratio may not be helpful. For this purpose, a number of ratios are to be calculated which is likely to confuse the financial analyst than to help him in making any meaningful conclusions.
- iv) Changes in the accounting procedures by the firms may mislead the ratio analysis. For example, a change in the methods of valuating inventory from FIFO to LIFO increases the cost of sales and decreases the value of closing stock. This results in unfavourable stock turnover ratio and gross profit ratio.

1.3.2 Classification of Ratios**1.3.2.1 Current Ratios**

Q14. What is liquidity ratio. Explain various types of liquidity ratios.

(OR)

Explain about liquidity ratios

Ans :

(Imp.)

- Liquidity refers to the ability of a concern to meet its current obligations as and when these become due. Liquidity ratios are calculated to measure short-term financial soundness of the business.
- The short-term obligations are met by realizing amounts from current, floating or circulating assets. The current assets should either be liquid or near liquidity.
- These should be convertible into cash for paying obligations of short-term nature.
- The sufficiency or insufficiency of current assets should be assessed by comparing them with short-term (current) liabilities. If current assets can pay off current liabilities, then liquidity position will be satisfactory.
- On the other hand, if current liabilities may not be easily met out of current assets then liquidity position will be bad.
- The bankers, suppliers of goods and other short-term creditors are interested in the liquidity of the concern.
- They will extend credit only if they are sure that current assets are enough to pay out the obligations. To measure the liquidity of a firm, the following ratios can be calculated:
 1. Current Ratio or Working Capital Ratio
 2. Quick or Acid Test or Liquid Ratio
 3. Absolute Liquid Ratio or Cash Position Ratio

Note :

The ideal current ratio is 2:1 The ideal quick ratio is 1:1 The ideal cash ratio is 0.5:1

1. Current Ratio**Meaning**

This ratio establishes a relationship between current assets and current liabilities.

Objective

The objective of computing this ratio is to measure the ability of the firm to meet its short-term obligations and to reflect the short-term financial strength/solvency of a firm. In other words, the objective is to measure the safety margin available for short-term creditors.

Components

There are two components of this ratio which are as under:

- (i) **Current Assets:** Current assets mean the assets which are held for their conversion into cash within a year and include the following:

Cash Balance	Bank Balance
Marketable Securities	Debtors (less Provision)
Bills Receivable (less Provisions)	Stock of all types, viz., Raw Materials.
Prepaid Expenses	Work-in-progress. Finished Goods.
Incomes accrued but not due	Short-term Loans and Advances
Advance Payment of tax	(Debit Balances)
Tax reduced at source (Debit Balance)	Incomes due but not received

Note: The 'provision of bad and doubtful debts/bills' is deducted from the total amount of trade debtors/bills receivable in order to ascertain the realizable value of trade debtors/bills receivable.

- (ii) **Current Liabilities:** Current Liabilities are those obligations which are payable within a short period of generally one year and include the following:

Creditors for Goods Creditors for Expenses

Creditors for goods	Creditors for expenses
Bills Payable	Bank Overdraft
Short-term Loans and Advances	Income received-in-advance
Provision for Tax	Unclaimed dividend

Short-term Loans and Advances Income received-in-advance Provision for Tax Unclaimed dividend

Computation: This ratio is computed by dividing the current assets by the current liabilities. This ratio is usually expressed as a pure ratio **for example**, 2:1. In the form of a formula, this ratio may be expressed as under:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Interpretation of Current Ratio

- A relatively high current ratio is an indication that the firm is liquid and has the ability to pay its current obligations in time as and when they become due.
- On the other hand, a relatively low current ratio represents that the liquidity position of the firm is not good and the firm shall not be able to pay its current liabilities in time without facing difficulties.
- A ratio equal or near to the rule of thumb of 2:1, i.e., current assets double the current liabilities is considered to be satisfactory.

- The idea of having doubled the current assets as compared to current liabilities is to provide for delays and losses in the realization of current assets.
- However, the rule of 2:1 should not be blindly followed while making interpretation of the ratio, because firms having less than 2:1 ratio may be having a better liquidity than even firms having more than 2:1 ratio.
- This is so because the current ratio measures only the quantity of current assets and not quality of current assets.

A high current ratio may not be favorable due to the following reasons:

- i) There may be slow moving stocks. The stocks will pile up due to poor sale.
- ii) The figures of debtors may go up because debt collection is not satisfactory.
- iii) The cash or bank balances may be lying idle because of insufficient investment opportunities.

On the other hand, a low current ratio may be due to the following reasons:

- i) There may not be sufficient funds to pay off liabilities.
- ii) The business may be trading beyond its capacity. The resources may not warrant the activities.

2. Quick Ratio

Meaning

This ratio establishes a relationship between quick assets and current liabilities.

Objective

The objective of computing this ratio is to measure the ability of the firm to meet its short-term obligations as and when due without relying upon the realization of stock.

Components

There are two components of this ratio which are as under:

- (i) **Quick Assets:** Which mean those current assets which can be converted into cash immediately or at a short notice without a loss of value and include the following:
 - a) Cash Balances
 - b) Bank Balances
 - c) Marketable Securities Debtors
 - d) Bills Receivable
 - e) Short-term Loans and
 - f) Advances
- (ii) **Current Liabilities:** (as explained earlier in Current Ratio)

Computation: This ratio is computed by dividing the quick assets by the current liabilities. This ratio is usually expressed as a pure ratio, e.g., 1:1. In the form of a formula, this ratio may be expressed as under:

$$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}}$$

Interpretation

- It indicates rupees of quick assets available for each rupee of current liability.
- Traditionally, a quick ratio of 1:1 is considered to be a satisfactory ratio.
- However, this traditional rule should not be used blindly since a firm having a quick ratio of more than 1, may not be meeting its short-term obligations in time if its current assets consist of doubtful and slow paying debtors while a firm having a quick ratio of less than 1, may be meeting its short-term obligations in time because of its very efficient inventory management.

3. Absolute Liquid Ratio**Meaning**

Although receivables, debtors and bills receivable are generally more liquid than inventories, yet there may be doubts regarding their realization into cash immediately or in time.

Objective

The objective of computing this ratio is to calculate it (absolute liquid ratio) together with current ratio and acid test ratio so as to exclude even receivables from the current assets and find out the absolute liquid assets.

Components

There are two components of this ratio which are as under:

- (i) **Absolute liquid assets:** Absolute liquid assets include cash in hand and at bank and marketable securities or temporary investments.
- (ii) **Current liabilities:** As explained in current ratio.

Computation

This ratio is computed by dividing absolute liquid assets by current liabilities. The acceptable norm for this ratio is 50% or 0.5:1 or 1:2, i.e. Re. 1 worth absolute liquid assets are considered adequate to pay `2 worth current liabilities in time as all the creditors are not expected to demand cash at the same time and then cash may also be realized from debtors and inventories.

In the form of formula this ratio may be expressed as under:

$$\text{Absolute Liquid Ratio} = \frac{\text{Absolute Liquid Assets}}{\text{Current Liabilities}}$$

1.3.2.2 Activity Ratios

Q15. Explain briefly about various activity ratios.

Ans. :

(Imp.)

Meaning

- Funds are invested in various assets in business to make sales and earn profits. The efficiency with which assets are managed directly affects the volume of sales.
- The better the management of assets, the larger is the amount of sales and the profits.
- Activity ratios measure the efficiency or effectiveness with which a firm manages its resources or assets.
- These ratios are also called turnover ratios because they indicate the speed with which assets are converted or turned over into sales. It includes the following ratios.

1. Capital Turnover Ratio
2. Fixed Assets Turnover Ratio
3. Working Capital Turnover Ratio
4. Stock Turnover Ratio
5. Debtors Turnover Ratio (or Receivables Turnover Ratio).
6. Creditors Turnover Ratio (or Payables Turnover Ratio).

1. Capital Turnover Ratio

Meaning

This ratio establishes a relationship between net sales and capital employed.

Objective

The objective of computing this ratio is to determine the efficiency with which the capital employed is utilized.

Components

There are two components of this ratio which are as under:

1. Net Sales
2. Capital Employed

Computation

This ratio is computed by dividing the net sales by the capital employed. This ratio is usually expressed as 'x' number of times. In the form of a formula, this ratio may be expressed as under:

$$\text{Capital Turnover Ratio} = \frac{\text{Net Sales}}{\text{Capital Employed}}$$

$$\text{Net sales} = \text{Gross Sales} - \text{Sales return}$$

$$\text{Capital Employed} = \text{Long-term debt} + \text{Shareholder's Fund}$$

2. Fixed Assets Turnover Ratio

Meaning

This ratio establishes a relationship between net sales and fixed assets.

Objective

The objective of computing this ratio is to determine the efficiency with which the fixed assets are utilized.

Components

There are two components of this ratio which are as under:

1. Net Sales
2. Net Fixed (operating) Assets

Note: An advance for purchase of a fixed asset is not an operating fixed asset.

Computation

This ratio is computed by dividing the net sales by the net fixed assets. This ratio is usually expressed as 'x' number of times. In the form of a formula, this ratio may be expressed as under:

$$\text{Fixed Assets Turnover Ratio} = \frac{\text{Net Sales}}{\text{Net Total Fixed Assets}} = \frac{\text{Cost of goods sold}}{\text{Net Total Fixed Assets}}$$

$$\text{Net Sales} = \text{Gross Sales} - \text{Sales Return}$$

$$\text{Net Fixed (operating) Assets} = \text{Gross Fixed Assets} - \text{Depreciation}$$

Interpretation

It indicates the firm's ability to generate sales per rupee of investment in fixed assets. In general, higher the ratio, the more efficient the management and utilization of fixed assets, and vice versa. It may be noted that there is no direct relationship between sales and fixed assets since the sales are influenced by other factors as well, e.g., quality of product, delivery terms, credit terms, after sales service, advertisement and publicity, etc.

3. Working Capital Turnover Ratio**Meaning**

This ratio establishes a relationship between net sales and working capital.

The working capital is taken as:

$$\text{Working Capital} = \text{Current Assets} - \text{Current Liabilities}$$

Objective

The objective of working capital turnover ratio is to indicate the velocity of the utilization of net working capital. This ratio indicates the number of times the working capital is turned over in the course of a year.

This ratio measures the efficiency with which the working capital is being used by a firm.

Components

The components of this ratio are as under:

1. Net Sales
2. Working Capital

Computation

This ratio is computed by dividing the net sales by the working capital. This ratio is usually expressed as 'x' number of times. In the form of a formula, this ratio may be expressed as under:

$$\text{Working Capital Turnover Ratio} = \frac{\text{Net Sales}}{\text{Working Capital}} = \frac{\text{Cost of goods sold}}{\text{Net Working Capital}}$$

$$\text{Net Sales} = \text{Gross Sales} - \text{Sales return}$$

$$\text{Working Capital} = \text{Current Assets} - \text{Current Liabilities}$$

Interpretation

It indicates the firm's ability to generate sales per rupee of working capital. In general, higher the ratio, the more efficient the management and utilization of working capital and vice versa.

4. Stock Turnover Ratio

Meaning

This ratio establishes a relationship between costs of goods sold and average inventory.

Objective

The objective of computing this ratio is to determine the efficiency with which the inventory is utilized.

Components

There are two components of this ratio which are as under:

- 1) Cost of Goods Sold
- 2) Average Inventory

Computation

This ratio is computed by dividing the cost of goods sold by the average inventory. This ratio is usually expressed as 'x' number of times. In the form of a formula, this ratio may be expressed as under:

$$\text{Stock Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

$$\text{Cost of Goods sold} = \text{Sales} - \text{Gross Profit}$$

or

$$\text{Cost of Goods sold} = \text{Opening Stock} + \text{Purchases} + \text{Direct Expenses} - \text{Closing Stock}$$

$$\text{Average Stock} = \frac{\text{Opening Stock} + \text{Closing Stock}}{\text{Average Stock}}$$

Note:

- i) If opening stock is not known, closing stock can be taken.
- ii) If there is any difficulty in calculating cost of goods sold, then

$$\text{Stock Turnover Ratio} = \frac{\text{Net Sales}}{\text{Average Stock}}$$

Interpretation

- It indicates the speed with which the inventory is converted into sales. In general, a high ratio indicates efficient performance since an improvement in the ratio shows that either the same volume of sales has been maintained with a lower investment in stocks, or the volume of sales has increased without any increase in the amount of stocks. However, too high ratio and too low ratio, call for further investigation.
- A too high ratio may be the result of a very low inventory levels which may result in frequent stock-outs and thus the firm may incur high stock out costs.
- On the other hand, a too low ratio may be the result of excessive inventory levels, slow-moving or obsolete inventory and thus, the firm may incur high carrying costs.
- Thus, a firm should have neither a very high nor a very low stock turnover ratio; it should have a satisfactory level.

Inventory Conversion Period (Stock Velocity)

It may also be of interest to see average time taken for clearing the stocks. This can be possible by calculating inventory conversion period. This period is calculated by dividing the number of days by inventory turnover. The formula may be as:

$$\text{Inventory Conversion Period} = \frac{12 \text{ months} / 52 \text{ weeks} / 365 \text{ days}}{\text{Stock Turnover Ratio}}$$

5 Debtors Turn over Ratio/Receivables Turn over Ratio**Meaning**

This ratio establishes a relationship between net credit sales and average trade debtors.

Objective

The objective of computing this ratio is to determine the efficiency with which the trade debtors are managed.

Components

There are two components of this ratio which are as under:

1. Net Credit Sales
2. Average Trade Debtors

Computation

This ratio is computed by dividing the net credit sales by average trade debtors. This ratio is usually expressed as 'x' number of times. In the form of a formula, this ratio may be expressed as under:

$$\text{Debtors Turn over Ratio} = \frac{\text{Net Credit Sales}}{\text{Average Trade Debtors}}$$

$$\text{Net Credit Sales} = \text{Gross Credit Sales} - \text{Sales Returns}$$

$$\text{Trade Debtors} = \text{Sundry Debtors} + \text{Bills Receivables and Accounts Receivables}$$

$$\text{Average Trade Debtors} = \frac{\text{Opening Trade Debtors} + \text{Closing Trade Debtors}}{2}$$

Interpretation

- It indicates the number of times the debtors are turned over during a year. Generally, the higher the value of debtor's turnover the more efficient is the management of debtors/sales or more liquid are the debtors.
- Similarly, low debtors turnover implies inefficient management of debtors/sales and less liquid debtors. But a precaution is needed while interpreting a very high debtors turnover ratio because a very high ratio may imply a firm's inability due to lack of resources to sell on credit thereby losing sales and profits.
- There is no 'rule of thumb' which may be used as a norm to interpret the ratio as it may be different from firm to firm, depending upon the nature of business. This ratio should be compared with ratios of other firms doing similar business and a trend may also be found to make a better interpretation of the ratio.

Debt Collection Period (or Debtors' Velocity)

The debt collection period represents the average number of days for which a firm has to wait before its receivables are converted into cash. The ratio can be calculated as follows:

$$i) \quad \text{Debt Collection Period} = \frac{\text{Average Trade Debtors (Drs + B/R)}}{\text{Sales per day}}$$

$$ii) \quad \text{Sales per day} = \frac{\text{Net Sales}}{\text{No. of working days}}$$

or Debt Collection Period

$$= \frac{\text{Average Trade Debtors}}{\frac{\text{Net Sales}}{\text{No. of working days}}} = \frac{\text{Average Trade Debtors} \times \text{No. of working days}}{\text{Net Sales}}$$

If the period is in months:

$$\text{Debt Collection Period} = \frac{\text{Average Trade Debtors} \times \text{No. of Months}}{\text{Net Sales}}$$

6. Creditors Turnover Ratio/Payables Turnover Ratio

Meaning

This ratio establishes a relationship between net credit purchases and average trade creditors.

Objective

The objective of computing this ratio is to determine the efficiency with which the creditors are managed.

Components

There are two components of this ratio which are as under:

1. Net credit Purchases
2. Average Trade Creditors

Computation

This ratio is computed by dividing the net credit purchases by average trade creditors. This ratio is usually expressed as 'x' number of times. In the form of formula, this ratio may be expressed as under:

$$\text{Creditors Turnover Ratio} = \frac{\text{Net Credit Purchases}}{\text{Average Trade Creditors}}$$

$$\text{Net credit Purchases} = \text{Gross Credit Purchases} - \text{Purchases Returns}$$

$$\text{Average Trade Creditor} = \frac{\text{Opening Trade Creditor} + \text{Closing Trade Creditor}}{2}$$

Interpretation

- The average payment period ratio represents the average number of days taken by the firm to pay its creditors.
- Generally, lower the ratio, the better is the liquidity position of the firm and higher the ratio, less liquid is the position of the firm.
- But a higher payment period also implies greater credit period enjoyed by the firm and consequently larger the benefit reaped from credit suppliers. But one has to be careful in interpreting this ratio, as higher ratio may also imply lesser discount facilities availed or higher prices paid for the goods purchased on credit.
- To make correct interpretation of this ratio, a comparative analysis of different firms in the same industry and the trend may be found for various years.

Debt Payment Period (or Creditors' Velocity)

This period shows an average period for which the credit purchases remain outstanding or the average credit period actually availed of.

$$\begin{aligned}\text{Debt Payment Period} &= \frac{\text{Average Trade Creditors}}{\text{Average Net Credit Purchases Per day}} \\ &= \frac{12 \text{ months} / 52 \text{ weeks} / 365 \text{ days}}{\text{Creditors Turnover Ratio}}\end{aligned}$$

$$\text{Average Net Credit Purchases Per day} = \frac{\text{Net Credit Purchases for the year}}{\text{No. of working days in the year}}$$

7. Total Assets Turnover Ratio**Meaning**

This ratio is the relationship between sales and total asset.

Objective

The objective is to measure the overall performance and activity of the business organization.

Computation

It is computed by dividing sales by total assets. The following formula is applied to compute this ratio:

$$\text{Total Assets Turnover} = \frac{\text{Sales}}{\text{Total Assets}}$$

1.3.2.3 Profitability Ratios**Q16. Explain different types of profitability ratios.**

Ans :

(Imp.)

Meaning

- The primary objective of a business undertaking is to earn profits. Profit earning is considered essential for the survival of the business.
- A business needs profits not only for its existence but also for expansion and diversification. "Profits are thus, a useful measure of overall efficiency of a business.
- Profits to the management are the test of efficiency and a measurement of control; to owners, a measure of worth of their investment; to the creditors, the margin of safety; to employees, a source of fringe benefits; to government, a measure of tax-paying capacity and the basis of legislative action; to customers, a hint to demand for better quality and price cuts; to an enterprise, less cumbersome source of finance for growth and existence and finally to the country, profits are an index of economic progress.
- Profitability ratios are calculated to measure the overall efficiency of the business.
- Generally, profitability ratios are calculated either in relation to sales or in relation to investment.
- To measure the profitability of a firm, the following ratios can be calculated.

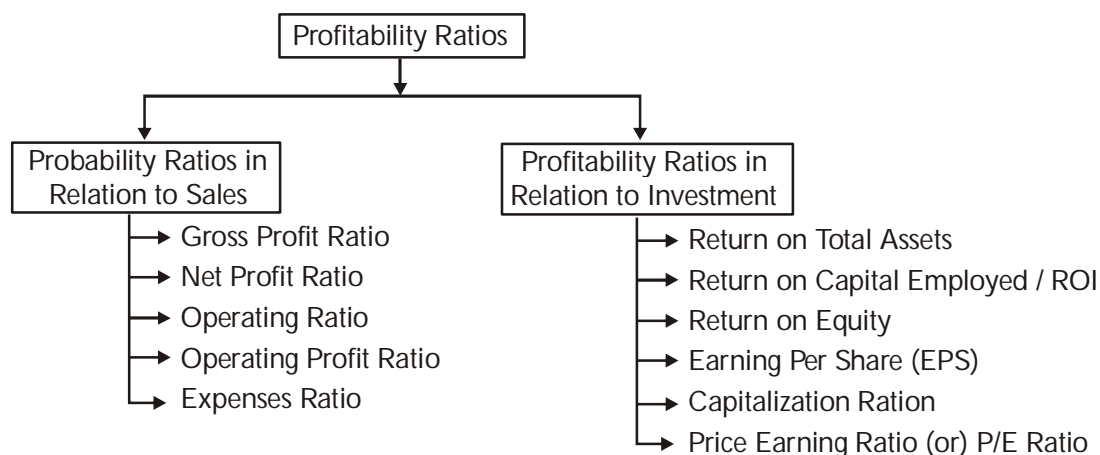


Fig.: Classification of Profitability Ratios

A) Profitability Ratios in Relation to Sales**(i) Gross Profit Ratio****Meaning**

This ratio measures the relationship between gross profit and net sales.

Objective

Gross profit ratio is calculated to know:

1. Whether the business is in a position to meet operating expenses or not, and
2. How much the share holders can get after meeting such expenses?

Components

There are two components of this ratio which are as under:

1. Gross profit
2. Net Sales

Cost of Goods Sold is calculated as under:

A: Opening Stock	xxx
B: Add: Net Purchases	xxx
C: Add: Direct Expenses (for example carriage inward)	xxx
D: Less: Closing Stock	xxx
Cost of Goods Sold (A + B + C – D)	xxx

Computation

This ratio is computed by dividing the gross profit by the net sales. It is expressed as percentage. In the form of a formula, this ratio may be expressed as under:

$$\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100$$

Gross Profit = Net Sales - Cost of Good Sold

Net Sales = Gross Sales - Sales Return

Gross profit is higher because of the following factors:

1. When sale price is higher.
2. Cost of sales remains constant.
3. If there is an increase in the volume of sales.
4. If closing stock is valued at a higher price.

Interpretation

This ratio indicates:

- (a) An average gross margin earned on a sales of ` 100,
- (b) The limit beyond which the fall in sales prices will definitely result in losses, and,
- (c) What portion of sales is left to cover operating expenses, (other than the cost of goods sold) and non-operating expenses (for example, interest on borrowed funds), to pay dividend and to create reserves. Higher the ratio, the more efficient the production and/or purchase management.

(ii) Net Profit Ratio

Meaning

This ratio measures the relationship between net profit and net sales.

Objective

The main objective of computing this ratio is to determine the overall profitability due to various factors such as operational efficiency, trading on equity, etc.

Components

There are two components of this ratio which are as under:

1. Net Profit
2. Net Sales

Computation

This ratio is computed by dividing the net profit by the net sales. It is expressed as a percentage. In the form of a formula, this ratio may be expressed as under:

$$\text{Net Profit Ratio} = \frac{\text{Net Profit}}{\text{Net Sales}} \times 100$$

Note : The figure of net profit may be taken either before tax or after tax.

Interpretation

This ratio indicates,

- (a) An average net margin earned on a sale of ` 100
- (b) What portion of sales is left to pay dividend and to create reserves, and
- (c) Firm's capacity to withstand adverse economic conditions when selling price is declining, cost of production is rising and the demand for the product is falling. Higher the ratio, greater is the capacity of the firm to withstand adverse economic conditions and vice versa.

(iii) Operating Ratio

Meaning

This ratio measures the relationship between operation cost and net sales.

Objective

The main objective of computing this ratio is to determine the operational efficiency with which production and/or purchases and selling operations are carried on.

Components

There are two components of this ratio which are as under:

1. Operating cost which comprises:

- i) Cost of goods sold, and
- ii) Other operation expenses.

For example, administrative expenses, selling and distribution expenses, interest on short-term loans, discount allowed and bad debts.

2. Net sales = Gross Sales - Sales Returns.

Computation

This ratio is computed by dividing the operating cost by the net sales. This ratio is expressed as a percentage. In the form of a formula, this ratio may be expressed as under:

$$\text{Operating Ratio} = \frac{\text{Operating Cost}}{\text{Net Sales}} \times 100$$

$$\text{Operating Cost} = \text{Cost of Good Sold} + \text{Operating Expenses}$$

$$= \frac{\text{Cost of Good Sold} + \text{Operating Expenses}}{\text{Net Sales}} \times 100$$

Interpretation

This ratio indicates an average operating cost incurred on a sale of goods worth ` 100. Lower the ratio, greater is the operating profit to cover the non-operating expenses, to pay dividend and to create reserves and vice versa.

(iv) Operating Profit Ratio

Meaning

This ratio measures the relationship between operating profits and net sales.

Objective

The main objective of computing this ratio is to determine the operational efficiency of the management. Components: There are two components of this ratio which are as under:

- 1. **Operating Profit:** It is the excess of gross profit over other operating expenses. (For example, office and administrative expenses, selling and distribution expenses, discount, bad debts, interest on short-term debts).
- 2. **Net Sales:** It means gross sales (both cash and credit minus sales returns).

Computation

This ratio is computed by dividing the operating profit by the net sales. It is expressed as a percentage. In the form of a formula, this ratio may be expressed as under:

$$\text{Operating Profit Ratio} = \frac{\text{Operating Profit}}{\text{Net Sales}} \times 100$$

$$\text{Operating Profit} = \text{Net Sales} - \text{Operating Cost}$$

(or)

$$= \text{Net Sales} - (\text{Cost of Goods Sold} + \text{Administrative and Office Expenses} + \text{Selling and Distributive Expenses})$$

$$\text{Net Sales} = \text{Gross Sales} - \text{Sales Return}$$

Alternatively

Operating Profit can also be calculated as

$$\text{Operating Profit} = \text{Net Profit} + \text{Non-operating Expenses} - \text{Non-operating income.}$$

This ratio can also be calculated as:

$$\text{Operating Profit Ratio} = 100 - \text{Operating Ratio.}$$

Interpretation

This ratio indicates:

- i) An average operating margin earned on a sale of ₹ 100, and
- ii) What portion of sales is left to cover non-operating expenses, to pay dividend and to create reserves.

(v) Expenses Ratio**Meaning**

Expenses ratios indicate the relationship of various expenses to net sales.

Objective

The objective of computing this ratio is to provide information about increase or decrease in expenses. Lower expense ratio is considered better for the business.

Computation

This can be calculated by using the following formula:

$$\text{Expense Ratio} = \frac{\text{Amount of Expenses}}{\text{Net Sales}} \times 100$$

One can also calculate separate expense ratios, such as ratio of administrative expenses to net sales, ratio of selling and distribution expenses to sales, financial expenses to sales etc. The above ratios can be calculated as below:

$$\text{For Administrative Expenses to Net Sales Ratio} = \frac{\text{Administrative and Office Expenses}}{\text{Net Sales}} \times 100$$

$$\text{For Selling \& Distribution Expenses to Net Sales Ratio} = \frac{\text{Selling and Distribution Expenses}}{\text{Net Sales}} \times 100$$

$$\text{For Financial Expenses to Net Sales Ratio} = \frac{\text{Financial Expenses and Interest}}{\text{Net Sales}} \times 100$$

Interpretation

The expense ratio indicates about efficiency of the business.

B) Profitability Ratio in Relation to Investment**(i) Return on Total Assets****Meaning**

This ratio measures a relationship between net profit before interest and tax, and total assets.

Objective

The objective of computing this ratio is to find out how efficiently the total assets have been used by the management.

Components

There are two components of this ratio which are as under:

1. Net Profit before interest and tax.
2. Total assets (excluding fictitious assets,

For example, preliminary expenses.

Computation

This ratio is computed by dividing the net profit before interest and tax by total assets. This ratio is expressed as a percentage. In the form of a formula, this ratio may be expressed as under:

$$\text{Return on Total Assets} = \frac{\text{Net Profit before Interest and Tax}}{\text{Total Assets}} \times 100$$

Interpretation

This ratio indicates the firm's ability of generating profit per rupee of total assets. Higher the ratio, the more efficient the management and utilization of total assets.

(ii) Return on Capital Employed/Return on Investment

Meaning: This ratio measures a relationship between net profit before interest and tax and capital employed.

Objective

The objective of computing this ratio is to find out how efficiently the long-term funds supplied by the creditors and shareholders have been used.

Components

There are two components of this ratio which are as under:

1. Net profit before interest and tax.
2. Capital employed which refers to long-term funds supplied by the long-term creditors and shareholders. It comprises the long-term debt and shareholders' funds.

Computation

This ratio is computed by dividing the net profit before interest and tax by capital employed. It is expressed as a percentage. In the form of formula, this ratio may be expressed as under:

$$\text{Return on Capital Employed} = \frac{\text{Net Profit before Interest and Tax}}{\text{Capital Employed}} \times 100$$

Note: Generally return on capital employed is taken as return on investments.

The term 'capital employed' refers to the total of investments made in a business and can be defined in a number of ways. The three most widely used definitions of this term are:

- i) **Gross Capital Employed:** The term 'gross capital employed' usually comprises the total assets, fixed as well as current assets used in a business.

$$\text{Gross Capital Employed} = \text{Fixed Assets} + \text{Current Assets}$$

- ii) **Net Capital Employed:** The term 'net capital employed' comprises the total assets used in a business less its current liabilities.

$$\text{Net Capital Employed} = \text{Total Assets} - \text{Current Liabilities}$$

- iii) **Proprietors' Net Capital Employed:** Proprietors' net capital employed means shareholders' funds or investments in the business. This term is the same as return on shareholders' investment.

$$\text{Proprietors' Net Capital Employed} = \text{Fixed Assets} + \text{Current Assets} - \text{Outside Liabilities} \\ (\text{both long-term and short-term})$$

Interpretation

This ratio indicates the firm's ability of generating profit per rupee of capital employed. Higher the ratio, the more efficient the management and utilization of capital employed.

(iii) Return on Equity (or) Return on Equity Shareholders' Funds**Meaning**

This ratio measures a relationship between net profit after interest, tax, and preference dividend, and equity shareholders' funds.

Objective

The objective of computing this ratio is to find out how efficiently the funds supplied by the equity shareholders have been used.

Components

There are two components of this ratio, which are as under:

1. Net profit after interest, tax and preference dividend (including participating dividend, if any, due to participating preference shareholders).
2. Equity shareholders' funds

Computation

This ratio is computed by dividing the net profit after interest, tax and preference dividend by shareholders' funds. It is expressed as a percentage. In the form of a formula, this ratio may be expressed as under.

$$\text{Return on Equity Shareholder's Funds} = \frac{\text{Net Profit after interest, tax and preference dividend}}{\text{Equity Shareholder's Funds}} \times 100$$

$$\text{Equity Shareholder Fund} = \text{Equity Share Capital} + \text{Preference Share Capital} + \text{Reserve and Surplus} - \text{Fictitious Assets (if any)}$$

Interpretation

This ratio indicates the firm's ability of generating profit per rupee of equity shareholders' funds. Higher the ratio, the more efficient the management and utilization of equity shareholders' funds.)

(iv) Earning Per Share (EPS)

Meaning

This ratio measures the earnings available to an equity shareholder on a per share basis.

Objective

The objective of computing this ratio is to measure the profitability of the firm on per equity share basis.

Components

There are two components of this ratio which are as under:

- 1) Net profit after interest, tax and preference dividend;
- 2) Number of equity shares

Computation

This ratio is computed by dividing the net profit after interest, tax and preference dividend by the number of equity shares. It is expressed as an absolute figure. In the form of a formula, this ratio may be expressed as under:

$$\text{Earning Per Share} = \frac{\text{Net Profit after interest, tax and preference dividend}}{\text{Number of Equity Shares}} \times 100$$

Interpretation

In general, higher the figure, better it is and vice versa. While interpreting this ratio, it must be seen whether there is any increase in equity shareholders' funds as a result of retained earnings without any change in numbers of outstanding shares.

For example, in the case of a company which, is following a practice of ploughing.

(v) Capitalization Ratio

Meaning

This ratio measures the relationship between market price and earnings per share.

Computation

This ratio is calculated as given below:

$$\text{Capitalization Ratio} = \frac{\text{Earnings per share}}{\text{Market price per share}} \times 100$$

If market price is taken along with dividend received, this is known as Dividend Yield Ratio.

Only change is that in place of earnings per share, dividend per share is written. In a formula, it is:

$$\text{Dividend Yield Ratio} = \frac{\text{Dividend per share}}{\text{Market price per share}} \times 100$$

(vi) Price Earning Ratio or P/E Ratio (Earning Yield Ratio)**Meaning**

This ratio measures the relationship between market price per equity share and earnings per share.

Objective

The objective of computing this ratio is to make an estimate of appreciation in the value of a share of a company and is widely used by investors to decide whether or not to buy shares in a particular company.

Computation

The ratio is calculated as:

$$\text{Price earnings ratio} = \frac{\text{Market price per equity share}}{\text{Earnings per share}}$$

$$\text{Earning Yield Ratio} = \frac{\text{Earnings per share}}{\text{Market price per share}} \times 100$$

Interpretation

Generally, higher the price-earning ratio, the better it is. If the P/E ratio falls, the management should look into the causes that have resulted into the fall of this ratio.

1.3.2.4 Solvency Ratios**Q17. Explain briefly about various Solvency Ratios.**

Ans :

(Imp.)

Meaning

- This term 'Solvency' generally refers to the capacity of the business to meet its short-term and long-term obligations.
- Short-term obligations include creditors, bank loans and bills payable etc. Long-term obligations consist of debenture, long-term loans and long-term creditors etc.
- Solvency Ratio indicates the sound financial position of a concern to carry on its business smoothly and meet its all obligations.
- Liquidity Ratios and Turnover Ratios concentrate on evaluating the short-term solvency of the concern have already been explained. Now under this part of the chapter only the long-term solvency ratios are dealt with.
- Some of the important ratios which are given below in order to determine the solvency of the concern.
 - 1) Debt - Equity Ratio
 - 2) Proprietary Ratio
 - 3) Capital Gearing Ratio
 - 4) Debt Service Ratio or Interest Coverage Ratio

1. Debt Equity Ratio

This ratio also termed as External - Internal Equity Ratio. This ratio is calculated to ascertain the firm's obligations to creditors in relation to funds invested by the owners. The ideal Debt Equity Ratio is 1:1. This ratio also indicates all external liabilities to owner recorded claims. It may be calculated as.

2. Proprietary Ratio

Proprietary Ratio is also known as Capital Ratio or Net Worth to Total Asset Ratio. This is one of the variant of Debt-Equity Ratio. The term proprietary fund is called Net Worth. This ratio shows the relationship between shareholders' fund and total assets. It may be calculated as :

$$\begin{aligned}\text{Proprietary Ratio} &= \frac{\text{Shareholders Fund}}{\text{Total Assets}} \\ \text{Shareholders' Fund} &= \text{Preference Share Capital} + \text{Equity Share Capital} \\ &\quad + \text{All Reserves and Surplus} \\ \text{Total Assets} &= \text{Tangible Assets} + \text{Non-Tangible Assets} + \text{Current Assets (or)} \\ &\quad \text{All Assets including Goodwill}\end{aligned}$$

Significance

- This ratio used to determine the financial stability of the concern in general. Proprietary Ratio indicates the share of owners in the total assets of the company.
- It serves as an indicator to the creditors who can find out the proportion of shareholders' funds in the total assets employed in the business.
- A higher proprietary ratio indicates relatively little secure position in the event of solvency of a concern.
- A lower ratio indicates greater risk to the creditors. A ratio below 0.5 is alarming for the creditors.

3. Capital Gearing Ratio

This ratio also called as Capitalization or Leverage Ratio. This is one of the Solvency Ratios. The term capital gearing refers to describe the relationship between fixed interest and/or fixed dividend bearing securities and the equity shareholders' fund. It can be calculated as shown below ;

$$\begin{aligned}\text{Capital Gearing Ratio} &= \frac{\text{Equity Share Capital}}{\text{Fixed Interest Bearing Funds}} \\ \text{Equity Share Capital} &= \text{Equity Share Capital} + \text{Reserves and Surplus} \\ \text{Fixed Interest Bearing Funds} &= \text{Debentures} + \text{Preference Share Capital} \\ &\quad + \text{Other Long-Term Loans}\end{aligned}$$

Significance

- A high capital gearing ratio indicates a company is having large funds bearing fixed interest and/or fixed dividend as compared to equity share capital.
- A low capital gearing ratio represents preference share capital and other fixed interest bearing loans are less than equity share capital.

4. Debt Service Ratio

Debt Service Ratio is also termed as Interest Coverage Ratio or Fixed Charges Cover Ratio. This ratio establishes the relationship between the amount of net profit before deduction of interest and tax and the fixed interest charges. It is used as a yardstick for the lenders to know the business concern will be able to pay its interest periodically. Debt Service Ratio is calculated with the help of the following formula

$$\begin{aligned}\text{Interest Coverage Ratio} &= \frac{\text{Net Profit before Interest and Income Tax}}{\text{Fixed Interest Charges}} \times 100 \\ \text{Fixed Interest Charges} &= \text{Rs. 3,00,000} + \text{1,00,000} \\ &= \text{Rs. 4,00,000}\end{aligned}$$

$$\begin{aligned}\text{Interest Coverage Ratio} &= \frac{7,50,000}{4,00,000} \times 100 \\ &= 187.5\% \text{ (or) } 1.87 : 1\end{aligned}$$

Significance

- Higher the ratio the more secure the debenture holders and other lenders would be with respect to their periodical interest income.
- In other words, better is the position of long-term creditors and the company's risk is lesser.
- A lower ratio indicates that the company is not in a position to pay the interest but also to repay the principal loan on time.

PROBLEMS

1. From the following information, calculate liquidity ratios for the two companies and give your interpretation of the liquidity position of the companies as revealed by the ratios.

Particulars	(Rupees in Lakhs)	
	Company X	Company Y
Cash	360	280
Debtors	2,800	6,400
Inventory	4,000	12,000
Bills payable	600	2,000
Creditors	1,600	10,000
Accrued Expenses	200	250
Tax payable	1,200	1,000

Sol :

- (i) **Current Ratio** = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$

Current Assets	X	Y	Current Liabilities	X	Y
Cash	360	280	Bills payable	600	2,000
Debtors	2,800	6,400	Creditors	1,600	10,000
Inventory	4,000	12,000	Accrued expenses	200	250
			Tax payable	1,200	1,000
	7,160	18,680		3,600	13,250

$$\text{Current Ratio for X Co} = \frac{7,160}{3,600} = 1.98:1$$

$$\text{Current Ratio for Y Co} = \frac{18,680}{13,250} = 1.41:1$$

(ii) **Quick Ratio** = $\frac{\text{Quick Assets}}{\text{Current Liabilities}}$

Quick Assets = Current Assets – [Stock and Prepaid expenses]

Quick ratio for X co = 7,160 – 4,000 = Rs. 3,160

Quick ratio for Y co = 18,680 – 12,000 = Rs. 6,680

Quick ratio for X co = $\frac{3,160}{3,600} = 0.877$

Quick ratio for Y co = $\frac{6,680}{13,250} = 0.50$

(iii) **Absolute liquidity ratio** = $\frac{\text{Absolute Liquid Assets}}{\text{Current Liabilities}}$

Absolute liquid assets = QA – [Debtors + Bills Receivable]

Absolute liquid assets for x co. = 3,160 – 2,800 = 360

Absolute liquid assets for y co. = 6,680 – 6,400 = 280

Absolute Liquidity Ratio

X company = $\frac{360}{3,600} = 0.1$

Y company = $\frac{280}{13,250} = 0.02$

2. You are given Trading and Profit & Loss Account of Mahesh Company limited for the year ended 31st December 1992.

Dr. Trading and Profit & Loss Account		Cr.	
Particulars	Rs.	Particulars	Rs.
To Opening Stock	30,000	By Net Sales	1,10,000
To Purchases	60,000	By Closing Stock	20,000
To Wages	10,000		
To Gross Profit (c/d)	30,000		
	1,30,000		1,30,000
To Administrative Expenses	10,000	By Gross Profit (b/d)	30,000
To Selling & Distribution Expenses	5,000	By Sundry Receipt	5,000
To Net Profit	20,000		
	35,000		35,000

Calculate

1. Gross Profit Ratio
2. Net Profit Ratio
3. Operating Ratio
4. Operating Profit Ratio

Sol.:

(Imp.)

1. **Gross Profit Ratio** = $\frac{\text{Gross profit}}{\text{Net sales}} \times 100$

$$\begin{aligned}\text{Gross Profit Ratio} &= \frac{30,000}{1,10,000} \times 100 \\ &= 27.27\%\end{aligned}$$

2. **Net Profit Ratio**

$$\text{Net Profit Ratio} = \frac{\text{Net profit}}{\text{Net sales}} \times 100$$

$$\text{Net Profit Ratio} = \frac{20,000}{1,10,000} \times 100$$

$$\therefore \text{Net Profit Ratio} = 18.18\%$$

3. **Operating Ratio**

$$\text{Operating Ratio} = \frac{\text{Cost of goods sold} + \text{Operating expenses}}{\text{Net sales}} \times 100$$

Cost of goods sold = Opening stock + Purchases + Direct expenses – Closing stock

$$\begin{aligned}\text{COGS} &= 30,000 + 60,000 + 10,000 - 20,000 \\ &= 1,00,000 - 20,000 \\ \text{COGS} &= 80,000\end{aligned}$$

$$\text{Operating Ratio} = \frac{\text{COGS} + \text{Operating expenses}}{\text{Net sales}} \times 100$$

$$\text{Operating Ratio} = \frac{80,000 + 15,000}{1,10,000} \times 100$$

$$= \frac{95,000}{1,10,000} \times 100$$

$$\therefore \text{Operating Ratio} = 86.36\%$$

4. **Operating Profit Ratio**

$$\begin{aligned}100 - \text{Operating Ratio} \\ &= 100 - 86.36\end{aligned}$$

$$\text{Operating Profit Ratio} = 13.64\%$$

3. From the following Trading and Profit & Loss A/c of Rim Zim Limited for the year ended 31st March 1993.

Calculate

- (i) Gross Profit Ratio
(ii) Net Profit Ratio
(iii) Operating Ratio
(iv) Operating Profit Ratio.

Dr.

Cr.

Particulars	Amount	Particulars	Amount
To Opening Stock	5,00,000	By Sales	
To Purchases	11,00,000	Cash 3,00,000	
To Wages	3,00,000	Credit <u>17,00,000</u>	20,00,000
To Factory Overheads	2,00,000	By Closing Stock	6,00,000
To Gross Profit (c/d)	5,00,000		
	<u>26,00,000</u>		<u>26,00,000</u>
To Administration Expenses	75,000	By Gross Profit (b/d)	5,00,000
To Selling & Distribution Exp.	50,000	By Dividend on Investment	10,000
To Interest on Debentures	20,000	By Profit on Sale of Furniture	20,000
To Depreciation	60,000		
To Loss on Sale of Motorcar	5,000		
To Net Profit	3,20,000		
	<u>5,30,000</u>		<u>5,30,000</u>

Sol.:

(Imp.)

- (i) **Gross Profit Ratio** = $\frac{\text{Gross profit}}{\text{Net sales}} \times 100$

$$\text{Gross Profit Ratio} = \frac{5,00,000}{20,00,000} \times 100$$

$$\therefore \text{GP Ratio} = 25\%$$

- (ii) **Net Profit Ratio**

$$\text{Net Profit Ratio} = \frac{\text{Net profit}}{\text{Net sales}} \times 100$$

$$= \frac{3,20,000}{20,00,000} \times 100$$

$$\therefore \text{NP Ratio} = 16\%$$

$$(iii) \text{ Operating Ratio} = \frac{\text{Cost of goods sold} + \text{Operating expenses}}{\text{Net sales}} \times 100$$

$$\begin{aligned} (i) \text{ Cost of goods sold} &= \text{Opening stock} + \text{Purchases} + \text{Direct expenses} - \text{Closing stock} \\ &= 5,00,000 + 11,00,000 + 3,00,000 + 2,00,000 - 6,00,000 \\ 21,00,000 - 6,00,000 &= 15,00,000 \end{aligned}$$

OR

$$\begin{aligned} (i) \text{ COGS} &= \text{Net Sales} - \text{Gross Profit} \\ &= 20,00,000 - 5,00,000 = 15,00,000 \end{aligned}$$

$$\begin{aligned} (ii) \text{ Operating Expenses} &= \text{Administrative Expenses} + \text{Selling and Distribution Expenses} \\ \text{Operating Expenses} &= 75,000 + 50,000 = 1,25,000 \end{aligned}$$

$$\text{Operating Ratio} = \frac{15,00,000 + 1,25,000}{20,00,000} \times 100$$

$$= \frac{16,25,000}{20,00,000} \times 100$$

$$\text{Operating Ratio} = 81.25\%$$

(iv) Operating Profit Ratio

$$\begin{aligned} &= 100\% - \text{Operating Ratio} \\ &= 100\% - 81.25\% \end{aligned}$$

$$\therefore \text{Operating Profit Ratio} = 18.75\%$$

4. From the following details, prepare a summarized Balance Sheet as on 31-3-2018.

Particulars		Particulars	
Networking Capital	1,20,000	Proprietary ratio	0.75
Reserves	80,000	Current ratio	2.5
Bank O.D	20,000	Quick ratio	1.5

Sol:

(Imp.)

Given that,

$$\text{Current Ratio} = 2.5$$

$$\text{Quick Ratio} = 1.5$$

$$\text{Proprietary Ratio} = 0.75$$

$$\text{Net Working Capital} = 1,20,000$$

$$\text{Reserves} = 80,000$$

$$\text{Bank OD} = 20,000$$

Calculation of Current Assets and Current Liabilities

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = 2.5$$

Let us assume Current Liabilities as x and Current Assets as 2.5x

Net Working Capital = Current Assets – Current Liabilities

$$1,20,000 = 2.5x - x$$

$$1.5x = 1,20,000$$

$$x = \frac{1,20,000}{1.5} = 80,000$$

Therefore,

$$\text{Current Liabilities} = ₹ 80,000$$

$$\begin{aligned} \text{Current Assets} &= 2.5 \times 80,000 \\ &= ₹ 2,00,000 \end{aligned}$$

Calculation of Stock

$$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Quick Liabilities}} = 1.5$$

$$= \frac{\text{Current Assets} - \text{Stock}}{\text{Current Liabilities} - \text{Bank OD}} = 1.5$$

$$= \frac{2,00,000 - \text{Stock}}{80,000 - 20,000} = 1.5$$

$$2,00,000 - \text{Stock} = 1.5 \times 60,000$$

$$2,00,000 - \text{Stock} = 90,000$$

$$2,00,000 - 90,000 = \text{Stock}$$

$$1,10,000 = \text{Stock}$$

$$\text{Stock} = ₹ 1,10,000$$

Calculation of Proprietors Funds and Fixed Assets

$$\text{Proprietary Ratio} = 0.75 : 1$$

$$\text{Fixed Assets} : \text{Proprietors Funds} = 0.75 : 1$$

$$\text{Proprietors Funds} = x$$

$$\text{Fixed Assets} = 0.75x$$

$$\begin{aligned} \text{Proprietors Funds} + \text{Long Term Loans} + \text{Current Liabilities} &= \text{Fixed Assets} + \text{Current Assets} \\ &+ \text{Fictitious Assets} \end{aligned}$$

$$x + 0 + 80,000 = 0.75x + 2,00,000 + 0$$

$$x - 0.75x = 2,00,000 - 80,000$$

$$0.25x = 1,20,000$$

$$x = \frac{1,20,000}{0.25} = 4,80,000$$

$$x = 4,80,000$$

Note: There are no long term loans and Fictitious Assets

So, Proprietors Fund is ₹ 4,80,000

$$\begin{aligned} \text{Fixed Assets} &= 4,80,000 \times 0.75 \\ &= ₹ 3,60,000 \end{aligned}$$

Calculation of Capital

Proprietors Fund = Share Capital + Reserves

$$4,80,000 = \text{Share Capital} + 80,000$$

$$\begin{aligned} \text{Share Capital} &= 4,80,000 - 80,000 \\ &= ₹ 4,00,000 \end{aligned}$$

Balance Sheet

Liabilities	Amount (₹)	Assets	Amount (₹)
Share Capital	4,00,000	Fixed Assets	3,60,000
Reserves	80,000	Current Assets	
		Stock	1,10,000
Current Liabilities	80,000	Others (2,00,000 – 1,10,000)	90,000
	5,60,000		5,60,000

5 Following are assets and liabilities of Krishna Co. Ltd. as on 31st March, 2016.

Liabilities	(₹)	Assets	(₹)
Equity capital	5,00,000	Land and buildings	3,50,000
5% debentures	2,00,000	Machinery	2,50,000
Bank loan	1,50,000	Cash in hand	25,000
Creditors	75,000	Cash at bank	55,000
Bills payable	50,000	Debtors	85,000
Outstanding expenses	5,000	Bills receivable	1,05,000
		Stock	1,00,000
		Prepaid expenses	10,000
	9,80,000		9,80,000

Calculate :

(i) Current ratio

(ii) Quick ratio

(iii) Debt to equity ratio

(iv) Proprietary ratio

(v) Assets turnover ratio if sales are ₹ 19,60,000.

Sol :

(Imp.)

(i) Calculation of Current Ratio

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Current Assets = Cash in Hand + Cash at Bank + Debtors + Bills Receivable + Stock + Prepaid Expenses.

Current Assets = 25,000 + 55,000 + 85,000 + 1,05,000 + 1,00,000 + 10,000 = ₹ 3,80,000

Current Liabilities = Creditors + Bills Payable + Outstanding Expenses

∴ Current Liabilities = 75,000 + 50,000 + 5,000 = ₹ 1,30,000

$$\text{Current Ratio} = \frac{3,80,000}{1,30,000} = 2.92$$

(ii) Calculation of Quick Ratio

$$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}}$$

Quick Assets = Current Assets – (Stock + Prepaid Expenses)

∴ Quick Assets = 3,80,000 – (1,00,000 + 10,000)
= ₹ 2,70,000

$$\therefore \text{Quick Ratio} = \frac{2,70,000}{1,30,000} \Rightarrow 2.08$$

(iii) Calculation of Debt Equity Ratio

$$\text{Debt Equity Ratio} = \frac{\text{Outsiders Funds}}{\text{Shareholders Funds}}$$

$$= \frac{\text{Debentures} + \text{Bank Loan} + \text{Creditors}}{\text{Equity Share Capital}}$$

$$= \frac{2,00,000 + 1,50,000 + 75,000}{5,00,000}$$

$$= \frac{4,25,000}{5,00,000}$$

∴ Debt Equity Ratio = 0.85

(iv) Calculation of Proprietary Ratio

$$\text{Proprietary Ratio} = \frac{\text{Total Assets}}{\text{Proprietary Funds}}$$

Proprietary funds is also known as shareholders funds.

$$= \frac{9,80,000}{5,00,000}$$

$$\therefore \text{Proprietary Ratio} = 1.96$$

(v) Calculation of Assets Turnover Ratio if Sales are ₹ 19,60,000

$$\text{Assets Turnover Ratio} = \frac{\text{Sales}}{\text{Total Assets}}$$

$$= \frac{19,60,000}{9,80,000}$$

$$\therefore \text{Assets Turnover Ratio} = 2$$

6. From the following Trading and Profit and Loss Account of Ramesh & Co. for the year 31st. Dec. 2003 :

Particulars	Rs.	Particulars	Rs.
To Opening Stock	60,000	By Sales	4,00,000
To Purchase	2,75,000	By Closing Stock	75,000
To Wages	25,000		
To Gross Profit c/d	1,15,000		
	4,75,000		4,75,000
To Administrative Expenses	45,000	By Gross Profit b/d	1,15,000
To Selling and Distribution Expenses	10,000	By Interest on Investment	10,000
To Office Expenses	5,000		
To Non Operating Expenses	15,000		
To Net Profit	50,000		
	1,25,000		1,25,000

You are required to calculate :

1. Gross Profit Ratio
2. Operating Ratio
3. Operating Profit Ratio
4. Net Profit Ratio

Sol.:

(Imp.)

$$\begin{aligned}
 1. \quad \text{Gross Profit Ratio} &= \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100 \\
 &= \frac{1,15,000}{4,00,000} \times 100 \\
 &= 28.75\%
 \end{aligned}$$

$$2. \quad \text{Operating Ratio} = \frac{\text{Total Operating Cost}}{\text{Net Sales}} \times 100$$

Total Operating Cost = Cost of Goods Sold + Operating Expenses

Cost of goods sold = Opening Stock + Purchases – Closing Stock

= Rs. 60,000 + 2,75,000 – 75,000

= Rs. 2,60,000

Operating Expenses = Office Expenses + Administrative Expenses

+ Selling and Distribution Expenses

= Rs. 5,000 + 45,000 + 10,000

= Rs. 60,000

Total Operating Cost = Rs. 2,60,000 + 60,000

= Rs. 3,20,000

= 3,20,000

$$\text{Operating Ratio} = \frac{3,20,000}{4,00,000} \times 100$$

= 80%

$$3. \quad \text{Operating Profit Ratio} = \frac{\text{Net Operating Profit}}{\text{Net Sales}} \times 100$$

Net Operating Profit = Net Sales – Total Operating Cost

= Rs. 4,00,000 – 3,20,000

= Rs. 80,000

= 80,000

$$\text{Operating Profit Ratio} = \frac{80,000}{4,00,000} \times 100$$

= 20%

$$4. \quad \text{Net Profit Ratio} = \frac{\text{Net Profit (after tax)}}{\text{Net Sales}} \times 100$$

$$= \frac{50,000}{4,00,000}$$

= 12.5 %

7. Calculate

1. Earning Per Share
2. Dividend Yield Ratio and
3. Price Earning Ratio from the following figures :

Net Profit	Rs. 6,00,000
Market Price per Equity Shares	Rs. 60
No. of Equity Shares	Rs. 40,000
Provision for Tax	Rs. 1,60,000
Preference Dividend	Rs. 50,000
Depreciation	Rs. 70,000
Bank Overdraft	Rs. 50,000

Sol :

(Imp.)

$$1. \text{ Earning Per Share} = \frac{\text{Net Profit After Tax and Preference Dividend}}{\text{No. of Equity Shares}}$$

Net Profit After Tax and

Preference Dividend

$$= \text{Rs. } 6,00,000 - (1,60,000 + 50,000)$$

$$= \text{Rs. } 6,00,000 - 2,10,000 = \text{Rs. } 3,90,000$$

$$\text{Earning Per Share} = \frac{3,90,000}{40,000}$$

$$= \text{Rs. } 9.75$$

$$2. \text{ Dividend Yield Ratio} = \frac{\text{Earning Per Share}}{\text{Market Value Per Share}} \times 100$$

$$= \frac{9.75}{60} \times 100$$

$$= 16.25\%$$

$$3. \text{ Price Earning Ratio} = \frac{\text{Market Price Per Equity Share}}{\text{Earning Per Share}}$$

$$= \frac{60}{9.75}$$

$$= 6.15$$

Interpretations

The market price of a share is Rs. 60 and earning per share is Rs. 9.75, the price earning ratio would be 6.15. It means that the market value of every one rupee of earning is 6.15 times or Rs. 6.15.

8. Calculate Interest Coverage Ratio :

Profit before Interest	= Rs. 7,00,000
Income Tax Paid	= Rs. 50,000
Interest On Debenture	= Rs.3,00,000
Interest on Long-Term Loan	= Rs. 1,00,000

Sol.:

$$\text{Interest Coverage Ratio} = \frac{\text{Net Profit before Interest and Income Tax}}{\text{Fixed Interest Charges}} \times 100$$

Net Profit before Interest = Rs. 7,00,000 + 50,000
and Taxes

$$= \text{Rs. 7,50,000}$$

$$\begin{aligned} \text{Fixed Interest Charges} &= \text{Rs. 3,00,000} + 1,00,000 \\ &= \text{Rs. 4,00,000} \end{aligned}$$

$$\begin{aligned} \text{Interest Coverage Ratio} &= \frac{7,50,000}{4,00,000} \times 100 \\ &= 187.5 \% \text{ (or) } 1.87 : 1 \end{aligned}$$

Significance

- Higher the ratio the more secure the debenture holders and other lenders would be with respect to their periodical interest income.
- In other words, better is the position of long-term creditors and the company's risk is lesser.
- A lower ratio indicates that the company is not in a position to pay the interest but also to repay the principal loan on time.

9. From the following information, you are required to find out Capital Gearing Ratio

	Rs.
Preference Share Capital	5,00,000
Equity Share Capital	6,00,000
Capital Reserve	3,00,000
Profit and Loss Account	1,00,000
12% Debenture	3,00,000
Secured loan	1,00,000

Sol.:

$$\text{Capital Gearing Ratio} = \frac{\text{Equity Share Capital}}{\text{Fixed Interest Bearing Funds}}$$

$$\begin{aligned} \text{Equity Share Capital} &= \text{Equity Share Capital} + \text{Capital Reserve} + \text{Profit and Loss Account} \\ &= \text{Rs. } 6,00,000 + 3,00,000 + 1,00,000 \\ &= \text{Rs. } 10,00,000 \end{aligned}$$

$$\begin{aligned} \text{Fixed Interest Bearing funds} &= \text{Debenture} + \text{Preference Share Capital} + \text{Secured Loans} \\ &= \text{Rs. } 3,00,000 + 5,00,000 + 1,00,000 \\ &= \text{Rs. } 9,00,000 \end{aligned}$$

$$\text{Capital Gearing Ratio} = \frac{10,00,000}{9,00,000}$$

$$= 10 : 9$$

10. From the following profit and loss account and balance sheet relating to Ramesh Company presented as 31st March, 2003 :

Dr.		Profit and Loss Account		Cr.	
Particulars	Rs.	Particulars	Rs.		
To Opening Stock	3,000	By Gross Sales	Rs. 2,00,000		
To Purchase	1,20,000	Less: Sales Return	Rs. 5,000	1,95,000	
To Wages (Direct)	7,000	By Closing Stock		5,000	
To Gross Profit c/d	70,000				
	2,00,000			2,00,000	
To Administrative Expn.	15,000	By Gross Profit b/d		70,000	
To Selling and		By Dividend Received		10,000	
Distribution expenses	20,000				
To Loss on sale of					
Fixed Assets	5,000				
To Net Profit	40,000				
	80,000			80,000	

Balance Sheet as on 31st March 2002

Liabilities	Rs.	Assets	Rs.
Equity Share Capital (5000 Equity Shares of 100 each)	5,00,000	Land	1,50,000
General Reserve	50,000	Building	2,00,000
Profit and Loss A/c	70,000	Plant. & Machinery	2,00,000
Sundry Creditors	80,000	Stock	50,000
		Debtors	50,000
		Bank Balance	20,000
	7,00,000		7,00,000

From the above information you are required to calculate :

1. Gross Profit Ratio
2. Operating Ratio
3. Operating Profit Ratio.
4. Net Profit to Capital Employed Ratio
5. Current Ratio
6. Liquid Ratio
7. Stock Turnover Ratio
8. Debtor's Turnover Ratio
9. Debt Collection Period Ratio

Sol.:

$$\begin{aligned}
 1. \quad \text{Gross Profit Ratio} &= \frac{\text{Gross Profit}}{\text{Net Sales}} \times 100 \\
 &= \frac{70,00}{1,95,000} \times 100 \\
 &= 35.89\%
 \end{aligned}$$

$$2. \quad \text{Operating Ratio} = \frac{\text{Operating Cost}}{\text{Net Sales}} \times 100$$

Operating Cost = Cost of goods sold + Administrative Expenses + Selling and distribution Expenses

Cost of Goods Sold = Opening Stock + Purchases + Direct Wages – Closing Stock

$$\begin{aligned}
 &= \text{Rs. } 3,000 + 1,20,000 + 7,000 - 5,000 \\
 &= \text{Rs. } 1,30,000 - 5,000 = 1,25,000 \\
 \text{Operating Cost} &= \text{Rs. } 1,25,000 + 15,000 + 20,000 \\
 &= \text{Rs. } 1,60,000
 \end{aligned}$$

$$\text{Operating Ratio} = \frac{1,60,000}{1,95,000} \times 100 = 82.05\%$$

$$3. \quad \text{Operating Profit Ratio} = \frac{\text{Operating Profit}}{\text{Net Sales}} \times 100$$

$$\begin{aligned}
 \text{Operating Profit} &= \text{Net Sales} - \text{Total Operating Cost} \\
 &= \text{Rs. } 1,95,000 - 1,60,000 = \text{Rs. } 35,000
 \end{aligned}$$

$$\begin{aligned}
 \text{Operating Profit Ratio} &= \frac{35,000}{1,95,000} \times 100 \\
 &= 17.94\%
 \end{aligned}$$

$$4. \quad \text{Net Profit to Capital Employed Ratio} = \frac{\text{Net Profit}}{\text{Capital Employed}} \times 100$$

$$\begin{aligned}
 \text{Capital Employed} &= \text{Share Capital} + \text{General Reserve} + \text{Profit and Loss A/c} \\
 &= \text{Rs. } 5,00,000 + 50,000 + 70,000 \\
 &= \text{Rs. } 6,20,000
 \end{aligned}$$

$$= \frac{40,000}{6,20,000} \times 100$$

$$\begin{aligned}
 \text{Net Profit to Capital Employed Ratio} &= \frac{40,000}{6,20,000} \times 100 \\
 &= 6.45\%
 \end{aligned}$$

$$5. \quad \text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$\begin{aligned}
 &= \text{Current Assets} = \text{Stock} + \text{Debtors} + \text{Bank Balances} \\
 &= \text{Rs. } 80,000 + 50,000 + 20,000 \\
 &= \text{Rs. } 1,50,000
 \end{aligned}$$

$$\text{Current Ratio} = \frac{1,50,000}{80,000} = 1.88 \text{ (or) } 1.88 : 1$$

$$\begin{aligned} 6. \quad \text{Liquid Ratio} &= \frac{\text{Liquid Assets}}{\text{Current Liabilities}} \\ &= \text{Current Assets} - \text{Stock and Prepaid Expenses} \\ &= \text{Rs.150,000} - 80,000 \\ &= \text{Rs.70,000} \end{aligned}$$

$$\begin{aligned} \text{Liquid Ratio} &= \frac{70,000}{80,000} \\ &= 87.5 \text{ (or) } 875 : 1 \end{aligned}$$

$$7. \quad \text{Stock Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

$$\begin{aligned} \text{Average Inventory} &= \frac{\text{Opening Stock} + \text{Closing Stock}}{2} \\ &= \frac{3,000 + 5,000}{2} \\ &= \text{Rs.4,000} \end{aligned}$$

$$\begin{aligned} \text{Stock Turnover Inventory} &= \frac{1,25,000}{4,000} \\ &= 31.25 \text{ times} \end{aligned}$$

Alternatively

$$\begin{aligned} \text{Stock Turnover Ratio} &= \frac{\text{Net Sales}}{\text{Average Inventory}} \\ &= \frac{1,95,000}{4,000} = 48.75 \text{ time} \end{aligned}$$

$$8. \quad \text{Debtor's Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Average Receivables}}$$

It is to be noted that credit sales, opening and closing receivables are not given in the problem, the ratio may be calculated as :

$$\begin{aligned} \text{Debtor's Turnover Ratio} &= \frac{\text{Total Sales}}{\text{Account Receivable}} \\ &= \frac{1,95,000}{50,000} \\ &= 3.9 \text{ times} \end{aligned}$$

9. **Debt Collection Period Ratio** = $\frac{\text{Month (or) Days in a year}}{\text{Debtor's Turnover}}$

$$= \frac{365 \text{ days}}{3.9} = 93.58 \text{ days}$$

(or)

$$= \frac{12 \text{ months}}{3.9}$$

$$= 3.07 \text{ months}$$

11. The following information is given about M/s Gowda Ltd. for the year ending Dec. 31st 2003 :

(a) Share Capital	Rs. 8,40,000
(b) Bank Overdraft	Rs. 50,000
(c) Working Capital	Rs. 2,52,000
(d) Current Ratio	= 2.5 : 1
(e) Quick Ratio	= 1.5 : 1
(f) Gross Profit Ratio	= 20 % on sales
(g) Stock Turnover Ratio	= 5 times
(h) Sales for 2003 Rs.	5,00,000
(i) Trade Debtors Rs.	70,000
(j) Opening Creditors	Rs. 40,000
(k) Closing Creditors	Rs. 30,000
(l) Closing Stock is Rs. 20,000 higher than the opening stock	

Find Out

- Current Assets and Current Liabilities.
- Cost of goods sold. Average stock and Purchases.
- Creditor's Turnover Ratio.
- Creditor's Payment Period.
- Debtor's Turnover Period.
- Debtor's Collection Period.
- Working Capital Turnover Ratio.

Sol.:

(a) Current AitrIs and Current Liabilities

Working Capital = Current Assets – Current Liabilities

∴ 2,52,000 = 2.5 – 1

1.5 = Rs. 2,52,000

1 = $\frac{2,52,000}{1.5}$

= Rs.1,68,000

Therefore

Current Assets = Rs 1,68,000 × 2.5 = Rs. 4,20,000

Current Liabilities = Rs 1,68,000 × 1 = Rs. 1,68,000

(b) Cost of goods sold, Average Stock and Purchases

Cost of Goods Sold = Sales – Gross Profit

= Rs. 5,00,000 – 20 % on sales

= Rs. 5,00,000 – 1,00,000

= Rs. 4,00,000

Average Stock

Stock Turnover Ratio = $\frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$

5 times = $\frac{4,00,000}{\text{Average Stock}}$

= Rs. 80,000

Purchases

Cost of Goods Sold = Opening Stock + Purchases – Closing Stock

Purchases = Cost of Goods Sold + Closing Stock – Opening Stock

Average Stock = $\frac{\text{Opening Stock} + \text{Closing Stock}}{2}$

Since closing stock is Rs. 20,000 higher than the opening stock

Rs. 80,000 = $\frac{\text{Opening Stock(Rs.20,000} + \text{Opening Stock)}}{2}$

$$\text{Rs. } 1,60,000 = 2 \text{ Opening Stock} + \text{Rs. } 20,000$$

$$\text{Opening Stock} = \frac{1,60,000 - 20,000}{2} = \frac{1,40,000}{2}$$

$$= \text{Rs. } 70,000$$

$$\text{Closing Stock} = \text{Rs. } 70,000 + \text{Rs. } 20,000 = \text{Rs. } 90,000$$

$$\text{Purchases} = \text{Rs. } 4,00,000 + 90,000 - 70,000 = \text{Rs. } 4,20,000$$

(c) Creditor's Turnover Ratio

$$\text{Creditor's Turnover Ratio} = \frac{\text{Net Credit Purchases}}{\text{Average Trade Creditors}}$$

All Purchases taken as credit purchases

$$\text{Average Trade Creditors} = \frac{\text{Opening Creditors} + \text{Closing Creditors}}{2}$$

$$\text{Average Trade Creditors} = \frac{\text{Rs. } 40,000 + \text{Rs. } 30,000}{2}$$

$$= \frac{\text{Rs. } 70,000}{2}$$

$$= \text{Rs. } 35,000$$

(d) Creditor's Payment Period

$$\text{Creditor's Payment Period} = \frac{\text{Month or Days in a year}}{\text{Creditor's Turnover Ratio}}$$

$$= \frac{12 \text{ months}}{12}$$

$$= 1 \text{ month}$$

Alternatively

$$\text{Creditor's Payment Period} = \frac{\text{Average Trade Creditors} \times \text{No. of Working Days}}{\text{Net Credit Purchases}}$$

$$= \frac{35,000 \times 365}{4,20,000}$$

$$= 30.41 \text{ days}$$

(e) Debtor's 'Rirnover Ratio

$$\text{Debtor's Turnover Ratio} = \frac{\text{Net Credit Sales}}{\text{Average Trade Debtor's}}$$

It is to be noted that credit sales, opening and closing receivables are not given in the problem, so the ratio may be calculated as :

$$\begin{aligned}\text{Debtor's Turnover ratio} &= \frac{\text{Total Sales}}{\text{Accounts Receivable or Trade Debtor's}} \\ &= \frac{\text{Rs.5,00,000}}{\text{Rs.70,000}} \\ &= 7.14 \text{ times}\end{aligned}$$

(f) Debtors Collection Period

$$\begin{aligned}\text{Debtor's Collection Period} &= \frac{\text{Month or Days in a year}}{\text{Debtor's Turnover ratio}} \\ &= \frac{12 \text{ months}}{7.14} \\ &= 1.68 \text{ months}\end{aligned}$$

Alternatively

$$\begin{aligned}\text{Debtor's Collection Period} &= \frac{\text{Average Trade Debtors} \times \text{No. of Working Days}}{\text{Net Annual Sales}} \\ &= \frac{70,000 \times 365}{5,00,000} \\ &= 51.1 \text{ days}\end{aligned}$$

(g) Working Capital Turnover Ratio

$$\text{Working Capital Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Net Working Capital}}$$

Ratio

$$\begin{aligned}&= \frac{\text{Rs.4,00,000}}{\text{Rs.2,50,000}} \\ &= 1.6 \text{ times}\end{aligned}$$

1.4 DuPONT ANALYSIS

Q18. Explain briefly about DuPont Analysis

Ans. :

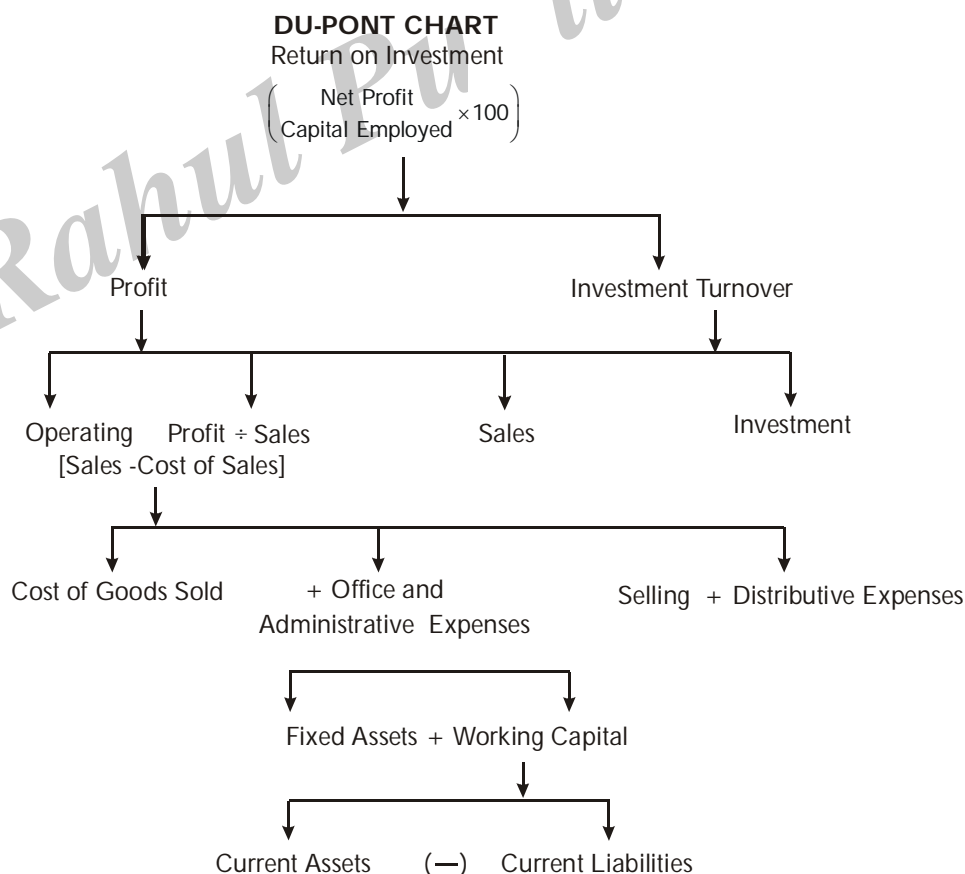
(Imp.)

A system of management control designed by an American company named Du-Pont Company is popularly called Du-Pont Control Chart. This system uses the ratio inter-relationship to provide charts for managerial attention. The standard ratios of the company are compared to present ratios and changes in performance are judged.

The chart is based on two elements i.e., Net profit and capital employed. Net profit is related to operating expenses. If the expenses are under control then profit margin will increase. The earnings as a percentage of sales or earnings divided by sales give us percentage of profitability. Earnings can be calculated by deducting cost of sales from sales. Cost of sales includes cost of goods sold plus office and administrative expenses and selling and distributive expenses. Capital employed, on the other hand, consists of current assets and net fixed assets. Current assets include debtors, stock, bills receivables, cash, etc. Fixed assets are taken after deducting depreciation. So profit margin is divided by capital employed and is multiplied by 100.

$$\text{The ratio will be} = \frac{\text{Profit Margin}}{\text{Capital Employed}} \times 100$$

Du-Pont Chart is presented as under



The efficiency of a concern depends upon the working operations of the concern. The return on investment becomes a yardstick to measure efficiency because return influences various operations. The profit margin will show the efficiency with which assets of the business have been used. The efficiency can be improved either by a better relationship between sales and costs or through more effective use of available capital. The profitability can be increased by controlling costs and/or increasing sales. The investments turnover can be raised by having a control over investments in fixed assets and working capital without adversely affecting sales. The sales may also be increased with the use of same Capital. The management is able to pinpoint weak spots and take corrective measures. The performance can be better judged by having inter-firm comparison. The ratios of return on investment, assets turnover and profit margins of comparable companies can be calculated and these can be used as standards of performance.

1.5 CASH FLOW ANALYSIS

1.5.1 Meaning

Q19. Define cash flow statement. What are the advantages and disadvantages of cash flow statements.

(OR)

Explain the various utilities of the cash flow statement analysis.

(OR)

What is Cash Flow Statement? What are the advantages of Cash Flow Statement?

Ans :

(Imp.)

Meaning

- Cash plays a very important role in the entire economic life of a business.
- A firm needs cash to make payments to its suppliers, to incur day-to-day expenses and to pay salaries, wages, interest and dividends, etc. In fact, what blood is to a human body, cash is to a business enterprise.
- It is very essential for a business to maintain an adequate balance of cash. But many a times, a concern operates profitably and yet it becomes very difficult to pay taxes and dividends. This may be because
 - (i) although huge profits have been earned yet cash may not have been received or
 - (ii) even if cash has been received; it may have drained out (used) for some other purposes.

This movement of cash is of vital importance to the management.

- A statement of changes in the financial position of firm on cash basis is called a cash flow statement. Such a statement enumerates net effects of the various business transactions on cash and takes into account receipts and disbursements of cash. A cash flow statement summarizes the causes of changes in cash position of a business enterprise between dates of two balance sheets.
- Cash flow statement is a statement of changes of financial position in business due to inflow or outflow of cash and their statement is required for short-range business premises.

Advantages

A cash flow statement is useful for short-term planning. A business enterprise needs sufficient cash to meet its various obligations in the near future such as payment for purchase of fixed assets, payment of debts maturing in the near future, expenses of the business, etc.

A cash flow analysis is an important financial tool for the management. Its chief advantages are as follows:

1. Helps in Efficient Cash Management

Cash flow statement helps in evaluating financial policies and cash position, cash is the basis for all operations and hence a projected cash flow statement will enable the management to plan and coordinate the financial operations properly.

2. Helps in Internal Financial Management

Cash flow statement provides information about funds, which will be available from operations. This will help the management in determining policies regarding internal financial management, for example, possibility of repayment of long-term debt, dividend policies, planning replacement of plant and machinery, etc.

3. Disclose the Movements of Cash

Cash flow statement discloses the complete story of cash movement. The increase or decrease in cash and the reason therefore can be known. It discloses the reasons for low cash balance in spite of heavy operating profits or for heavy cash balance in spite of low profits. However, comparison of original forecast with the actual results highlights the trends of movement of cash, which may otherwise go undetected.

4. Discloses Success or Failure of Cash Planning

The extent of success or failure of cash planning can be known by comparing the projected cash flow statement with the actual cash flow statement and necessary remedial measures can be taken.

5. Helpful in Declaring Dividends etc

Cash flow statement is very helpful in declaring dividends etc. This statement can supply information regarding availability of cash. If cash is available, dividend can be paid. Thus, it helps to understand the liquidity. It must be paid within 42 days.

Disadvantages

The disadvantages of cash flow statement are as follows:

1. Ignores Basic Principle of Accounting

As cash flow statement is based on cash basis of accounting, it ignores the basic accounting concept of accrual basis.

2. Not Suitable for Judging Profitability

Cash flow statement is not suitable for judging the profitability of a firm, as non-cash charges are ignored while calculating cash flows from operating activities.

3. Cannot be Equated with Income Statement

Cash flow statement cannot be equated with the income statement. An income statement takes into account both cash as well as non-cash items and, therefore, net cash does not necessarily mean net income of the business.

4. May not Represent Real Liquid Position

The cash balance as disclosed by the cash flow statement may not represent the real liquid position of the business since it can be easily influenced by postponing purchases and other payments.

1.5.2 Preparation of Cash Flow Statement as per Ind-AS-7**Q20. Write the procedure for preparing cash flow statement.***Ans :***(Imp.)**

The statement of cash flows shall report cash flows during the period classified by operating, investing and financing activities.

The cash flow statement can be classified into following activities:

1. Operating activities,
2. Investing activities, and
3. Financing activities.

1. Operating activities

The amount of cash flows arising from operating activities is a key indicator of the extent to which the operations of the enterprise have generated sufficient cash flows to maintain the operating capability of the enterprise, pay dividends, repay loans, and make new investments without recourse to external sources of financing. Information about the specific components of historical operating cash flows is useful, in conjunction with other information in forecasting future operating cash flows.

Cash flows from operating activities are primarily derived from principal revenue producing activities of the enterprise. Therefore, they generally result from the transactions and other events that enter into the determination of net profit or loss.

Examples of cash flows from operating activities are:

S.No.	Operating Cash Inflows	S.No.	Operating Cash Outflows
1.	Cash receipts from the sale of goods and the rendering of services	1.	Cash payments to suppliers for goods and services
2.	Cash receipts from royalties, fee, commission and other revenue	2.	Cash payments to and on behalf of employees
3.	Cash receipts and cash payments of an insurance entity for premiums and claims, annuities and other policy benefits	3.	Cash payments or refunds of income taxes unless they can be specifically identified with financing and investing activities
4.	Cash receipts and payments from contracts held for dealing or trading purposes		

2. Investing Activities

The separate disclosure of cash flows arising from investing activities is important because the cash flows represent the extent to which expenditures have been made for resources intended to generate future income and cash flows.

Examples of cash flows arising from investing activities are:

S.No.	Cash Inflow from Investing Activities	S.No.	Cash Outflow from Investing Activities
1.	Cash receipts from sales of property, plant and equipment, intangibles and other long-term assets	1.	Cash payments to acquire property, plant and equipment, intangibles and other long-term assets. These payments include those relating to capitalised development costs and self-constructed property, plant and equipment
2.	Cash receipts from sales of equity or debt instruments of other entities and interests in joint ventures (other than receipts for those instruments considered to be cash equivalents and those held for dealing or trading purposes)	2.	Cash payments to acquire equity or debt instruments of other entities and interests in joint ventures considered to be cash equivalents or those held for dealing or trading purposes)

3. Financing Activities

The separate disclosure of cash flows arising from financing activities is important because it is useful in predicting claims on future cash flows by providers of funds (both capital and borrowings) to the enterprise.

Examples of cash flows arising from financing activities are:

S.No.	Cash Inflows from Financing Activity	S.No.	Cash Outflows from Financing Activity
1.	Cash proceeds from issuing shares or other equity instruments.	1.	Cash payments to owners to acquire or redeem the entity's shares.
2.	Cash proceeds from issuing debentures, loans, notes, bonds, mortgages and other.	2.	Cash repayments of amounts borrowed; and Short-term or long-term borrowings.
3.	Cash payments by a lessee for the reduction of the outstanding liability relating to a lease.		

PROBLEMS

12. Company has provided the following information regarding the various assets held by company on 31st March 2011. Find out, which of the following items will be part of cash and cash equivalents for the purpose of preparation of cash flow statement as per the guidance provided in Ind AS 7:

S.No.	Name of the Security	Additional Information
1.	Fixed deposit with SBI	12%, 3 years maturity on 1st Jan 2014
2.	Fixed deposit with HDFC	10%, original term was for 2 years, but due for maturity on 30.06.2011
3.	Redeemable Preference shares in ABC Ltd	Acquired on 29th January 2011 and the redemption is due on 30th April 2011
4.	Cash balances at various banks	All branches of all banks in India
5.	Cash balances at various banks	All international branches of Indian banks
6.	Cash balances at various banks	Branches of foreign banks outside India
7.	Bank overdraft of SBI Fort branch	Temporary overdraft, which is payable on demand
8.	Treasury Bills	90 days maturity

Sol.:

S.No.	Name of the Security	Decision
1.	Fixed deposit with SBI	Not to be considered – long term
2.	Fixed deposit with HDFC	Exclude as original maturity is not less than 90 days from the date of acquisition
3.	Redeemable Preference shares in ABC Ltd.	Include as due within 90 days from the date of acquisition
4.	Cash balances at various banks	Include
5.	Cash balances at various banks	Include
6.	Cash balances at various banks	Include
7.	Bank overdraft of SBI Fort branch	Include
8.	Treasury Bills	Include

13. From the following transactions, identify which transactions will be qualified for the calculation of operating cash flows, if company is into the business of trading of mobile phones

S.No.	Nature of Transaction
1.	Receipt from sale of mobile phones
2.	Purchases of mobile phones from various companies
3.	Employees expenses paid
4.	Advertisement expenses paid
5.	Credit sales of mobile
6.	Misc. charges received from customers for repairs of mobiles
7.	Loss due to decrease in market value of the closing stock of old mobile phones
8.	Payment to suppliers of mobile phones
9.	Depreciation on furniture of sales showrooms
10.	Interest paid on cash credit facility of the bank
11.	Profit on sale of old computers and printers, in exchange of new laptop and printer
12.	Advance received from customers
13.	Sales tax and excise duty paid

Sol.:

S.No.	Nature of Transaction	Included / Excluded with reason
1.	Receipt from sale of mobile phones	Include – main revenue generating activity
2.	Purchases of mobile phones from various companies	Include – expenses related to main operations of business
3.	Employees expenses paid	Include – expenses related to main operations of business
4.	Advertisement expenses paid	Include – expenses related to main operations of business
5.	Credit sales of mobile	Do not include – Credit transaction will not be included in cash flow (receipts from customers will be included)
6.	Misc. charges received from customers for repairs of mobiles	Include – supplementary revenue generating activity
7.	Loss due to decrease in market value of the closing stock of old mobile phones	Do not include - Non cash transaction
8.	Payment to suppliers of mobile phones	Include – cash outflow related to main operations of business
9.	Depreciation on furniture of sales showrooms	Do not include – non cash item
10.	Interest paid on cash credit facility of the bank	Do not include – cost of finance
11.	Profit on sale of old computers and printers, in exchange of new laptop and printer	Do not include – non cash item
12.	Advance received from customers	Include – Related to operations of business
13.	Sales tax and excise duty paid	Include – related to operations of business

14. From the following transactions taken from a private sector bank operating in India, identify which transactions will be classified as operating and which would be classified as Investing activity.

S.No.	Nature of transaction paid
1.	Interest received on loans
2.	Interest paid on Deposits
3.	Deposits accepted
4.	Loans given to customers
5.	Loans repaid by the customers
6.	Deposits repaid
7.	Commission received
8.	Lease rentals paid for various branches
9.	Service tax paid
10.	Furniture purchased for new branches
11.	Implementation of upgraded banking software
12.	Purchase of shares in 100% subsidiary for opening a branch in Abu Dhabi
13.	New cars purchased from Honda dealer, in exchange of old cars
14.	Provident fund paid for the employees
15.	Issued employee stock options

Sol.:

S.No.	Nature of Transaction	Operating / Investing / Not to be considered
1.	Interest received on loans	Operating – Main revenue generating activity
2.	Interest paid on Deposits	Operating – Main expenses of operations
3.	Deposits accepted	Operating – in case of financial institutes
4.	Loans given to customers	Operating – in case of financial institutes
5.	Loans repaid by the customers	Operating – in case of financial institutes
6.	Deposits repaid	Operating – in case of financial institutes
7.	Commission received	Operating – Main revenue generating activity
8.	Lease rentals paid for various branches	Operating – Main expenses of operations
9.	Service tax paid	Operating – Main expenses of operations
10.	Furniture for new branches	Investing – Assets purchased
11.	Implementation of upgraded banking software	Investing – Purchased for long term purpose
12.	Purchase of shares in 100% subsidiary for opening a branch in Abu Dhabi	Investing – strategic investment
13.	New cars purchased from Honda dealer, in exchange of old cars	Investing
14.	Provident fund paid for the employees	Operating
15.	Issued employee stock options	Not to be considered. No cash flow

- 15. From the following transactions taken from a parent company having multiple businesses and multiple segments, Identify which transactions will be classified as operating Investing and Financing:**

S.No.	Nature of transaction
1.	Issued preference shares
2.	Purchased the shares of 100% subsidiary company
3.	Dividend received from shares of subsidiaries
4.	Dividend received from other companies
5.	Bonus shares issued
6.	Purchased license for manufacturing of special drugs
7.	Royalty received from the goods patented by the company
8.	Rent received from the let out building (letting out is not main business)
9.	Interest received from the advances given
10.	Dividend paid
11.	Interest paid on security deposits
12.	Purchase goodwill
13.	Acquired the assets of a company by issue of equity shares (not parting any cash)
14.	Interim dividends paid
15.	Dissolved the 100% subsidiary and received the amount in final settlement

Sol :

S.No.	Nature of Transaction	Operating / Investing / Financing / Not to be considered
1.	Issued preference shares	Financing
2.	Purchased the shares of 100% subsidiary company	Investing
3.	Dividend received from shares of subsidiaries	Investing
4.	Dividend received from other companies	Investing
5.	Bonus shares issued	No cash flow
6.	Purchased license for manufacturing of special drugs	Investing
7.	Royalty received from the goods patented by the company	Operating
8.	Rent received from the let out building (letting out is not main business)	Investing
9.	Interest received from the advances given	Operating
10.	Dividend paid	Financing
11.	Interest paid on security deposits	Financing
12.	Purchased goodwill	Investing
13.	Acquired the assets of a company by issue of equity shares (not parting any cash)	Not to be considered
14.	Interim dividends paid	Financing
15.	Dissolved the 100% subsidiary and received the amount in final settlement	Investing

Q21. Explain the format of cash flow statement as per Ind AS-7.*Ans :***Cash Flow Statement Under Listing Agreement and IAS-7**

IAS-7 (Indirect Method)/SEBI Format	IAS-7 (Direct Method)
A. Cash flow from operating activities	A. Cash flow from operating activities
Net profit before tax & extraordinary items	Cash receipt from customers
Adjustments for:	
Depreciation	
Foreign Exchange	
Investments	Less: Cash paid to suppliers & other operating expenses
Operating Profit before working capital changes	
Adjustments for:	
Trade and other receivables	
Inventories	
Trade Payables	
Cash generated from operations	Cash generated from operation
Less: Interest paid	Less: Interest paid
Direct tax paid	Income tax paid
Cash flow before extraordinary items	Cash flow before Extraordinary items
Extraordinary items	Less: Extraordinary items
Net Cash from / (used in) operating activities	Net Cash from / (used in) operating activities

B. Cash flow from investing activities	B. Cash flow from investment activities
Purchase of fixed assets	Purchase of fixed assets
Sale of fixed assets	Proceeds from sale of fixed assets
Acquisition of companies	Investment in subsidiaries
Purchase of investments	Investment in trade investment
Sale of investments	Loans and Advances Taken/(returned)
Interest Received	Current investments made
Dividend Received	Interest/Dividend Received
Net cash used in investing activities	Net cash used in investing activities
C. Cash flows from financing activity	C. Cash flows from financing activity
Proceeds from issue of share capital	Proceeds from issue of share capital
Proceeds from long-term borrowings(net)	Proceeds from long-term borrowings
Repayment of financial lease liabilities	Repayment of Loans
Dividend paid	Dividend paid
Net Cash used in financing activities	Net Cash used in financing activities
Net Increase in cash & cash equivalents	Net Increase in cash & cash equivalents

PROBLEMS

16. Use the following data of ABC Ltd. to construct a statement of cash flows using the direct and indirect methods:

(Amount in `)

Particulars	2022	2021
Cash	4,000	14,000
Accounts Receivable	25,000	32,500
Prepaid Insurance	5,000	7,000
Inventory	37,000	34,000
Fixed Assets	3,16,000	2,70,000
Accumulated Depreciation	(45,000)	(30,000)
Total Assets	3,42,000	3,27,500
Accounts Payable	18,000	16,000
Wages Payable	4,000	7,000
Debentures	1,73,000	1,60,000
Equity Shares	88,000	84,000
Retained Earnings	59,000	60,500
Total Liabilities & Equity	3,42,000	3,27,500
	2022	
Sales	2,00,000	
Cost of Goods Sold	(1,23,000)	
Depreciation	(15,000)	
Insurance Expense	(11,000)	
Wages	(50,000)	
Net Profit	1,000	

During the financial year 2022 company ABC Ltd. declared and paid dividends of ₹ 2,500. During 2022, ABC Ltd. paid ₹ 46,000 in cash to acquire new fixed assets. The accounts payable was used only for inventory. No debt was retired during 2022

Sol :

A. DIRECT METHOD

Particulars	Amount	Amount
Cash flows from operating activities		
Cash received from customers	2,07,500	
Cash paid for inventory	(1,24,000)	
Cash paid for insurance	(9,000)	
Cash paid for wages	(53,000)	
Net cash flow from operating activities		21,500
Cash flows from investing activities		
Purchase of fixed assets		(46,000)
Cash flows from financing activities		
Dividend paid	(2,500)	
Proceeds from issuance of debentures	13,000	
Proceeds from issue of equity	4,000	
Net cash flows from financing activities		14,500
Net decrease in cash and cash equivalents		(10,000)
Opening Cash Balance		14,000
Closing Cash Balance		4,000

B. INDIRECT METHOD

Particulars	Amount	Amount
Cash flows from operating activities		
Net Profit	1,000	
Adjustments for Depreciation	15,000	
	16,000	
Decrease in accounts receivable	7,500	
Decrease in prepaid insurance	2,000	
Increase in inventory	(3,000)	
Increase in accounts payable	2,000	
Decrease in wages payable	(3,000)	
Net cash flow from operating activities		21,500
Cash flows from investing activities		
Purchase of fixed assets		(46,000)
Cash flows from financing activities		
Dividend paid	(2,500)	
Proceeds from issue of debentures	13,000	
Proceeds from issue of equity	4,000	
Net cash flows from financing activities		14,500
Net decrease in cash and cash equivalents		(10,000)
Opening Cash Balance		14,000
Closing Cash Balance		4,000

Working notes:**Fixed Assets Account**

Particulars	Amount (₹)	Particulars	Amount (₹)
To Balance b/d To	2,70,000	By Balance c/d	3,16,000
Cash (Purchase of Fixed Assets)	46,000		
	3,16,000		3,16,000

Inventory Account

Particulars	Amount (₹)	Particulars	Amount (₹)
To Balance b/d To	34,000	By Cost of goods sold	1,23,000
Creditors account (credit purchase)	2,000	By Balance c/d	37,000
To Purchase (Bal. Figure)	1,24,000		
	1,60,000		1,60,000

Accounts Payable Account

Particulars	Amount (₹)	Particulars	Amount (₹)
To Balance c/d	18,000	By Balance b/d	16,000
		By Inventory Account (credit purchase) (Bal.Fig.)	2,000
	18,000		18,000

Equity Share Capital Account

Particulars	Amount (₹)	Particulars	Amount (₹)
To Bal. c/d	88,000	By Balance b/d	84,000
		By Bank account (Proceeds from equity share issued)	4,000
	88,000		88,000

17. From the following summary cash account of XYZ Ltd, prepare cash flow statement for the year ended March 31, 20X1 in accordance with Ind AS 7 using direct method.

Summary of Bank Account for the year ended March 31, 2021

Particulars	₹ '000	Particulars	₹ '000
Balance on 1.4.2020	50	Payment to creditors	2,000
Issue of Equity Shares	300	Purchase of Fixed Assets	200
Receipts from customers	2,800	Overhead Expenses	200
Sale of Fixed Assets	100	Payroll	100
Tax Payment	250	Dividend	50
		Repayment of Bank loan	300
		Balance on 31.3.2021	150
	3,250		3,250

*Sol :***Cash Flow Statement for the year ended March 31, 2021 (Using the Direct Method)**

Particulars	Amount	Amount
Cash flows from operating activities		
Cash receipts from customers	2,800	
Cash payments to suppliers	(2,000)	
Cash paid to employees	(100)	
Cash payments for overheads	(200)	
Cash generated from operations	500	
Income tax paid	(250)	
Net cash from operating activities		250
Cash flow from investing activities		
Payments for purchase of fixed assets	(200)	
Proceeds from sale of fixed assets	100	
Net cash used in investing activities		(100)
Cash flows from financing activities		
Proceeds from issuance of equity shares	300	
Bank loan repaid	(300)	
Dividend paid	(50)	
Net cash used in financing activities		(50)
Net increase in cash		100
Cash at the beginning of the period		50
Cash at end of the period		150

18. Using the P and L account and Balance Sheet given below, prepare Cash Flow Statement both under direct and indirect method.

Profit and Loss Account for the year ended 31st March, 2005**(Rs. in thousands)**

Particulars	Year 2004-05	Year 2003-04
Sales	1,11,780	98,050
Other Income	390	220
Cost of Goods Sold	41,954	39,010
Selling and Administrative Expenses	16,178	12,500
Profit Before Tax	54,038	46,760
Less: Income Tax	21,615	18,704
Profit After Tax	32,423	28,056

Balance Sheet as on 31st March, 2005

(Rs. in thousands)

Liabilities and Shareholder Equity	As on 31-3-05	As on 31-3-04
Equity Share Capital	1,80,000	1,80,000
Retained Earnings	1,34,045	1,01,622
Current Liabilities		
Accounts Payable	3,526	4,330
Income Tax Payable	21,615	—
Dividend Payable	—	25,000
Total Liabilities	3,39,186	3,10,952
Assets		
Fixed Assets	3,93,000	3,70,000
Less: Depreciation	92,400	90,000
Current Assets		
Cash	6,380	6,000
Accounts Receivable: 20,064		
Less: Provision — (972)	19,092	23,568
Inventory : Raw Materials	516	636
Finished Good	598	748
Investments	12,000	—
Total Assets	3,39,186	3,10,952

Sol :

Cash Flow Statement Under Direct Method (Rs. in thousands)

Particulars	Amt.	Amt.	Amt.
(A) Operating Activities			
Cash Collection from Sales		1,15,716	
Less: Cash Paid for:			
Raw Materials	(18,478)		
Direct Labour	(13,452)		
Overhead	(8,758)	(40,688)	
Less: Cash Paid for Non-factory Costs:			
Salaries and Wages	(14,625)		
Other Sales and Administration	(413)	(15,038)	
Cash Generated from Operation			59,990
Add: Interest Earned			390
Net Cash from Operating Activities			60,380

(B) Investment Activities			
Purchase of Plant Assets		(23.000)	
Short-term investments		(12.000)	
Net Cash Flow from Investing Activities			(35.000)
(C) Financing Activities			
Dividends paid		(25,000)	
Net Cash Flow from Financing Activities			(25,000)
(D) Net Change in Cash			380
Cash at the Beginning of the year			6000
Cash at the End of the Year			6380

Cash Flow Statement Under Indirect Method/as per Listing Agreement

Particulars	Amt.	Amt.	Amt.
(A) Operating Activities			
Profit After Tax or Net Income		32,423	
Adjustments for:			
Depreciation	2,400		
Trade Receivables	4,476		
Inventories	270		
Income Tax	21,615		
Accounts Payable	(804)	27,957	
Net Cash from Operating Activities			60,380
(B) Investment Activities			
Purchase of Plant Assets		(23,000)	
Short-term investments		(12,000)	
Net Cash Flow from Investing Activities			(35,000)
(C) Financing Activities			
Dividends paid		(25,000)	
Net Cash Flow from Financing Activities			(25,000)
(D) Net Change in Cash			380
Cash at the Beginning of the year			6,000
Cash at the End of the Year			6,380

Short Question and Answers

1. What are Financial Statements?

Ans :

Meaning

A financial statement is a collection of data organized according to logical and consistent accounting procedures. Its purpose is to convey an understanding of some financial aspects of a business firm. It may show a position at a moment in time, as in the case of a balance sheet, or may reveal a series of activities over a given period of time, as in the case of an income statement.' Thus, the term 'financial statements' generally refers to the two statements :

- (i) The position statement or the balance sheet; and
- (ii) The income statement or the profit and loss account.

These statements are used to convey to management and other interested outsiders the profitability and financial position of a firm. Financial statements are the outcome of summarizing process of accounting.

Definitions

- (i) **According to John N. Myer**, "The financial statements provide a summary of the accounts of a business enterprise, the balance sheet reflecting the assets, liabilities and capital as on a certain date and the income statement showing the results of operations during a certain period.'" Financial statements are prepared as an end result of financial accounting and are the major sources of financial information of an enterprise.
- (ii) **According to Smith and Asburne define financial statements as**, "the end product of financial accounting in a set of financial statements prepared by the accountant of a business enterprise-that purport to reveal the financial position of the enterprise, the result of its recent activities, and an analysis of what has been done with earnings."

2. Objectives of Financial Statements.

Ans :

Financial statements are the sources of information on the basis of which conclusions are drawn about the profitability and financial position of a concern. The primary objective of financial statements is to assist in decision making. The Accounting Principles Board of America (APB) states the following objectives of financial statements:

- (i) To provide reliable financial information about economic resources and obligations of a business firm.
- (ii) To provide other needed information about changes in such economic resources and obligations.
- (iii) To provide reliable information about changes in net resources (resources less obligations) arising out of business activities.
- (iv) To provide financial information that assists in estimating the earning potentials of business.
- (v) To disclose, to the extent possible, other information related to the financial statements that is relevant to the needs of the users of these statements.

3. Nature of Ratio Analysis.

Ans :

- Ratio analysis is a technique of analysis and interpretation of financial statements. It is the process of establishing and interpreting various ratios for helping in making certain decisions. However, ratio analysis is not an end in itself. It is only a means of better understanding of financial strengths and weaknesses of a firm.
- Calculation of ratios does not serve any purpose, unless several appropriate ratios are analyzed and interpreted. There are a number of ratios which can be calculated from the information given in the financial

statements, but the analyst has to select the appropriate data and calculate only a few appropriate ratios from the same keeping in mind the objective of analysis.

- The ratios may be used as a symptom like blood pressure, the pulse rate or the body temperature and their interpretation depends upon the calibre and competence of the analyst.

4. Liquidity Ratios.

Ans :

- Liquidity refers to the ability of a concern to meet its current obligations as and when these become due. Liquidity ratios are calculated to measure short-term financial soundness of the business.
- The short-term obligations are met by realizing amounts from current, floating or circulating assets. The current assets should either be liquid or near liquidity.
- These should be convertible into cash for paying obligations of short-term nature.
- The sufficiency or insufficiency of current assets should be assessed by comparing them with short-term (current) liabilities. If current assets can pay off current liabilities, then liquidity position will be satisfactory.
- On the other hand, if current liabilities may not be easily met out of current assets then liquidity position will be bad.
- The bankers, suppliers of goods and other short-term creditors are interested in the liquidity of the concern.
- They will extend credit only if they are sure that current assets are enough to pay out the obligations.

5. Solvency Ratios.

Ans :

- The term 'Solvency' generally refers to the capacity of the business to meet its short-term and long-term obligations.
- Short-term obligations include creditors, bank loans and bills payable etc. Long-term obli-

gations consist of debenture, long-term loans and long-term creditors etc.

- Solvency Ratio indicates the sound financial position of a concern to carry on its business smoothly and meet its all obligations.
- Liquidity Ratios and Turnover Ratios concentrate on evaluating the short-term solvency of the concern have already been explained. Now under this part of the chapter only the long-term solvency ratios are dealt with.

6. Define cash flow statement.

Ans :

- Cash plays a very important role in the entire economic life of a business.
- A firm needs cash to make payments to its suppliers, to incur day-to-day expenses and to pay salaries, wages, interest and dividends, etc. In fact, what blood is to a human body, cash is to a business enterprise.
- It is very essential for a business to maintain an adequate balance of cash. But many a times, a concern operates profitably and yet it becomes very difficult to pay taxes and dividends. This may be because
 - (i) although huge profits have been earned yet cash may not have been received or
 - (ii) even if cash has been received; it may have drained out (used) for some other purposes.

This movement of cash is of vital importance to the management.

- A statement of changes in the financial position of firm on cash basis is called a cash flow statement. Such a statement enumerates net effects of the various business transactions on cash and takes into account receipts and disbursements of cash. A cash flow statement summarizes the causes of changes in cash position of a business enterprise between dates of two balance sheets.
- Cash flow statement is a statement of changes of financial position in business due to inflow or outflow of cash and their statement is required for short-range business premises.

7. Disadvantages of cash flow statement.*Ans :***(i) Ignores Basic Principle of Accounting**

As cash flow statement is based on cash basis of accounting, it ignores the basic accounting concept of accrual basis.

(ii) Not Suitable for Judging Profitability

Cash flow statement is not suitable for judging the profitability of a firm, as non-cash charges are ignored while calculating cash flows from operating activities.

(iii) Cannot be Equated with Income Statement

Cash flow statement cannot be equated with the income statement. An income statement takes into account both cash as well as non-cash items and, therefore, net cash does not necessarily mean net income of the business.

(iv) May not Represent Real Liquid Position

The cash balance as disclosed by the cash flow statement may not represent the real liquid position of the business since it can be easily influenced by postponing purchases and other payments.

8. Trend Analysis.*Ans :*

The financial statements may be analyzed by computing trends of series of information. This method determines the direction upwards or downwards and involves the computation of the percentage relationship that each statement item bears to the same item in base year. The information for a number of years is taken up and one year, generally the first year, is taken as a base year. The figures of the base year are taken as 100 and trend ratios for other years are calculated on the basis of base year. The analyst is able to see the trend of figures, whether upward (or) downward.

9. Comparative Statements.*Ans :*

Comparative financial statement is a tool of financial analysis used to study the magnitude and

direction of changes in the financial position and performance of a firm over a period of time. The preparation of comparative statements is based on the premise that a statement covering a period of a number of years is more meaningful and significant than for a single year only.

The comparative statement may show :

- (i) Absolute figures (rupee amounts).
- (ii) Changes in absolute figures i.e., increase or decrease in absolute figures.
- (iii) Absolute data in terms of percentages.
- (iv) Increase or decrease in terms of percentages.
- (v) Comparisons expressed in terms of ratios.
- (vi) Percentage of totals.

10. Limitations of ratio analysis.*Ans :*

- i) As ratios are calculated based on the historical data or past performance, they may not necessarily provide the correct information that is useful in decision-making.
- ii) As there are no particular standards or rules of thumb for all the ratios, it is difficult to interpret accurate results.
- iii) In order to draw correct interpretations, a single ratio may not be helpful. For this purpose, a number of ratios are to be calculated which is likely to confuse the financial analyst than to help him in making any meaningful conclusions.
- iv) Changes in the accounting procedures by the firms may mislead the ratio analysis. For example, a change in the methods of valuating inventory from FIFO to LIFO increases the cost of sales and decreases the value of closing stock. This results in unfavourable stock turnover ratio and gross profit ratio.

Exercise Problems

1. If Apple Company Ltd.'s Current Ratio is 55 : 1, Quick Ratio is 4 to 1; Inventory is ` 30,000 what are the current liabilities ?

[Ans: Current liabilities ` 20,000]

2. You are given the following information about two companies

Particulars	Company A	Company B
Cash	180	140
Debtors	1,420	3,200
Inventory	1,800	5,400
Bills Payable	270	1,000
Creditors	500	4,000
Accrued Expenses	150	125
Tax Payable	750	1,000

Calculate liquidity ratios for the two companies and give your interpretation of the liquidity position of the companies, as revealed by the ratios.

[Ans : Current ratio Company A : 2.03 : 1; Company B : 1.43 : 1]

Quick ratio Company A : 0.95 :1; Company B : 0.54 : 1]

3. Following are the Balance Sheets of Good Luck limited

Liabilities	2001 Rs	2002 Rs	Assets	2001 Rs	2002 Rs
Equity share capital	1,00,000	1,42,000	Land	24,000	48,000
7% Preference share capital	80,000	80,000	Buildings & Equipments		
Profit & loss account	75,900	81,900	Debtors	1,80,000	2,88,000
Creditors	1,20,000	1,08,000	Inventory	84,000	84,000
Outstanding expenses	12,000	24,000	Prepaid Rent	1,32,000	48,000
Provision for taxation	6,000	6,600	Prepaid Insurance	1,800	2,400
Provision for depreciation	60,000	66,000	Cash	2,100	2,100
				30,000	36,000

Additional Information:

- (i) The company declared and paid equity dividend of Rs.36,000 during the year 2002.
- (ii) The provision for taxation for 2002 included in creditors
- (iii) A truck costing Rs.36,000 and with accumulated depreciation of Rs.24,000 was sold at a profit of Rs.600.

- (iv) Prepare (a) Statement of source and Application of Funds for year 2002 and (b) Cash Flow Statement.

[Ans: Net Decrease in W.C. Rs.78,000; Funds from Operations Rs.71,400; Cash Operating Profit Rs. 1,05,900.]

4. The following are the summarised Balance sheets of Company as on 31st December 2002.

Liabilities	2001	2002	Assets	2001	2002
Share Capital	1,00,000	1,25,000	Land & Building	1,00,000	95,000
General reserve	25,000	30,000	Machinery	75,000	85,500
Profit & loss A/c	15,250	15,300	Stock	50,000	37,000
Bank loan(long term)	35,000	—	Sundry Debtors	40,000	31,100
Sundry creditors	75,000	67,600	Cash	250	300
Provision for taxation	15,000	17,500	Bank	—	4,000
			Good will	—	
	<u>2,65,250</u>	<u>2,55,400</u>		<u>2,65,250</u>	<u>2,55,400</u>

Additional information:

During the year ended 31st December 2002:

- Dividend of Rs.1 1,500 was paid
- Assets of another company were purchased for a consideration of Rs.25,000 payable in shares. The following assets were purchased: Stock Rs. 10,000 Machinery Rs. 15,000
- machinery was further purchased for Rs.4,000
- Depreciation written off on machinery Rs.6,000
- Income tax provided during the year Rs. 16,500
- Loss on sale of machinery Rs.100 was written off to general reserve you are required to prepare a Cash flow Statement.

[Ans: Cash Operating Profit Rs.44,150]

5. Find out Working Capital Turnover Ratio from the below given data:

	Rs.
Cash	20,000
Bills Receivable	10,000
Sundry Debtor's	50,000
Stocks	40,000
Sundry Creditors	60,000
Cost of Sales	3,00,000

[Ans: Working Capital Turn Over Ratio = 5 Times]

6. The net profit (after Taxes) of a firm is Rs. 1,00,000 and its fixed interest charges on long-term borrowings are Rs. 20,000. The rate of Income Tax is 50%. Calculate Interest Coverage Ratio.

[Ans: 11 Times (1,00,000 + 1,00,000 + 20,000 / 20,000)]

Choose the Correct Answer

1. Determine Debtors turnover ratio if, closing debtors is Rs 40,000, Cash sales is 25% of credit sales and excess of closing debtors over opening debtors is Rs 20,000. [a]
(a) 4 times (b) 2 times
(c) 6 times (d) 8 times
2. The relationship between two financial variables can be expressed in : [d]
(a) Pure ratio (b) Percentage
(c) Rate or time (d) Either of the above
3. Liquid assets is determined by [a]
(a) Current assets – stock - Prepaid expenses
(b) Current assets + stock + prepaid expenses
(c) Current assets + Prepaid expenses
(d) None of the above
4. While calculating Gross Profit, if net profit is given, [a]
(a) It can be converted into gross profit by adding interest to it
(b) It can be converted into Gross profit by adding indirect expenses to it
(c) Both a and b
(d) None of the above
5. Higher the ratio, the more favorable it is, doesn't stand true for _____. [a]
(a) Operating ratio (b) Liquidity ratio
(c) Net profit ratio (d) Stock turnover ratio
6. Overall Profitability ratios are based on [a]
(a) Investments (b) Sales
(c) Both a and b (d) None of the above
7. The cash flow statement analysis is described in terms of which of the following activities? [d]
(a) Operating activities (b) Financing activities
(c) Investing activities (d) All of the above
8. In the cash flow statement if the company invests more in fixed assets and short term financial investments, it would result to: [a]
(a) decreased cash (b) increased cash
(c) increased equity (d) increased liability
9. Which of the following are regarded as financial activities in the cash flow? [d]
(a) The interest that is paid
(b) The issue of preference share
(c) The redemption of the preference share
(d) All of the above
10. An activity that falls under operating activity in the cash flow statement is: [b]
(a) The sales of the fixed asset
(b) The interest that is paid on term deposits by a bank
(c) The purchase of the own debenture
(d) The sewing of equity share capital

Fill in the blanks

1. A _____ is a collection of data organized according to logical and consistent accounting procedures.
2. The term _____ refers to the data taken out from the accounting records.
3. The financial statements are used to assess _____ of business enterprises.
4. A _____ is a simple arithmetical expression of the relationship of one number to another.
5. The term _____ means movement and includes both 'inflow' and 'outflow'.
6. _____ is a technique of analysis and interpretation of financial statements.
7. _____ Liabilities are those obligations which are payable within a short period of generally one year.
8. _____ assets mean the assets which are held for their conversion into cash within a year.
9. _____ plays a very important role in the entire economic life of a business.
10. The chart is based on two elements i.e., _____ and _____.

ANSWERS

1. Financial statement
2. Recorded facts
3. Tax liability
4. Ratio
5. Flow
6. Ratio analysis
7. Current
8. Current
9. Cash
10. Net profit, Capital employed

UNIT II

Responsibility Accounting And Transfer Pricing :

Responsibility Accounting – Concept – Steps – Responsibility Centre – Types of Responsibility Centres: Cost Centre, Revenue Centre, Profit Centre and Investment Centre – Preparation of Responsibility accounting reports (Including problems).

Transfer Pricing - Concept – Methods: Market-based pricing – Cost-based pricing – Negotiated pricing - Dual pricing (including problems).

2.1 RESPONSIBILITY ACCOUNTING

2.1.1 Concept

Q1. Define Responsibility Accounting.

Ans :

Meaning

Responsibility Accounting is a system of control where responsibility is assigned for the control of costs. The persons are made responsible for the control of costs. Proper authority is given to the persons so that they are able to keep up their performance. In case the performance is not according to the predetermined standards then the persons who are assigned this duty will be personally responsible for it. In responsibility accounting the emphasis is on men rather than on systems.

Definitions

i) According to - Charles, T.Homgreen

"Responsibility accounting is a system of accounting that recognizes various responsibility centres throughout the organization and reflects the plans and actions of each of these centres by assigning particular revenues and costs to the one having the pertinent responsibility. It is also called profitability accounting and activity accounting".

ii) According to Louderback and Dominiak

"Responsibility accounting is the name given to that aspect of the managerial process

dealing with the reporting of information to facilitate control of operations and evaluation of performance."

iii) According to Charles T. Horngren
"Responsibility accounting is a system of accounting that recognizes various decision centres throughout an organization and traces costs to the individual managers who are primarily responsible for making decisions about the costs in question."

iv) According to Scialtke, R.W. Jonson, H. G. Responsibility accounting "is a system of accounting in which costs and revenues are accumulated and reported to managers on the basis of the manager's control over these costs and revenues. The managerial accounting system that ties budgeting and performance reporting to a decentralised organization is called responsibility accounting."

This is a system of accounting in which cost data are reported to managers who are in-charge of various cost centres. In this system, budgets are prepared and actual performance is recorded and reported.

v) According to David Fanning, Responsibility accounting "is a system or mechanism for controlling the wider freedom of action that executives decision centre manages in other words are given by senior management and for holding those executives responsible for the consequences of their decisions."

Q2. Explain the features of Responsibility Accounting*Ans.:***1. Inputs and Outputs (or) Costs and Revenues**

The implementation and maintenance of responsibility accounting system is based upon information relating to inputs and outputs. The physical resources utilized in an organization such as quantity of raw material used and labour hours consumed, are termed as inputs. These inputs expressed in the monetary terms are known as costs. Similarly outputs expressed in monetary terms are called revenues. Thus, responsibility accounting is based on cost and revenue information.

2. Planned and Actual Information (or) Use of Budgeting

Effective responsibility accounting requires both planned and actual financial information. It is not only the historical cost and revenue data but also the planned future data which is essential for the implementation of responsibility accounting system. It is through budgets that responsibility for implementing the plans is communicated to each level of management. The use of fixed budgets, flexible budgets and profit planning are all incorporated into one overall system of responsibility accounting.

3. Identification of Responsibility Centres

- The whole concept of responsibility accounting is focused around identification of responsibility centres. The responsibility centres represent the sphere of authority or decision points in an organization. In a small firm, one individual or a small group of individuals, who are usually the owners, may possibly manage or control the entire organization.
- However, for effective control, a large firm is, usually, divided into meaningful segments, departments or divisions. These sub-units or divisions of organization are called responsibility centres.
- A responsibility centre is under the control of an individual who is responsible for the control of activities of that sub-unit of the organization.

- This responsibility centre may be a very small sub-unit of the organization, as an individual could be made responsible for one machine used in manufacturing operations, or it may be very big division of the organization, such as a divisional manager could be responsible for achieving a certain level of profit from the division and investment under his control.

- However, the general guideline is that "the unit to the organization should be separable and identifiable for operating purposes and its performance measurement possible".

4. Relationship between Organization Structure and Responsibility Accounting System

A sound organization structure with clear-cut lines of authority - responsibility relationships is a prerequisite for establishing a successful responsibility accounting system. Further, responsibility accounting system must be so designed as to suit the organization structure of the organization. It must be founded upon the existing authority responsibility relationships in the organization. In fact, responsibility accounting system should parallel the organization structure and provide financial information to evaluate actual results of each individual responsible for a function.

5. Assigning Costs to Individuals and Limiting their Efforts to Controllable Costs

After identifying responsibility centres and establishing authority-responsibility relationships, responsibility accounting system involves assigning of costs and revenues to individuals. Only those costs and revenues over which an individual has a definite control can be assigned to him for evaluating his performance. Responsibility accounting has an appeal because it distinguishes between controllable and uncontrollable costs.

6. Transfer Pricing Policy

- In a large scale enterprise having decentralised divisions, there is a common practice of transferring goods and services from one

segment of the organization to another. In such situations, there is a need to determine the price at which the transfer should take place so that costs and revenues could be properly assigned.

- The significance of the transfer price can well be judged from the fact that for the transferring division it will be a source of revenue, whereas for the division to which transfer is made it will be an element of cost.
- Thus, there is a need of having a proper transfer policy for the successful implementation of responsibility accounting system.
- There are various transfer pricing methods in use, such as cost price, cost plus normal profit, incremental cost basis, negotiated price, standard price, etc.

7. Performance Reporting

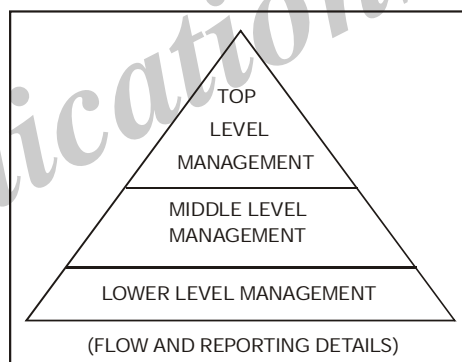
- Responsibility account is a control device. A control system to be effective should be such that deviations from the plans must be reported at the earliest so as to take corrective action for the future.
- The deviations can be known only when performance is reported.
- Thus, responsibility accounting system is focused on performance reports also known as 'responsibility reports', prepared for each responsibility unit. Unlike authority which flows from top to bottom, reporting flows from bottom to top. These reports should be addressed to appropriate persons in respective responsibility centres.
- The reports should contain information in comparative form as to show plans (budgets) and the actual performance and should give details of variances which are related to that centre.

8. Participative Management

- The function of responsibility accounting system becomes more effective if participative or democratic style of management is followed, wherein, the plans are laid or budgets/standards are fixed according to the mutual consent and the decisions reached after consulting the subordinates.
- It provides motivation to the workers by ensuring their participation and self imposed goals.

9. Management by Exception

- It is a well accepted fact that at successive higher levels of management in the organizational chain less and less time is devoted to control and more and more to planning.
- Thus, an effective responsibility accounting system must provide for management by exception, i.e., it should focus attention of the management on significant deviations and not burden them with all kinds of routine matters, rather condensed reports requiring their attention must be sent to them particularly at higher levels of management.
- The following diagram explains the flow and reporting details at different levels of management



10. Human Aspect of Responsibility Accounting

- The aim of responsibility accounting is not to place blame. Instead it is to evaluate the performance and provide feed back so that future operations can be improved'.
- Goals and objectives are achieved through people and, hence, responsibility accounting system should motivate people.
- It should be used in positive sense. It should not be taken as a device to punish subordinates. It should rather help in improving their performance.
- Subordinates sometimes dislike control because they take them as restraints. The best responsibility accounting system enlightens employees about the positive side of control.

2.1.2 Steps**Q3. Out line the process of Responsibility Accounting.**

Ans : (Imp.)

Responsibility accounting is used as a control device. The aim of responsibility accounting is to help management in achieving organizational goals. The following steps are involved in responsibility accounting:

1. The organization is divided into various responsibility centres. Each responsibility centre is put under the charge of a responsibility manager. The managers are responsible for the performance of their departments.
2. The targets of each responsibility centre are set in. The targets or goals are set in consultation with the manager of the responsibility centre so that he may be able to give full information about his department. The goals of the responsibility centres are properly communicated to them.
3. The actual performance of each responsibility centre is recorded and communicated to the executive concerned and the actual performance is compared with goals set and it helps in assessing the work of these centres.
4. If the actual performance of a department is less than the standard set, then the variances are conveyed to the top management. The names of those persons who were responsible for that performance are also conveyed so that responsibility may be fixed.
5. Timely action taken to take necessary corrective measures so that the work does not suffer in future. The directions of the top level management are communicated to the concerned responsibility centre so that corrective measures are initiated at the earliest.

The purpose of all these steps is to assign responsibility to different individuals so that the performance is improved.

Q4. What are the advantages of Responsibility Accounting

Ans :

Management uses responsibility accounting as a control device. It is used to evaluate the performance of executives who are incharge of various cost centres. Their performance is compared to the targets set for them and proper action is taken for low results. So responsibility accounting is very important in every type of business.

The following are some of the advantages of responsibility accounting :

1. Assigning of Responsibility

Each and every individual in the organization is assigned some responsibility and they are accountable for their work. Every body knows what is expected of him. The responsibility can easily be identified and satisfactory and unsatisfactory performances of various persons are known. Nobody can shift responsibility to any body else if something goes wrong. So, under this system responsibility is assigned individually.

2. Improves Performance

The assigning of tasks to specific persons acts as a motivational factor too. The persons incharge for different activities know that their performance will be reported to the top management. They will try to improve their performance. On the other hand, it acts as a deterrent for low performance also because persons know that they are accountable for their work.

3. Helpful in Cost Planning

Under the system of responsibility accounting, full information is collected about costs and revenues. This data is helpful in planning of future costs and revenues, fixing of standards and preparing of budgets.

4. Delegation and Control

This system enables management to delegate authority while retaining overall control. The authority is delegated according to the

requirements of the task assigned. On the other hand, responsibility of various persons is fixed which is helpful in controlling their work. The control remains with top management because performance of every cost centre is regularly reported to it. So management is able to delegate authority and at the same time to retain control.

5. Helpful in Decision-Making

Responsibility accounting is not only a control device but also helpful in decision-making. The information collected under this system is helpful to management in planning its future actions. The past performance of various cost centres also helps in fixing their future targets. So this system enables management to take important decisions.

2.2 RESPONSIBILITY CENTRE

Q5. Define Responsibility Centre.

Ans :

(May - 17)

- A small firm may possibly be managed by an individual or a small group of people. But the activities of a large firm are difficult to be supervised by an individual or a few individuals.
- For effective control of its activities, a large firm is divided into meaningful segments (units) - divisions, departments and so on.
- Each unit has certain activities to perform; its manager is assigned specific authority and responsibility to carry out those activities and is held responsible for his actions and decisions affecting those activities.
- The units of an enterprise for the purpose of control are called responsibility centres or decision centres.
- A responsibility centre is a unit of an organization under the supervision of a manager who has the responsibility for the activities of that responsibility centre. The responsibility centre manager may have a big unit, such as the production department, or a small unit, such as the cash section of the

accounting department, or a machine in the production department.

- Two important criteria should be used to create a responsibility centre:
 - (a) the organization unit should be separable and identifiable for operating purposes and
 - (b) it should be possible to measure the performance of the unit.
- The basic characteristic of responsibility centre is that each of them uses inputs-material, labour and services - to produce outputs - goods, if tangible, or services, if intangible.
- The goods or service so produced will either be transferred to other responsibility centres to act as their inputs, or will be sold to outside customers.
- Inputs of responsibility centres are measured as costs. A common denominator money is used to measure inputs expressed in various physical units.
- The money value of inputs consumed in a responsibility centre is called cost. Outputs of responsibility centres are measured as revenues when goods or services are sold to outside customers.
- The monetary measure of outputs is difficult to estimate if outputs are used within the organization. A number of approaches can be followed for this purpose. Usually, the methods suggested are: (a) market-based price, (b) cost-based price, (c) full cost price.

Q6. Explain the significance of responsibility centre

Ans :

(i) Relating efforts and achievements

When an organisation designs its accumulation and reporting system on the basis of areas of responsibility, its management is able to relate efforts and achievements. Responsibility accounting is the process of matching the costs and benefits with the unit (and manager) whose activities led to their achievement. If the assignment of responsibility for costs and benefits has been strictly

defined, it shall be difficult for individual managers to pass the buck when unfavourable results appear.

(ii) Isolating areas of corrective action

An organization in which there is clearly defined authority and corresponding placement of responsibility, it identifies the area if the unsatisfactory operating conditions. Such a system immediately draws attention towards the off-standard condition which forms the basis for an investigation into the reasons, resulting hopefully, in remedy and correction.

(iii) High morale and efficient performance

A business is unlikely to continue to operate at a profit even with the existence of high monetary rewards for employees. The rewards for work must include not only economic incentives but also those which stem from participating, from doing a good job, from belonging. These are the characteristics of morale and necessary ingredients of efficient performance.

(iv) Management by objectives

Since the emphasis responsibility accounting is on decentralization of authority and delineation of objectives, the system of Management by Objectives (MBO) gets established. The heads of divisions/departments understand quite clearly what is expected of them which enables the top of exercise managerial action. Pre-determined objectives hold them accountable for target attainments in their respective cost centres. Deficient and potential areas of managers' performance are identified for necessary action.

(v) Facilitating delegation of authority and responsibility

Since responsibility accounting hinges on the redesigning of the corporate organization, it paves way for the delegation of authority and placement of responsibility. In a business of modern size and complexity, neither planning nor control can be effective unless the management has worked out a satisfactory method of decentralization.

2.2.1 Types of Responsibility Centre

2.2.1.1 Cost Centre, Revenue Centre, Profit Centre and Investment Centre

Q7. Explain the different types of Responsibility Centre.

Ans :

(Imp.)

Types

For the purposes of evaluating financial performance and control, the responsibility centres are generally classified into three categories :

1. Cost (or) Expenses Centre
2. Profit Centre
3. Revenue Centre
4. Investment Centre

1. Cost (or) Expenses Centre

- A responsibility centre is called a cost centre when the manager is held accountable only for costs incurred. Output of cost centres are not measured in monetary terms.
- A number of centres in an organization produce services which can not be given a monetary value.
- For instance, it is not possible to measure the money value of the services of the legal department, or the accounting department.
- Even the production departments, whose output can easily be measured, may be organized as cost centres. Even the production department manager is required to produce a budgeted quantity at the minimum cost, there is no necessity to measure the monetary value of his department outputs.
- Thus, costs are the primary planning and control data in cost centres; a manager is not responsible for profit (revenue) and investments in assets. The performance of the responsibility centre managers is evaluated by comparing the costs incurred with the budgeted costs. Management focuses its attention on cost variances for control purposes.

- Since the consequences of a cost centre's decisions are measured by costs alone, without giving any consideration to its accomplishments (outputs), it is not possible to measure its effectiveness. Effectiveness is related to outputs, and in cost centre, outputs are not measured in monetary terms.
- A measure of efficiency can, however, be developed in a cost centre since actual costs can be related to standard or budgeted costs. The lowest cost consumption of resources, the most efficient the manager of the cost centre.
- The term cost centre is sometimes used as an accounting unit for accumulating cost for the purpose of charging them to products or to some other cost objective. Cost centre, as used here, refers to accumulation and reporting of costs by a person who heads that centre.

2. Profit Centre

- A responsibility centre is called a profit centre when the manager is held responsible for both costs (inputs) and revenues (outputs), and thus, for profit. In profit centre, both inputs and outputs are capable of measurement in financial terms.
- The term revenue is not used in the strict accounting sense in a profit centre.
- A profit centre may sell its outputs to another responsibility centre. This kind of internal transfer does not create any asset (receivable of cash) as happens in the case of outside sale.
- Management decides to make a responsibility centre as a profit centre when it thinks that outputs are capable to be measured in monetary terms and that it would be beneficial to do so. In fact, any responsibility centre can be turned into a profit centre by determining a selling price (arbitrarily or otherwise) for its outputs.
- The practical feasibility and necessity of such action would be considered by management.
- A profit centre provides more effective assessment of the manager's performance since both costs and revenues are measured in monetary terms.
- Since profit is a better measure of one's accomplishment, a profit centre manager is motivated to make decisions about inputs and outputs that increase his centre's profit.
- As the profit centre manager is allowed to act in his own way, it provides him good opportunity to learn to assume higher responsibilities independently. By creating profit centres a company can decentralize its activities.

3. Investment Centre

- "An investment centre is an entity segment in which a manager can control not only revenues and costs but also investment."
- The manager of a responsibility centre is made responsible for properly utilizing the assets used in his centre. He is expected to earn a fair return on the amount employed in assets in his centre.
- Measurement of assets employed poses many problems. It becomes difficult to determine the amount of assets employed in a particular responsibility centre. Some assets may be used in a responsibility centre but their actual possession may be with some other department.
- Some assets may be used by two or more responsibility centres and it becomes difficult to apportion the amount of those assets to various centres. Investment Centres may be used for big responsibility centres where assets will be in exclusive possession of that centre.
- The performance of an investment centre can be measured by relating profit to the investment base.

The two methods which are generally used to evaluate the performance of an investment centre are:

- i) Return on Investment/Capital Employed (ROI)
- ii) Economic Value Added (EVA) or Residual Income Approach (RI)

(i) Return on Investment/Capital Employed (ROI)

Return on capital employed establishes the relationship between profits and the capital employed.

The capital employed refers to the total investment made in the investment centre/business. However, capital employed comprises the total assets used less its current liabilities. The profits for the purpose of calculating return on capital employed should be computed according to the concept of capital employed, i.e., gross capital employed (or) net capital employed. tax because tax is paid after profits have been earned and has no relation to the earning capacity of a centre. Return on investment can be computed as follows :

$$\text{Return on Investment/Capital Employed} = \frac{\text{Net Profit}}{\text{Capital Employed}} \times 100$$

(or)

$$\text{ROI} = \frac{\text{Net Profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Capital Employed}} \times 100$$

(or)

$$\text{ROI} = \text{Net Profit Ratio} \times \text{Capital Turnover Ratio}$$

(ii) Economic Value Added/Residual Income Approach (EVA)

Economic value added is a measure of performance evaluation that was originally employed by Stern Stewart and Co. It is also referred to as residual income (RI) approach of performance evaluation. It is a very popular method used to measure the surplus value created by an investment or a portfolio of investments. EVA has been considered as a better measure of divisional performance as compared to the return on assets ROA or ROI. It is also being used to determine whether an investment positively contributes to the shareholders' wealth. The economic value added of an investment is simply equal to the after tax operating profits generated by the investment minus the cost of funds used to finance the investment. EVA can be calculated as below

$$\text{EVA} = (\text{Net operating profit after tax}) - (\text{Cost of capital} \times \text{Capital invested})$$

(or)

$$\text{EVA} = \text{Capital employed} (\text{Return on investment} - \text{cost of capital})$$

(or)

$$\text{EVA} = \text{Capital employed} (\text{ROI} - \text{Cost of capital})$$

Q8. What are the Limitation of Responsibility Accounting ?*Ans :*

- (a) A sound organization structure, with clearly defined authority and responsibility, is rather difficult to be established. This is so owing to the inter-dependent nature of many departments.
- (b) It is equally difficult to match the responsibility centres and the chart of accounts for collecting costs by such centres.
- (c) Individual interest may come into conflict with the interest of the organization.
- (d) The system may not work well unless it has the support of the people who operate the system. Since the person who incurs costs is to be held responsible for each item of cost, he should, willingly accept responsibility for the deviations.
- (e) The system does not take into consideration the reactions of those who are involved in it.

2.3 PREPARATION OF RESPONSIBILITY ACCOUNTING REPORTS

1. A Company has 10 cars in operation. The budget for the transport department based on 25,000 km of run for a month is ₹ 87,500 out of which a sum of ₹ 25,000 is fixed. During the last month, the total kilometres run by all the 10 cars were 22,400 and the costs incurred were ₹ 83,150. The cost of hiring a car would have been ₹ 4 per km. Evaluate the performance of the transport department on the basis of (a) Cost Centre, (b) Profit Centre.

*Sol :***Performance Evaluation Report**

Total budgeted expenditure for the month	87,500
Less : Fixed expenditure	25,000
	62,500
Variable cost	62,500
	2.50
Variable cost per km. (62,500/25,000)	
(a) Cost Centre Basis	
Allowed Cost:	
Variable (22,400 × 2.50)	56,000
Fixed	25,000
	81,000
Total allowed cost	81,000
Actual cost	83,150
	2,150 (A)
Cost Variance	
(b) Profit Centre Basis	
Cost of hiring car (22,400 × 4)	89,600
Actual cost incurred	83,150
	6,450 (F)
Profit Variance	

2. Jimmedar Works Ltd. has at the factory three production departments. Machine Shop, Fabrication and Assembly which are the responsibility of the shop superintendent. The shop superintended, along with materials manager, planning superintendent and maintenance engineer reports to the works manager at the factory. The office administration, sales and publicity come under the sales manager who along with the works manager report to the managing director of the company. The following data, relating to a month's performance, are called out from the books of the company:

Particulars	Budget (₹)	Variance from budget (₹)
Sales commission	800	50 A
Raw material & components :		
— Machine shop	900	20 A
Publicity expenses	1,100	100 A
Printing & stationery	3,200	200 F
Travelling expenses	4,000	200 A
Wages — machine shop	800	10 F
— fabrication	600	20 A
— assembly	720	10 A
Material — assembly	760	40 A
— fabrication	460	10 A
Utilities — machine shop	320	10 A
— assembly	470	60 F
— fabrication	560	30 F
— maintenance	400	20 A
— stores	210	40 F
— planning	180	20 A
Shop superintendent's office :		
— Salaries & expenses	1,100	22 F
Depreciation - factory	3,880	40 A
Works manager's office:		
— Salaries & administration	3,810	40 A
General office salaries & administration	4,270	30 F
Managing director's office :		
— Salary & administration	2,800	20 F

(A = Adverse, F = Favourable)

- (i) Treating the machine shop, fabrication and assembly as cost centres, prepare cost sheets for each centre with the help of the following additional information : The shop superintendent devotes his time amongst machine shop, fabrication and assembly in the ratio 4:3:4. Other factory overheads are absorbed on the basis of direct labour in each cost centre. Office, administration, selling and distribution overheads are borne equally by the cost centres.
- (ii) Treating the machine shop, fabrication and assembly as responsibility centres, prepare a responsibility accounting report for the shop superintendent.

Sol.:

**(i) Cost Sheet for Machine Shop, Fabrication
and Assembly Cost Centres**

Elements of cost	Machine Shop		Fabrication		Assembly	
	Budget	Actual	Budget	Actual	Budget	Actual
	(₹)	(₹)	(₹)	(₹)	(₹)	(₹)
Raw Material and Components	900	920	460	470	760	800
Wages	800	790	600	620	720	730
Utilities	320	330	560	530	470	410
Prime Cost	2,020	2,040	1,620	1,620	1,950	1,940
Add: Factory Overheads :						
Shop Superintendent's						
Office- Salaries and Expenses (apportioned in the ratio of 4 : 3 : 4)	400	392	300	294	400	392
Other Factory Overheads (See Working Note 1)	3,200	3,160	2,400	2,480	2,880	2,920
Factory Cost	5,620	5,592	4,320	4,394	5,230	5,252
Add : Selling and Adm. Overheads (See Working Note 2)	5,390	5,443	5,390	5,443	5,390	5,443
Total Cost	11,010	11,035	9,710	9,837	10,620	10,696

Working Notes :

1. **Determination and Apportioning of Factory Overheads (other than Shop Superintendent's office salaries and expenses)**

Particulars	Budget (₹)	Actual (₹)
Maintenance Cost	400	420
Stores Cost	210	170
Planning Cost	180	200
Works manager's office-Salaries and Administration	3810	3850
Depreciation-factory	3880	3920
Total Factory overhead	8480	8560
Factory Overhead Other than Shop Superintendent's office-salaries and exp. divided in the Ratio of Direct Labour, i.e.. 800 : 600 : 720, thus		
Machine shop centre	3200	3,160
Fabrication Centre	2400	2,480
Assembly	2880	2,920

2. **Determination and Apportioning of Selling and Administration Overhead**

Particulars	Budget (₹)	Actual (₹)
Sales Commission	800	850
Publicity Expenses	1100	1200
Printing and Stationery	3200	3000
Traveling Expenses	4000	4200
General Office Salaries and Administration Exp.	4270	4300
Managing Director's Office-salary and Administration Exp.	2800	2780
Total Selling and Administration Overhead	16,170	16,330
Apportionment: Divided equally among the three cost centres (1 : 1 : 1)	5,390	5,443

(ii) Responsibility Accounting Report For the Shop Superintendent

Particulars	Budget (₹)	Actual (₹)	Variance (₹)
(a) Machine Shop Centre :			
Raw Material and Components	900	920	20 (A)
Wages	800	790	10 (F)
Utilities	320	330	10 (A)
Total (a)	2,020	2040	20 (A)
(b) Fabrication Centre			
Raw Material and Components	460	470	10 (A)
Wages	600	620	20 (A)
Utilities	560	530	30 (F)
Total (b)	1620	1620	Nil
(c) Assembly Centre			
Raw Material and Components	760	800	40 (A)
Wages	720	730	10 (A)
Total (c)	1950	1940	10 (F)
Total for the three Centres (a + b + c)	5,590	5,600	10 (A)

3. **S V Ltd. manufactures a product which is obtained basically from a series of mixing operations. The finished product is packaged in the company made glass bottles and packed in attractive cartons. The company is organized into two independent divisions viz. one for the manufacture of the end- product and the other for the manufacture of glass bottles. The product manufacturing division can buy all the bottle requirements from the bottle manufacturing division. The general manager of the bottle manufacturing division has obtained the following quotations from the outside manufacturers for the supply of empty bottles :**

Volume (empty bottles)	Total purchases value (₹)
8,00,000	14,00,000
12,00,000	20,00,000

A cost analysis of the bottle manufacturing division for the manufacture of empty bottles reveals the following production costs :

Volume (empty bottles)	Total purchases value (₹)
8,00,000	10,40,000
12,00,000	14,40,000

The production cost and sales value of the end-product marketed by the product manufacturing division are as under :

Volume (bottles of end-product)	Total cost of end-product (excluding cost of empty bottles)	Sales Value (packed in bottles)
8,00,000	64,80,000	91,20,000
12,00,000	96,80,000	1,27,80,000

There has been considerable discussion at the corporate level as to the use of proper price for transfer of empty bottles from the bottle manufacturing division to the product manufacturing division. This interest is heightened because a significant portion of the divisional general manager's salary is in incentive bonus based on profit centre results.

As the corporate management accountant responsible for defining the proper transfer prices for the supply of empty bottles by the bottle manufacturing division to the product manufacturing division, you are required to show for the two levels of volumes of 8,00,000 and 12,00,000 bottles, the profitability by using (i) market price and (ii) shared profit relative to the costs involved basis for the determination of transfer prices. The profitability position should be furnished separately for the two divisions and the company as a whole under each method. Discuss also the effect of these methods on the profitability of the two divisions.

Sol.:

(Imp.)

(i) Profitability Statement Using Market Price Basis of Transfer Pricing

Particulars	Volume	
	8,00,000 Bottles	12,00,000 Bottles
(a) Glass Bottles Manufacturing Division :		
Sales Revenue	14,00,000	20,00,000
Less: Cost of Production	10,40,000	14,40,000
Profit	3,60,000	5,60,000
(b) End Product Manufacturing Division :		
Sales Revenue (i)	91,20,000	1,27,80,000
Less: Cost of production	64,80,000	96,80,000
Cost of Empty Bottles	14,00,000	20,00,000
Total cost (ii)	78,80,000	1,16,80,000
Profit (i-ii)	12,40,000	11,00,000
Total Profit of the Company (a + b)	16,00,000	16,60,000

(ii) Profitability Statement Using Shared Profit**Relative to the Costs Basis**

Particulars	Volume	
	8,00,000 Bottles	12,00,000 Bottles
Sales Revenue (i)	91,20,000	1,27,80,000
Less : Cost of Production of Bottle Division	10,40,000	14,40,000
Production cost of End Product Division	64,80,000	96,80,000
Total cost (ii)	75,20,000	1,11,20,000
Total Profit for the Company (i-ii)	16,00,000	16,60,000
(Profit x Cost of Bottle Division)		
(a) Share of Bottle Mfg. Division	2,21,276	2,14,964
$\left(\frac{\text{Profit} \times \text{Cost of Bottle Division}}{\text{Total Cost}} \right)$		
(b) Share of Product Division	13,78,724	14,45,036
(iii) Determination of Transfer Price		
Cost of production of Bottle Division	10,40,000	14,40,000
Add: Share of Profit	2,21,276	2,14,964
Transfer Price	12,61,276	16,54,964

Effect of the two Methods of Transfer Pricing on Profitability

The profit to the company as a whole remains the same whatever is the method of transfer price. However, market price basis of transfer pricing yields more profits for the bottle manufacturing division.

4. The following information relating to the operating performance of three divisions of X Limited.

Particulars	Divisions		
	A Rs.	B Rs.	C Rs.
Operating profit	32,000	1,50,000	3,00,000
Investment	4,00,000	7,50,000	18,00,000

- i) Calculate the Return on Investment
- ii) Assume that a charge is levied on each division for the use of capital. The charge is 10% on investment and it is deducted in measuring divisional net income. Recalculate ROI using net income after deduction of the use of capital charge in the numerator.
- iii) Which of these two measures do you think better indication of operating performance ? Explain your reasoning.

Sol.:

(Imp.)

i) Return on Investment = $\frac{\text{Operating Income}}{\text{Investment}}$

$$\text{Division 'A'} = \frac{32,000}{4,00,000} = 0.08 = 8\%$$

$$\begin{aligned}\text{Division 'B'} &= \frac{1,50,000}{7,50,000} \\ &= 0.2 = 20\%\end{aligned}$$

$$\begin{aligned}\text{Division 'C'} &= \frac{3,00,000}{18,00,000} \\ &= 0.167 = 16.7\%\end{aligned}$$

- ii) **Charge on Capital for each division**

$$\text{Division A} = 4,00,000 \times \frac{10}{100} = 40,000$$

$$\text{Division B} = 7,50,000 \times \frac{10}{100} = 75,000$$

$$\text{Division C} = 18,00,000 \times \frac{10}{100} = 1,80,000$$

Measuring of divisional net income after charging.

Net Income = Operating profit - Capital charge
--

$$\text{Division A} = 32,000 - 40,000 = -8,000$$

$$\text{Division B} = 1,50,000 - 75,000 = 75,000$$

$$\text{Division C} = 3,00,000 - 1,80,000 = 1,20,000$$

$$\text{Division D} = 3,00,000 - 1,80,000 = 1,20,000$$

Revised ROI

$$\text{Division A} = \frac{-8,000}{4,00,000} - 0.02 = -0.2$$

$$\text{Division B} = \frac{75,000}{7,50,000} = 0.1 = 10\%$$

$$\text{Division C} = \frac{1,20,000}{18,00,000} = 0.067 = 6.7\%$$

iii) Option (i) gives better performance, because in

Option (i) = All divisions has positive performance

Option (ii) = All divisions except division A's performance have the better performance.

5. From the following details analyze the relative performance of two independent responsibility centres.

Particulars	A (Rs.)	B (Rs.)
Sales	10,00,000	12,00,000
Divisional assets	15,00,000	14,00,000
Fixed cost	3,00,000	3,50,000
Variable cost	2,50,000	3,00,000
Capital employed	20,00,000	25,00,000
Cost of capital	8%	9%

Sol :

Responsibility centre 'A'		Responsibility centre 'B'	
Particulars	Amount	Particulars	Amount
Sales	10,00,000	Sales	12,00,000
(-) Variable cost	2,50,000	(-) Variable Cost	3,00,000
Contribution	7,50,000	Contribution	9,00,000
(-) Fixed cost	3,00,000	(-) Fixed cost	3,50,000
Net profit	4,50,000	Net profit	5,50,000

1. ROI

$$A = \frac{NP}{\text{Capital employed}} \times 100 = \frac{4,50,000}{15,00,000} \times 100 = 30$$

$$B = \frac{5,50,000}{14,00,000} \times 100 = 39.2$$

2. Residual Method

$$A = \text{Net profit} - (\text{Cost of capital} \times \text{Return on investment})$$

$$= 4,50,000 - (20,00,000 \times 8\%)$$

$$= 2,90,000$$

$$B = 5,50,000 - (25,00,000 \times 9\%)$$

$$= 3,25,000$$

6. The following information related to the operating performance of three divisions of 'X' Ltd.

Particulars	A (Rs.)	B (Rs.)	C (Rs.)
Operating Profit	64,000	3,00,000	6,00,000
Investment	8,00,000	15,00,000	30,00,000

- Compute the ROI of each division.
- Assume that a charge is levied on each division for the use of capital. The charge is 10% on Investment and it is deducted in measuring divisional net income. Recalculate ROI using Capital charge and deduct from net income of the divisions.
- Which of these two measures gives better indication of performance ?

Sol.:

$$(i) \quad ROI = \frac{\text{Operating Income}}{\text{Investment}}$$

$$\text{Division A} = \frac{64,000}{8,00,000} = 0.8 = 8\%$$

$$\text{Division B} = \frac{3,00,000}{15,00,000} = 0.2 = 20\%$$

$$\text{Division C} = \frac{6,00,000}{30,00,000} = 0.2 = 20\%$$

(ii) Charge on capital for each division

$$\text{Division A} = 8,00,000 \times \frac{10}{100} = 80,000$$

$$\text{Division B} = 15,00,000 \times \frac{10}{100} = 1,50,000$$

$$\text{Division C} = 30,00,000 \times \frac{10}{100} = 3,00,000$$

Measuring of divisional net income after charging

$$\text{Net Income} = \text{Operating profit} - \text{Capital charge}$$

$$\text{Division A} = 64,000 - 80,000 = (-16,000)$$

$$\text{B} = 3,00,000 - 1,50,000 = 1,50,000$$

$$\text{C} = 6,00,000 - 3,00,000 = 3,00,000$$

Revised ROI

$$\text{Division A} = \frac{-16,000}{8,00,000} = (-2\%)$$

$$\text{B} = \frac{1,50,000}{15,00,000} = 10\%$$

$$\text{C} = \frac{3,00,000}{30,00,000} = 10\%$$

- (iii) Option (i) giving the better indicates for performance, because in
 Option - (i) = All division have the positive performance
 Option - (ii) = All the division except division 'A's performance have the better performance.

7. Home Comforts LTD. deals in three products, Ace, Nice and Grace, which are sold directly through salesmen in three zones, Prime, Extension and Outreach, The responsibility for sales promotion rests with the headquarters and so does the overall control of distribution and sales.

Cost of sales are : Ace 85 per cent of sales,
 Nine 80 per cent of sales,
 Grace 75 per cent of sales.

Details of sales and selling and distribution expenses for the year are as follows:

Particulars	Sales	Selling and distribution expenses allocated direct	
		Rs.	Rs.
Prime zone:	Ace	9,00,000	63,990
	Nice	9,00,000	84,465
	Grace	4,50,000	47,160
		22,50,000	1,95,615
Extension zone:	Ace	6,75,000	46,710
	Nice	4,50,000	47,700
	Grace	2,25,000	23,940

Outreach zone:	Ace Nice Grace	13,50,000	1,18,350
		2,25,000	18,900
		1,80,000	15,165
		4,95,000	66,375
		9,00,000	1,00,440

Selling and distribution expenses at headquarters are as follows:

Office expenses Rs. 94,500

Advertisement Rs. 1,35,000

Other Expenses Rs. 1,21,500

Advertisement costs are allocated to zones and products on the basis of sales, Office expenses and other expenses are apportioned equally to the zones or the products, while computing the profit or loss for the zones or the products as the case may be.

Prepare comparative profit and loss statements presenting zonal performance as distinct from product performance.

Sol :

(Imp.)

Comparative Profit and loss statement of Zonal Performance.

Particulars	Zones			
	Prime Rs.	Extension Rs.	Outreach Rs.	Total Rs.
Sales Revenue (A)	22,50,000	13,50,000	9,00,000	45,00,000
Cost of Sales				
Ace (85% of sales)	7,65,000	3,60,000	5,73,750	15,30,000
Nine (80% of sales)	7,20,000	1,68,750	1,44,000	12,24,000
Grace (75% of sales)	3,37,500	1,91,250	3,71,250	77,500
Total (B)	18,22,500	11,02,500	7,06,500	36,31,500
Gross profit (A)-(B)=(C)	4,27,500	2,47,500	1,93,500	8,68,500
Selling and				
Distribution expenses	1,95,615	1,18,350	1,00,440	4,14,405
Allocated direct Office	31,500	31,500	31,500	94,500
Expenses (equal)				
Other expenses (equal)	40,500	40,500	40,500	1,21,500
Advertisement (sales)	67,500	40,500	27,000	1,35,000
Total (D)	3,35,115	2,30,850	1,99,440	7,65,405
Net Profit / Loss (C)-(D)	92,385	16,650	(5,940)	1,03,095

2.4 TRANSFER PRICING

2.4.1 Concept

Q9. Define Transfer Pricing. Explain the criteria for determining Transfer Pricing.

Ans :

Introduction

An essential feature of decentralized firms is responsibility centres (e.g. cost profit-revenue, or investment-centres). The performance of these responsibility centres is evaluated on the basis of various accounting numbers, such as standard cost, divisional profit, or return on investment (as well as on the basis of other non-accounting measures, like market share). One function of the management accounting system therefore is to attach a rupee figure to transactions between different responsibility centres.

Meaning

The transfer price is the price that one division of a company charges another division of the same company for a product transferred between the two divisions. The basic purpose of transfer pricing is to induce optimal decision making in a decentralized organization (i.e. in most cases, to maximize the profit of the organization as a whole).

Criteria

It will be advisable to formulate certain criteria before determining the transfer price. Those criteria may be as follows:

- 1) Transfer price should help in accurate measurement of divisional performance.
- 2) Transfer price should motivate the divisional managers into maximizing the profitability of their divisions and making decisions which are in the best interest of the organization as a whole.
- 3) The transfer price should ensure that divisional autonomy and authority is preserved.
- 4) The transfer price should allow goal congruence to take place. It implies that the objectives of the divisional managers are

compatible with the objectives of overall company.

- 5) A transfer pricing system should check the international groups which may try to manipulate transfer prices between countries with a view to minimize the overall tax burden.

2.4.2 Methods

2.4.2.1 Market Based Pricing

Q10. Explain briefly about Market Based Pricing.

Ans :

(Imp.)

The most popular method of determining transfer pricing is the market price, as it is quite reasonable for supplying division as well buying division. It is not difficult, as the price is easily available in the open market. When there is a well-established market for the goods or services to be transferred. The transfer price can be easily determined on the market price basis. However, such market price should be taken as ceiling limit for transfer price. When divisions have the alternative to buy or sell from the open market, they would transfer to buy or sell from sister division. When transferred goods are recorded at market price, the divisional performances are more likely to represent the real economic contribution of the division to total company profits.

Under certain conditions, there may be deviations from market-based transfer price. Some instances, for such deviations, are as follows:

- Where the products involved are highly specialized and a ready market does not exist, market-price determination will be more difficult.
- Where it is necessary to take advantage of economies of the scale in the production of some goods or services.
- When it is necessary to shift resources from low priority to high priority divisions.
- Where considerations of taxation are applicable.

Market-based transfer pricing is more commonly used, as it offers following advantages:

- They are one of the most simple and easily understood method.

- They minimize the complications for performance evaluation.
- They reduce points of conflict between various divisions.
- They are usually consistent with the environment outside.

2.4.2.2 Cost-based Pricing

Q11. Explain briefly about Cost-based Pricing.

Ans :

When external markets do not exist or are not available to the company or when correct information about external market prices is not available, the cost based transfer price may be used.

The cost-based prices methods may be as follows:

- a) Variable Cost
- b) Actual Cost
- c) Cost plus a normal mark-up
- d) Standard Cost
- e) Opportunity Cost

(a) Variable Cost

Under this method, only variable production cost is taken into account. In variable cost, the cost of direct material, direct labour and variable factory overhead are included. In other words, fixed cost is not included in it. Variable cost method for transfer price may be useful when the selling division is operating below capacity. However, the selling division manager would not like it as a basis for transfer price, as it does not provide the profit to that division.

(b) Actual Cost

If transfer prices based on actual cost, it would include total or full cost of production per unit. It is a simple and convenient method, as the required information is available in the accounting records. However, the selling division would not earn any profit on goods or services transferred to the buying division. The buying division would stand to gain, as it would be lower than the market price.

However, it is quite inappropriate for profit center analysis.

(c) Cost Plus Normal Mark-up

Under this method, the transfer price include cost per unit plus some profit margin or normal mark-up. This mark-up price may be equal to the profit Margin that competing firm might reasonable be expected to realize. However. the decision about the 'percentage' of mark-up may be arbitrary and questionable.

(d) Standard Cost

Standard Cost is pre-determined cost and is also called engineered cost'. In practice, it may appear to be more practical and useful and may be taken to be a good choice for transfer price. Standard cost based transfer price encourages efficiency in the selling division as inefficiencies are not transferred on to the buying division. Use of standard cost reduces the risk to the buyer.

(e) Opportunity Cost

Often in practice, the determination of transfer price on market price or cost may be difficult. Under those circumstances, the transfer price may be based on opportunity cost. Such pricing may also be required where the supplier division is a monopoly producer or the user division is a monopoly consumer.

The transfer price may be fixed at a level which equal the opportunity cost of the supplier division and the user division. It also identifies the minimum price that a selling division will be willing to accept and the buying division will be willing to pay.

The opportunity costs based on transfer prices for each division are as follows:

(i) Selling Division: For the selling division, the opportunity cost of transferring is the greater of:

- a) The outside sales value of the transferred product;
- b) Differential production cost for the transferred product.

(ii) Buying Division

For the buying division, the opportunity cost of acquiring by transfer is the lesser of:

- (a) The price that would be required to purchase from the outside:
- (b) The profit that would be lost for producing the final product if the transferred unit could not be obtained at economic price.

In the economic interest of the company, it would be better if the opportunity cost for the selling division is less than the opportunity cost for the buying division. The practical difficulty may arise when the divisions will tend to overstate or understate their opportunity cost so as to influence the transfer price to their advantage. Under such condition, the central management may examine it and bring the necessary changes by obtaining necessary information in this regard.

2.4.2.3 Negotiated Pricing**Q12. Explain briefly about Negotiated Pricing.**

Ans :

(Imp.)

- In practice, the transfer price is determined on the basis of negotiations between the selling and buying division.
- It may be between the market prices and the cost-based price.
- While negotiating the price, the seller division manager and buying division manager act much the same as the managers of independent companies.
- If the transfer price is based on negotiated price, the company, as a whole, stands to benefit. Such price avoids mistrusts, bad feeling and undesirable bargaining interest among divisional managers, it provides an opportunity to achieve the objectives of goal congruence, autonomy and accurate performance evaluation.
- The negotiated price basis may have some limitations also. They are:
- In the process of negotiation, a great deal of management effort, time and resources may be consumed.

- Such a price may also depend upon the skill and ability of managers concerned.
- One divisional manager may take advantage of having some private information which the other manager may not possess. With the result, the negotiated price may not be accurate.

2.4.2.4 Dual Pricing**Q13. What is dual Pricing?**

Ans :

It is also known as 'two-way prices'. Under this method the selling division is credited with one price. That may be cost plus profit margin whereas the buying division is charged at different price, which may be equal to variable cost. The difference in the transfer prices for the two divisions could be accounted for by a centralized account. The dual pricing gives motivation and incentive to selling division as goods are transferred at cost plus some profit margin. On the other hand, for the buying division, it would be quite appropriate price.

Often, the use of dual prices may lead to a divergence between the segment profits and those of company. However, this is not a serious issue and can be resolved in the interest of the divisions concerned.

Q14. Explain the rules for successful transfer pricing.

Ans :

(Imp.)

Rules for successful transfer pricing

- It should be simple to understand and easy to operate
- It should enable fixation of fair transfer prices for the output transferred or service rendered
- Ideally the business unit/divisional manager must be given autonomy and freedom to sell in open market
- The business unit divisions should have free access to various sources of market information.
- There should be a negotiation for transfer prices between the business unit/divisional managers of the selling business unit/division and the buying unit/division.

- Negotiated transfer prices are far more motivating than the prices imposed by the top management or determined by the finance department.
- Sound transfer pricing ground rules must be framed to guide negotiations between business unit/divisional manager
- It must promote consistency in transfer pricing decisions, but also minimize interdivisional conflicts
- A system of arbitration with ground rules must also be established
- Top management should discourage prolonged arguments between business unit/divisional manager
- Transfer prices can be reviewed annually or as dictated by the demand and supply conditions in the market
- Transfer pricing guidelines must state the circumstances under which a revision of transfer prices can be made during the year
- When transfer prices are based on market price, long-run competitive/normal prices must be considered
- Transfer pricing and arbitration rules can be reviewed once in four years or earlier if there is a major change in business conditions

Q15. State the problems associated with transfer pricing.

Ans :

- Transfer pricing as shorthand for multinational corporations shifting profits to tax havens to avoid tax in developed countries
- If a division is transferring goods to another division located in a high tariff country, a low transfer price reduce the tariff.
- A company can shift income from a division (foreign country) to itself (home country) by charging a management fee.
- In transfer pricing, the reported performance of the local managers is influenced by corporate policies.

PROBLEMS

- 8. A company has two divisions, A and B. the division A is currently operating at full capacity. It has been asked to supply its product to division B. division A sells its product to its regular customers for Rs. 30 each. Division B (currently operating at 50% capacity) is willing to pay Rs. 20 each for the component produced by division A (this represents the full absorption cost per component at division A)**

The components will be used by division B in supplementing its main product to conform to the need of special order.

As per the contract terms of sales, the buyer calls for reimbursement of full cost to division B plus 10%

Division A has a variable cost of Rs. 17 per component. The cost per unit of division B subsequent to the buying part from division A is estimated as follow:

Purchased parts- outside vendors	Rs.90
Purchase part – division A	Rs. 20
Other variable costs	Rs. 50
Fixed overheads and administration	Rs. 40
	<u>Rs.200</u>

The company uses return on investment in the measurement of division and division manager's performance.

Required:

- As manager of division A, would you recommend sales of your output to division B at the stipulated price of Rs. 20?
- Would it be in the over-all interest of the company for division A to sell its output to division B?
- Suggests an alternative transfer price and show how could it lead to goal congruence?

Sol.:

- As manager of division A, sales at Rs. 20 per unit to division B, should not be recommended. The division is already operating at its full capacity and the market is presumably absorbing all its output at Rs. 30 per unit.
- Decision analysis (whether to transfer part from division A to division B of Rs. 20 per unit or not)

Particulars	Sold externally (Rs.)	Transferred to division B (Rs.)
Sale price (division A)	30	
Sale price (division B) (RS.200 + 10%)		220
Less: relevant incremental cost		
For part of division	(17)	(17)
A Purchased parts from outside	(90)
Other valuable costs	(50)
Profit per unit	<u>13</u>	<u>63</u>

- Dual price basis of effecting transfer is the most appropriate. In this case, the relevant transfer price will be Rs. 30 (sale) so far as division A concerned and Rs. 20 (purchase) so far as division B is concerned. It will keep the profits of division A unaffected and will facilitate the utilization of idle capacity of division B, as also increase its profit:

Sale price (Rs. 210 + 10%)	Rs. 231
Less: costs (Rs. 90 + 50)	(Rs.140)
Profit	<u>Rs. 91</u>

Short Question and Answers

1. Define Responsibility Accounting.

Ans :

Meaning

Responsibility Accounting is a system of control where responsibility is assigned for the control of costs. The persons are made responsible for the control of costs. Proper authority is given to the persons so that they are able to keep up their performance. In case the performance is not according to the predetermined standards then the persons who are assigned this duty will be personally responsible for it. In responsibility accounting the emphasis is on men rather than on systems.

Definitions

- i) **According to - Charles, T.Homgreen,** "Responsibility accounting is a system of accounting that recognizes various responsibility centres throughout the organization and reflects the plans and actions of each of these centres by assigning particular revenues and costs to the one having the pertinent responsibility. It is also called profitability accounting and activity accounting".
- ii) **According to Louderback and Dominiak** "Responsibility accounting is the name given to that aspect of the managerial process dealing with the reporting of information to facilitate control of operations and evaluation of performance."
- iii) **According to Charles T. Horngren** "Responsibility accounting is a system of accounting that recognizes various decision centres throughout an organization and traces costs to the individual managers who are primarily responsible for making decisions about the costs in question."

2. Advantages of Responsibility Accounting

Ans :

The following are some of the advantages of responsibility accounting :

1. **Assigning of Responsibility:** Each and every individual in the organization is assigned some responsibility and they are accountable for their work. Every body knows what is expected of him. The responsibility can easily be identified and satisfactory and unsatisfactory performances of various persons are known. Nobody can shift responsibility to any body else if something goes wrong. So, under this system responsibility is assigned individually.
2. **Improves Performance:** The assigning of tasks to specific persons acts as a motivational factor too. The persons incharge for different activities know that their performance will be reported to the top management. They will try to improve their performance. On the other hand, it acts as a deterrent for low performance also because persons know that they are accountable for their work.
3. **Helpful in Cost Planning:** Under the system of responsibility accounting, full information is collected about costs and revenues. This data is helpful in planning of future costs and revenues, fixing of standards and preparing of budgets.
4. **Delegation and Control:** This system enables management to delegate authority while retaining overall control. The authority is delegated according to the requirements of the task assigned. On the other hand, responsibility of various persons is fixed which is helpful in controlling their work. The control remains with top management because performance of every cost centre is regularly reported to it. So management is able to delegate authority and at the same time to retain control.

3. Define Responsibility Centre.

Ans :

- A small firm may possibly be managed by an individual or a small group of people. But the activities of a large firm are difficult to be supervised by an individual or a few individuals.

- For effective control of its activities, a large firm is divided into meaningful segments (units) - divisions, departments and so on.
- Each unit has certain activities to perform; its manager is assigned specific authority and responsibility to carry out those activities and is held responsible for his actions and decisions affecting those activities.
- The units of an enterprise for the purpose of control are called responsibility centres or decision centres.
- A responsibility centre is a unit of an organization under the supervision of a manager who has the responsibility for the activities of that responsibility centre. The responsibility centre manager may have a big unit, such as the production department, or a small unit, such as the cash section of the accounting department, or a machine in the production department.

4. Cost (or) Expenses Centre.

Ans :

- A responsibility centre is called a cost centre when the manager is held accountable only for costs incurred. Output of cost centres are not measured in monetary terms.
- A number of centres in an organization produce services which can not be given a monetary value.
- For instance, it is not possible to measure the money value of the services of the legal department, or the accounting department.
- Even the production departments, whose output can easily be measured, may be organized as cost centres. Even the production department manager is required to produce a budgeted quantity at the minimum cost, there is no necessity to measure the monetary value of his department's outputs.
- Thus, costs are the primary planning and control data in cost centres; a manager is not responsible for profit (revenue) and investments in assets. The performance of the responsibility centre managers is evaluated by comparing the costs incurred with the budgeted costs. Management focuses its attention on cost variances for control purposes.

5. Profit Centre

Ans :

- A responsibility centre is called a profit centre when the manager is held responsible for both costs (inputs) and revenues (outputs), and thus, for profit. In profit centre, both inputs and outputs are capable of measurement in financial terms.
- The term revenue is not used in the strict accounting sense in a profit centre.
- A profit centre may sell its outputs to another responsibility centre. This kind of internal transfer does not create any asset (receivable of cash) as happens in the case of outside sale.
- Management decides to make a responsibility centre as a profit centre when it thinks that outputs are capable to be measured in monetary terms and that it would be beneficial to do so. In fact, any responsibility centre can be turned into a profit centre by determining a selling price (arbitrarily or otherwise) for its outputs.

6. Investment Centre

Ans :

- "An investment centre is an entity segment in which a manager can control not only revenues and costs but also investment."
- The manager of a responsibility centre is made responsible for properly utilizing the assets used in his centre. He is expected to earn a fair return on the amount employed in assets in his centre.
- Measurement of assets employed poses many problems. It becomes difficult to determine the amount of assets employed in a particular responsibility centre. Some assets may be used in a responsibility centre but their actual possession may be with some other department.

7. What are the Limitation of Responsibility Accounting ?*Ans :*

- (a) A sound organization structure, with clearly defined authority and responsibility, is rather difficult to be established. This is so owing to the inter-dependent nature of many departments.
- (b) It is equally difficult to match the responsibility centres and the chart of accounts for collecting costs by such centres.
- (c) Individual interest may come into conflict with the interest of the organization.
- (d) The system may not work well unless it has the support of the people who operate the system. Since the person who incurs costs is to be held responsible for each item of cost, he should, willingly accept responsibility for the deviations.

8. Transfer Pricing.*Ans :*

The transfer price is the price that one division of a company charges another division of the same company for a product transferred between the two divisions.

9. Market Based Pricing.*Ans :*

The most popular method of determining transfer pricing is the market price, as it is quite reasonable for supplying division as well buying division. It is not difficult, as the price is easily available in the open market. When there is a well-established market for the goods or services to be transferred. The transfer price can be easily determined on the market price basis. However, such market price should be taken as ceiling limit for transfer price. When divisions have the alternative to buy or sell from the open market, they would transfer to buy or sell from sister division. When transferred goods are recorded at market price, the divisional performances are more likely to represent the real economic contribution of the division to total company profits.

10. Cost-based Pricing.*Ans :*

When external markets do not exist or are not available to the company or when correct information about external market prices is not available, the cost based transfer price may be used.

- (a) **Variable Cost:** Under this method, only variable production cost is taken into account. In variable cost, the cost of direct material, direct labour and variable factory overhead are included. In other words, fixed cost is not included in it. Variable cost method for transfer price may be useful when the selling division is operating below capacity.
- (b) **Actual Cost:** If transfer prices based on actual cost, it would include total or full cost of production per unit. It is a simple and convenient method, as the required information is available in the accounting records. However, the selling division would not earn any profit on goods or services transferred to the buying division. The buying division would stand to gain, as it would be lower than the market price. However, it is quite inappropriate for profit center analysis.
- (c) **Cost Plus Normal Mark-up:** Under this method, the transfer price include cost per unit plus some profit margin or normal mark-up. This mark-up price may be equal to the profit Margin that competing firm might reasonable be expected to realize. However, the decision about the 'percentage' of mark-up may be arbitrary and questionable.

11. What is dual Pricing?*Ans :*

It is also known as 'two-way prices'. Under this method the selling division is credited with one price. That may be cost plus profit margin whereas the buying division is charged at different price, which may be equal to variable cost. The difference in the transfer prices for the two divisions could be accounted for by a centralized account. The dual pricing gives motivation and incentive to selling division as goods are transferred at cost plus some profit margin. On the other hand, for the buying division, it would be quite appropriate price.

Exercises Problems

1. A company fixes the inter-divisional transfer prices of its products on the basis of cost plus an estimated return on investment in its divisions. The relevant portion of the budget for Division A for the year 2015 - 2016 is given below :

Fixed Assets	10,00,000
Debtors	4,00,000
Other Current Assets (Other than Debtors)	6,00,000
Annual Fixed Cost of the Division	12,00,000
Variable Cost per unit of the Product	15
Budgeted Volume of Production per year (units)	8,00,000
Desired Rate of Return on Investment	20%
You are required to determine the transfer price for the division	

[Ans : ₹ 17.00 per unit]

2. A production department of a large manufacturing organization has furnished the following data for May, 2017 :

	Budget (₹)	Actual (₹)
Direct Materials	4,00,000	5,10,000
Direct Wages	2,50,000	3,25,000
Repairs and maintenance (₹ 1,00,000 Fixed)	2,00,000	2,20,000
Supervision (Fixed)	1,00,000	1,10,000
Consumable Stores	75,000	95,000
Factory Rent (Fixed)	50,000	50,000
Depreciation (Fixed)	1,00,000	1,00,000
Tools (Variable)	25,000	30,000
Power and Fuel (Variable)	1,50,000	1,80,000
Administration (Fixed)	2,50,000	2,65,000

The department has 50 identical machines. During May 2017, the budgeted and actual production of the department are 10,000 and 12,500 units respectively. However, if the department was closed and the machine production services were hired from outside, the cost of hiring the services of similar machines would be ₹ 150 per unit.

- (i) You are required to present reports showing the evaluation of the performance of the department based on the concept of (a) Cost Center (b) Profit Centre, and (c) Responsibility Centre.
- (ii) It is felt that since the total budgeted cost of production per unit is greater than the cost of hired service, the possibility of closing down the department and use of hired services should be explored if the budgeted production cannot be increased in June 2017. Assuming that the budgeted expenses and level of output planned for May 2017 will hold good for June 2017 also, calculate the volume of output required to justify the continuance of the department.

[Ans : (i) Cost Variance ₹ 1,15,000 (F); Profit Variance ₹ 10,000 (A); Responsibility Center - Controllable ₹ 20,000 (A); Uncontrollable ₹ 15,000 (A); (ii) 12,000 units]

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Choose the Correct Answer

1. Which of the following statements are true about responsibility accounting? [a]
 - (a) Responsibility accounting results in inter-departmental conflicts
 - (b) In responsibility center more focus is paid on products, processes or jobs
 - (c) No focus is paid on controlling costs
 - (d) None of the above
2. In profit center revenue represents a monetary measure of output emanating from a profit center in a given period irrespective whether [c]
 - (a) The revenue is realized or not
 - (b) The output is sold or not
 - (c) Both a and b
 - (d) None of the above
3. Contribution margin center is also known as [b]
 - (a) Expense center
 - (b) Profit center
 - (c) Investment center
 - (d) All of the above
4. Which of the following is responsibility center? [d]
 - (a) Expense center
 - (b) Profit center
 - (c) Investment center
 - (d) All of the above
5. The responsibility centers, for control purposes, may be classified into _____ types. [b]
 - (a) Five
 - (b) Three
 - (c) Four
 - (d) None of the above
6. The area of focus on responsibility center is [c]
 - (a) Quantum of sales
 - (b) Quantum of production
 - (c) Optimum utilization of resources
 - (d) All of the above
7. In responsibility cost accounting the costs in focus are [a]
 - (a) Controllable costs
 - (b) Uncontrollable costs
 - (c) Both a and b
 - (d) None of the above
8. In responsibility accounting, responsibilities of various groups or individuals are identified in terms of [d]
 - (a) Work
 - (b) Revenue
 - (c) Cost
 - (d) All of the above
9. Responsibility Accounting is also known as [c]
 - (a) Profitability accounting
 - (b) Activity accounting
 - (c) Both a and b
 - (d) None of the above
10. Transfer pricing intends to arrive at the arm's length price, for goods sold or services rendered by- [a]
 - (a) One segment of an enterprise to another segment of the same enterprise.
 - (b) One Enterprise to another Enterprise
 - (c) Both A and B
 - (d) Neither A nor B

Fill in the blanks

1. _____ Accounting is a system of control where responsibility is assigned for the control of costs.
2. _____ uses responsibility accounting as a control device.
3. A responsibility centre is called a _____ centre.
4. "An _____ centre is an entity segment in which a manager can control not only revenues and costs but also investment."
5. _____ establishes the relationship between profits and the capital employed.
6. EVA stands for _____
7. The _____ is the price that one division of a company charges another division of the same company for a product transferred between the two divisions
8. Standard Cost is pre-determined cost and is also called _____ cost.
9. The transfer price may be fixed at a level which equal the _____ cost of the supplier division and the user division.
10. _____ cost method for transfer price may be useful when the selling division is operating below capacity.

ANSWERS

1. Responsibility
2. Management
3. Cost
4. Investment
5. Return on capital employed
6. Economic Value
7. Transfer price
8. Engineered
9. Opportunity
10. Variable

UNIT III

INFLATION ACCOUNTING AND INCOME MEASUREMENT:

Inflation Accounting - Concept – Limitations of historical based-cost financial statements – Methods of Inflation Accounting: Current Purchasing Power Method – Current Cost Accounting Method (Including problems) Income Concepts for financial reporting – Measurement and Reporting of Revenues, Expenses, Gains and Losses (Theory only) – Analysis of Changes in Gross Profit. (Including problems)

3.1 INFLATION ACCOUNTING

3.1.1 Concept

Q1. Define Inflation Accounting (or)

What is Inflation Accounting

Ans : (May -17, May -16, Imp.)

Introduction

Prices do not remain constant over a period of time. They tend to change due to various economic, social (or) political factors. Changes in the price levels cause two types of economic conditions, inflation and deflation.

Meaning

- Inflation may be defined as a period of general increase in the prices of factors of production whereas deflation means fall in the general price level.
- These changes in the price levels lead to inaccurate presentation of financial statements which otherwise are prepared to present a true and fair view of the company's financial health.
- This is so because the financial statements are prepared on historical costs on the assumption that the unit of account, i.e. rupees in case of India, has static value.
- But the assumption is not valid because the value of the unit of account, i.e., the purchasing power of the rupee, has been

changing ever since the beginning of this century. After the First World War, during 1918-23, there was a period of higher inflation in Germany. But it was only after the Second World War that the prices started rising continuously and it made a nonsense of presenting the financial statements on historical cost basis.

Q2. Explain the advantages and disadvantages of Inflation Accounting .

Ans :

- In the past few years of high inflation, companies have reported very high profits on the one hand but on the other they have faced real financial difficulties.
- This is so because in reality dividends and taxes have been paid out of capital due to overstated figures of profits arrived at by adopting historical cost concept.
- Thus a change from historical cost concept to price level or inflation accounting has been recommended.

The major advantages of Inflation Accounting are as follows :

1. It enables company to present more realistic view of its profitability because current revenues are matched with current costs.
2. Depreciation charged on current values of assets in inflation accounting further enables a firm to show accounting profits more nearer to economic profits and replacement of these assets when required.

3. It enables a company to maintain its real capital by avoiding payment of dividends and taxes out of its capital due to inflated profits in historical accounting.
4. Balance Sheet reveals a more realistic and true and fair view of the financial position of a concern because the assets are shown at current values and not on distorted values as in historical accounting.
5. When financial statements are presented, adjusted to the price level changes, it makes possible to compare the profitability of two concerns set up at different times.
6. Investors, employees and the public at large are not misled by inflated book profits because inflation accounting shows more realistic profits. Higher paper profits without adjustment for price level changes cause resentment among workers and they demand higher wages and also excessive profits attract new entrepreneurs to enter the business.
7. The financial statements prepared by a company adjusted to the price level changes also improve its social image.
8. Inflation accounting also effects the investment market as it helps to establish a realistic price for the shares of a company.

Disadvantages

Some people are of the opinion that inflation accounting may create more problems than solving them because of the following inherent disadvantages of the price level accounting :

1. Adjusting accounts to price level changes is a never-ending process. It involves constant changes and alterations in the financial statements.
2. Price level accounting involves many calculations and makes financial statements so complicated and confusing that it becomes very difficult for man of ordinary prudence to understand, analyze and interpret them.
3. The concept of price level accounting appears to have more theoretical importance than practical because adjusting the accounts to the changes in the price levels may lead to

window dressing of accounts due to the element of subjectivity in it.

4. Depreciation charged on current values of fixed assets is not acceptable under the Income Tax Act, 1961 and hence adjusting it to price level changes does not serve any practical purpose.
5. During deflation, when the prices are falling, adjustments of accounts to price level changes will mean charging lesser depreciation and overstatement of profits.

3.2 LIMITATIONS OF HISTORICAL BASED-COST FINANCIAL STATEMENTS

Q3. Define Financial Statements. What are the Limitations of Historical based-cost financial statements

Ans :

Meaning

The term 'financial statement' refers to two statements, i.e. the balance sheet or statement of financial position that reflects assets, liabilities and capital on a particular date and profit and loss account or income statement that shows the operating results achieved during a particular period. The primary function of accounting is the preparation of financial statements in such a manner so as to give a true and fair view of the financial and operating position of the company.

Financial statements are usually based on actual or historical cost concept. They reveal the impact of various transactions involved in the accounting period on the operating and financial health of the company.

But various transactions include :

1. Current assets acquired and current liabilities incurred at different points of time in the accounting period.
2. Various expenses incurred and incomes earned at different points of time in the accounting period.
3. Various assets acquired at different points of time.

4. Various liabilities incurred at different points of time. Hence, it is clear that the measurement unit of various transactions, i.e. money, relates to different points of time. But the value of money does not remain the same over a period of time, it has different values at different points of time due to changes in the price levels.

Limitations

1. Inaccurate presentation of financial statements during the changes in the price levels.
2. Unrealistic, imaginary and inflated book profits in times of rise in prices due to overvaluation of stock in trade and writing off depreciation on fixed assets at a lower rate.
3. Payment of dividends and taxes, much more than warranted by the real profits, out of the equity capital resulting in the erosion of capital.
4. Difficulties in replacement of fixed assets during inflation.

3.3 METHODS OF INFLATION ACCOUNTING

3.3.1 Current Purchasing Power Method

Q4. Explain the techniques of Current purchasing power.

Ans :

(Imp.)

Current Purchasing Power Technique of accounting requires the companies to keep their records and present the financial statements on conventional historical cost basis but it further requires presentation of supplementary statements in terms of current purchasing power of currency at the end of the accounting period. In this method the various items of financial statements, i.e. balance sheet and profit and loss account are adjusted with the help of recognized general price index. The consumer price index or the wholesale price index prepared by the Reserve Bank of India can be taken for conversion of historical costs.

The main objective of this method is to take into consideration the changes in the value of money as a result of changes in the general price levels. It helps in presenting the financial statements in terms of a unit of measurement of constant value when both cost and revenue have been changing due to changes in the price levels.

This technique of price level accounting has been followed by a number of companies like Germany, Australia and U.S.A. But although this method is simple, it may be considered as only a first step towards inflationary accounting. The major weaknesses of this techniques are as follows :

- (i) As it takes into account the general price index, it does not account for changes in the individual assets of the company. Sometimes it is possible that there may be an increase in the general price index, but there may not be any increase (rather there might be a decrease) in the value of a particular asset of a certain company.
- (ii) The technique seems to be more of theoretical nature than of any practical utility.
- (iii) In a country like India, even the price indices may not be correct and it may further cause inaccurate presentation of the financial statements.

Mechanism of Preparing Financial Statement under CPP Method

(a) Conversion Technique

Current Purchasing Power Method (CPP) requires conversion of historical figures at current purchasing power. In this method, various items of balance sheet and profit loss account are adjusted

with the help of recognized general price index. The consumer price index or the wholesale price index prepared by the Reserve Bank of India can be taken for conversion of historical costs. For this purpose, historical figures must be multiplied with the conversion factor. The conversion factor can be calculated with the help of the following formula :

$$\text{Conversion factor} = \frac{\text{Current Price Index}}{\text{Previous Price Index at the date of existing figure}}$$

And, the formula for calculating the converted figure is :

$$\text{Converted figure} = \text{Historical figure} \times \text{Conversion Factor}$$

$$\text{Historical figure} \times \frac{\text{Current year Index}}{\text{Previous year Index at the date of existing figure}}$$

(b) Mid-Period Conversion

There are several transactions which take place throughout the year such as purchases, sales, expenses, etc. For conversion of such items, average index of the year can be taken as the one index for all such items. If such an average is not available, the index of the mid-year be taken for this purpose. And, if the index of the mid year is also not available, then the average of index at the beginning and at the end of the period may be taken.

(c) Monetary and Non-Monetary Accounts (Gain or Loss on Monetary items)

For the conversion of historical costs in terms of current purchasing power of currency, it is useful to make a distinction between :

- (i) Monetary accounts, i.e., money value items;
- (ii) Non-monetary accounts, i.e., real value items.

(i) Monetary Accounts

- Monetary accounts are those assets and liabilities which are not subject to reassessment of their recorded values owing to change of purchasing power of money. The amounts of such items are fixed, by contract or other wise in term of rupees, regardless of change in the general price level.
- The examples of such items are cash, debtors, bills receivables, outstanding incomes, etc., as assets and creditors, bills payable, loans etc., as liabilities. Such items whose amounts are fixed and do not require reassessment are also known as money value items.

(ii) Non - Monetary Account

- Other assets and liabilities, the values of which do change or are subject to reassessment along with the change in the purchasing power of money are called non-monetary items or real value assets and liabilities.
- Non-monetary items include items such as stocks, land, building, plant and machinery, etc. It must be noted that, in the process of conversion, it is only the non monetary items which are adjusted to the current purchasing power of money.
- Further, if assets and liabilities are converted as stated above, it may be found that a loss or gain arises from the difference of the converted total value of assets and that of liabilities.
- This loss or gain arises through monetary items or money value assets and liabilities i.e., cash, debtors, receivables, creditors, bills payable, etc., and not through real value assets and liabilities or non-monetary items.

(d) Adjustment of Cost of Sales and Inventory

As inventory is purchased in period n and sold in $(n + x)$ period, there is a time gap between purchases and sales. During this time, there might be changes in the price levels. Because of inflation, the selling prices would indicate the value realized in terms of the increased price levels and costs which relate to the earlier periods would imply lower values. This results in over-statement of profits which are often misleading. The same is true in deflation also, as current revenues are not matched with current costs. Hence, adjustment of inventory and cost of sales is very important. This adjustment depends upon the method adopted for the outflow of inventories, viz., first-in-first-out or last-in-first-out.

i) First in First out (FIFO)

Under first-in-first out method (FIFO) cost of sales comprise the entire opening stock and current purchases less closing stock. The closing inventory is entirely from current purchases.

ii) Last in First out (LIFO)

But under the last-in-first-out method (LIFO) cost of sales comprise mainly of the current purchases and it is only when the cost of sales exceeds current purchases, opening stock enters into cost of sales. The closing stock enters current purchases, opening stock enters into cost of sales. The closing inventory in LIFO is out of the purchases made in the previous year.

For adjusting the figures for price level changes the following indices are applied:

- For current purchases - the average index of the year.
- For opening stock - the index at the beginning of the year.
- For purchases of previous year - the average index of the relevant year.

(e) Ascertainment of Profit

Profit under Current purchasing Power (CPP) accounting can be ascertained in two ways :

(i) Net Change Method

This method is based on the normal accounting concept that profit is the change in equity during an accounting period. Under this method, the opening as well as closing balance sheets are converted into CPP terms by using appropriate index numbers. The difference in the balance sheet is taken as reserves after converting the equity capital also. If equity capital is not converted, it may be taken as the balancing figure. It must be remembered that in the closing balance sheet, the monetary items will remain unchanged. Profit is calculated as the net change in reserves, where equity capital is also converted; and will be equal to net change in equity, where equity is not converted.

(ii) Conversion of Income Method

Under this method, the historical income statement is converted in CPP terms. Purchases, sales and other expenses which are incurred throughout the year, are converted at average index. Depreciation can be calculated on converted values. Monetary gain or loss is also ascertained as explained in point.

3.3.2 Current Cost Accounting Method**Q5. Explain briefly about Current Cost Accounting Method**

Ans :

(Imp.)

The British Government had appointed a committee known as Sandilands Committee under the chairmanship of Mr. Francis C.R Sandilands to consider and recommend the accounting for price level changes. The committee presented its report in the year 1975 and recommended the adoption of Current Cost Accounting Technique in place of Current Purchasing Power of Replacement Cost

Accounting Technique for price level changes. The current cost accounting technique is the preparation of financial statements (Balance Sheet and Profit and Loss Account) on the current values of individual items and note on the historical (or) original cost.

The essential characteristics of current cost accounting technique are as follows :

1. The fixed assets are shown in the balance sheet at their current values and not on historical costs.
2. The depreciation is charged on the current values of the fixed assets and not on original costs.
3. Inventories or stocks are valued in the balance sheet at their current replacement costs on the date of the balance sheet and not cost or market price whichever is lower.
4. The cost of goods sold is calculated on the basis of their replacement cost to the business and not on their original cost.
5. The surpluses arising out of revaluation are transferred to Revaluation Reserve Account and are not available for distribution as dividend to the shareholders.
6. In addition to the balance sheet and profit and loss account, an appropriation account and a statement of changes is prepared.

The current cost accounting (CCA) technique has been preferred to the current purchasing power (CPP) technique of price level accounting as it is a complete system of inflation accounting. The financial statements prepared under this technique provide more realistic information and make a distinction between profits earned from business operations and the gains arising from changes in price levels. As depreciation under CCA is provided on current cost, the method prevents overstatement of profits and keeps the capital intact. The effect of holding monetary items in terms of gains and losses having an impact on the finance of the business is also highlighted. However, there are many difficulties in the operation of CCA technique :

- (a) It is very difficult to determine the 'value to the business' of a real asset.
- (b) There is an element of subjectivity in this technique.
- (c) It does not hold good during the periods of depression.

Some important Adjustments Required Under the CCA Technique

(i) Current Cost of Sales Adjustment (COSA)

Under the CCA technique, cost of sales are to be calculated on the basis of cost of replacing the goods at the time they are sold. The important principle is that current costs must be matched with current revenues. As for sales are concerned, it is current revenue and out of the costs, all operating expenses are current costs. But in case of inventories, certain adjustments will have to be made, known as cost of sales adjustment.

Cost of sales adjustment can be calculated with the help of the following formula

$$\text{COSA} = (C - O) - I_a \left(\frac{C}{I_c} - \frac{O}{I_o} \right)$$

Where

C = Historical cost of closing stock

O = Historical cost of opening stock

I_a = Average Index number

I_c = Index number appropriate to closing stock

I_o = Index number appropriate to opening stock

(ii) Depreciation Adjustment

Under the CCA method assets are shown in the balance sheet on current replacement costs after allowing for depreciation. This will require an adjustment in depreciation also. Current year's depreciation under CCA can be calculated with the help of following formula :

Current year's depreciation (CCA method)

$$= \frac{\text{Opening Current Value of Assets} + \text{Closing Current Value of Assets}}{2 \times \text{Life of asset}}$$

And, Depreciation Adjustment = Current year's depreciation of CCA – Depreciation on historical cost

(iii) Backlog Depreciation

Whenever an asset is revalued, the profit on revaluation is transferred to Evaluation Reserve Account. But the revaluation also gives rise to a backlog depreciation. This backlog depreciation should be charged to Revaluation Reserve Account.

(iv) Monetary Working Capital Adjustment (MWCA)

Working capital is that part of capital which is required to meet the day to day expenses and for holding current assets for the normal operations of the business. It is referred to as the excess of current assets over current liabilities. The changes in the price levels disturb the working capital position of a concern. CCA method requires a financing adjustment reflecting the effects of changing prices on net monetary items, leading to a loss from holding net monetary assets or to a gain from holding net monetary liabilities when prices are rising, and vice-versa, in order to maintain the monetary working capital of the enterprise. This adjustment reflects the amount of additional finance needed to maintain the same working capital due to the changes in price levels. The method of calculating MWCA is the same as that of COSA. Symbolically,

$$\text{MWCA} = (C - O) - I_a \left(\frac{C}{I_c} - \frac{O}{I_o} \right)$$

Where C = Closing Monetary Working Capital

O = Opening MWC

I_a = Average Index for the period

I_c = Appropriate Index for closing MWC

I_o = Appropriate index for opening MWC

(v) Current Cost Operating Profit

Current cost operating profit is the profit as per historical cost accounting before charging interest and taxation but after charging adjustments of cost of sales, depreciation and monetary working capital.

(vi) Gearing Adjustment

During the period of rising prices, shareholders are benefited to the extent fixed assets and net working fixed assets and net working capital are financed while the amount of borrowings to be repaid remains fixed except interest charges. In the same manner, there is a loss to the shareholders in the period of falling prices. To adjust such profit or loss on account of borrowings, 'gearing adjustment' is required to be made. 'Gearing adjustment' is also a financing adjustment like COSA and MWCA. This adjustment reduces the total adjustment for cost of sales, depreciation and monetary working capital in the proportion of finance by borrowings to the total financing. Gearing adjustment can be calculated with the help of the following formula :

$$\text{Gearing Adjustment} = \frac{B}{B + S} \times A$$

Where,

B = Average net borrowings

S = Average Shareholders' interest

A = Total of the current cost adjustments

Q6. Explain briefly about Current Value Accounting Technique.

Ans :

In the Current Value Accounting Technique of price level accounting all assets and liabilities are shown in the balance sheet at their current values. The value of the net assets at the beginning and at the end of the accounting period is ascertained and the difference in the value in the beginning and the end is termed as profit or loss, as the case may be. In this method also, like replacement cost accounting technique, it is very difficult to determine relevant current values and there is an element of subjectivity in this technique.

PROBLEMS

1. A building was purchased in 2000 at a price of ` 80,000, the general price index at that item was 150, Convert the figure in current rupees on 31.12.2007 when the index stood at 300.

Sol :

$$\begin{aligned} \text{Conversion Factor} &= \frac{\text{Current Price Index}}{\text{Previous Price Index at the date of existing figure}} \\ &= \frac{300}{150} = 2 \end{aligned}$$

$$\begin{aligned} \text{Converted Value} &= \text{Historical Cost} \times \text{Conversion Factor} \\ &= 80,000 \times 2 = ` 1,60,000 \end{aligned}$$

$$\text{Alternatively, Converted Value} = 80,000 \times \frac{300}{150} = ` 1,60,000$$

2. Mr. A purchased a piece of land in 2000 for ₹ 50,000 when the general price index was 125. He sold this piece of land in 2007 for ₹ 1,05,000 when the general price index was 300. Calculate the profit or loss on the sale of land keeping aside the price level changes.

Sol :

Purchase price of Land (Original cost) ₹ = 50,000

Sale Price ₹ = 1,05,000

It seems as if there is a profit of ₹ 55,000 (1,05,000 – 50,000) but it is not so if the gain arising due to price level changes is ignored:

Converted value of land at 2007 Index $50,000 \times \frac{300}{125} = ₹ 1,20,000$

So, there is rather a loss of ₹ 15,000.

i.e., Sale Price – Converted Value of Land

₹ 1,05,000 – 1,20,000 = ₹ 15,000 (Loss)

3. A company has the following transactions at the given dates and price indices for the first quarter of 2008 :

ZPParticularsP	₹	Price Index
Opening Balance (Jan. 1)	8,000	100
Cash Sales (Feb. 1)	15,000	104
Payment to Creditors (March 1)	10,000	106
Cash Purchases (March 1)	2,000	108
Payment of Expenses (March 31)	4,000	110
Closing Balance	7,000	110
Calculate Monetary Gain or Loss.		

Sol :

Statement of Cash

ParticularsP	Conventional Accounting ₹	Conversion Factor	Converted Values ₹
Opening Balance	8,000	110/100	8,800
Add: Cash Sales	15,000	110/104	15,865
(a)	<u>23,000</u>		<u>24,665</u>
Less: Cash Payments			

(i) Creditors	10,000	110/106	10,377
(ii) Purchases	2,000	110/108	2,037
(iii) Expenses	4,000	110/110	4,000
(b)	<u>16,000</u>		<u>16,414</u>
Closing Balance [(a) – (b)]	7,000		8,251

ParticularsP	
Expected balance	8,251
(–) Actual Balance	<u>7,000</u>
Monetary Loss	<u>1,251</u>

4. From the information given below, ascertain the cost of sales and closing inventory under CPP method, if (i) LIFO and (ii) FIFO is followed :

Particulars

Inventory on 1.1.2007	20,000
Purchases during 2007	1,00,000
Inventory on 31.12.2007	30,000
General Price index:	
On 1.1.2007	160
Average for the year	180
On 31.12.2007	200

Sol :

Particulars	Historical Factor	Conversion Values	Converted
(i) Under LIFO			
(a) Cost of Sale			
Opening Inventory	20,000		
Add: Purchases	1,00,000		
	<u>1,20,000</u>		
Less: Closing Inventory	30,000	200	$90,000 \times \frac{200}{180}$
Cost of Sales	<u>90,000</u>	<u>180</u>	<u>= 1,00,000</u>
(b) Closing Inventory		200	
Out of current purchases	10,000	<u>180</u>	<u>11,111</u>
		200	
Out of opening stock	20,000	<u>160</u>	<u>25,000</u>
	<u>30,000</u>		<u>36,111</u>

(ii) Under FIFO			
Cost of Sales and Closing Inventory		200	
Opening inventory	20,000	160	25,000
		200	
Add: Purchases	1,00,000	180	1,11,111
	1,20,000		1,36,111
Less : Closing inventory	30,000	200	33,333
	90,000	180	1,02,778
(Under FIFO, the closing inventory is entirely from current purchases and hence has been converted at average index)		200	
Closing Inventory	30,000	180	33,333

5. Arjun Ltd. furnishes the following income statement for the year ending 31st December 2007, prepared on the basis of conventional accounting. You are required to adjust the same for price level changes under CPP method.

Particulars		
Sales		90,000
Less : Cost of goods sold :		
Opening inventory	8,000	
(+) Purchases	60,000	
	68,000	
(-) Closing inventory	6,000	
Add	62,000	
Expenses		
Wages & salaries	6,000	
Other expenses	4,500	
Depreciation on building	700	
Interest	300	73,500
Net Income		16,500
Dividends		4,000
Retained Earnings		12,500

Additional Information

- Index of general price level:

January 1, 2007	100
December 31, 2007	200
Average Index	150
- Interest and dividends are paid on December 31.
- Building was purchased when the index was 50.

Sol :

(Imp.)

Particulars	Conventional Values	Conversion Factor	Adjusted Values
Sales	90,000	200/150	1,20,000
Less : Cost of goods sold :			
Opening inventory 8,000		200/100	16,000
(+) Purchases 60,000		200/150	80,000
68,000			96,000
(-) Closing Inventory 6,000		200/150	8,000
62,000			88,000
Add: Expenses:			
Wages & Salaries 6,000		200/150	8,000
Other Expenses 4,500		200/150	6,000
Depreciation on building 700		200/50	2800
Interest 300		200/200	300
73,500			1,05,100
Net Income 16,500			14,900
Less: Dividends 4,000		200/200	4,000
Retained Earnings	12,500		10,900

6. Calculate the 'Cost of sales adjustment' (COSA) from the following :

Particulars	Historical Cost	Index Number
Opening Stock	52,000	100
Purchases	2,20,000	110
		(Average)
Total goods	2,72,000	
Less: Closing Stock	72,000	120
Cost of sales	2,00,000	

Sol :

$$\text{COSA} = (C - O) - I_a \left[\frac{C}{I_c} - \frac{O}{I_a} \right]$$

$$\begin{aligned} \text{(Or) COSA} &= (72,000 - 52,000) - 110 \left(\frac{72,000}{120} - \frac{52,000}{100} \right) \\ &= 20,000 - 110 (600 - 520) \\ &= 20,000 - 8,800 = ₹ 11,200 \end{aligned}$$

Particulars	₹
Cost of sale adjustment can also be calculated as under:	
Opening stock at average index = $52,000 \times \frac{110}{120}$	57,200
Add: Purchases at average index	2,20,000
Total goods available at average index	2,77,200
Less: Closing stock at average index = $72,000 \times \frac{110}{120}$	66,000
Current Cost of Sales	2,11,200

$$\text{COSA} = \text{Current Cost of Sales} - \text{Historical Cost of Sales}$$

$$= ₹ 2,11,200 - 2,00,000 = ₹ 11,200$$

7. A machine was purchased on 1.1.2002 at a cost of ₹ 10,00,000 and its useful life was estimated to be 10 years. Its replacement cost was ₹ 18,00,000 on 1.1.2007 and ₹ 20,00,000 on 31.12.2007.

- Calculate the amount of depreciation adjustment.
- Compute the backlog depreciation

Sol :

(Imp.)

$$\begin{aligned} \text{i) Current year's depreciation (CCA method)} &= \frac{18,00,000 + 20,00,000}{2 \times 10} \\ &= \frac{38,00,000}{20} \\ &= ₹ 1,90,000 \end{aligned}$$

$$\text{Historical depreciation} = \frac{10,00,000}{10} = ₹ 1,00,000$$

Depreciation Adjustment = Current year's dep. on CCA – Historical dep.

$$= ₹ 1,90,000 - 1,00,000 = ₹ 90,000.$$

ii) Replacement cost of the machine on 1.1.2007 (Current Value) = ₹ 18,00,000

Expired Life on 1.1.2007 = 5 years

$$\text{Depreciation under CAA} = 18,00,000 \times \frac{5}{10} = ₹ 9,00,000$$

Replacement/ Current value on 31.12.2007 = ₹ 20,00,000

Expired Life on 31.12.2007 = 6 years

$$\text{Depreciation under CAA} = 20,00,000 \times \frac{6}{10} = ₹ 12,00,000$$

Difference in depreciation = 12,00,000 – 9,00,000

$$= ₹ 3,00,000$$

Backlog depreciation = Diff. in dep. – Depreciation chargeable in current year

$$= 3,00,000 - 1,90,000 = 1,10,000$$

Current year's dep. has been calculated as = $\frac{18,00,000 + 20,00,000}{2 \times 10}$

$$= ₹ 1,90,000$$

8. Compute the net monetary result of A Co., Ltd., as on 31.3.2016 from the following information.

Particulars	1-4-2015 (Rs.)	31-3-2016 (Rs.)
Cash	20,000	25,000
Debtors	50,000	60,000
Creditors	70,000	80,000
Loan	30,000	30,000

Sol.:

Retail Price Index Numbers :

01-04-2015 ... 200

Average for the 2016 210

31-03-2016 ... 230

Statement of Cash as on 31-3-2016

Particulars	Conventional Accounting	Conversion Factor	Converted Values
Opening Cash Balance	20,000	230/200	23,000
Add : Debtors	60,000	230/210	65,714
	80,000		
Less : Cash payments			
i) Creditors	80,000	230/210	87,619
ii) Loan	30,000	230/200	34,500
	<u>1,10,000</u>		

9. Calculate the Monetary Working Capital Adjustment (MWCA) from the following data

Particulars	1-1-2006	31-12-2007
Sundry Debtors (₹)	70,000	1,00,000
Sundry Creditors (₹)	30,000	40,000
Index Number	100	120
Average Index		110

Sol :

$$MWCA = (C - O) - I_a \left(\frac{C}{I_c} - \frac{O}{I_o} \right)$$

C = Closing Monetary Working Capital

$$= 1,00,000 - 40,000 = 60,000$$

O = Opening Monetary Working Capital

$$= 70,000 - 30,000 = 40,000$$

 I_a = Average Index = 110 I_c = Closing Index = 120 I_o = Opening Index = 100

Substituting the values :

$$\begin{aligned}
 \text{MWCA} &= (60,000 - 40,000) - 110 \left(\frac{60,000}{120} - \frac{40,000}{100} \right) \\
 &= 20,000 - 110 (500 - 400) \\
 &= 20,000 - 11,000 = ` 9,000.
 \end{aligned}$$

10. From the data below, calculate the gearing adjustment required under CCA method :

Particulars	Opening	Closing
Convertible Debentures	1,00,000	1,20,000
Bank Overdraft	60,000	80,000
Cash	10,000	30,000
Paid-up Share Capital	1,50,000	2,00,000
Reserves	50,000	80,000
COCA	20,000	
MWCA	15,000	
Depreciation	5,000	
Total of Adjustments	40,000	

Sol :

Calculation of Net Borrowings :

Particulars	Opening	Closing
Convertible Debentures	1,00,000	1,20,000
Bank Overdraft	60,000	80,000
Total Borrowings	1,60,000	2,00,000
Less : Cash (as this does not enter into MWCA)	10,000	30,000
Net Borrowings	1,50,000	1,70,000
Calculation of Shareholder Funds :		
Paid-up Share Capital	1,50,000	2,00,000
Reserves	50,000	80,000
Shareholder's Funds	2,00,000	2,80,000

$$\text{Average Net Borrowings} = \frac{1,50,000 + 1,70,000}{2}$$

$$B = ₹ 1,60,000$$

$$\text{Average Share holders Interest} = \frac{2,00,000 + 2,80,000}{2}$$

$$S = ₹ 2,40,000$$

$$\text{Gearing Adjustment} = \frac{B}{(B+S)} \times A$$

$$= \frac{1,60,000}{(1,60,000 + 2,40,000)} \times 40,000$$

As Total of Adjustment A = 40,000 (given)

$$\text{Gearing Adjustment} = \frac{1,60,000}{4,00,000} \times 40,000 = ₹ 16,000$$

3.4 INCOME CONCEPTS FOR FINANCIAL REPORTING

Q7. What do you mean by accounting concept of Income. State its procedure.

Ans:

(Dec.-20)

Meaning

Accounting income is the excess of realized revenues over related expired costs of an accounting period.

Accounting income is the difference between the realized revenues arising from the transactions of the period and the corresponding historical costs. It is the increase in the resources of a business or other entity which results from the operations of the enterprise. According to this concept the transactions of a period entered into with third parties in its operational activities have to be measured to identify realized revenues and related historical costs of the period. In the process of doing so, it follows Generally Accepted Accounting Principles such as the revenue principle, historical cost principle, matching principle and accounting period concept.

Procedure

It generally involve four steps.

i) Defining the particular Accounting period

The performance of business undertaking in terms of income must relate to a particular period. Hence it needs defining of a period for computation of accounting income, it is customary that many of the business undertakings prepare their income position once in a year. Hence the commonly accepted accounting period is either calendar year or natural business year.

ii) Identifying revenues of the accounting period selected

Realization principle is followed in recognizing revenues and consequently income. Revenue is the inflow, either in the form of cash or increase in the assets or decrease in the liabilities, takes place on account of the main activity of any business undertaking such as sale of goods and services, manufacture and sale of goods and services.

iii) Identifying the costs related to realized revenues of the period

According to this concept, the costs which are applied in earning revenues during the related period and have become expenses only are considered for computing income.

iv) Matching of realized revenues with that of expired costs

It is known as application of matching principle. According to this principle, the realized revenues of an accounting period recognized through the application of principle of realization are matched with the expired and related costs of the period to compute the income of the period.

Q8. Explain the Economic Concept of Income.

Ans:

- Economic concept of income is based on Hicks concept of income. According to Hicks(1946) Economic income is the maximum value which can be consumed during a period and still expect to be well-off at the end of the week as he was at the beginning. Well-off ness is equivalent to capital or wealth. Subsequently the same concept was applied to firm by Solomons and Alexander.
- They defined income of an enterprise as the maximum amount a firm can distribute to share holders during a period and still be well-off at the end of the period as at the beginning. Unlike matching of revenues of a period with that of related costs economic income is measured on the basis of changes in the value of assets.
- The well off ness is measured by comparing the value of the company at two points in terms of present value of expected future net receipts at each of these two periods. This concept follows balance sheet approach to income measurement.
- The balance sheet approach determines the income as the difference between the value

of the capital at the opening and closing balance sheets adjusted for the dividend or the additional capital contributed during the year.

- This concept involves the following procedure:

- i) Estimating the expected net cash inflows from the total assets of a firm over its useful remaining life.
- ii) Estimation is to be made about discount rate for arriving present value of future cash inflows.
- iii) Find the capitalized value of cash inflows at an estimated discount factor at the beginning of the year.

Economic income may be expressed as follows :

$$E1 = (K2 - K1)$$

Where;

E1 = Economic income

K1 = Capitalized value of cash inflows from total assets at an estimated discount actor at the beginning of the year.

K2 = Capitalized value of cash inflows from total assets at an estimated discount actor at the end of the year.

Q9. Explain the meaning of Capital Maintenance Concept Of Income.

Ans:

(Imp.)

- Maintaining the capital of business enterprises intact in financial and physical form is known as capital maintenance concept of income measurement and capital maintenance are interrelated in balance sheet approach and transactions approach of measuring the income.
- In Balance sheet approach the difference between capital at the beginning and end of the defined period is considered as income after making adjustments for additional investment made during the year.

- In transactions approach, income is measured on the basis of the transactions of revenue inflows and transactions of revenue out flows. It is like measuring the increase in the level of water tank, after maintaining the existing level of water.
- Existing level of water is like capital invested and any increase in the level is considered as additional water known as income. Increase in the water level can be measured either on the basis of finding difference between inflow and out flow of water during a defined period of time (transactions approach) or on the basis of difference between levels of water at the beginning and ending of the defined period of time. (balance sheet approach).
- Thus both the approaches recognize income after maintaining capital intact.
- According to Folker, the capital maintenance concept is viewed as a neutral bench mark to be used in determining the surplus which accrues to share holders as income and implies nothing which ought to be interpreted as suggesting normative behaviour for the management of the enterprise.

Q10. Explain the merits and demerits of capital maintenance concept of income.

Ans: (Imp.)

Merits

1. This concept does not treat holding gains as income like accounting concept income. Hence, real profits are only distributed as dividends. It also helps to avoid distribution of dividends out of capital during inflationary periods.
2. The investment of owners is always reflect current market value. Their investment is always safe as holding gains shown in the shareholders equity section of balance sheet as capital maintenance adjustments.
3. The physical capital maintenance concept is consistent with the going concern assumption by maintaining the firms ability to continue its normal operations.

4. It helps users to understand past changes and to predict future changes in the volume of activity.
5. It enables the users to assess the future cash flows on the basis of understanding enterprises performance.

Limitations

1. This concept necessitates to value the assets at the end of every period based on current cost. It is difficult to estimate the current cost of assets as different approaches are prevailing for assessing the value.
2. It involves lengthy process and deviates from historical cost concept.
3. During inflation period frequent changes takes place in price levels, hence involve continuous review process.

Q11. State the Concept of Business Income state its merits and demerits.

Ans :

Meaning

This concept is developed by Edgar O. Edwards and Philip W. Bell in 1961. It is also known as money income by some writers. According to this concept Business Income includes:

- (i) The current operating profit (X) which is the difference between the realized revenues and the corresponding replacement cost. Thus the current operating profit is equal to the excess of current value of revenue during a specified period over the current cost of related inputs.
- (ii) The realized and accrued holding gains of the specified period. Holding gain is the difference between the cost of an asset and replacement cost of such asset on a given date. If the cost of inventory at the date of purchasing is Rs.50 and its replacement cost is Rs.80 on the date of calculating income, the difference of Rs.30 is known as accrued holding gain. If that inventory is sold for Rs.90, the difference between Rs. 80 and Rs. 50 is known as realized holding gain and the difference between Rs.90 and replacement cost of Rs.80 is known as current operating profit.(Y)

- (iii) The unrealized holding gains and losses accruing in the period.(w)

Thus Business income may be expressed as :

$$BI = X + Y + Z$$

where,

- BI = Business Income,
 X = Current Operating Profit
 Y = Realized and accrued holding gains of the period
 Z = Unrealized holding gains and losses accruing in the period

Merits :

- (i) It takes into account all types of gains whatever may be its nature as income of the period. If such gain accrues in the period that deserves inclusion the business income.
- (ii) Users will aware of total income from all the sources of the period.

Demerits :

- (i) This concept makes any allowance for changes in the general price level. Both real gains resulting from changes in relative prices and fictitious gains resulting from the effects of a rise in the general price level being regarded as income.
- (ii) It involves cumbersome process to decide holding and current operating gains.

Q12. Explain Operating Income concept state its Merits and demerits.

Ans :

- Operating income measures the operating efficiency of a business enterprise. It is concerned with the efficient utilization of resources of business enterprises in the main activities of an enterprise.
- Operations normally comprise the provision of goods and services that make up the main business of the enterprise and other activities that have to be undertaken jointly with the provision of goods and services.

- Such goods and services are produced and distributed at prices that are sufficient to enable a firm to pay for goods and services it uses and to provide a satisfactory return to its owners. Examples are manufacturing of soaps, house hold goods and their distribution.
- Operating items are generally of recurring nature such as cost of raw material, salaries, wages etc.
- However that may not be true always. Some times certain special items may be incurred which are of non recurring nature but include in operating items.
- Thus, whether an item includes under operating or non operating depends primarily on its nature.
- The scope of operating income includes firstly, the events and transactions relating to the current period. It does not include transactions and events that have taken place in earlier years and also concerned with future periods.
- However there are some transactions taken place in earlier years such as purchase of fixed assets but used in current year.
- Secondly, the current operating income recognizes normal change in operations such as sales, costs of sales etc, but does not recognize non operating incomes.

Merits :

- (i) Current operating income concept is more useful in judging the profitability of business enterprises.
- (ii) It facilitates in making predictions .
- (iii) It is useful in all propositions of business enterprises in understanding the past behaviour of profits and coming to tangible conclusions.
- (iv) This concept of income facilitates inter period and inter firm comparison.

Demerits

- (i) External users are concerned with total income of the period irrespective of their nature to know the performance of the business enterprises.
- (ii) This concept does not project incidental incomes derived during the period as they are non operating in nature.
- (iii) Current operating income concept does not include incidental losses incurred during the period as they are of non operating nature and relate to prior period.

Q13. Define Comprehensive Income. State its features merits and demerits.*Ans :***Meaning**

Comprehensive income concept is also known as all inclusive concept of income. It measures the changes in equity or net assets during the defined period other than those resulting from investments by owners and distribution to owners. It is equivalent to revenue receipts plus gains minus revenue expenditure and losses.

➤ **According to Solomon** "A truly comprehensive concept of income for a period must include all changes in owners' equity from non owner resources that are associated with the period and that can be measured reliably, regardless of the restrictions on recognition imposed by our present GAAP."

Features:

- (i) Comprehensive income includes all revenues from normal operations and expenditure incurred for earning such revenues.
- (ii) It also takes into account non operating items such as incidental gains and losses.
- (iii) According to the IAS Committee it includes holding gains and losses on assets and liabilities, whether realized or not.
- (iv) Earnings as per financial accounting standards board include what the entity has received or expects to receive for its output (revenues) and what it sacrifices to produce and distribute

such output.(expenses). It also includes the results of the entity's' incidental or peripheral activities known as gains and losses. Where as comprehensive income includes effect of prior period adjustments, changes in income due to changes in accounting policies apart from all the items stated above.

- (v) Thus , Comprehensive includes the following:

Revenues:

- (a) Revenues from normal business activities
- (b) Gains from unusual source
- (c) Other non owner changes in equity such as recognized holding gains.
- (d) Extra ordinary gains
- (e) Items relating to recovery of taxes
- (f) Unrealized increase in the value of assets decided to incorporate in the financial statements as a policy matter.

Expenses:

- (a) Revenue expenses incurred for earning revenues.
- (b) Losses from incidental and peripheral transactions.
- (c) Extra ordinary losses.
- (d) Cumulative effect on prior periods change in accounting principles.
- (e) Items relating to payment of taxes.
- (f) Unrealized decrease in the value of assets decided to incorporate in the financial statements as a policy matter.

Merits:

- (i) All annual reported net incomes, when added together for the life of the enterprise, it equals the total net income of the enterprise. Thus it enables reconciliation of total income of the enterprise over its life.
- (ii) It avoids possible manipulations as total income should reconcile as stated above.
- (iii) Understanding and preparation of income under this concept is easy as it includes the effect of all transactions of the year..

- (iv) If adequate disclosure of items influencing the comprehensive is given, users can make appropriate classification to arrive at appropriate income.
- (v) As the distinction between operating and non operating items is not clear and many a time an estimation this approach gives more accuracy in income measurement.
- (vi) It provides information about all items that effect shareholders interest other than capital and dividend transactions. Hence, provide more useful information to the share holders and other users.

Limitations:

- (i) This concept necessitates to analyze the information by the users for their decision making as does not discriminate normal income with that of other incomes. All the users may not be technically sound to analyze the income statement as per their needs.
- (ii) For managerial decisions also it may not be useful unless analysis is made.
- (iii) Users may not be in a position to discriminate which is normal income and which is other than normal income. It may not help in assessing the efficiency of the management.

3.4.1 Measurement and Reporting of Revenues

Q14. Explain briefly about Revenues.

Ans : (Dec.-20, Imp.)

Concepts of Revenue

Business organizations take up productive or trading or service activities with an objective of earning profits by selling goods and services to the public. Provision of goods and services results into either inflow of cash or increase in assets and increase in net worth of the share holders. If goods are sold on cash basis, increase in cash takes place on account of cash inflow. On the other hand if goods are sold either on credit basis or exchange of assets basis, increase in assets take place on account of either increase in debtors or increase in assets with which the goods are exchanged.

These inflows in the form of either cash or increase in debtors or receivables or other assets from sale of goods and services are Known as revenues. Thus "Revenues earned result into inflows and gross increase in the value of assets and capital of business entity and out flows of goods or services from the firm to its customers.

➤ Broader Concept of Revenue

American Institute of Certified public Accountants (AICPA). According to this view revenues include all of the inflows from main and incidental activities of the business. Thus, its scope includes inflows from sale of goods and services, and other gains and losses taken place on account of sale of fixed assets and investments.

"Revenue results from the sale of goods and rendering of services and is measured by the charge made to customers, clients or tenants for goods and services furnished to them. It includes gains from the sale or exchange of assets (other than stock in trade) interest and dividends earned on investments, and other increase in owners equity except those arising from the capital contributions and capital adjustments."

➤ Narrower Concept of revenue

As per the narrower concept, revenues include inflows from the main activity of the business such as proceed from goods and services but not other inflows as stated in broader concept of revenue.

According to the above definitions revenue include the following:

1. Gross inflow of the cash, receivables from the sale of goods.
2. Gross inflow of the cash, receivables from the rendering of the services.
3. Gross inflow of the cash, receivables in the form of interest royalties, dividends from the use of enterprises resources such as allowing others to use funds of the enterprise on interest basis, allowing others to use enterprises properties such as lands, fixed assets etc on royalty basis and dividends on investments made in other companies by the investing companies.

4. All these inflows are related to a particular accounting period.
5. These inflows may either in the form of cash, receivables or in the form of settlement of liabilities.
6. Revenue is measured on the basis of charges made to customers or clients for the goods and services provided.

Q15. Describe the rules regarding recognition of revenues.

Ans :

- Many manufacturing and trading concerns adopt the criteria of recognizing revenue at the "time of sale and record in books of accounts. International accounting standards committee and Indian accounting standards committee recognized point of sale method as appropriate one for recognizing revenues. As per Indian accounting standard 9(AS9), revenues relating to trading activity are to be recognized and recorded on the basis of point of sale method. According to AS9, revenue from sale of goods is recognized when the seller transfer the goods to the buyer for a consideration.

(i) Revenue recognition in sale of services.

Certain enterprises provide services like consultancy, expertise, repairs and maintenance etc. In sale of such services revenues are recognized after completion of the services and amount of consideration payable is decided. Payment of consideration shall not be taken as point of consideration, because one can able to decide the exact consideration of the service only after its performance.

(ii) Revenue recognition in construction works

Construction of irrigation dams, erection high-tension electricity lines, construction of multi storied buildings, overbridges, flyovers etc also come under service activities. For their completion several years of time may be required. In all these services definite

understanding will be there between contractor and contracted about the specification of the works to be performed, contract price and terms payment etc.

(iii) Completed contract method

Under completed contract method revenue is recognized after performance of the agreed work and final approval of the project by the customer and the rights in such project are transferred to him.

(iv) Revenue recognition in installment credit sales

In installment credit sales, the rights in goods are transferred on a particular date where as cash collection takes place in many years. Many a time outstanding dues from customers may become bad debts. Under point of sale method, it requires to recognize total sale as revenue at the time of transferring the rights in goods to customers and provision has to be for doubtful debts as suppliers are uncertain about collection of installments.

(v) Revenue Recognition using production method

In some cases when sale of output is assured due to forward contract, government assurance or any such thing the it is being practiced to recognize revenue at the completion of out put. This fact was also was recognized by ICAI and stated in its As 9 as follows;

"At certain stages in specific industries, such as when agricultural crops were harvested or mineral ores have been extracted, performance may be substantially prior to the execution of the transaction generating revenue. In such cases where sale assured under forward contract or a government guarantee or where market exists and there is a negligible risk of failure to sell, the goods involved are often valued at net realizable value. Such amounts while not revenue, are sometimes recognized in the statement of profit and loss and appropriately described.

(vi) Revenue Recognition when a firm receives interest, royalties and dividends

Some firms may allow others to use its rights and resources and receive return in the form of interest on loans and advances, royalty on assets allowed to use such as patents trademarks copy rights, mines etc, and dividends on investments made.

Q16. Explain the procedure for measurement of revenues.

Ans :

Measurement of Recognized Revenues

- (a) Measurement of revenue recognized, needs the following adjustments to the agreed cash price of the goods :

(i) Discounts

Discounts may be of two types viz trade discounts and cash discounts. Both are given for promoting and increasing sales. Trade discount is given at the time of sale, which is to be deducted from the invoice and after such deduction only the remaining is recognized as value of revenue. Cash discounts are given as an incentive for prompt payment. If cash is paid on the spot after sale as an incentive for prompt payment, the value of revenue is equivalent to value of goods sold at agreed price less agreed discount. If cash is paid with in stipulated period and availed the facility of cash discount, the value of revenue is equivalent to the gross sales value. (quantity sold multiplied by agreed price before deducting cash discount). The cash discount provided at the time of payment at a latter agreed date will be deducted as expenditure from the profit and loss account.

(ii) Sales Returns and allowances

After the sale, customers may return the goods for various reasons such as inferior quality, damaged stock etc. In such cases the value of revenue recognized should be equivalent to total sales less value of goods returned and allowances. However care must be taken that the goods returned are related to the sales made during the period so that the matching principle may be satisfied.

(iii) Sales tax

Sales tax is an indirect tax which the seller collects as a percentage of sales and remits to the government. There is no uniformity in accounting for sales tax. In most of the case the value of sale is recognized net of sales tax. However some companies prefer to present sales on gross basis and sales tax paid is considered as expense.

3.4.2 Measurement and Reporting of Expenses**Q17. Define expenses and their factors.**

Ans :

(Dec.-20, Imp.)

Meaning

- Expenses are known as expired costs. They are the resources used or given up or sacrificed for earning revenues and expressed in monetary amounts. A manufacturing firm uses material, labor, other direct services for producing a product.
- In addition it also uses indirect services such as office and administration, selling and distribution for pooling up of resources and also to sell the goods produced. If all these various resources given up or sacrificed to produce goods and to get them sold in the market for getting revenues are expressed in monetary values , they are known as expenses.
- Expenses may be incurred in cash or on credit basis. for eg : Material, Labour, Services such as administrative selling & distribution etc may be acquired by giving up cash it is ie.
- On cash basis or on credit basis i.e accepting to pay for such resources after some time.
- Thus, when such resources are acquired either on cash basis or on credit basis, expressed in monetary value and used in the process of out put are known as expenses.
- Thus, expenses can be defined as out flow of cash at the time of incurrence or agreed to pay after some time for the resources used in the process of producing output and sale of such out put for getting revenues resulting

into either decrease in assets or increase in liabilities.

- i) Expenses are resources used up in the process of getting revenues. This include material, labor, assets consumed in the process of out put (depreciation etc.), services used in administration ,office, selling and distribution.
- ii) They are expressed in terms of monetary values.
- iii) They result into either increase in liabilities or decrease in assets.
- iv) At the time of acquisition, normally the resources are known as assets. When they are used in the process of generating, the monetary values of assets used are known as expenses. Thus expenses are expired costs.
- v) The expenses include costs directly associated with the revenues of the period, costs associated with the period on some basis and costs that cannot be associated with any other period.

Q18. State the different classes of expenses.

Ans :

The expenses have to be recognized at the time of recording the activity in the books of accounts after the activity or sometimes before the activity. The following principles may be useful in recognition of revenues:

(i) On the basis of matching process

Income is known as excess of revenues over expired related costs of a specified period. Hence all the costs incurred for producing revenues during a specified period should be taken as expenses.

(ii) On the basis of systematic allocation

When direct matching between revenues and costs of a period is not possible for any expenses, they have to allocated systematically. For example if machine used in the process of producing output it is not possible to trace out the cost machine used in revenue generation following direct matching principle.

(iii) On the basis of recognizing immediately

Some costs become expenses of the period at the time of incurrence only. They include salaries, wages, selling costs, costs on law suits, worthless assets like patents etc.,.

3.4.3 Measurement and Reporting of Gains and Losses

Q19. Discuss briefly about Measurement and Reporting of Gains and Losses.

Ans :

(Dec.-20)

Meaning

Gains are increases in equity or net assets from incidental or peripheral transactions, all other transactions and events and circumstances affecting an entity during a specified period except those that result from revenues or investments by the owners. Losses are decrease in net assets or equity from incidental or peripheral transactions ,all other transactions and events and circumstances affecting an entity during a specified period except those that result from expenses or distribution to owners. Thus, the gains and losses are not directly concerned with the main or prime activity of entities.

Features :

The following are the features of gains & losses :

- i) Gains and losses takes place from incidental and peripheral activities and not from revenue generating activities.
- ii) Gains and losses may be classified source wise:
 - a) Some gains and losses takes place on account of comparing proceed and sacrifices. For example when investments are sold if proceeds are more than the amount invested on it (sacrifices) it is known as gain and if proceeds are lesser than the sacrifices made, the difference is known as loss
 - b) Some gains and losses takes place from non reciprocal transactions between the enterprise and outsiders other than owners.

- c) Some gains and losses takes place from changes in the values of assets that were in possession of the firm (holding of assets). It takes place when such assets are revalued as per the standards.
- d) Some other gains and losses result from environmental factors.

Examples are destruction of property due to earth quakes, fire accidents, obsolescence due to technological changes.

- iii) They may be further classified as operating and non operating depending on their relation to the earning activities of the enterprise. Based on accounting standard if inventory values are written off to realizable value the loss taken place is considered as operating loss as, it is relating to revenue generating activity of the concern.

Recognition Of Gains And Losses

- Gains and losses have to be recognized following the principle of Realization. Normally, they are recognized only when sale (or) exchange takes place.
- They may be also recognized based on the changes in the market values.
- This principle is followed in the case of current assets particularly inventory. In the case of fixed assets, unless it is confirmed that the market changes are permanent or for a fairly longer period the gains are not to be recognized.
- Losses cannot be matched with revenues. Hence they have to be recognized based on period of incurrence like period expenses.
- The timing of loss resulted event is the base for recognizing the losses. If fire accident takes place on a particular date it has to be considered as loss of that accounting period only. Loss arising during a particular period should not be carried forward future periods. If happening of losses is certain and their value can be estimated with more accuracy, then they have to be recognized.

3.5 ANALYSIS OF CHANGES IN GROSS PROFIT

Q20. Explain briefly about Gross Profit Analysis.

Ans :

Gross profit is the difference between net sales and cost of goods sold and is computed as a part of income statement or profit and loss account of a business. It is computed for a specific period by deducting the cost of goods sold (COGS) from net sales revenue realized during that period. In equation form, it can be presented as follows:

$$\text{Gross profit} = \text{Nets sales revenue} - \text{Cost of goods sold}$$

For example, if the annual net sales revenue of a company is 1,000,000 and its cost of goods sold is 600,000, the gross profit would be 400,000 (= 1000,000 – 600,000). The gross profit figure is very important for any business because it is used to cover all operating expenses and provide for operating profit. The higher the gross profit, the better it is.

A company (or) firm may experience a significant positive or negative change in gross profit. In order to maintain profitability and avoid operating losses, any unexpected or significant change in gross profit for a period must be timely investigated.

Gross profit analysis is the procedure of finding the causes of changes in gross profit percentage from budgeted to actual or from one period to another period. The major purpose of gross profit analysis is to reveal the unexpected changes in gross profit and their causes so that they can be brought to the

attention of management in a timely manner. A change in gross profit usually occurs due to one or more of the following reasons:

1. Changes in total revenue for the period due to changes in selling prices of goods and services.
2. Changes in total revenue for the period due to changes in quantity of goods and services sold during the period.
3. Changes in proportion in which a multi-product company sells its products (usually termed as shift in sales mix or product mix).
4. Changes in basic manufacturing cost elements i.e., direct materials, direct labor and manufacturing overhead.

Procedure

- The procedure of determining the gross profit variation is identical to the computation of variances in a standard costing system.
- However, the gross profit analysis is possible without the use of budgets or standard costs.
- In that case, the prices and costs data of any year may be used as the basis for the computations of variances involved in gross profit analysis.
- The usual approach is to use the prices and costs of any previous year as the basis to find the variations.
- However, to achieve a greater degree of accuracy and better results, it is always recommended to employ standard costs and budgeted figures to carry out the analysis.

Variances involved in gross profit analysis

For performing a gross profit analysis, the standard sales and cost figures (or a previous year's sales and cost figures) are used as the basis. The analysis is performed in three steps. In first step, the sales price variance and the sales volume variance are computed. In second step, the cost price variance and cost volume variance are computed. In third step, the sales volume variance and cost volume variance are further analyzed by computing sales mix variance and a final sales volume variance.

Q21. Explain the usefulness of Gross profit Analysis.

Ans :

- The gross profit figure is very important for any business and must be closely watched. The gross profit analysis uncovers inefficiencies in company's performance during the period and enables management to take remedial actions to correct the situation.
- The manufacturing and marketing departments of business are mostly responsible to meet or exceed the planned gross profit.
- In case the business fails to achieve the desired gross profit, the manufacturing department must explain the changes in manufacturing costs and marketing department must explain the changes in prices, decrease in number of units of each product sold and/or shift in sales mix during the period.
- This way, the gross profit analysis brings together the two major functional areas of the business and focuses on the need of more study by these two departments.

PROBLEMS

11. The Steward Company manufactures to products - product A and product B. The budgeted and actual data for the last month is provided below:

Sales Units		Cost of goods sold		Gross profit		Per unit	Amount
		Unit price	Amount	Unit cost	Amount		
Budgeted:							
Product A	8,000	20.00	160,000	16.00	1,28,000	4 00	32,000
Product B	4,200	14.00	58,800	12.00	50,400	2 00	8,400
Total budgeted	12,200	17.9344 *	218.000	14.6229	178,400	3.3115	40,400
Actual:							
Product A	7,500	21.00	157,500	16.50	123,750	4 50	33,750
Product B	4,500	13.50	60,750	11.50	51,750	2.00	9,000
Total actual	12,000	18.1875	218.250	14.625	175.500	3.5625	42,750

Required: Using the data of Steward Company given above, compute:

1. Sales price variance and sales volume variance
2. Cost price variance and cost volume variance
3. Sales mix variance and final sales volume variance

Sol :

Particulars	Amount	Amount
1. Sales price variance and sales volume variance		
Actual sales		218.250
Actual sales at budgeted prices:		
Product A	1,50,000	
Product B	63,000	2,13,000
Favorable sales price variance		5,250
Actual sales at budgeted prices		2,13,000
Budgeted sales		2,18,000
Unfavorable sales volume variance		5,000

2. Cost price variance and cost volume variance		
Cost of goods sold—actual		175,500
Budgeted cost of actual units sold:		
Product A: 7500 × 16.00	120,000	
Product B: 4,500 × 12.00	54,000	174,000
		<hr/>
Unfavorable cost price variance		1,500
Budgeted cost of actual units sold		174,000
Budgeted cost of budgeted units sold		178,400
		<hr/>
Favorable cost volume variance		4,400
		<hr/>
Favorable sales price variance		5,250
Recapitalization :		
Less unfavorable volume variance (net)		
consisting of :		
Unfavorable sales volume variance	5,800	
Less favorable cost volume variance	4,400	1,400
		<hr/>
Less unfavorable cost price variance		3,850
		1,500
Increase in gross profit		2,350
3. Sales mix variance and final sales volume variance		
Actual sales at budgeted price		213,000
Budgeted cost of actual units sold		174,000
		<hr/>
Difference		39,000
Budgeted gross profit of actual units sold		
(12,000 × 3.3115)		39,738
		<hr/>
Unfavorable sales mix variance		738
		<hr/>
Budgeted gross profit of actual units sold		39,738
Budgeted sales		
Budgeted cost of budgeted units sold	2,18,800	
	1,78,400	
		<hr/>
Budgeted gross profit		40,400
		<hr/>
Unfavorable sales volume variance		662

Particulars	Gains	Losses
Gain due to increased sales price	5,250	
Loss due to increased cost		1,500
Loss due to shift in sales mix		738
Loss due to decrease in units sold		662
Total	5,250	2,900
Less : Loss	2,900	
Net increase in gross profit	2,350	

12. From the following information, prepare a statement of changes in gross profit for the years 2014 and 2015.

Particulars	2014 (Rs.)	2015 (Rs.)
Sales	5,00,000	5,50,000
Cost of sales	3,00,000	3,25,000
Gross profit	2,00,000	2,25,000
No. of units sold	20,000	25,000

Sol :

(Imp.)

Particulars	2014	2015	Difference
Sales	5,00,000	5,50,000	50,000
– (CGS)	3,00,000	3,25,000	25,000
Gross profit	2,00,000	2,25,000	25,000
No. of units sold	20,000	25,000	5,000
S.P.	25	22	– 3
C.P.	15	13	– 2

Therefore,

Selling Price

$$\begin{aligned}\text{Quantity factor} &= \text{Change in quantity} \times \text{Previous year selling price} \\ &= 5000 \times 25 = 125000\end{aligned}$$

$$\begin{aligned}\text{S.P.} &= \text{Change in S.P} \times \text{No. of units sold} \\ &= - 3 \times 25,000\end{aligned}$$

$$= - 75,000$$

Quantity factor + S.P. factor

$$= 1,25,000 + (- 75,000)$$

$$= 50,000$$

Cost Price

Quantity factor = Change in Qty \times Previous year cost price

$$= 5,000 \times 15 = 75,000$$

C.P = Change in CP \times No. of units produced

$$= - 2 \times 25,000 = 50,000$$

Quantity factory + C.P. factor

$$75,000 + (- 50,000) = - 25,000$$

Gross profit = S.P factor + C.P factor

$$= 50,000 + (- 25,000)$$

$$= 25000$$

Rahul Publications

Short Question and Answers

1. Define Inflation Accounting

Ans :

- Inflation may be defined as a period of general increase in the prices of factors of production whereas deflation means fall in the general price level.
- These changes in the price levels lead to inaccurate presentation of financial statements which otherwise are prepared to present a true and fair view of the company's financial health.
- This is so because the financial statements are prepared on historical costs on the assumption that the unit of account, i.e. rupees in case of India, has static value.
- But the assumption is not valid because the value of the unit of account, i.e., the purchasing power of the rupee, has been changing ever since the beginning of this century. After the First World War, during 1918-23, there was a period of higher inflation in Germany. But it was only after the Second World War that the prices started rising continuously and it made a nonsense of presenting the financial statements on historical cost basis.

2. Advantages of Inflation Accounting.

Ans :

1. It enables company to present more realistic view of its profitability because current revenues are matched with current costs.
2. Depreciation charged on current values of assets in inflation accounting further enables a firm to show accounting profits more nearer to economic profits and replacement of these assets when required.
3. It enables a company to maintain its real capital by avoiding payment of dividends and taxes out of its capital due to inflated profits in historical accounting.

3. Define Financial Statements.

Ans :

Meaning

The term 'financial statement' refers to two statements, i.e. the balance sheet or statement of financial position that reflects assets, liabilities and capital on a particular date and profit and loss account or income statement that shows the operating results achieved during a particular period. The primary function of accounting is the preparation of financial statements in such a manner so as to give a true and fair view of the financial and operating position of the company.

4. Current Value Accounting Technique.

Ans :

In the Current Value Accounting Technique of price level accounting all assets and liabilities are shown in the balance sheet at their current values. The value of the net assets at the beginning and at the end of the accounting period is ascertained and the difference in the value in the beginning and the end is termed as profit or loss, as the case may be. In this method also, like replacement cost accounting technique, it is very difficult to determine relevant current values and there is an element of subjectivity in this technique.

5. Accounting concept of Income

Ans:

Meaning

Accounting income is the excess of realized revenues over related expired costs of an accounting period.

Accounting income is the difference between the realized revenues arising from the transactions of the period and the corresponding historical costs. It is the increase in the resources of a business or other entity which results from the operations of the enterprise. According to this concept the transactions of a period entered into with third parties in its operational activities have to be

measured to identify realized revenues and related historical costs of the period. In the process of doing so, it follows Generally Accepted Accounting Principles such as the revenue principle, historical cost principle, matching principle and accounting period concept.

6. Capital Maintenance Concept Of Income.

Ans:

- Maintaining the capital of business enterprises intact in financial and physical form is known as capital maintenance concept of income measurement and capital maintenance are interrelated in balance sheet approach and transactions approach of measuring the income.
- In Balance sheet approach the difference between capital at the beginning and end of the defined period is considered as income after making adjustments for additional investment made during the year.
- In transactions approach, income is measured on the basis of the transactions of revenue inflows and transactions of revenue out flows. It is like measuring the increase in the level of water tank, after maintaining the existing level of water.

7. Define Comprehensive Income. State its features merits and demerits.

Ans :

Meaning

Comprehensive income concept is also known as all inclusive concept of income. It measures the changes in equity or net assets during the defined period other than those resulting from investments by owners and distribution to owners. It is equivalent to revenue receipts plus gains minus revenue expenditure and losses.

- **According to Solomon** "A truly comprehensive concept of income for a period must include all changes in owners' equity from non owner resources that are associated with the period and that can be measured reliably, regardless of the restrictions on recognition imposed by our present GAAP."

8. Define expenses

Ans :

Meaning

- Expenses are known as expired costs. They are the resources used or given up or sacrificed for earning revenues and expressed in monetary amounts. A manufacturing firm uses material, labor, other direct services for producing a product.
- In addition it also uses indirect services such as office and administration, selling and distribution for pooling up of resources and also to sell the goods produced. If all these various resources given up or sacrificed to produce goods and to get them sold in the market for getting revenues are expressed in monetary values, they are known as expenses.
- Expenses may be incurred in cash or on credit basis. for eg : Material, Labour, Services such as administrative selling & distribution etc may be acquired by giving up cash it is i.e.
- On cash basis or on credit basis i.e accepting to pay for such resources after some time.
- Thus, when such resources are acquired either on cash basis or on credit basis, expressed in monetary value and used in the process of out put are known as expenses.

9. Different classes of expenses.*Ans :*

The following principles may be useful in recognition of revenues:

(i) On the basis of matching process

Income is known as excess of revenues over expired related costs of a specified period. Hence all the costs incurred for producing revenues during a specified period should be taken as expenses.

(ii) On the basis of systematic allocation

When direct matching between revenues and costs of a period is not possible for any expenses, they have to be allocated systematically. For example, if a machine is used in the process of producing output, it is not possible to trace out the cost of the machine used in revenue generation following the direct matching principle.

(iii) On the basis of recognizing immediately

Some costs become expenses of the period at the time of incurrence only. They include salaries, wages, selling costs, costs on law suits, worthless assets like patents etc.,.

10. Gross Profit Analysis.*Ans :*

Gross profit is the difference between net sales and cost of goods sold and is computed as a part of the income statement or profit and loss account of a business. It is computed for a specific period by deducting the cost of goods sold (COGS) from net sales revenue realized during that period. In equation form, it can be presented as follows:

$$\text{Gross profit} = \text{Net sales revenue} - \text{Cost of goods sold}$$

Exercises Problems

1. Mr. X purchased a machine in 2000 for ₹ 1,00,000 when the general price index was 180. He sold this machine in 2007 for ₹ 1,65,000 when the general price index was 270. Calculate the profit or loss on the sale of the machine, keeping aside the price level changes.

[Ans : Profit ₹ 15,000]

2. A company has the following transactions at the give dates and price indices for the first quarter of 2008 :

P Particulars	₹	Price Index
Opening Balance (January, 1)	6,000	100
Cash Sales (February, 1)	17,500	105
Payment to Creditors (March, 1)	12,000	108
Cash Purchases (March, 1)	2,000	108
Payment of Expenses (March 31)	2,000	110
Closing Balance (March 31)	7,500	110
Calculate monetary gain or loss		

[Ans : Loss of ₹ 1,174]

3. The information given below relates to monetary accounts of Jayanath Co. Ltd. Compute the general price level gain or loss.

Particulars	As on, 1.1.07	As on, 31.12.07
Monetary Assets	80,000	1,00,000
Monetary Liabilities	1,00,000	1,00,000
Retail Price Index	200	300
Average Index for the year		240

[Ans : Gain ₹ 5,000]

4. H Company held shares in X company which it bought for ₹ 10,000 in 2003 when an index of the general price level of prices stood at ₹ 110. At the end of 2006, the market price of the shares was ₹ 8,000 and the index 132. At the end of 2007, the market price of the shares was ₹ 9,000 and the index 145.2.

- (a) Calculate the CPP value of shares at the end of 2006 and 2007.
 (b) Under CPP accounting, what gain or loss would be shown in respect of the shares?
 (c) What in fact was the gain or loss in purchasing power in respect of the shares during 2007?

**[Ans : (a) 2006 – ₹ 12,000; 2007 – ₹ 13,200; (b) 2006 – Loss ₹ 2,000; 2007 – Loss ₹ 3,200
 (c) Actual Loss, 2006 ₹ 4,000 and 2007 ₹ 4,200]**

Choose the Correct Answer

1. What is inflation accounting? [b]
 - (a) Accounting for the rise and fall of consumer prices
 - (b) Accounting for the effects of inflation on financial statements
 - (c) Accounting for the effects of interest rates on financial statements
 - (d) Accounting for the effects of taxes on financial statements
2. Which of the following is a method of inflation accounting? [c]
 - (a) The accrual basis method
 - (b) The cash basis method
 - (c) The historical cost method
 - (d) The matching principle method
3. Which method of inflation accounting is more commonly used? [b]
 - (a) The historical cost method
 - (b) The current purchasing power method
 - (c) The cash basis method
 - (d) The accrual basis method
4. Which financial statement is most affected by inflation accounting? [a]
 - (a) The balance sheet
 - (b) The income statement
 - (c) The statement of cash flows
 - (d) The statement of retained earnings
5. How does inflation affect financial statements? [b]
 - (a) It increases the value of assets and liabilities
 - (b) It decreases the value of assets and liabilities
 - (c) It has no effect on the value of assets and liabilities
 - (d) It increases the value of assets and decreases the value of liabilities
6. What is the purpose of inflation accounting? [a]
 - (a) To provide a more accurate picture of a company's financial position and performance
 - (b) To reduce a company's tax liability
 - (c) To increase a company's profits
 - (d) To decrease a company's debt
7. Which industry is most affected by inflation accounting? [d]
 - (a) The retail industry
 - (b) The healthcare industry
 - (c) The technology industry
 - (d) The oil and gas industry

8. Which financial statement shows the effects of inflation accounting? [b]
- (a) The balance sheet (b) The income statement
(c) The statement of cash flows (d) The statement of retained earnings
9. Which of the following is a limitation of using inflation accounting? [a]
- (a) It can be difficult to determine the appropriate price index to use.
(b) It can be time-consuming to adjust financial statements for inflation.
(c) It can be confusing for investors who are not familiar with inflation accounting.
(d) It can lead to higher tax liabilities for companies.
10. Which of the following is an example of a price index used in inflation accounting? [a]
- (a) The Consumer Price Index (CPI) (b) The Dow Jones Industrial Average
(c) The S&P 500 Index (d) The Nasdaq Composite Index

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Fill in the blanks

1. Gross Profit = _____
2. _____ are earned from the sale of goods or services done by a business entity to the others.
3. In construction project revenues are recognized by the _____
4. _____ is incurred when goods or services are consumed or used in the process of obtaining revenue.
5. _____ is increase in net assets other than from revenues or from changes in capital.
6. Financial statements are usually based on _____ concept.
7. Return on capital employed = _____
8. Conversion factor = _____
9. COSA = _____
10. Gearing adjustment = _____

ANSWERS

1. Net Sales revenue - cost of goods sold
2. Revenues
3. Percentage completion method, complete contract method
4. Expenses
5. Gains
6. Actual or historical cost
7. $\frac{\text{Net Profit}}{\text{Capital Employed}} \times 100$
8. $\frac{\text{Current Price Index}}{\text{Previous Price Index at the date of Existing figure}}$
9. Current cost of sales adjustment
10. $\frac{B}{B + S} \times A$

UNIT IV

FINANCIAL MEASURES OF PERFORMANCE:

Introduction – Return On Investment (ROI) – Concept – Uses and Limitations– Economic Value Added (EVA) – Concept – Significance of EVA – Measurement of EVA (Theory only)

Balanced Score Card (BSC) – Concept – Objectives – Perspectives of BSC - Multiple Scorecard measures into a single strategy

4.1 FINANCIAL MEASURES OF PERFORMANCE

4.1.1 Introduction

Q1. Explain briefly about Financial Measures of Performance.

Ans :

Business performance measurement is receiving a lot of attention today due to a variety of reasons. The important ones seem to be as follows:

1. Heightened Competition

Global competition has become a fact of life. In the wake of increased competition, firms are emphasising quality, productivity, cost, innovation, flexibility, and customisation. Improvement initiatives such as total quality management, world class manufacturing, total productivity management, and total cost management are gaining currency. All these tools and techniques rely on performance measurement.

2. Growing Empowerment

Many organizations have realised the benefits of empowering people down the line. Empowerment works well when the top management spells out clearly what it expects from people at various levels. For this purpose, well-defined performance measures are required.

3. Quality Awards

To recognise outstanding performance and motivate companies to excel, a number of national and international awards have been established. Notable among them are the

Balridge Award (US), the European Business Excellence Model (Europe), and the Deming Prize (Japan and Asia).

Each of these awards requires a comprehensive self-assessment by the companies who wish to be considered for these awards. As more and more companies are applying for these awards, the interest in business performance measurement is growing.

4. Expanding Organizational Roles

Professional bodies like the Institute of Chartered Accountants in England and Wales (ICAEW), the Chartered Institute of Management (CIMA), the Institute of Chartered Accountants of India (ICAI), and the Institute of Cost and Works Accountants of India (ICWAI) are prodding their members to participate actively in developing balanced performance measurement systems.

They are arguing that the role of the management accountant is to provide comprehensive information to run the business, and not just to prepare information required for external reporting.

5. Greater External Demands

Organizations today have to satisfy various external demands. One such demand comes from the regulatory authorities. In the wake of deregulation of sectors such as telecommunications, power, airlines, and insurance, regulatory authorities have been set up.

The regulatory authorities demand certain performance standards from the firms

falling under their jurisdiction. This has implications for business performance measurement.

Financial community is another group which is exerting pressure on firms to disclose information about different dimensions of performance and thereby influencing performance measurement. A 1997 survey conducted by the Financial Executives Research Foundation found that "investors, analysts, and other users of financial reports would find value in more extensive disclosure of the company's market and competitive position, management goals and objectives, and business segment data."

6. Power of Information Technology

The power of information technology has had a significant effect on performance measurement. Not only has information technology made it easier to capture and analyse data, but it has also provided new ways of performance monitoring.

Q2. Explain briefly about non - Financial Measures.

Ans :

Performance measurement sometimes relies heavily on financial measures. An excessive emphasis on financial measures in a business is like an obsession with the score card while playing cricket (or any other game).

The score in a game, like financial results in a business, reflects the outcome of past performance. While it is important to know the score it must be recognised that the success in a game or business calls for paying considerable attention to the steps required for competing effectively in the game or the marketplace. Just as a cricket player must focus on batting, bowling, and fielding, a company must concentrate on activities like product development, manufacturing, marketing, and customer service.

Well-conceived performance measures in these areas are essential for monitoring improvements required for maintaining competitive edge.

As financial measures like TSR or EVA are lagging indicators, companies concerned with long-term value creation use a variety of nonfinancial measures which are leading indicators of value. A representative list is given below:

- Customer satisfaction index
- Customer returns
- Market share
- New product introduction
- On-time delivery
- Manufacturing cycle time
- Defects percentage
- Throughput
- Employee productivity index
- Patents obtained

Strengths of Non-financial Measures

Non-financial measures offer the following advantages :

- Non-financial measures are directly traceable to key success factors like customer satisfaction, market leadership, manufacturing excellence, quality and technological competence.
- Non-financial measures are actionable. A major problem about a standard cost system is that it is not often easy to determine the cause and cure of unfavourable variances. In contrast, non-financial measures are actionable at the plant level.
- Non-financial measures may predict better the future cash flows of the firm. For example, the long-term performance of a firm may be substantially influenced by its ability to improve product quality.

Problems with Non-financial Measures

While non-financial measures are useful, there are certain problems associated with them :

- It is difficult to assign rupee value to improvements in non-financial measures.

- Non-financial measures may conflict with each other. In the absence of a theoretical framework, it is difficult to make proper trade offs.
- Managers may resort to gaming. There are opportunities for managers to optimise their performance at the expense of others.

Q3. Explain various ways to measure financial performance.

Ans : (Imp.)

Following are the ways to measure financial performance :

1. Profit

Profit describes how much wealth your company created (profit) or consumed (loss) over a certain period of time. Other words for profit are earnings, net income, and the bottom line. A full measurement of profit must include owner's compensation. More profit is good.

2. Cash flow

The difference between the amount of cash you end up with at the end of a certain period of time versus how much you started with. More positive cash flow is good.

3. Balance sheet strength

Generally speaking, your company's assets relative to its liabilities at a specific point in time. More assets (what the company owns) and fewer liabilities (what the company owes) results in a stronger balance sheet. Except when you're intentionally running a highly leveraged company, a stronger balance sheet is good.

4. Risk

Business is risky. You might not get paid by a customer, you might default on a bank loan, your company might get sued, etc. Risk is sometimes defined as probability times consequence, the likelihood of something occurring multiplied by the damage it would

cause if it does occur. To earn the same dollar of profit with less risk is good. Or, to earn more profit with the same amount of risk is good. Hence, the risk/reward relationship.

Risk is often not priced correctly, as we learned all too well through the collapse of gigantic U.S. financial institutions during The Great Recession.

5. Valuation

Businesses create wealth for their owners by having a resale value. When it comes time for you to sell your business (whole or in part), a higher business valuation is better.

6. Business owner's net worth

Financially, the purpose of a business is to create wealth for its owners. Does the owner(s) have substantial investments in retirement accounts, real estate, and other holdings? Has the owner's net worth increased a result of money she/he has taken out of the business? Look to the owner's personal balance sheet for a full understanding of a small business' financial performance.

4.2 RETURN ON INVESTMENT (ROI)

4.2. 1 Concept

Q4. What is the ROI ?

(OR)

Explain the concept of ROI.

Ans : (May-17, May-16, Imp.)

Meaning

"Return on Investment (ROI) is a performance measure used to evaluate the efficiency of an investment or compare the efficiency of a number of different investments. ROI tries to directly measure the amount of return on a particular investment, relative to the investment's cost, of calculate ROI, the benefit (or return) of an investment is divided by the cost of the investment. The result is expressed as a percentage or a ratio.

$$\text{Return on investment} = \text{Net income} / \text{Investment}$$

where, Net income = gross profit - expenses

Investment = stock + market outstanding + claims

(or)

$$\text{Return on investment} = (\text{gain from investment} - \text{cost of investment}) / \text{cost of investment}$$

(or)

$$\text{Return on investment} = (\text{revenue} - \text{cost of goods sold}) / \text{cost of goods sold}$$

4.2.2 Uses

Q5. Explain the uses of Return on investment..

Ans :

(Dec.-20)

Uses of ROI

- ROI can be computed on a company-wide basis by dividing net income by owners' equity. This measure indicates how well the overall company is utilizing its equity investment.
- ROI provides a good indicator of profitability that can be compared against competitors (or) an industry average.
- Experts suggest that companies usually need at least 10-14 percent ROI in order to fund future growth. If this ratio is too low, it can indicate poor management performance (or) a highly conservative business approach.
- On the other hand, a high ROI can either mean that management is doing a good job, or that the firm is undercapitalized.
- ROI can also be computed for various divisions, product lines, or profit centers within a small business. In this way, it gives management a basis for comparing the performance of different areas.
- One large division may generate much higher profits than another, smaller division, for example, which might encourage management to consider investing further in that division.
- An ROI analysis might reveal that a great deal more capital investment was required by the large division than by the smaller one. The smaller division may have generated a lower dollar amount of profit, but a greater percentage of profit on every dollar of investment.
- ROI can also be used to evaluate a proposed investment in new equipment by dividing the increase in profit attributable to the new equipment by the increase in invested capital needed to acquire it.
- **For example**, a small business may be able to save 5,000 in operating expenses (and thus raise profit by the same amount) by spending 25,000 on a piece of new equipment. This yields an ROI of 5,000 / 25,000 (or) 20 percent. If this figure is higher than the company's cost of capital (the interest paid on debt and the dividends paid to investors) prior to the investment, and no better investment opportunities exist for those funds, it may make sense to purchase the equipment.
- In addition to the various uses ROI holds for a small business managers, it can also be a useful measure for investors.
- **For example**, a stockholder might calculate the return of investing in a company by the following formula: dividends stock price change / stock price paid. This calculation of ROI measures the gain (or loss) achieved by placing an investment over a period of time.

4.2.3 Limitations

Q6. Explain the advantages and disadvantages of ROI.

Ans. : (Dec.-20, Imp.)

Advantages**1. Better Measure of Profitability**

It relates net income to investments made in a division giving a better measure of divisional profitability. All divisional managers know that their performance will be judged in terms of how they have utilized assets to earn profit, this will encourage them to make optimum use of assets. Also, it ensures that assets are acquired only when they are sure to give returns in consonance with the organization's policy.

Thus, the major focus of ROI is on the required level of investment. For a given business unit at a given point of time, there is an optimum level of investment in each asset that helps maximise earnings. A cost-benefit analysis of this kind helps managers find out the rate of return that can be expected from different investment proposals.

This allows them to choose an investment that will enhance both divisional and organizational profit performance as well as enable effective utilization of existing investments.

2. Achieving Goal Congruence

ROI ensures goal congruence between the different divisions and the firm. Any increase in divisional ROI will bring improvement in overall ROI of the entire organization.

3. Comparative Analysis

ROI helps in making comparison between different business units in terms of profitability and asset utilization. It may be used for inter firm comparisons, provided that the firms whose results are being compared are of comparable size and of the same industry. ROI a good measure because it can be easily compared with the related cost of capital to decide the selection of investment opportunities.

4. Performance of Investment Division

ROI is significant in measuring the performance of investment division which focuses on earning maximum profit and making appropriate decisions regarding acquisition and disposal of capital assets. Performance of investment centre manager can also be assessed advantageously with ROI.

5. ROI as Indicator of Other Performance Ingredients

ROI is considered the single most important measure of performance of an investment division and it includes other performance aspects of a business unit. A better ROI means that an investment centre has satisfactory results in other fields of performance such as cost management, effective asset utilization, selling price strategy, marketing and promotional strategy etc.

6. Matching with Accounting Measurements

ROI is based on financial accounting measurements accepted in traditional accounting. It does not require a new accounting measurement to generate information for calculating ROI. All the numbers required for calculating ROI are easily available in financial statements prepared in conventional accounting system.

Some adjustments in existing accounting numbers may be necessary to compute ROI, but this does not pose any problem in calculating ROI

Disadvantages

1. Satisfactory definition of profit and investment are difficult to find. Profit has many concepts such as profit before interest and tax, profit after interest and tax, controllable profit, profit after deducting all allocated fixed costs.

Similarly, the term investment may have many connotations such as gross book value, net book value, historical cost of assets, current cost of assets, assets including or excluding intangible assets.

2. While comparing ROI of different companies, it is necessary that the companies use similar accounting policies and methods in respect of valuation of stocks, valuation of fixed assets, apportionment of overheads, treatment of research and development expenditure, etc.
3. ROI may influence a divisional manager to select only investments with high rates of return (i.e., rates which are in line or above his target ROI). Other investments that would reduce the division's ROI but could increase the value of the business may be rejected by the divisional manager. It is likely that another division may invest the available funds in a project that might improve its existing ROI (which may be lower than a division's ROI which has rejected the investment) but which will not contribute as much to the enterprise as a whole.

These types of decisions are sub-optimal and can distort an enterprise's overall allocation of resources and can motivate a manager to make under investing in order to preserve its existing ROI. A good or satisfactory return is defined as an ROI in excess of some minimum desired rate of return, usually based on the firm's cost of capital.

4. ROI provides focus on short term results and profitability; long term profitability focus is ignored. ROI considers current period's revenue and cost and do not pay attention to those expenditures and investments that will increase long term profitability of a business unit. Based on ROI, the managers tend to avoid the new investments and expenditure due to returns being uncertain or return may not be realized for sometime.
5. Investment Centre managers can influence (manipulate) ROI by changing accounting policies, determination of investment size or asset, treatment of certain items as revenue or capital. Sometimes, managers may reduce the investment base by scrapping old machines that still earn a positive return but less than others.

4.3 ECONOMIC VALUE ADDED (EVA)

4.3.1 Concept

Q7. What is Economic Value Added (EVA)?

Ans :

Economic value added is a measure of performance evaluation that was originally employed by Stem Stewart & Co. It is very popular measure today which is used to measure the surplus value created by an investment or a portfolio of investments. EVA has been considered as a better measure of divisional performance compared to the Return on Assets ROA or ROI. It is also being used to determine whether and investment positively contributes to the shareholders wealth. The economic value added of an investment is simply equal to the after tax operating profits generated by the investment minus the cost of funds used to finance the investment.

EVA can be calculated as below :

$$\text{EVA} = (\text{Net Operating profit after tax} - \text{Cost of capital} \times \text{Capital invested})$$

or,

$$\text{EVA} = \text{Return on investment} - \text{Cost of capital} \times \text{Capital employed}$$

According to this approach, an investment can be accepted only if the surplus (EVA) is positive. It is only the positive EVA that will add value and enhance the shareholders wealth. However, to calculate the economic value added we need to estimate the net operating profit after tax and cost of funds invested.

4.3.2 Significance of EVA

Q8. Explain the need and Significance of EVA.

(OR)

State the Significance of EVA

(OR)

Discuss the Significance of EVA

(OR)

Explain the Significance of EVA

Ans : (May-17, May-16, May-15,
May-14, Imp.)

Importance

The importance of EVA can be realised in the following fields :

1. It helps the Company for Better Financial Management

A financial management system consists of all the financial policies, procedures and measures that guide a company's operations and its strategies. It addresses the following questions as: What are our overall corporate financial goals and how are they to be communicated both internally as well as to the external investing community?

How are business plans to be evaluated? How are resources to be allocated? How is the ongoing operation performance to be evaluated and what is our corporate reward system for the employees?

Companies generally use different measures for answering each of these questions for example for evaluating an investment proposal a company may use one of the discounted cash flow methods like net present value or internal rate of return, while for setting goals and communicating they may use measures such as profit margins, ROE, earnings growth etc. and the management may be compensated based on achieving some target profit figures.

2. Its Analysis Helps in Capital Budgeting Decisions

The EVA concept is very closely related to the NPV concept. The present value of an investment's annual EVA stream is the same as its NPV. However while NPV analysis is a one-time measure of the value added by an investment, EVA is a continuous annual value-added measure.

3. It Helps for Measuring Performance and Management Compensation

Firms compete with each other for getting the scarce capital from the shareholders. To be able to get the capital firm must perform better than those with whom it competes for capital and once it gets the capital it must earn a return on it that is more than that earned by similar risky seekers of capital. If it can achieve this objective, it has created value for the shareholder and its stock price will command a higher premium in the market.

This is a well-known concept and EVA is one measure that takes this concept into account.

Q9 Explain the limitation of EVA.

Ans :

Limitations

- (i) It ignores inflation. So it is biased against new assets. Whenever a new investment is made capital charge is on the full cost initially, so EVA figure is low. But as the depreciation is written off the capital charge decreases and hence EVA goes up. This problem existed with measures like ROI also.
- (ii) It is biased. EVA is measured in rupee terms, so it is biased in favour of large, low return businesses. Large businesses that have returns only slightly above the cost of capital can have higher EVA than smaller businesses that earn returns much higher than the costs. This makes EVA a poor metric for comparing businesses.
- (iii) In the short term EVA can be improved by reducing assets faster than the earnings. If this is pursued for long, it can lead to problems

in the longer run when new improvements to the asset base are made. This new investment can have a high negative effect on EVA because the asset base would have been reduced to a large extent and improvements will involve huge investments.

Q10. What are the advantages of EVA?

Ans :

Following are the advantages of EVA :

- It acts as performance measure which is linked to share holder value creation in all directions.
- It is useful in providing business knowledge to everyone.
- It is an efficient method for communicating to investors.
- It transforms the accounting information into economic quality which can be easily understood by non financial managers.
- It is useful in evaluating Net Present Value (NPV) of projects in capital budgeting which is contradictory to IRR.
- Instead of writing the value of firm in terms of discounted cash flow, it can be expressed in terms of EVA of projects.

4.3.3 Measurement of EVA

Q11. Explain the Measurement of EVA.

(OR)

Discuss the Measurement of EVA.

(OR)

Explain the EVA concept in measuring financial performance of a company.

(OR)

Discuss the various techniques of EVA.

Ans : (May-18, May-17, May-16, May-15, May-12, Imp.)

1. Calculation of NOPAT (Net Operating Profit After Tax)

NOPAT is measured from the Income Statement by adding back interest payments

and subtracting and adding non-operating income and expenses, respectively, to the Net Profit figure and after making certain other adjustments which turn accounting profits into economic profits.

Some of the adjustments and the reasons follows :

- (i) Accounting principles allows companies to write-off R & D expenses. But these expenses may not be truly revenue in nature. For successful R & D projects EVA calculations writes back the R & D expenses and amortised them over a period during which benefits of the successful R & D projects will be reaped.

The NOPAT figure calculated from P & L account is adjusted by adding back the R & D expenses and capitalising them in the balance sheet. Only those R & D expenses and that have no future value are charged to the income statement.

- (ii) During periods of rising prices companies save taxes by adopting the LIFO system of inventory valuation. Under the LIFO method, costs of the recently acquired raw materials are charged to the production while the costs of earlier purchases.

NOPAT and Equity are adjusted for this change from LIFO to FIFO by adding the difference between the LIFO and FIFO inventory (or LIFO and FIFO cost of goods sold) to the equity and NOPAT. This way the tax benefits of LIFO are retained.

- (iii) Deferred taxes arise due to the difference in timing of recognition of revenues and expenses for financial reporting versus reporting for tax purposes. It is basically the accumulation of the difference between accounting provision of taxes and the tax amount actually paid under the head 'Reserve for Deferred Taxes'.

NOPAT is adjusted for the tax actually paid instead of the accounting provisions. The reserves for deferred taxes are added to the equity.

- (iv) The depreciation charge if excessive needs adjustments.
- (v) Certain marketing expenses like advertising or sales promotion for a new brand launch are capitalised and amortised over the period during which benefits will be reaped.
- (vi) Goodwill of an acquired business, if written off, is capitalised and adjusted in NOPAT and equity.
- (vii) Expenses incurred on employee training again will provide benefits over a period, so these expenses are also capitalised.
- (viii) Operating leases are to be capitalised. The net present value of the lease payments is capitalised.
- (ix) Restructuring expenses and such other expenses which will benefit the firm in the long run are capitalised and written-off over a period.
- (x) Other adjustments like adding back the provision for warranty claims, provisions for bad and doubtful debts are also made. They are accounted for on cash basis.

Similarly other non-cash book-keeping entries are adjusted and accounted for on cash basis.

- (xi) Provision for gratuity and pension should be recognised and provided for properly.

2. Calculation of Capital Employed

The next element required for calculating EVA is the capital employed. Capital employed consists of adjusted Equity Shareholders fund, all interest bearing obligations and preference Capital (if any). The capital employed can be calculated through the assets side of the balance sheet or the liability side.

From the assets side, capital employed is the current assets less the non-interest bearing current liabilities i.e. the net working capital (current assets—non-interest bearing current liabilities) plus the net fixed assets.

From the liabilities side it is the sum of interest bearing debt (short-term as well as long term) and net worth less any non-operating assets. The pertinent questions are whether the capital employed be taken at its opening value at the beginning of the year or the year end value or the average of the two? And should the capital employed be taken at the book value or the market value?

The answer to the first question is to use the beginning of the year capital employed for calculating EVA as this was the capital available to the management to earn the returns on and further as we will see, taking the beginning of the year capital employed helps in evaluating capital budgeting decisions.

3. Calculation of Weighted Average Cost of Capital (WACC)

The third element in EVA calculation is the cost of capital, which is weighted the average of the cost of debt, cost of equity and cost of preference capital with its weights equivalent to the proportion of each in the total capital.

While the cost of debt is the average interest rate paid by the company on its debt, the cost of equity can be found out using the Capital Asset Pricing Model (CAPM) and the cost of preference shares can be taken as the fixed rate of dividend.

Improving EVA

The following are the ways in which the EVA can be improved :

- (a) Increasing NOPAT with the same amount of capital.
- (b) Reducing the capital employed without affecting the earnings i.e., discarding the unproducing assets.

- (c) Investing in those projects that earn a return greater than the cost of capital.
- (d) By reducing the cost of capital, which means employing more debt as debt is cheaper than equity or preference capital.

4.4 BALANCED SCORE CARD (BSC)

4.4.1 Concept

Q12. What is Balanced Score Card (BSC)?

Ans : (May-16, May-14, May-13, Imp.)

Definition

According to RS Kaplan and D P Norton came out with a popular, Balanced Scorecard approach in the early 90s linking corporate goals with strategic actions undertaken at the business unit, departmental and individual level. The scorecard allows managers to evaluate a firm from different complementary perspectives. The arguments run thus:

- (i) A firm can offer superior returns to stockholders if it has a competitive advantage in its product or service offerings as compared to its rivals,
- (ii) In order to sustain a competitive advantage, a firm must offer superior value to customers,
- (iii) This, in turn, requires development of operations with necessary capabilities,
- (iv) In order to develop the needed operational capabilities, a firm requires the services of employees having requisite skills, creativity, diversity and motivations. Thus, the performance as assessed in one perspective supports performance in other areas.

The balance scorecard is used in order for the organisation to work in an efficient manner keeping its direction on the mission and the vision that is to be achieved. In order to truly make use of the balance scorecard, a firm must understand the two important aspects of the firm: (i) 'The company's mission statement' and (ii) 'The company's vision statement'

After that, the firm needs data on the following:

- Financial status of the organisation.
- Current structure and operations of the organisation.
- Level of expertise of the employees.
- Level of customer satisfaction.

4.4.2 Objectives

Q13. Explain the Objectives of balance Score Card.

Ans : (May-16, May-13, May-12, Imp.)

A balanced scorecard is a strategic management performance metric used to identify and improve various internal business functions and their resulting external outcomes. Balanced scorecards are used to measure and provide feedback to organizations. Data collection is crucial to providing quantitative results as managers and executives gather and interpret the information and use it to make better decisions for the organization.

1. Better Strategic Planning

The Balanced Scorecard provides a powerful framework for building and communicating strategy. The business model is visualized in a strategy map which helps managers to think about cause-and-effect relationships between the different strategic objectives.

The process of creating a Strategy Map ensures that consensus is reached over a set of interrelated strategic objectives. It means that performance outcomes as well as key enablers or drivers of future performance are identified to create a complete picture of the strategy.

2. Improved Strategy Communication & Execution

Having a one-page picture of the strategy allows companies to easily communicate strategy internally and externally. We have known for a long time that a picture is worth a thousand words.

This 'plan on a page' facilitates the understanding of the strategy and helps to engage staff and external stakeholders in the delivery and review of the strategy. The thing

to remember is that it is difficult for people to help execute a strategy which they don't fully understand.

3. **Better Alignment of Projects and Initiatives**

The Balanced Scorecard help organizations map their projects and initiatives to the different strategic objectives, which in turn ensures that the projects and initiatives are tightly focused on delivering the most strategic objectives

4. **Better Management Information**

The Balanced Scorecard approach helps organizations design key performance indicators for their various strategic objectives. This ensures that companies are measuring what actually matters. Research shows that companies with a BSC approach tend to report higher quality management information and better decision-making.

5. **Improved Performance Reporting**

The Balanced Scorecard can be used to guide the design of performance reports and dashboards. This ensures that the management reporting focuses on the most important strategic issues and helps companies monitor the execution of their plan.

6. **Better Organizational Alignment**

The Balanced Scorecard enables companies to better align their organizational structure with the strategic objectives. In order to execute a plan well, organizations need to ensure that all business units and support functions are working towards the same goals. Cascading the Balanced Scorecard into those units will help to achieve that and link strategy to operations.

7. **Better Process Alignment**

Well implemented Balanced Scorecards also help to align organizational processes such as budgeting, risk management and analytics with the strategic priorities. This will help to create a truly strategy focused organization.

Q14. Explain the importance of Balanced Score Card (BSC).

Ans :

It highlights the importance of non-financial drivers of performance, and clarifies vision throughout the organization. Specifically the benefits are :

1. Greater Participation

After constructing the Balanced Scorecard leaders cascade strategy down to business units, divisions and support functions. In doing so, top management does not dictate strategy to operating units. Instead it recognizes that operating units have a better 'feel' for local conditions, operating technologies, and competition. So it encourages the latter to define their own strategy so as to dovetail with the organization's overall strategy.

2. Improved Communication

Top management explains the Balanced Scorecard and the strategy map through newsletters, brochures, bulletin boards, meetings, training, and education programs. This is reinforced by the top management's conviction in the efficacy of the Balanced Scorecard.

This conviction gets translated into their personal behavior and their commitment is reflected in the initiatives taken to accomplish their strategy.

3. Improved Understanding of Mission

Departments performing line functions (such as the production department in a manufacturing concern) as well as those in staff functions such as human resources, purchase, finance and internal audit, are asked to define what services ought to be provided, as also the quality of these services and their cost.

They examine and understand the interrelationships between each staff function and line functions. In doing so they realize what each function (whether line or staff), contributes to overall organizational success.

The concept of partnerships with each other and with the corporate parent is grasped, enabling the emergence of corporate-level synergies.

4. Empowerment

Employees get a clearer understanding of what the organization wishes to accomplish, and how they can contribute to these accomplishments. They realize that their work can and does make a difference to the organization, and this increases their intrinsic motivation.

They come to work with enthusiasm, creativity and initiatives, actively searching for better ways in which they can help the organization succeed. Personal objectives are linked to team objectives. Typically a new incentive plan is drawn up that enables employees to benefit financially when targets for strategic measures are achieved.

5. Style of management

Chief executive officers (CEOs) understand that they cannot implement corporate strategy alone. They need contribution, cooperation and ideas from everyone in the organization. Persons far from corporate headquarters whether they are employees, vendors, or distributors can suggest new ways of doing business.

So CEOs need to alter their style of management from autocratic to participative. They discard top down direction and embrace top down communication, helping the 'partners' learn how they can contribute to successful implementation of corporate strategy.

6. Improved Training

Top management is aware that employee skills enhance internal processes. The strategy map reveals the strategic chain of cause and effect relationships that link greater investment in improving employee skills to improved financial performance. Top management

realizes the importance of skill upgradation and the specific skills that should be enhanced.

The Balanced Scorecard shows people how improving of capabilities leads to the organization achieving its long term financial goals. The organization implements the learning and growth objectives, by focusing on sustained investment in training.

7. Selection of Suppliers

In choosing strategic partners, the organization pays as much attention to low cost supplies as quality of supplies, lead time, on time delivery performance of suppliers, defect free supplies, and whether suppliers are electronically connected to the organization.

This last factor allows the online ordering of supplies as well as online payment. Attention to cost of supplies alone is dangerous. Low cost suppliers may turn out to be extremely high cost if they fail to deliver supplies on schedule, or the deliveries do not conform to quality standards.

The organization will have to spend considerable time, effort and cost, in monitoring quality, arranging for replacement of defective goods, sourcing supplies from other vendors at short notice, and stocking up of inventory when the supply is known to be erratic.

By incorporating measures for superior supplier relationships into the Balanced Scorecard, employees understand the value of forging long term relationships with key suppliers. This recognition generates initiatives from the employees and feedback on the most critical elements of the supplier relationship.

8. Enhancement of value in the community

Organizations cannot afford to ignore the community within which they operate. They may wish to move beyond mere compliance, setting industry standards in areas such as corporate governance, community concern, and environmental protection.

One chemical company Stated - 'Our strategy is to be seen by the community within which Mr operate, ax not only a law abiding corporate citizen, but as an outstanding. corporate citizen, measured both environ-mentally and by creating well paying, safe, and productive jobs.

If regulations are tightened, though other firms may get affected, we expect to have earned the right to continue operations.' In recognition of this, environmental and community performance was a key part of its strategy.

Such recognition enables an organization to successfully operate in markets that differ in terms of cultural, linguistic, and economic bases and geographic locations.

4.4.3 Perspectives of BSC

Q15. Explain the various Perspectives of Balanced Score Card.

Ans :

(May-15, May-13, Imp.)

The metrics should be SMART (Specific, Measurable, Achievable, Realistic and Timely). One can't improve what can't be measured, and the metrics must be aligned with the company's strategic plan. The balanced scorecard directs us to visualise the organisation to have four perspectives that are inter-dependent, yet improving one area doesn't mean success for the other areas as well; all four must work in sync.

1. Financial Perspective

The balanced scorecard uses financial performance measures, such as net income and return on investment, because all for-profit organizations use them. Financial performance measures provide a common language for analyzing and comparing companies.

People who provide funds to companies, such as financial institutions and shareholders, rely heavily on financial performance measures in deciding whether to lend or invest funds. Properly designed financial measures can provide an aggregate view of an organization's success.

Financial measures by themselves do not provide incentives for success. Financial measures tell a story about the past, but not the future; they have importance, but will not guide performance in creating value.

2. Customer Perspective

In the customer perspective of the Balanced Scorecard, managers identify the customer and market segments in which the business unit will compete and the measures of the business unit's performance in these targeted segments. This perspective typically includes several core or generic measures of the successful outcomes from a well-formulated and implemented strategy.

The core out-come measures include customer satisfaction, customer retention, new customer acquisition, customer profitability, and market share in targeted segments. But the customer perspective should also include specific measures of the value propositions that the company will deliver to customers in targeted market segments.

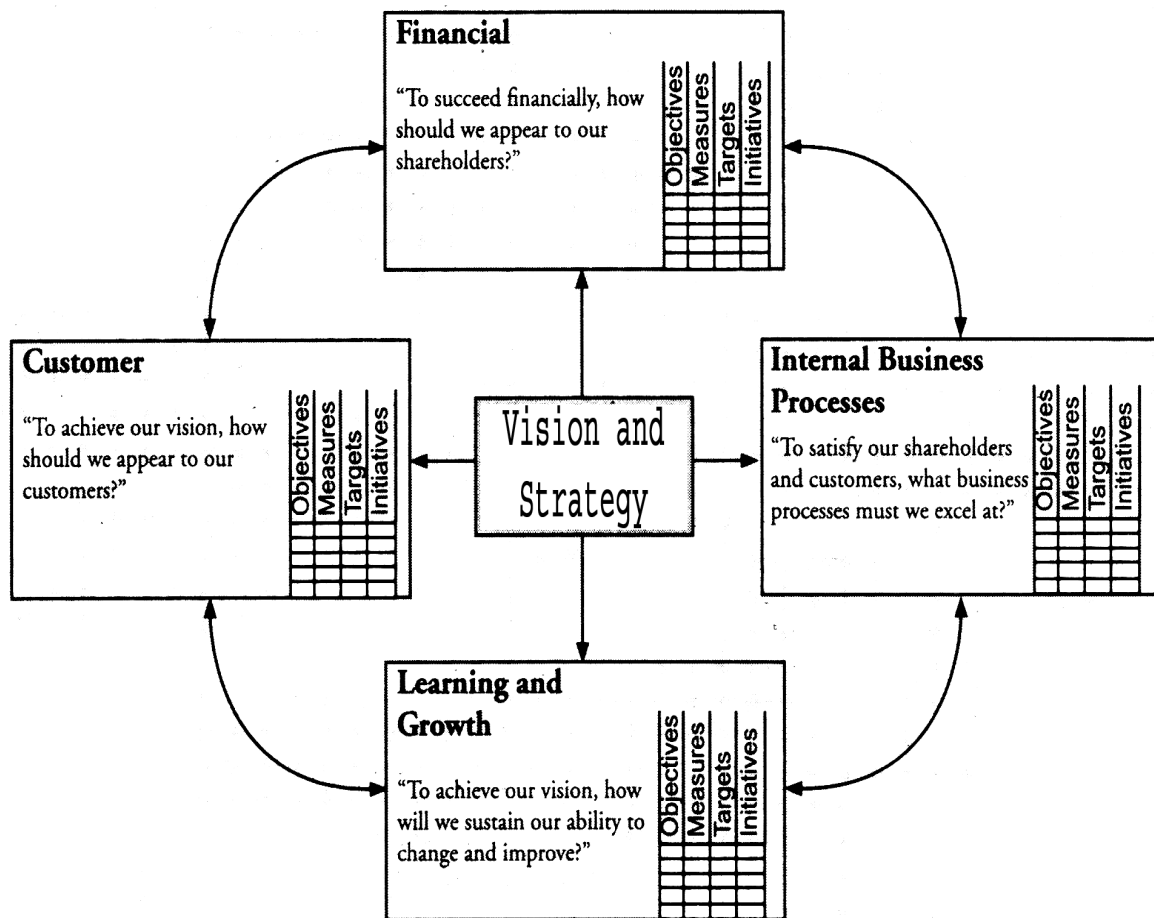


Fig.: Firm's Mission Statement

3. Internal-Business-Process Perspective

- (i) Deliver the value propositions that will attract and retain customers in targeted market segments, and
- (ii) Satisfy shareholder expectations of excellent financial returns.
- (iii) The key to excellence in any organization is control of its processes to produce reliable and consistent products and services.
- (iv) Performing the right processes in the right manner leads to consistent levels of product and service quality. The difficulty lies in finding the right process variables to measure and setting the standards appropriate to performance levels of each of the process measures.
- (v) Process and operational measures are leading-edge measures that are more short-term-focused.
- (vi) These are the measures that are typically monitored every day or at least every week. Some process variables are even monitored continuously to ensure the production and delivery of high-quality products and services.
- (vii) Achieving good performance levels on process or operational measures leads to high-quality products and services, which, in turn, lead to satisfied or delighted customers, which lead to repeat business and promote an organization's long-term survival and success

- (viii) In order to achieve consistently high performance, an organization must control its inputs. The two most important inputs to good performance are knowledge of customer requirements and high-quality goods and services from key suppliers.
- (ix) Process measures provide with the data needed to predict and control the quality of products and services. When a problem occurs with a product or service, the cause is usually found by looking at the process data.
- (x) Results and outcomes are important for all organizations. In fact, they may be the most important thing. But how those results are achieved the process measures is also very important to track.

Brown finds that excellent organizations measure processes and operational results in the following manner:

- (a) Cycle time for all key processes is measured.
- (b) Rework time and/or costs are tracked for key production and service delivery processes.
- (c) Key measures of productivity are identified and tracked for major processes in the organization.
- (d) Key processes have been identified in each unit, function, and department of the organization, and process measures have been defined for each key process.
- (e) Process measures are correlated directly with product/service characteristics or performance factors that are of prime importance to customers.
- (f) Standards or goals are set for all key process measures, and those standards are based upon benchmark organizations and customer requirements.
- (g) Process measures promote a preventive approach to achieving consistently high-quality products and services.

- (h) The organization has developed an overall safety index that is tracked at least once a month, and consists of several output measures like lost-time accidents, as well as a number of preventive or behavioral measures.
- (i) A few future-oriented process measures are tracked that will help ensure long-term survival and success.

4. The Learning and Growth Perspective

For incentive purposes, the learning and growth perspective focuses on the capabilities of people. Managers would be responsible for developing employee capabilities. Key measures for evaluating managers' performance would be employee satisfaction, employee retention, and employee productivity.

(a) Employee Satisfaction

Employee satisfaction recognizes the importance of employee morale for improving productivity, quality, customer satisfaction and responsiveness to situations. Managers can measure employee satisfaction by sending surveys, interviewing employees, or observing employees at work.

(b) Employee Retention

Firms committed to retaining employees recognize that employees develop organization-specific intellectual capital and provide a valuable non-financial asset to the company. Furthermore, firms incur costs when they must find and hire good talent to replace people who leave. Firms measure employee retention as the inverse of employee turnover—the percent of people who leave each year.

(c) Employee Productivity

Employee productivity recognizes the importance of output per employee. Employees create physical output (i.e.,

miles driven, pages produced, or lawns mowed), or financial output (i.e., revenue per employee or profits per employee). The number of loans processed per loan officer per month would provide a simple measure of productivity for loan officers at a bank.

Within this core, the employee satisfaction objective is generally considered the driver of the other two measures, employee retention and employee productivity.

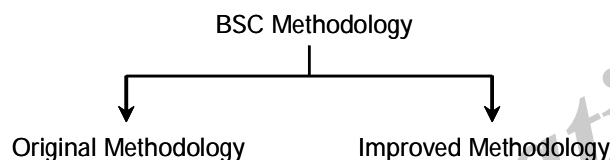
Q16. Explain briefly the methodology of BSC.

Ans :

According to Kaplan and Norton, "The balanced scorecard provides managers with the instrumentation they need to navigate to future competitive success".

Balanced scorecard follows two methodologies, namely,

1. Original methodology and
2. Improved methodology.

**1. Original Methodology**

Initially the balanced scorecards consisted of simple tables which were divided into four parts/ perspectives, namely,

- (i) Financial
- (ii) Customer
- (iii) Internal business process and
- (iv) Learning and growth.

Balanced scorecards were designed by taking five or six good measures of each perspective. Several authors had been giving different headings to these perspectives and have also recommended few additional perspectives. This earlier/initial balanced scorecard faced a major difficulty of justifying the selection of measures made i.e., "of all the measures one could have chosen, why did one select these"?

If in case the user is not confident or sure about the selected measure within the balanced scorecard, then they will be even not confident about the information they provide. Even though these BSCs are not so common but still they are being used and designed even today.

Thus, the early-style balanced scorecards are difficult to be designed in such a manner that builds confidence that these BSCs are designed well. Due to this reason, most of the BSCs are abandoned as soon as they are accomplished.

2. Improved/Enhanced Methodology

This method was started in the mid 1990's. Which was an enhanced version of the early-style balanced scorecard. This method selects the measures on the basis of "strategic objectives" set and plots them on the "strategic linkage model" or "strategy map". This model has divided the strategic objectives across the same set of "perspectives".

The managers identifies five to six goals of each perspective and then shows interconnection between these goals by plotting causal links on the map/diagram. Balanced scorecard is then devised by selecting suitable measures for each objective by reaching at some conclusion about each objective.

This type of balanced scorecard was used from 1996 onwards which provided greater contextual justification for the selected measures. It was easy also.

During 1990's again there were few changes made in the design approach. The "2nd generation" balanced scorecard faced a problem of plotting causal links between twenty or medium term strategic goals, but still it remained the abstract activity.

The third generation balanced scorecard represented the present state-of-the-art in scorecard design.

Kaplan and Norton has concluded that the companies use balanced scorecard for the following purpose,

- Executing strategy
- Clarifies strategy and makes it functional
- Identifies and aligns strategic initiatives
- Associating budget with strategy.
- Improving strategy by conducting timely strategic performance reviews.

In 1997, it was found out by Kurtzman that 64% companies who were questioned started using the balanced scorecard to measure performance.

Government agencies, military units, business units, corporations, nonprofit organizations and schools implement BSC. Different organizations use balanced scorecard differently. Many theorists recommend not to adapt any organization's BSC, as the advantages of BSC can be derived from its implementation.

Most of the 1st generation or the early-state BSC failed due to this reason only that they adapted other organization's BSC, which were prepared by the consultants who had inadequate or poor knowledge about the organization and management's responsibility.

Q17. Explain the merits and demerits of BSC.

Ans :

Merits

The important of balanced score card can be under-stood from its merits. The following are the merits of bal-anced score card:

1. The balanced score card facilitates a strong foundation for changing the performance measurement approach into a management system.
2. Senior management can change the strategies of the company into long-term objectives with the help of a balanced score card.
3. Balanced score card helps in transforming the mea-sures at higher level to effective and supporting measures and analyses the main causes of variations.
4. It produces a structure which helps in executing an organized performance management system and culture.
5. The balanced score card includes all the aspects of the business and even the strategic and tactical purposes are considered.

Demerits

The following are the demerits of balanced score card:

1. It is very essential to manage the balanced score card effectively as it encourages a league table culture of number games.
2. Many times well planned measures are not explained clearly and may be considered as an organizational scheme for an organizational person who is exercising total control over the employees lives.
3. Balanced score card may face a significant challenge when there are several measures resulting in bureaucracy and when there are very few measures which are insufficient.

Q18. Explain the applications of Balance Score Card.

Ans :

The balanced scorecard is being used and implement-ed in various organizations across the globe successfully.

1. It acts as a useful management tool for senior executives who emphasize on strategies and long-term objectives.
2. Balanced scorecard is also used to ascertain the performance at the tactical operational level.
3. The use of the balanced scorecard has changed the evaluating performance techniques of company with the help of financial indices.
4. The characteristics of the design and the usage needs of the balanced scorecard are being made use in the collaborative culture of the integrated supply chain.

4.4.4 Multiple Scorecard Measures into a Single Strategy**Q19. Explain the Multiple Scorecard measures into a single strategy.**

Ans :

(Imp.)

Linking Multiple Scorecard Measures to a Single Strategy

Many companies may already be using a mixture of financial and nonfinancial measures, even in senior management reviews and to communicate with boards of directors. Especially in recent years, the renewed focus on customers and process quality has caused many organizations to track and communicate measures on customer satisfaction and complaints, product and process defect levels, and missed delivery dates.

In France, companies have developed and used, for more than two decades, the Tableau de Bard, a dashboard of key indicators of organizational success. The Tableau de Bord is designed to help employees "pilot" the organization by identifying key success factors, especially those that can be measured as physical variables.

Our experience is that the best Balanced Scorecards are more than collections of critical indicators or key success factors. The multiple measures on a properly constructed Balanced Scorecard should consist of a linked series of objectives and measures that are both consistent and mutually reinforcing.

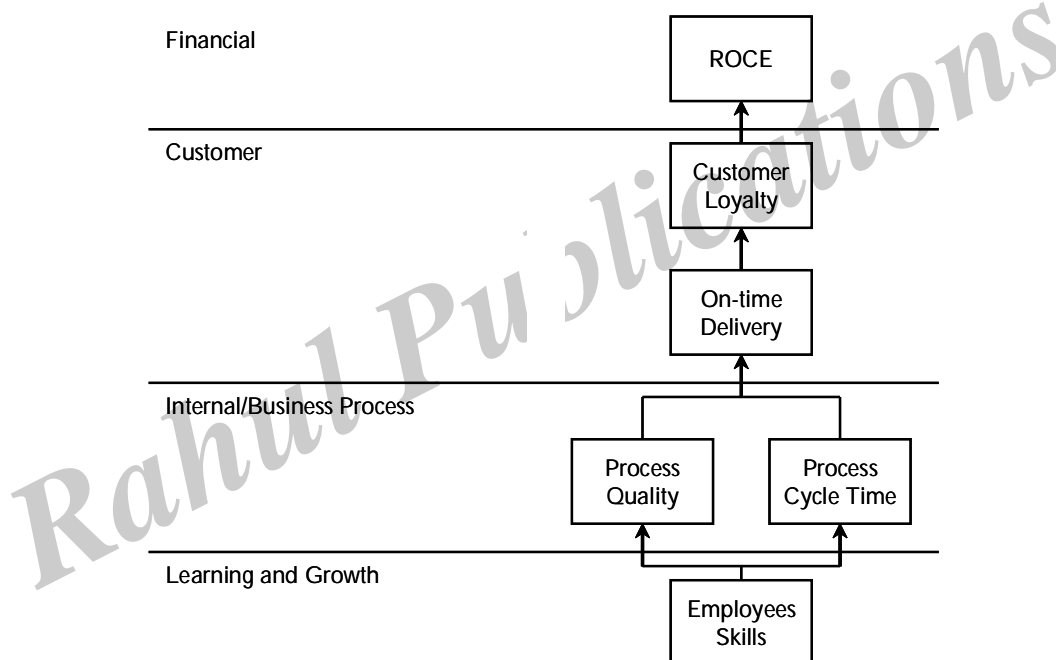
The metaphor should be a flight simulator, not a dashboard of instrument dials. Like a flight simulator, the scorecard should incorporate the complex set of cause-and-effect relationships among the critical

variables, including leads, lags, and feedback loops, that describe the trajectory, the flight plan, of the strategy. The linkages should incorporate both cause-and-effect relationships, and mixtures of outcome measures and performance drivers.

Cause-and-Effect Relationships

A strategy is a set of hypotheses about cause and effect. The measurement system should make the relationships (hypotheses) among objectives (and measures) in the various perspectives explicit so that they can be managed and validated. The chain of cause and effect should pervade all four perspectives of a Balanced Scorecard.

For example, return-on-capital-employed may be a scorecard measure in the financial perspective. The driver of this measure could be repeat and expanded sales from existing customers, the result of a high degree of loyalty among those customers. So, customer loyalty is included on the scorecard (in the customer perspective) because it is expected to have a strong influence on ROCE. Analysis of customer preferences may reveal that on-time delivery of orders is highly valued by customers.



Thus, improved OTD (On time delivery) is expected to lead to higher customer loyalty, which, in turn, is expected to lead to higher financial performance. So both customer loyalty and OTD are incorporated into the customer perspective of the scorecard.

The process continues by asking what internal processes must the company excel at to achieve exceptional on-time delivery. To achieve improved OTD, the business may need to achieve short cycle times in operating processes and high-quality internal processes, both factors that could be scorecard measures in the internal perspective. And how do organizations improve the quality and reduce the cycle times of their internal processes?

By training and improving the skills of their operating employees, an objective that would be a candidate for the learning and growth perspective. We can now see how an entire chain of cause-and-effect relationships can be established as a vertical vector through the four BSC perspectives:

Performance Drivers

A good Balanced Scorecard should also have a mix of outcome measures and performance drivers. Outcome measures without performance drivers do not communicate how the outcomes are to be achieved.

They also do not provide an early indication about whether the strategy is being implemented successfully. Conversely, performance drivers such as cycle times, but will fail to reveal whether the operational improvements have been translated into expanded business with existing and new customers, and, eventually, to enhanced financial performance. A good Balanced Score-card should have an appropriate mix of outcomes (lagging indicators) and performance drivers (leading indicators) of the business unit's strategy.

Rahul Publications

Short Question and Answers

1. State the Significance of EVA

Ans :

The importance of EVA can be realised in the following fields :

- (i) **Its Analysis Helps in Capital Budgeting Decisions :** The EVA concept is very closely related to the NPV concept. The present value of an investment's annual EVA stream is the same as its NPV. However while NPV analysis is a one-time measure of the value added by an investment, EVA is a continuous annual value-added measure.

- (ii) **It Helps for Measuring Performance and Management Compensation :** Firms compete with each other for getting the scarce capital from the shareholders. To be able to get the capital firm must perform better than those with whom it competes for capital and once it gets the capital it must earn a return on it that is more than that earned by similar risky seekers of capital. If it can achieve this objective, it has created value for the shareholder and its stock price will command a higher premium in the market. This is a well-known concept and EVA is one measure that takes this concept into account.

2. Financial Measures of Performance.

Ans :

(i) Heightened Competition

Global competition has become a fact of life. In the wake of increased competition, firms are emphasising quality, productivity, cost, innovation, flexibility, and customisation. Improvement initiatives such as total quality management, world class manufacturing, total productivity management, and total cost management are gaining currency. All these tools and techniques rely on performance measurement.

(ii) Growing Empowerment

Many organizations have realised the benefits of empowering people down the line. Empowerment works well when the top management spells out clearly what it expects from people at various levels. For this purpose, well-defined performance measures are required.

3. Strengths of Non-financial Measures.

Ans :

Non-financial measures offer the following advantages :

- Non-financial measures are directly traceable to key success factors like customer satisfaction, market leadership, manufacturing excellence, quality and technological competence.
- Non-financial measures are actionable. A major problem about a standard cost system is that it is not often easy to determine the cause and cure of unfavourable variances. In contrast, non-financial measures are actionable at the plant level.
- Non-financial measures may predict better the future cash flows of the firm. For example, the long-term performance of a firm may be substantially influenced by its ability to improve product quality.

4. What is the ROI

Ans :

"Return on Investment (ROI) is a performance measure used to evaluate the efficiency of an investment or compare the efficiency of a number of different investments. ROI tries to directly measure the amount of return on a particular investment, relative to the investment's cost, of calculate ROI, the benefit (or return) of an investment is divided by the cost of the investment. The result is expressed as a percentage or a ratio.

Return on investment = Net income / Investment

Where,

Net income = gross profit - expenses

Investment = stock + market outstanding + claims

5. Uses of ROI

Ans :

- ROI can be computed on a company-wide basis by dividing net income by owners' equity. This measure indicates how well the overall company is utilizing its equity investment.
- ROI provides a good indicator of profitability that can be compared against competitors (or) an industry average.
- Experts suggest that companies usually need at least 10-14 percent ROI in order to fund future growth. If this ratio is too low, it can indicate poor management performance (or) a highly conservative business approach.
- On the other hand, a high ROI can either mean that management is doing a good job, or that the firm is undercapitalized.

6. Disadvantages of ROI

Ans :

- (i) Satisfactory definition of profit and investment are difficult to find. Profit has many concepts such as profit before interest and tax, profit after interest and tax, controllable profit, profit after deducting all allocated fixed costs. Similarly, the term investment may have many connotations such as gross book value, net book value, historical cost of assets, current cost of assets, assets including or excluding intangible assets.
- (ii) While comparing ROI of different companies, it is necessary that the companies use similar accounting policies and methods in respect of valuation of stocks, valuation of fixed assets, apportionment of overheads, treatment of research and development expenditure, etc.

- (iii) ROI may influence a divisional manager to select only investments with high rates of return (i.e., rates which are in line or above his target ROI).

Other investments that would reduce the division's ROI but could increase the value of the business may be rejected by the divisional manager. It is likely that another division may invest the available funds in a project that might improve its existing ROI (which may be lower than a division's ROI which has rejected the investment) but which will not contribute as much to the enterprise as a whole.

These types of decisions are sub-optimal and can distort an enterprise's overall allocation of resources and can motivate a manager to make under investing in order to preserve its existing ROI. A good or satisfactory return is defined as an ROI in excess of some minimum desired rate of return, usually based on the firm's cost of capital.

7. What is Economic Value Added (EVA)

Ans :

Economic value added is a measure of performance evaluation that was originally employed by Stem Stewart & Co. It is very popular measure today which is used to measure the surplus value created by an investment or a portfolio of investments.

EVA has been considered as a better measure of divisional performance compared to the Return on Assets ROA or ROI. It is also being used to determine whether and investment positively contributes to the shareholders wealth. The economic value added of an investment is simply equal to the after tax operating profits generated by the investment minus the cost of funds used to finance the investment.

EVA can be calculated as below :

$$EVA = (\text{Net Operating profit after tax} - \text{Cost of capital} \times \text{Capital invested})$$

or,
$$EVA = \text{Return on investment} - \text{Cost of capital} \times \text{Capital employed}$$

According to this approach, an investment can be accepted only if the surplus (EVA) is positive. It is only the positive EVA that will add value and enhance the shareholders wealth. However, to calculate the economic value added we need to estimate the net operating profit after tax and cost of funds invested.

8. Weighted Average Cost of Capital (WACC)

Ans :

The third element in EVA calculation is the cost of capital, which is weighted the average of the cost of debt, cost of equity and cost of preference capital with its weights equivalent to the proportion of each in the total capital. While the cost of debt is the average interest rate paid by the company on its debt, the cost of equity can be found out using the Capital Asset Pricing Model (CAPM) and the cost of preference shares can be taken as the fixed rate of dividend.

Improving EVA

The following are the ways in which the EVA can be improved :

- (a) Increasing NOPAT with the same amount of capital.
- (b) Reducing the capital employed without affecting the earnings i.e., discarding the unproducing assets.
- (c) Investing in those projects that earn a return greater than the cost of capital.
- (d) By reducing the cost of capital, which means employing more debt as debt is cheaper than equity or preference capital.

9. Balanced Score Card (BSC)

Ans :

Definition

According to RS Kaplan and D P Norton came out with a popular, Balanced Scorecard approach in the early 90s linking corporate goals with strategic actions undertaken at the business unit, departmental and individual level. The scorecard allows managers to evaluate a firm from different complementary perspectives. The arguments run thus:

- (i) A firm can offer superior returns to stockholders if it has a competitive advantage in its product or service offerings as compared to its rivals.
- (ii) In order to sustain a competitive advantage, a firm must offer superior value to customers.
- (iii) This, in turn, requires development of operations with necessary capabilities.

10. Objectives of balance Score Card.

Ans :

A balanced scorecard is a strategic management performance metric used to identify and improve various internal business functions and their resulting external outcomes. Balanced scorecards are used to measure and provide feedback to organizations. Data collection is crucial to providing quantitative results as managers and executives gather and interpret the information and use it to make better decisions for the organization.

- (i) **Better Strategic Planning :** The Balanced Scorecard provides a powerful framework for building and communicating strategy. The business model is visualized in a strategy map which helps managers to think about cause-and-effect relationships between the different strategic objectives.

The process of creating a Strategy Map ensures that consensus is reached over a set of interrelated strategic objectives. It means that performance outcomes as well as key enablers or drivers of future performance are identified to create a complete picture of the strategy.

- (ii) **Improved Strategy Communication & Execution :** Having a one-page picture of the strategy allows companies to easily communicate strategy internally and externally.

We have known for a long time that a picture is worth a thousand words. This 'plan on a page' facilitates the understanding of the strategy and helps to engage staff and external stakeholders in the delivery and review of the strategy. The thing to remember is that it is difficult for people to help execute a strategy which they don't fully understand.

Choose the Correct Answer

1. Any increase in divisional ROI will bring improvement in overall ROI of the entire organization. [b]
(a) Decrease (b) Increase
(c) Change (d) None of the above
2. ROI considers current period's revenue & cost & do not pay attention to those expenditures & investments that will increase long term probability of a business unit. [a]
(a) Long term (b) Short term
(c) Medium term (d) All of the above
3. ROI may influence a divisional manager to select only investments with _____ rates of return [c]
(a) Low (b) Medium
(c) High (d) both (a, b)
4. WACC _____. [b]
(a) Weighted average capital control (b) Weighted average cost of capital
(c) Weighted average cost control (d) Weighted average capital cost
5. Finance charge _____. [a]
(a) Capital invested *WACC (b) NOPAT *WACC
(c) WACC*NOPAT (d) Capital invested*NOPAT
6. Which of the following is not a dimension of balance score card [d]
(a) Customer (b) Internal processes
(c) Innovation (d) Stakeholder
7. Which of the following is not an extrinsic reward. [a]
(a) Satisfaction (b) Prizes
(c) Recognition (d) Awards
8. _____ perspective refers to internal business processes. [d]
(a) Financial (b) Customer
(c) Innovation (d) Internal process
9. Poor performance from customer perspective is a leading indicator of _____. [c]
(a) Present decline (b) Future improvement
(c) Future decline (d) Present improvement

10. Which of the following is not true for the balanced score card. [c]
- (a) Top-down reflection of mission & strategy
 - (b) Forward looking
 - (c) External measure
 - (d) Help to focus
11. As financial measures like logging Indicators [c]
- (a) TSR (b) FIR
 - (c) TSR & EVA (d) EVA
12. For most business leading Indicator's a bulk for long term [c]
- (a) 3 to 4 (b) 3 to 1
 - (c) 3 to 6 (d) 3 to 8
13. The three most widely used definitions of this term [b]
- (a) Gross Capital (b) Gross Capital Employed
 - (c) Net Profit (d) Net Profit Employed

Fill in the blanks

1. _____ is a performance measure used to evaluate the efficiency of an investment.
2. Net income = _____ .
3. If is too _____ is indicate poor management performance.
4. If ROI ratio is _____ it indicate good performance by the management.
5. _____ helps in making comparision between different business units in terms of profitability & asset utilization
6. _____ managers can influence ROI by changing accounting policies.
7. ROI provides focus on short term results _____ long term profitability focus is ignored.
8. ROI = _____.
9. EVA serves as an indicator of the _____ of profits undertaken.
10. A Balance Score Card is a _____ performance metric used to improve interval business functions.

ANSWERS

1. ROI
2. Gross profit – Expenses
3. Low
4. High
5. ROI
6. Investment centre
7. Profitability
8. Revenue – Cost of goods sold / Cost of goods sold
9. Profitability
10. Strategic management

UNIT V

MANAGERIAL DECISION MAKING:

Cost concepts for decision making – Marginal Costing and Decision Making - Pricing Decisions - Product decisions: Profit Planning - Level of Activity - Key/ Limiting Factor - Dropping a Product Line - Introducing a New Product Line- Product/Sales Mix Decisions - Make or Buy decisions

5.1 COST CONCEPTS FOR DECISION MAKING

Q1. Explain briefly about Decision Making.

Ans :

Introduction

- Decision making involves choice between alternatives. Many quantitative and qualitative factors have to be taken into account in decision making. The term cost is very elusive; it has different meanings in different situations.
- A cost accountant examines each situation in depth to decide the kind of cost concepts to be used and plays an important role in decision making by making precise and relevant data available to management.
- In cost studies, a cost accountant should always consider four points for decision makings;
 - (i) He must establish why a choice is necessary
 - (ii) He must separately analyze each available alternatives.
 - (iii) Specific effort should be made to determine how every alternative alters or influences decision makers choice.
 - (iv) Choice of a particular course of action from among the alternatives. Decision making involves prediction, which cannot change the past, but it is expected to influence the future.
- Decision making involves two types of decisions i.e. long term decisions and short term operating decisions. The long term decisions

force management to look beyond the current year. Time value of money and return on investment are major considerations in long term decisions.

- Short run operating decisions involves the selection of alternatives that can be implemented within a one year period. These short run operating decisions involve many special non recurring decisions such as:
 - i) Make or buy
 - ii) Sell or process further
 - iii) Accept or reject an order and countless other decisions.

Q2. Explain the process of decision making.

Ans :

(Imp.)

1. Identifying the problem

The decision making process starts with the identification of problem. The manager must take utmost care and be able to define the problem clearly because all subsequent actions depend on this if the problem at hand is not clearly defined, managers may spend considerable time and efforts in gathering information which is not relevant to the real problem.

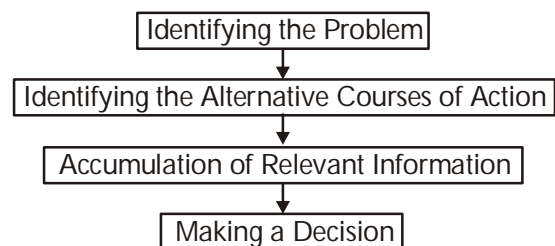


Fig. : Process of Decision Making

2. Identifying the Alternative Courses of Action

Once the problem is identified all possible and feasible solutions should be identified. It is the ideal phase of decision process and the experience of the concerned manager is of utmost importance. The manager must be objective in identifying different alternative courses of action and need not let his bias to enter into the decision process.

3. Accumulation of Relevant Information

Manager require a lot of information before making decisions. Depending upon whether the decision situation has long run implications or short-run implications, relevant data and information about different courses of action should be gathered. Information may be available internally or may have be collected from external sources. It is the relevance of information and the sources of information which is important.

4. Making a Decision

The information collected in respect of each of the alternative course of action should be analysed carefully to see the effect if each course of action on the objective of the firm. An economic cost benefit analysis should be make for each of the alternative course of action. Out of these different alternative the best one should be selected.

The following are the rules applied in making decisions related to each of the following matters.

5.2 MARGINAL COSTING AND DECISION MAKING

Q3. Define Marginal Costing. Explain the features of Marginal Costing.

Ans :

Meaning

The term 'Marginal Cost' is defined as the amount at any given volume of output by which aggregate costs are changed if the volume of output is increased or decreased by one unit. It is a variable cost of one unit of a product or a service

i.e. a cost which would be avoided if that unit was not produced or provided.

Definition

(i) **According to Marginal costing is a principle** whereby variable costs are charged to cost units and fixed costs attributable to the relevant period is written off in full against the contribution for that period. Marginal Costing is the ascertainment of marginal cost and the effect on profit of changes in volume or type of output by differentiating between fixed costs and variable cost.

(ii) **According to CIMA defines marginal as** "the accounting system in which variable cost are charged to the cost units and fixed costs of the period are written off in full against the aggregate contribution.

(iii) **According to Marginal Costing is not a distinct** method of costing like job costing or process costing. It is a technique which provides presentation of cost data in such a way that true cost volume profit relationship is revealed. Under this technique, it is presumed that costs can be divided in two categories, i.e., fixed cost and variable cost. Fixed cost is charged to contribution of the period in which it is incurred and is considered period cost.

Features

- (i) Costs are divided into two categories, i.e. fixed costs and variable costs.
- (ii) Fixed cost is considered period cost and remains out of consideration for determination of product cost and value of inventories.
- (iii) Prices are determined with reference to marginal cost and contribution margin.
- (iv) Profitability of department and products is determined with reference to their contribution margin.
- (v) In presentation of cost data, display of contribution assumes dominant role.
- (vi) Closing stock is valued on marginal cost.

Q4. Explain the advantages and limitations of marginal costing.*Ans :***Advantages**

- (i) It avoids the complications of over or under absorption of fixed cost by excluding it from cost of production.
- (ii) The technique provides useful data for managerial decision making.
- (iii) By not carrying forward fixed cost from period to period, it facilitates cost comparison.
- (iv) The impact of profit on sales fluctuations are clearly shown under marginal costing.
- (v) The technique is flexible in the sense it can be used along with other techniques such as budgetary control and standard costing.
- (vi) It establishes a clear relationship between cost, sales and volume of put and break even analysis which shows the effect of increasing an decreasing production activity on the profitability of the company.
- (vii) It provides useful data for the management in determination of policies regarding future
- (viii) The production and sales.
- (ix) Stock of work in progress and finished goods are valued at marginal cost, which is uniform.

Disadvantages

- (i) The segregation of semi variable costs often poses a problem
- (ii) Closing stock of work in progress and finished goods are understated which is not acceptable to tax authorities.
- (iii) With the change technology and owing to automation of industries, it results in more fixed cost. Marginal costing fails to reflect the exact change because of adoption of new technology.
- (iv) It does not provide any yardstick to exercise control. So an effective means of control cannot be exercised.

- (v) The technique is not suitable under cost plus contract because of technique ignores fixed cost in calculating total cost.
- (vi) Variable cost per unit remains constant only in the short run but not in the long run.
- (vii) Cost comparison of two jobs will be difficult. Though marginal costing may be same for both the jobs.
- (viii) When sales are based on marginal cost or marginal cost with some contribution, it may result in losses or low profit.

5.3 PRICING DECISIONS**Q5. Explain briefly about pricing decisions.***Ans :*

- Pricing decisions is one of the most important decisions that management has to make. Pricing decisions that management has to make.
- Pricing decision is considered most important because pricing decision is not just a marketing decision or a financial decision, rather it is a decision touching on all aspects of a firms activities, and as such affects the entire enterprise.
- Firstly, the price charged by the firm has a direct bearing by the consumers and as a consequence the in flows of revenues into the firm.
- Secondly, in the long-run they very existence of the firm depends on the pricing decision, that is if the price fixed does not cover all the costs (Variable and fixed), the firm cannot survive. Ultimate survival of the firm solely depends on the revenues generated by the firm.
- In spite of efficient management, expert personnel, etc. if a firm fails to make excess revenues over costs the firm cannot survive. Therefore, pricing decision is one of the most important decisions

Q6. Explain briefly about various pricing strategies.*Ans :*

Basically, there are two pricing strategies available to the price setter in pricing new products. These are skimming pricing and penetration pricing.

1. Skimming pricing

Skimming pricing involves setting a high initial price in order to recover costs as early as possible and make a quick profit and gradual reduction of prices.

2. Penetration Pricing

Penetration pricing involves setting low initial prices in order to reach a mass market immediately. In this type of pricing the company's intention is to gain quick acceptance from the mass market and is willing to sacrifice short run profits. After gaining the acceptance of market the price are slowly raised in order to earn profits.

Which pricing strategy a company adopts depends on the intention of the firm whether it wants quick recovery of costs and to make profits or ready to sacrifice short- run benefit for the long run benefits. Both the pricing strategies of pricing are in practice. For example price of small calculators was very high in the introduction stage and later witnessed abnormal fall in its price. T.V.s. Stereo sets. Automobiles are some other examples, which had a heavy initial prices and became cheaper slowly.

Skimming pricing offers some protection to the firm from unexpected costs in production and marketing of a product. The firm adopting the penetration pricing strategy cannot withstand heavy unexpected costs. Setting a high initial price and reducing it later is an easy task but reverse is difficult.

Q7. Explain briefly about various pricing approaches.*Ans :*

There are two important approaches for pricing; they are

- a) the full cost approach
- b) the contribution approach

(a) The Full Cost Pricing Approach

This is a widely used method of setting prices. In this case the cost of a product (both fixed and variable) and a certain percentage mark up for profit constitute the price. This method is also known as cost plus pricing.

(b) Contribution (Margin-based) Pricing Approach

- The full cost pricing approach does not give any importance to the behaviour of costs. All costs irrespective of behaviour i.e. whether fixed or variable were included in cost for pricing the products.
- In contribution margin approach the variable costs are only considered and fixed costs are excluded for the purpose of price fixation and the fixed costs are deducted in full from the contribution the reason for the exclusion of fixed cost from pricing is that fixed costs are not related to the level of production but incurred for producing the product only taken as costs, i.e. the costs which are incurred but for production of units concerned otherwise would not have been incurred.
- This method of pricing is not a viable policy from long-term point of view and not a substitute for full cost based pricing for supplements in certain ways.
- This method of pricing gives very useful results in certain special circumstances which are explained below.

(i) Pricing when idle capacity exists:

- No Company is going to sell at less than the regular prices. But, when situation is that there is idle capacity and a firm cannot sell more products unless the existing prices are reduced, in such a case, the firm has an option to reduce its selling price in order to utilise idle capacity.
- Sometimes, the firm may get a special order from a person who is not a regular buyer or an order

for the product with certain modifications to the product.

- In such situations any received which is in excess of variable costs is an extra income to the company and should be welcomed.

(ii) Pricing when operating under distress conditions

- There are certain occasions in the life of the company (like an individual's life) when it is forced to operate under distress conditions, where the market for its products is adversely affected in some way.
- For example, the demand for the product may virtually dry up overnight, forcing the company to drop its prices sharply downward.
- When the general economy suffers a set back like depression the company may also face a distress.
- In such a situation, any contribution which can be obtained above variable costs may be recoverable to ceasing operations altogether as it (depression) is only for a temporary period.

(iii) Pricing when faced with sharp competition on particular orders, under competitive bidding situation

- Normally a company may have its policy on pricing its goods and services. Policies have to be relaxed in certain occasions like competitive bidding, because, in the competitive bidding the competition will be very hot and fierce.
- Some companies act wisely and reduce their prices in order to obtain the contract/order. But, many companies do not cut their prices in order to obtain the contract/order.
- But, many companies do not cut their prices in spite of losing business heavily.

- Their argument is that unless they get a 'decent' price for their effort they do not want the business. Ignorance sometimes takes them away from the profitable transactions also. These companies usually adopt a full cost pricing.

- Full cost pricing needs some volume of sales and base, again sales itself is dependent upon the selling price. Full cost pricing is that practice where full cost plus some mark up for profit is required, profitability itself is the result of two things

i) margin; and

ii) Turn over

- Here, the decent price-mongers ignore the importance of turnover.

- Most important factor in increasing the total profit is turnover. Companies which have low margin but high turnover may make more profit compared to the companies which have high margin but low turnover.

- Companies with high fixed costs cannot be inflexible in its pricing policies. Once production facilities are created with huge investments, company's aim should be to generate every possible Rupee of contribution to recover its fixed costs.

- Therefore, any minor contribution to recover fixed costs should be welcomed.

- Some firms for internal transfer from one process to another also adopt pricing practices, usually they adopt market prices for the transfer from process to process.

5.4 PRODUCT DECISIONS

Q8. Explain briefly about Product decisions

Ans :

- Product decisions are part of long- range decisions. The objective of the management here is on how best to use the installed production capacity.'
- The production/product decisions may be studied under the following heads:
 - a) Decision to add a new product line.
 - b) Decision to drop a product-line/Department
 - c) Decision to sell or process further, and
 - d) Decision to make or buy component parts.
- In all the above matters it is the contribution margin which gives correct advice to the management to the management to determine which products are to be produced and sold to maximise its profits.
- The contribution margin it also useful when a company faces some shortage of inputs like supply of raw materials, skilled labour, machine hours and so on. The contribution margin helps the management to select the profitable product.
- For comparison purpose, the contribution is expressed for unit of scarce input, and the product which has highest contribution per unit of scarce input, is chosen to earn maximum profit. For example, when supply of raw materials is short, the products which bring more contribution for a unit of raw material should be produced more in order to make maximum profit.
- Like-wise when skilled labour or machine hours are in' limited supply, contribution for a unit of skilled labour/machine hour should be ascertained and the ranking should be according to the product with highest margin be given first Rank.

5.5 PROFIT PLANNING

Q9. Explain briefly about Profit planning and maintaining desired level of profit.

(OR)

Write a detail note on improving the profit by varying the various variables.

Ans :

- Marginal costing helps the profit planning, i.e., planning for future operations in such a way as to maximize the profits to maintain a specified level of profit.
- Absorption costing fails to bring out the correct effect of change in sale price, variable cost are product mix on the profits of the concern but that is possible with the help of marginal costing.
- Profits are increased or decreased as a consequence of fluctuations in selling prices, variable costs, and sales quantities in case there is fixed capacity to produce and sell.
- The first step in the profit planning is to know the break-even point.
- The second step is to bring out the effect of changes on sale price, variable cost, or product mix clearly on the profits of the concern.
- The volume of sales required to maintain a desired profit may be ascertained as follows :

$$\text{Desired Sales} = \frac{\text{Fixed costs} + \text{Desired profit}}{\text{P / V ratio}}$$

PROBLEMS

1. Quality products Ltd. manufacture and market a single product. The following data are available.

Particulars	₹/unit
Materials	16
Conversion costs (variable)	12
Dealer's margin	4
Selling price	40
Fixed costs	5,00,000
Capacity utilization	60%
Present sales	90,000 units

There is acute competition. Extra efforts are necessary to sell. Suggestions have been made for increasing sales.

- (a) By reducing sales price by 5%
 (b) By increasing dealers margin by 25% over the existing rate.

Which of these two suggestion, would you recommend, if the company desires to maintain the present profit?

Sol :

Profit Statement for Quality Products Ltd.

Particulars	Amount (₹)	Amount (₹)
Sales @ 40/units		36,00,000
Less: Variable Cost		
Material @ 16/units	14,40,000	
@ 12/units	10,80,000	
Dealer's margin @ 4/units	3,60,000	28,80,000
Contribution		7,20,000
Less: Fixed costs		5,00,000
Profits		2,20,000

In order to survive in the competition firm should follow certain ways. They are,

- (a) **Decrease in Selling Price by 5%**

$$\begin{aligned}
 \text{New selling price} &= 40 - 5\% \text{ of } 40 \\
 &= 40 - 2 \\
 &= 38
 \end{aligned}$$

In order to grab high market share and to maintain present profits firm can reduce the selling price from 40 to 38.

Profit Statement

Particulars	Amount (₹)	Amount (₹)
Sales		34,20,000
Less: Variable Cost		
Material	14,40,000	
Conversion costs	10,80,000	
Dealer's margin	3,60,000	28,80,000
Contribution		5,40,000
Less: Fixed costs		5,00,000
Profits		40,000

∴ Firm will earn profits of 40,000 if it reduces the selling price by 5%.

(b) Increasing Dealer's Margin by 25%

$$\begin{aligned}
 \text{New dealer's margin} &= 4 + 25\% \text{ of } 4 \\
 &= 4 + 1 \\
 &= 5
 \end{aligned}$$

Profit Statement

Particulars	Amount (₹)	Amount (₹)
Sales		36,00,000
Less: Variable cost		
Material	14,40,000	
Conversion costs	10,80,000	
Dealer's margin	4,50,000	29,70,000
Contribution		6,30,000
Less: Fixed costs		5,00,000
Profit		1,30,000

Conclusion

Option (b) is profitable when compared to (a) as it yields more profits (₹ 1,30,000) whereas option (a) yields only ₹ 40,000.

2. A company's target for 1990 is fixed at Rs.50,000, the company sells its products at Rs.20 per unit and variable costs are 75% of sales. During the year 1989 it sold 20,000 units and made a profit of Rs.40,000

The management wants to either

- Reduce variable cost per unit, or
- increase its selling price per unit.

You are required to calculate

- (i) reduced variable costs; and
- (ii) increased selling price.

Sol.:

Target profit is give as Rs.50,000 fixed costs are not given in the problem but ha to be ascertained.

Selling price per unit = Rs.20

Variable per unit @ 75% of sales = Rs. 15

Sales (Rs. 20 × 20,000) Rs. 4,00,000

(-) Variable cost

(Rs. 15 × 20,000) Rs. 3,00,000

Contribution Rs. 1,00,000

(-) fixed cost (B/F) Rs. 60,000

Profit (given) Rs. 40,000

(i) New variable cost per unit

Total contribution required

= fixed cost + Target profit

= Rs. 60,000 + 50,000

= Rs. 1,10,000

Contribution per unit = Rs. 1,10,000 / 20,000 units

= Rs. 5.50

Variable cost per unit = S.P. – unit contribution

= Rs. 20 – 5.50

= Rs. 14.50

(ii) New selling price per unit

Variable cost per unit = Rs. 15.00

Required contribution per unit = Rs. 5.50 as above

Selling price = Rs. 15 + Rs. 5,50 = Rs. 20.50

Selling price unit should be Increase to = Rs. 20.50

3. M/s Ball pen LTD, manufactures only Ball pens, marginal cost of each Ball pen is Rs.3. It has a fixed costs of Rs.25,000 per annum. Present production and sales of pens is 50,000 and selling price per pen is Rs.5. Any sale beyond 50,000 pens is possible only if the company reduces 20% of its current selling price. However, the reduced price applies only to the additional units. The company wants a target profit of Rs. 1,00,000. How many pens the company must produce and sell if the target profit is to be achieved?

Sol.:

(Imp.)

Present Sales : 50,000 units

Particulars	Per unit Rs.	Total Rs.
Sales	5.00	2,50,000
(-) Variable cost	3.00	1,50,000
Contribution	2.00	1,00,000
(-) Fixed costs	0.50	25,000
Profit	1.50	75,000
Target / Desired profit		= Rs. 1,00,000
(-) Profit on 50,000		Rs. 75,000
Profit to be earned from additional sales		= Rs. 25,000

Present Selling price = Rs. 5.00

(-) 20% = Rs. 1.00

S.P. obtainable beyond pens = Rs. 4.00

No. of units to be sold to obtain profit of Rs. 25,000 = Rs. 25,000 / Rs. 4 - 3
= 25,000 units

The company must produce and sell 75,000 (50,000 + 25,000) pens in order to make a target profit of Rs. 1,00,000.

5.5.1 Level of Activity

Q10. Explain briefly about Level of Activity Planning.

Ans.:

- In the context of profit maximization, management of a concern operating at less than the installed capacity, has to face the problem of planning the level of activity. It is a known fact that the impact of fixed cost per unit will be higher at lower levels of production.
- A concern producing goods on a small scale cannot take advantage of the economics of scale unless it expands itself and produces on large scale. It is also true that a concern has to increase its output and sell a larger quantity by lowering the price.

When a concern is not working to its full capacity, decision with regard to the level it should operate becomes relevant for the following reasons,

1. Increased capacity utilization resulting in increased output results in lower fixed cost per unit, since the same amount of total fixed cost gets spread over a large number of units.
2. It is possible to take advantage of economics of sale by increasing the capacity utilization.
3. Bulk purchases of materials results in lower purchase cost due to quantity discount allowed by the supplier.
4. If the level of activity is much more than which should be fixed cost may increase in step-like fashion.
5. To cope with the increased level of activity, the concern may have to hire skilled labour by paying a higher wage.

PROBLEM

4. A company is at present working at 90% of its capacity and produces 13,500 units per annum. It operates a flexible budgetary control system. The following figures are obtained from its budget :

Particulars	At 90% 13,500 units Rs.	At 100% 15,000 units Rs.
Sales	15,00,000	16,00,000
Fixed expenses	3,00,500	3,00,600
Semi-variable expenses	97,500	1,00,000
Variable expenses : (Other than material and labour)	1,45,000	1,49,000

Labour and material cost per unit remain the same under present conditions. Profit margin has been 10% on sales

- (i) You are required to determine the differential cost of producing 1,500 units by increasing capacity to 100%
- (ii) What price would you suggest for an export of these 1,500 units, taking into account that the overseas prices are lower than those of the home market ?

Sol :

Ascertainment of material and labour cost using the available particulars.

Particulars	At 90 %	At 100 %
Fixed expenses	3,00,000	3,00,000
Semi-Variable expenses	97,500	1,00,500
Variable overheads	1,45,000	1,49,500
Direct materials & labour (Balancing figure)	8,07,000	8,89,500
Marginal cost	13,50,000	14,40,000
Profit	1,50,000	1,60,000
Sales	15,00,000	16,00,000

- (i) Differential cost statement (for 1,500 units)

Particulars	Cost at 90% (13,500 units) Rs.	Cost at 100% (15,000 units) Rs.	Differential cost (1,500 units) Rs.
Direct material Labour	8,07,000	8,89,500	82,500
Variable overheads	1,45,000	1,49,500	4,500
Semi-variable expenses	97,500	1,00,500	3,000
Fixed costs Irrelevant here	10,49,500	11,39,500	90,000

(ii) Export Price

Incremental costs = Rs. 90,000

(+) Profit (10 % of sales) = Rs. 10,000

Price to be quoted = Rs. 1,00,000

Since overseas prices are less than domestic prices any price over Rs. 90,000 (for 1,500 units) is profitable and floor price (Bread-even) will be Rs. 90,000 or Rs. 60 per unit.

5. **Quality product limited's capacity of production is 3,00,000 units in a month. The sales department reports that the following schedule of sale price is possible.**

Production volume	Selling price/unit
50%	0.90
60%	0.90
70%	0.75
80%	0.60
90%	0.45

The variable cost is 0.30/unit and fixed costs are ` 60,000. At which volume of production will the profit be maximum.

Sol :

Statement Showing the Contribution at Various Levels of Production

Production Capacity	50%	60%	70%	80%	90%
Volume of production	1,50,000	1,80,000	2,10,000	2,40,000	2,70,000
Sales	1,35,000	1,62,000	1,57,500	1,44,000	1,21,500
Less: Variable cost	45,000	54,000	63,000	72,000	81,000
Contribution	90,000	1,08,000	94,500	72,000	40,500
Less: Fixed costs	60,000	60,000	60,000	60,000	60,000
Profit/operating income	30,000	48,000	34,500	12,000	19,500

Among all the contribution, the contribution is maximum (1,08,000) at 60% capacity. Fixed cost is constant i.e., 60,000/-. The profitability statement is as follows,

Profit is also maximum at 60% capacity of producing the product. In order to gain more profits the firm need to emphasise on the production capacity at 60%.

5.5.2 Key / Limiting Factor

Q11. Discuss the concept of Key or (Limiting) Factor.

Ans :

(Imp.)

- The limiting factor, which prevents an enterprise from earning unlimited profit, is known as the key factor. Usually this limiting factor is sales.
- A concern may not be able to sell as much as it can produce. But some times a concern cannot sell all it produces but production is limited due to the shortage of materials, lower plant capacity, or capital. In such a case, decision has to be taken the choice of the product whose production is to be increased, reduced, or stopped.

- The key factor is also called as limiting factor or principle budge factor.
- When there is no limiting factor, the choice of the product will be on the basis of the highest P/V Ratio.
- But when there is scarce or limited resources selection of the product will be on the basis of contribution per unit of scarce factor of production.
- When a limiting is in operation, the contribution per unit of such a factor should be the criterion to judge the profitability of a product. When two or more limiting factors are in operation simultaneously, it is necessary to take all of them into consideration to determine the profitability.
- When the material is in short supply, profitability is determined by contribution per kg, when labour shortage is there profitability is measured contribution per labour hour.

PROBLEM

- 6 A company manufactures and markets three products X, Y and Z. All the three products are made from the same set of machines. Production is limited by machine capacity. From the data given below, indicate priorities for products X, Y and Z with a view to maximising profits :

Particulars	Products		
	X	Y	Z
Raw material cost per unit (₹)	11.25	16.25	21.25
Direct labour cost per unit (₹)	2.50	2.50	2.50
Other variable cost per unit (₹)	1.50	2.25	3.55
Selling price per unit (₹)	25.00	30.00	35.00
Standard machine time required per unit in minutes	39	20	28

Sol :

(Imp.)

Statement Indicating Priorities of Different Products to Maximise Profits

Particulars	Products					
	X		Y		Z	
	₹	₹	₹	₹	₹	₹
Selling Price per unit		25		30		35
Less : Variable Cost per unit:						
Raw Material Cost per unit	11.25		16.25		21.25	
Direct Labour Cost per unit	2.50		2.50		2.50	
Other Variable Cost per unit	1.50		2.25		3.55	
		15.25		21		27.30
Contribution per unit (A)		9.75		9		7.70
Standard machine time required per unit in minutes (B)		39		20		28
Contribution per minute (A) ÷ (B)		0.25		0.45		0.275
Priorities for products		III		I		II

7. In a factory producing 2 different products, the limiting factor is the availability of materials. From the following particulars, decide the product you would recommend for priority.

Particulars	Product X Cost per Unit (₹)	Product Y Cost per Unit (₹)
Raw materials	25	40
Labour	10	15
Variable expenses	5	6
Fixed expenses	4	4
Total cost	44	65
Selling price	55	80
Profit	11	15

Sol :

Statement of Contribution/Unit

Particulars	Product X		Product Y	
	₹	₹	₹	₹
Selling price/unit		55		80
Less: Variable Cost/Unit				
(i) Materials	25		40	
(ii) Labour	10		15	
(iii) Variable expenses	5	40	6	61
Contribution/Unit (A)		15		19
Material Cost/unit (B)		25		40
Contribution/unit of material (A ÷ B)		0.6		0.475
Ranking		I		II

The contribution/unit of material is high for product Vi.e., 0.60 when compared to product Ti.e., 0.475. It is profitable for the firm to select product X.

8. The following particulars are taken from the records of a company engaged in manufacturing 2 products A and B from a certain material.

Particulars	Product A Per unit (₹)	Product B Per unit (₹)
Sales	2,500	5,000
Material cost (50 ₹/kg)	500	1,250
Labour cost (30 ₹/kg)	750	1,500
Variable overheads	250	500
Total fixed costs ₹ 10,00,000		

Comment on the profitability when,

(i) Total sales in value is limited

(ii) Raw material is in short supply

(iii) Production capacity is the limiting factor

(iv) Total availability of raw materials is 20,000 kgs and maximum sale potential of each product is 1,000 units find the product mix to yield maximum profits.

Statement Showing Profitability of each Product

Particulars	Product A		Product B	
	₹	₹	₹	₹
Sales value		2,500		5,000
Less: Variable Cost				
Material cost	500		1,250	
Labour cost	750		1,500	
Variable costs	250	1,500	500	3,250
Contribution per unit (A)		1,000		1,750
(i) Sale Value is Limiting Factor				
$\frac{\text{Contribution}}{\text{Selling price}}$	$\frac{1000}{2500}$	0.4	$\frac{1750}{5000}$	0.35
Ranking		I		II
(ii) Raw Material is Limiting Factor				
$\frac{\text{Contribution}}{\text{Consumption of material per unit}}$	$\frac{1000}{10}$	100	$\frac{1750}{25}$	70
Ranking		I		II
(iii) Production Capacity is Limiting Factor				
$\frac{\text{Contribution}}{\text{Direct labour hr/unit}}$	$\frac{1000}{25}$	40	$\frac{1750}{50}$	35
Ranking		I		II

(iv) If raw material is in short supply product 'A' appears to be most profitable than product 'B'. In this case, management should first utilize the raw materials for the production of product 'A'.

The allocation of raw materials to both the products A and B is as follows,

Total availability of raw materials = 20,000 kgs

Less: allocation of raw materials to = $1,000 \times 10 = 10,000$ kgs

Product A

[(Max sales = 1,000) × consumption per unit]

Remaining raw materials = 10,000 kgs

'B' product can consume 25 kg = $25 \times x = 10,000$ kgs of materials/unit

Number of units of 'B' = $\frac{10,000}{25} = 400$ units.

Statement of Product Mix

Product A – 1,000 × 2,500	25,00,000
Product B – 400 × 5,000	20,00,000
Total Contribution	45,00,000
Less: Fixed overheads	10,00,000
∴ Profit	35,00,000

∴ In order to gain maximum profits of 35,00,000 firm has to produce 1,000 units of 'A' and 400 units of product 'B'.

Working Notes

Raw materials consumed/unit for product A (in kgs) = $\frac{\text{Total material cost/unit}}{\text{Material cost/kg}}$

$$= \frac{500}{50} = 10 \text{ kgs/unit}$$

$$\text{For product 'B'} = \frac{1250}{50} = 25 \text{ kgs/unit}$$

Direct labour hours/unit for product 'A' = $\frac{\text{Total labour cost/hr}}{\text{Labour cost/hr}}$

$$= \frac{750}{30} = 25 \text{ hr/unit}$$

$$\text{For product 'B'} = \frac{1500}{30} = 50 \text{ hr/unit.}$$

9. Component on the relative portability of the following 2 products if,

(i) There is no key factor and

(ii) Output is the key factor

Particulars	Product Cost/Unit	
	Product A	Product B
Materials	200	150
Wages	100	200
Variable overhead	150	200
Fixed overhead	350	100
Profit	200	350
	1,000	1,000
Output/week	200	100

Sol :

Statement of Profitability of each Product

Particulars	Product A		Product B	
Sales		1,000		1,000
Less: Variable Cost				
(i) Materials	200		150	
(ii) Wages	100		200	
(iii) Variable overheads	150	450	200	550
Contribution/unit (A)		550		450
Ranking		I		II
Output is the limiting factor,				
$\frac{\text{Contribution/unit}}{\text{Output/week}}$	$\frac{550}{200}$	2.75	$\frac{450}{100}$	4.5
Ranking		II		I

- (i) If there is no limiting factor firm has to select product 'A' as the contribution per unit is more for product 'A' when compared to 'B'.
- (ii) If the output is the limiting factor, the firm has to select product 'B' instead of product 'A' as the contribution per output is more for product 'B'.

5.5.3 Dropping a Product Line

Q12. Discuss about Dropping (Discontinuance) a Product Line.

Ans :

Another type of condition of decision-making in multi-product firm is regarding the discontinuance of a product line.

The following factors should be considered before taking a decision about the discontinuance of a product line :

1. The contribution given by the product, This contribution is different from profit. Profit is arrived at after deducting fixed cost from contribution. Fixed costs are apportioned over different products on some reasonable basis which may not be very much correct. Hence, contribution gives a better idea about the profitability of a product as compared to profit.
2. The capacity utilization, i.e. whether the firm is working to full capacity or below normal capacity. In case a firm is having idle capacity, the production of any product which can contribute toward the recovery of fixed costs can be justified.
3. The availability of product to replace the product which the firm wants to discontinue and which is already accounting for a significant proportion of the total capacity.
4. The long-term prospects in the market for the product.
5. The effect on sale of other products. In some cases, discontinuance of one product may result in heavy decline in sales of other products affecting the overall profitability of the firm.

PROBLEM

10. The following are the present cost and output data of a manufacturer,

Product	Price (₹)	Variable Cost Per Unit (₹)	% of Sales Tables
Tables	120	80	40
Chairs	60	40	35
Book cases	80	60	25

Total fixed cost ₹ 40,000 Last year's sales was ₹ 2,00,000

The manufacturer is considering to drop the line of book cases and replace with cabinets. His estimate for the new scheme are as follows,

Product	Price (₹)	Variable Cost Per Unit (₹)	% of Sales
Tables	120	80	40
Chairs	60	40	40
Cabinets	150	100	20

Total fixed cost per annum ₹ 40,000 Sales ₹ 2,50,000

Is the change worth undertaking?

Sol.:

(Imp.)

Statement Showing Profitability of each Product

Particulars	Table	Chair	Book Cases	Total
Selling price	80,000	70,000	50,000	2,00,000
Less: Variable cost	53,333	46,666	37,500	1,37,499
Contribution	26,667	23,334	12,500	62,501
Less: Fixed cost				40,000
Net Return				22,501

∴ The net profits of the firm with these 3 products is ₹ 22,501/-.

After replacing the book cases with cabinets the change in the firm's profitability can be determined as follows,

Particulars	Table	Chair	Cabinets	Total
Selling price	1,00,000	1,00,000	50,000	2,50,000
Less: Variable cost	66,666	66,666	33,333	1,66,665
Contribution	33,334	33,334	16,667	83,335
Less: Fixed cost				40,000
Net Return				43,335

There is an increase in the profitability of the firm with the dropping of book cases and replacing it with cabinets from ₹ 22,501 to ₹ 43,335. Hence, the change is worth undertaking.

Working Notes

Sale price/value = Total sale value × % of sales

For each product,

$$\text{For table} = 2,00,000 \times \frac{40}{100} = 80,000$$

$$\text{For chair} = 2,00,000 \times \frac{35}{100} = 70,000$$

$$\text{For book cases} = 2,00,000 \times \frac{25}{100} = 50,000$$

Variable cost for each product = Number of units × Variable cost per unit

$$\text{Number of units} = \frac{\text{Total sale value of each product}}{\text{Selling price per unit}}$$

$$\text{For table} = \frac{80,000}{120} \times 80 = 53,333$$

$$\text{For chair} = \frac{70,000}{60} \times 40 = 46,666$$

$$\text{For book case} = \frac{50,000}{80} \times 60 = 37,500$$

After change,

Calculation of Sales

Sales value = Total sales × % of sales value

$$\text{For tables} = 2,50,000 \times \frac{40}{100} = 1,00,000$$

$$\text{For chairs} = 2,50,000 \times \frac{35}{100} = 87,500$$

$$\text{For cabinets} = 2,50,000 \times \frac{20}{100} = 50,000$$

Calculation of Variable Cost

$$\text{Variable cost of each unit} = \frac{\text{Total sales value of each product}}{\text{Selling price per unit}} \times \text{Variable cost per unit}$$

$$\text{For tables} = \frac{1,00,000}{120} \times 80 = 833 \times 80 = 66,666$$

$$\text{For chairs} = \frac{1,00,000}{60} \times 40 = 166 \times 40 = 66,666$$

$$\text{For cabinets} = \frac{50,000}{150} \times 100 = 333 \times 100 = 33,333$$

5.5.4 Introducing a New Product Line**Q13. Discuss about Introduction of New Product.***Ans. :*

- Sometimes, a product may be proposed to be introduced to the existing product or products to utilize idle facilities, to capture a new market, or for any other purpose.
- A decision has, therefore, to be taken as to the profitability of the new product. The new product may be manufactured if it is capable of contributing something towards fixed costs and profit after meeting its variable costs of sales.
- Fixed costs are not taken into consideration on the assumption that these costs will not change or, in other words, the product can be manufactured by the existing resources, manpower, etc.
- But for taking decision in this matter, if the cost data are presented under total cost method, it may appear that the new product is not at all profitable; instead, the old product may appear to be more profitable owing to arbitrary apportionment of fixed costs.

PROBLEM

11. M/s. Sneha LTD. produces and sells three products, particulars of which are as follows:

Particulars	Product A Rs.	Product B Rs.	Product C Rs.	Total Rs.
Sales (a)	1,00,000	60,000	90,000	2,50,000
Less: Costs - variable cost	40,000	40,000	50,000	1,30,000
Fixed costs	24,000	21,000	20,000	65,000
Total costs (b)	64,000	61,000	70,000	1,95,000

The profit after introducing the product "B new".

Sol.:

Item	Product A Rs.	Product "B new" Rs.	Product C Rs.	Total Rs.
Sales (a)	1,00,000	1,00,000	90,000	2,90,000
Less: Costs Variable	40,000	30,000	50,000	1,20,000
Fixed	24,000	21,000	20,000	65,000
Total costs (b)	64,000	51,000	70,000	1,85,000
Profit (a)-(b)	36,000	49,000	20,000	1,05,000

Decision

By introducing product 'B new' in place of product B. The company's profit has increased from just Rs.55,000 to Rs. 1,05,000. Therefore, it is recommended to the management, that the new-product "B New" be introduced.

5.5.5 Product/Sales Mix Decisions

Q14. What is product mix? How marginal costing helps a manager in determination or selection of most profitable product mix?

*Ans.:***(Imp.)****Product Mix**

The Product Mix refers to the total products offered by an organization. A product line is a group of products within the product mix that can be classified together on account of criteria like customer needs, market served, channel used or technology employed.

Determination/Selection of Profitable Product Mix

Suitable product mix highlights the ratio of different products which are being produced and sold by the firms in order to gain maximum profits. Product mix helps in providing information regarding different products and product lines of a firm. Consistency is one of the most important characteristic of a product mix which would determine the nature of product line. A consistent product mix would advise the firm to produce similar product line whereas inconsistent product mix would result in producing/offering the diversified product lines.

Decisions regarding product mix are quite important in the firms which are engaged in producing multiple products. One needs to be very careful while taking decisions regarding suitable product mix that leads to maximum profitability. Thus, management must make use of marginal costing technique in order to serve the purpose of taking decisions with respect to determination of most profitable product mix by comparing profitability or contribution of various products of the firm. Marginal costing also takes into consideration the limiting factors in terms of their contribution/unit while taking decisions regarding the suitable product mix.

Following are the two conditions in which product mix decisions are being made,

- (i) If there exists any limiting factor or any change in the fixed costs, then the most profitable product mix would be determined by comparing the relative profitability of different products in a product line.

- (ii) In case of absence of key factor and constant fixed costs, the most profitable product mix would be determined on the basis of the contribution/unit of each product.

The product mix which gives highest contribution/profitability would be retained and the management has to emphasize on increasing the production of that product mix. Whereas, if the product mix gives negative contribution or profitability that will be dropped out or discontinued.

The management must take into consideration the following factors while taking decisions with respect to the suitable product mix of a firm,

- The effect on raw materials resulting in making adjustment in the purchase programme
- Changes in the labour
- Changes in equipment load
- Locational factors
- Fluctuations in sales programmes

PROBLEMS

12. A company produces 3 products A, B and C and the following information is made available,

Particulars	A	B	C
Selling price/unit (₹)	100	75	50
Profit/volume ratio	10%	20%	40%
Maximum sales potential (Units)	40,000	25,000	10,000
Raw material content as a % of variable costs	50%	50%	50%

The fixed expenses are estimated at ₹ 6,80,000. The company uses a single raw material in all the 3 products. Raw material is in short supply and has a quota of the value of ₹ 18 lakhs for the year and the manufacture of its products to meet its sales demand.

You are required to

- Set a product mix which will give the maximum overall profit keeping the short supply in view, and
- Compute the maximum profit.

Sol :

Preparation of Profitability Statement

Particulars	A	B	C
Selling price (A)	100	75	50
Profit/volume ratio (B)	10%	20%	40%
Contribution per unit ($C = A \times B$)	10	15	20
Variable cost per unit ($D = A - C$)	90	60	30
Raw material per unit ($E = D/2$)	45	30	15
Contribution per ₹ 1 of raw material ($F = C/E$)	0.22	0.50	1.33
Ranks	III	II	I

Preparation of Statement for Product Mix and Profit

Ranks (1)	Products (2)	No.of Units (3)	Material cost P.U (4)	Total material cost (5 = 3x4)	Contribution P.U (6)	Total contribution (7 = 3x6)
I	C	10,000	15	1,50,000	20	200,000
II	B	25,000	30	7,50,000	15	3,75,000
III	A	20,000	45	9,00,000	10	2,00,000
Total						7,75,000

Calculation of Total Profit

Profit = Total contribution – Fixed cost

= 7,75,000 – 6,80,000

= 95,000

13. A firm has 2 machines, namely machine P and Q. Machine P can be used for production of either product A or product B or both. Machine Q can be used for the production of either product X or Y or both. In order to maintain customer relations, a minimum quantity of 1,500 units each of A and B and 1200 units each of X and Y should be produced by the firm. The production and the cost data for 2003 are as under.

Machine hours available P - 4,500

Q - 5,100

Particulars	Products			
	A	B	X	Y
Machine used	P	P	Q	Q
Machine hours required/unit of output	1.00 ` 200	1.25 ` 250	1.25 ` 300	0.80 ` 256
Selling price/unit	80	100	100	80
Direct materials/unit	90	80	100	125
Direct labour/machine hour	12	12	20	20
Variable overheads/machine hour				

Fixed overhead is ` 4 lakh/annum. An additional expenditure involving a fixed overhead of ` 25,000 annum will convert machine P and Q into a versatile center such that any four of the products can be manufactured on these 2 machines. The rate of output on these machines and direct wage rate will however, remain the same.

You are required to determine the optimal product mix subject to minimum market commitments both before and after the conversion of the machines into a versatile center.

Sol.:

Step 1 :

First we need to prepare a profitability statement.

Particulars	Products			
	A	B	X	Y
Selling price/unit	200	250	300	256
Less: Variable costs				
Direct Material	80	100	100	80
Direct labour	90	100	125	100
Variable overheads/machine hour/unit	12	15	25	16
Contribution/unit	18	35	50	60
Contribution/direct labour hour (WN)	18	28	40	75

Working Notes

	A	B	X	Y
<u>Contribution</u>	<u>18</u>	<u>35</u>	<u>50</u>	<u>60</u>
Direct labour hour	1	1.25	1.25	0.8
	= 18	= 28	= 40	= 75

Step 2 :

Preparation of product mix statement.

Product		Alternative I	Alternative II
P →	A	1,500	1,500
	Add: Additional	–	1,125
	Total	1,500	2,625
Q →	B	1,500	1,500
	Add: Additional	900	–
	Total	2,400	1,500
Q →	X	1,200	1,200
	Add: Additional	–	2,112
	Total	1,200	3,312
	Y	1,200	1,200
	Add: Additional	3,300	–
	Total	4,500	1,200
Grand Total		9,600	8,637

Working Notes

Total available labour hours for 'P' machine = 4,500

Required labours for minimum production,

$$A = 1,500 \times 1 = 1,500 \text{ hours}$$

$$B = 1,500 \times 1.25 = 1,875 \text{ hours}$$

∴ Total hours required to meet minimum production = 3,375 hours

Balance hours available for additional production = 4,500 – 3,375 = 1,125 hours

(i) Number of units of A-product can be produced in 1,125 hours is 1,125 / 1 hour/unit = 1,125 units

(ii) Number of units of product 'B' can be produced in 1,125 hours is 1,125 / 1.25 = 900 units

Total available machine hours for machine Q = 5,100

Required hours for minimum production,

$$X = 1,200 \times 1.25 = 1,500 \text{ hours}$$

$$Y = 1,200 \times 0.80 = 960 \text{ hours}$$

$$\underline{\underline{2,460 \text{ hours}}}$$

∴ Total hours required to meet minimum production on machine Q is 2,460 hours

Balance hours available for additional production = 5,100 – 2,460 = 2,640 hours

(i) Number of units of product X can be produced in 2,640 hours = $\frac{2640}{1.25} = 2,112$ units

(ii) Number of units of product Y can be produced in 2,640 hours = $\frac{2640}{0.80} = 3,300$ units

∴ The optimal product mix that helps the firm to meet customer demand in the market is,

Product A – 1,500 units

Product B – 2,400 units

Product X – 1,200 units

Product Y – 4,500 units

After conversion the product mix which is optimal to meet market demand is as follows. After conversion into a versatile center it is possible to manufacture any product on the 2 machines. The possible alternative are,

Product		Alternatives			
		I	II	III	IV
A	Min additional	1,500	1,500	1,500	1,500
		–	3,765	–	–
B	Min additional	1,500	1,500	1,500	1,500
		3,012	–	–	–
X	Min additional	1,200	1,200	1,200	1,200
		–	–	3,012	–
Y	Min additional	1,200	1,200	1,200	1,200
		–	–	–	4,706
	Total	8,412	9,165	8,412	10,106

Working Notes

After conversion

(i) Total time available = Machine hours of P + Q = 4,500 + 5,100 = 9,600 hours.

(ii) Total time taken to produce 1,500 units of A and B and 1,200 units of X and Y,

$$A = 1,500 \text{ units} \times 1 \text{ hour} = 1,500 \text{ hours}$$

$$B = 1,500 \text{ units} \times 1.25 \text{ hours} = 1,875 \text{ hours}$$

$$X = 1,200 \text{ units} \times 1.25 \text{ hours} = 1,500 \text{ hours}$$

$$Y = 1,200 \text{ units} \times 0.80 \text{ hours} = 960 \text{ hours}$$

$$\underline{\underline{5,835 \text{ hour}}}$$

$$\begin{aligned} \text{Total available time} &= (i) - (ii) \\ &= 9,600 - 5,835 \\ &= 3,765 \text{ hours} \end{aligned}$$

Alternative I

$$\text{Number of units of B that can be produced in 3,765 hours} = \frac{3,765}{1} = 3,765 \text{ units}$$

Alternative II

$$\text{Number of units of A that can be produced in 3,765 hours} = \frac{3,765}{1.25} = 3,012 \text{ units}$$

Alternative III

$$\text{Number of units of Y that can be produced in 3,765 hours} = \frac{3,765}{1.25} = 3,012 \text{ units}$$

Alternative IV

$$\text{Number of units of Y that can be produced in 3,765 hours} = \frac{3,765}{0.80} = 4,706.25 = 4706 \text{ units}$$

∴ The optimal product mix to effectively meet customer demand after conversion is,

Product A = 1,500 units

Product B = 1,500 units

Product X = 1,200 units

Product Y = 5,906 units

Step 3:

Income Statement Preparation

Contribution	Alternative I	Alternative II
A(1,500 × 18)	27,000	–
(2,625 × 18)	–	47,250
B(2,400 × 35)	84,000	–
(1,500 × 35)	–	52,500
X(1,200 × 50)	60,000	–
(3,312 × 50)	–	1,65,600
Y(4,500 × 60)	2,70,000	–
(1,200 × 60)	–	72,000
Total	4,41,000	3,37,350
Less: Fixed cost	4,00,000	4,00,000
Operational Profit	41,000	62,650

∴ Alternative I is optimal mix before conversion.

Income statement after Conversion

Contribution	Alternatives			
	I	II	III	IV
A	(1,500 × 18) = 27,000	(5,265 × 18) = 94,770	(1,500 × 18) = 27,000	(1,500 × 18) = 27,000
B	(4,512 × 35) = 1,57,920	(1,500 × 35) = 52,500	(1,500 × 35) = 52,500	(1,500 × 35) = 52,500
X	(1,200 × 50) = 60,000	(1,200 × 50) = 60,000	(4,212 × 50) = 2,10,600	(1,200 × 50) = 60,000
Y	(1,200 × 60) = 72,000	(1,200 × 60) = 72,000	(1,200 × 60) = 72,000	(5,906 × 60) = 3,54,360
Total funds	3,16,920	2,79,270	3,62,100	4,93,860
Less: Fixed costs	4,25,000	4,25,000	4,25,000	4,25,000
Operating income	(1,08,080)	(1,45,730)	(62,900)	68,860

After convention the product mix of alternative IV is optimal which yields profits of 68,860/-.

14. Mega limited produces 2 products and following particulars are detailed for these 2 products.

Particulars	A	B
Sales price/unit	7.00	4.00
Direct material cost/unit	3.50	2.00
Standard hour rate	2.00	2.00
Direct labour hours/unit	1 hour	½ hour
Variable overheads/unit	0.75	0.75

Machine hour required/unit of products 1.25, 1.00, 1.25 and 0.80.

Fixed overheads budgeted 60,000

Total direct labour hours available = 1,20,000

The company does not want to reduce the production of product A below 40,000 units and product B below 1,00,000 units. Assume that materials are freely available and that material and available direct labour can be freely used for either of the products subject to the minimum production as stipulated above. Suggest the best production program by outlining the steps along with the statements for profitability.

Sol.:

(Imp.)

Step 1

First, we need to prepare a profitability statement to determine the contribution per unit of the product.

Particulars	Product A		Product B	
Selling price/unit		7.00		4.00
Less: Variable cost				
Direct material	3.50		2.00	
Direct labour	2.00		1.00	
Variable overhead costs	0.75	6.25	0.75	3.75
Contribution/unit		0.75		0.25
Contribution/labour hour (C/Labour hour/unit)		$\frac{0.75}{1} = 0.75$		$\frac{0.25}{0.5} = 0.50$

Based on the above statement the product A is more profitable than product 'S'.

Step 2

Preparation of product mix statement

Particulars		Alternative I (units)	Alternative II (units)
Product A	Minimum	40,000	40,000
	Add: Additional	–	30,000
	Total	40,000	70,000
Product B	Minimum	1,00,000	1,00,000
	Add: Additional	60,000	
	Total	1,60,000	1,00,000

Working Notes

→ Total number of labour hours available to meet the demand are 1,20,000 hours

→ Required number of hours to meet minimum demand

$$A - 40,000 \times 1 = 40,000$$

$$B - 1,00,000 \times \frac{1}{2} = 50,000$$

$$= 90,000 \text{ hours}$$

∴ The number of hours that are available for additional production are,

$$1,20,000 \text{ hours} - 90,000 \text{ hours} = 30,000 \text{ hours}$$

1. Number of units of product A can be produced in $\frac{30,000}{1}$ hours = 30,000 units2. Number of units of product B can be produced in 30,000 hours = $\frac{30,000}{\frac{1}{2}} = 60,000$ units**Step 3**

Income statement preparation

Contribution	Alternative I	Alternative II
A(40,000 × 0.75)	30,000	–
(70,000 × 0.75)	–	52,500
B(1,60,000 × 0.25)	40,000	–
(1,00,000 × 0.25)	–	25,000
Total funds	70,000	77,500
Less: Fixed cost	60,000	60,000
Operational profit	10,000	17,500

Based on the operational income alternative II is more profitable than alternative I.

5.5.6 Make or Buy Decisions

Q15. Discuss About Make or Buy Decision.

Ans :

A firm may make some products; parts or tools or some times it may buy the same thing from outside. The management must decide which is profitable. In taking such a make or buy decision marginal costing technique helps the management.

Make or buy decisions become necessary when unutilized production facilities exist and the product being produced has a component, which can either be made in the factory itself or purchased from outside market.

While deciding to make or buy, the cost comparison should be made between the marginal cost of manufacture and the price at which the product or component could be obtained from outside. It is profitable to the firm to buy the component from others only when the supplier's price is less than the marginal cost. Fixed costs are excluded on the assumption that they have been already recovered.

Factors that Influence Make or Buy Decision

In a make or buy decision, the following cost, and non-cost factors must be considered specifically.

Cost Factors

- Availability of plant facility
- Quality and type of item which effects the production schedule.
- The space required for production of item
- Any special machinery or equipment required.
- Any transportation involved due to the location of the product, i.e., the "feeder point".
- Cost of acquiring special know-how required for the item.

Q16. Explain the pros and cons of Make or Buy Decision.

Ans :

S.No.	Pros/Benefits of Make Decisions	S.No.	Pros/Benefits of Buy Decisions
1.	Make decisions help in reducing the production cost.	1.	Buy decisions help in reducing the acquisition cost.
2.	It makes sure that products are supplied adequately.	2.	It helps in sustaining the commitment of supplier.
3.	Make decision helps in avoiding the misleading and deceptive suppliers.	3.	It helps in obtaining superior capabilities.
4.	It makes effective utilization of excess resources.	4.	Buy decisions help the firms to avoid making investments in additional capacity.
5.	Make decisions help the firms to produce desired quality product.	5.	Buy decisions help in decreasing the inventory costs.
6.	It helps in avoiding the supplier collusion.	6.	Buy decisions assure that the supply of items is constant and continuous.
7.	Make decisions help the firm in, <ul style="list-style-type: none"> • Producing unique products which are difficult to buy. • Protecting the intellectual properties. • Expand its size. 	7.	Buy decisions help the firm in, <ul style="list-style-type: none"> • Buying the products which are protected by patents. • Emphasizing more on core competency.

Cons

Pros of "make" decision are the cons of buy decision and pros of "buy" decision are the "cons" of make decision.

Q17. Explain the various reasons when to make and when to buy of Make or Buy Decision.

Ans :

Reasons

Make or Buy decision regulates the supply chain nature and resulting in management tasks.

The decision of making or buying a product is an important activity of management. A firm can meet the customer requirements, by making the products, by utilizing the facilities available within the firm or by buying the parts from a subcontractor and assembling them for producing the finished product.

The following are the basic reasons which act as the basis for taking make or buy decisions,

1. Retaining Core Technologies of Business

Many companies prefer to retain those processes which depict the core elements of their business within their companies.

2. Strategic Considerations

Make or Buy decisions must be taken within the strategic framework of the business. The firm determines the way in which the current and future market positions affect the ability of operations to support the market criteria for which it is responsible.

3. Buying Instead of Making

A company prefers a "buy" option, when the product needed for producing finished goods is completely different and needs a different processing machine. When company selects the 'buying' option, it will be difficult for it to attain significant competitive advantage from that bought component.

4. Service and Product Volumes

An organization facing different sets of demands for different volumes of products and services can opt for outsourcing for responding to one set of demands which it does not want to develop within the firm.

5. Globalization of World Trade

Traditionally, due to high tariff levels on the international trade, organizations used to prefer locally manufactured products. But in the current scenario, due to the elimination of trade barriers between the countries, organizations are preferring to go for global trade. This made global manufacturing economically feasible.

Criteria for 'Make' Decision

The following are the criteria on which the firm takes the decision to make a product or component,

1. The finished product can be produced at low cost by the firm, when compared to the outside suppliers.
2. The finished product is unable to meet the demand, as it is produced by limited suppliers.
3. The component/part is of high value for the firm and requires high quality control.

The company can manufacture the component/part along with the existing facilities for other items in which the company is experienced.

Criteria for 'Buy' Decision

Based on the following criteria, the firm takes the decision to buy a product or component.

1. Instead of spending high investments on facilities which are already at suppliers point, a firm can buy the product.
2. If a firm does not have adequate facilities for making a part or product and does not have any scope for more profitable opportunities for investing the firm's capital, then it opts for buying a part or component.
3. A firm can use existing facilities for making the other parts more economically.
4. The personnel of the company may not have adequate skills and abilities for making the required new product.
5. A company may be prevented from making a part due to patent or other legal barriers.
6. The part to be made by the firm may have temporary or seasonal demand.

PROBLEMS

15. A manufacturing company finds that while the cost of making a component part is ₹ 10, the same is available in the market at ₹ 9 with an assurance of continuous supply. Give your suggestion whether to make or buy this part. Give also your views in case the supplier reduces the price from ₹ 9 to ₹ 8. The cost information is as follows :

Materials	₹ 3.50	Other Variable Expenses	₹ 1.00
Direct Labour	₹ 4.00	Fixed Expenses	₹ 1.50

Sol :

To take a decision on whether to make or buy the component part, fixed expenses being irrelevant cost should not be added to the cost because these will be incurred even if the part is not produced. Thus, additional cost of the part will be as follows :

Particulars	₹
Materials	3.50
Direct Labour	4.00
Other Variable Expenses	1.00
Total	8.50

The company should produce the part if the part is available in the market at ₹ 9.00 because the production of every part will give to the company a contribution of 50 paise (i.e., ₹ 9.00 – ₹ 8.50).

The company should not manufacture the part if it is available in the market at ₹ 8 because additional cost of producing the part is 50 paise (i.e., ₹ 8.50 – ₹ 8) more than the price at which it is available in the market.

16. A firm can purchase a separate part from an outside source @ ₹ 11 per unit. There is a proposal that the spare part be produced in the factory itself. For this purpose a machine costing ₹ 1,00,000 with annual capacity of 20,000 units and a life of 10 years will be required. A foreman with a monthly salary of ₹ 500 will have to be engaged. Materials required will be ₹ 4.00 per unit and wages ₹ 2.00 per unit. Variable overheads are 150% of direct labour. The firm can easily raise funds @ 10% p.a. Advice the firm whether the proposal should be accepted.

Sol :

Increase in Fixed Costs		₹
Depreciation of Machine		10,000
Salary of Foreman		6,000
Interest on Capital		10,000
		26,000
		₹
Contribution per unit		11
Purchase Price		
Less : Variable Cost:	4.00	

Materials	2.00	
Wages	3.00	
Variable Overheads		9
Contribution per unit		2

$$\text{Minimum Volume} = \frac{26,000}{2}$$

$$= 13,000 \text{ units.}$$

In order to accept the proposal it is essential that the volume should be at least 13,000 units.

If there is no idle capacity and making of the spare part in the factory involves the loss of other work, the loss of contribution arising from displacement of work should also be considered along with variable cost of production. The loss of contribution is found with reference to key or limiting factor. If the purchase price is higher than the total variable cost of production plus traceable fixed costs plus the loss of contribution of production, it will be more profitable to manufacture.

- 17. A Radio manufacturing company finds that while it costs Rs. 6.25 to make a component × 273Q. The same is available in the market at Rs. 5.75 each with an assurance of a continued supply.**

The break - down of cost is :

Material	Rs. 2.75 each
Labour	Rs. 1.75 each
Other variables	Rs. 0.50 each
Depreciation and other fixed.	
Cost	1.25 each
	6.25

(a) Should you make or buy ?

(b) What would be your decision, if the supplier offers the components at Rs. 4.85 each.

Sol.:

(Imp.)

Calculation of making cost (or) variable cost

Materials Q	Rs. 2.75 each
Labour	Rs. 1.75 each
Other variables	Rs. 0.50 each
Making cost	Rs. 5.00 each
Market price	5.75 each

Decision

It is advisable to make the component because making charges are less than the market price.

i.e making charges 5 – 00

market price 5 – 75

If company buy the product from out sider than, company loose Re. 0.75 per component.

If market price is 4.85

It is advisable to buy the product from outsiders if company buy the product from outsiders it can save Rs. 0.15 per component.

- 18. An automobile manufacturing company finds that while the cost of making in its own workshop part no 0028 is Rs. 6.00 each, the same is available in the market at Rs. 5.60 with an assurance of continuous supply. Write a report to the managing director giving your views whether to make or buy this part. Give also your views in case the suppliers reduce the price from Rs. 5.60 to Rs. 4.60. The cost data is as follows :**

Material	Rs 2.00 per component
Direct labour	Rs.2.50 per component
Other variable over heads	Rs.0.50 per component
Depreciation and other fixed costs	1.00 per component
	<u>6.00 per component</u>

Sol :

- (a) Calculation of variable cost (or) making charges.**

Material	Rs 2.00 per component
Direct labour	Rs.2.50 per component
Other variable over heads	Rs.0.50 per component
	<u>5.00 per component</u>

Making charge Rs. 5 – 00 per component

Market price Rs. 5 – 60 per component

∴ It is advisable to the company to make the product Instead of buying. If company buys the product from outsiders. It will loose Rs. 0.60 paisa per unit.

- (b) If market price reduced from 5.60 to 4.60 paisa.**

If market price is reduced to 4.60. It is advisable to buy the product from outsiders instead of making. Because market price (buying) is less than the making cost.

19. Pipes manufacturing company is using a spar part Ax. The cost structure to manufacture is made up as under

Direct material	32 per unit
Direct wages	12 per unit
Variable over heads	5 per unit
Fixed cost	7 per unit
Total cost	<u>56 per unit</u>

The same component is offered by a seller for Rs. 45 with assumed. Supply should the company make or buy the component.

Sol.:

Calculation of variable cost or making cost per unit.

Direct material	Rs. 32 – 00
Direct wages	Rs. 12 – 00
Variable over heads	Rs. 5 – 00
Making charge	<u>49 – 00</u>
Making charge	Rs. 49 – 00
Market price	Rs. 45 – 00

Decision

It is advisable to the company to buy product. Because making charges is more than the buying costs if company make the product than It can loose Rs. 4 per unit.

20. An engineering company manufactures four components, namely A, B, C and D the cost particulars of which are given below:

Particulars	A(₹)	B(₹)	C(₹)	D(₹)
Direct Materials	80	100	100	120
Direct Labour	20	25	25	30
Variable Overhead	10	12	15	10
Fixed Overhead	15	23	20	20
	125	160	160	180
Output per Machine-hour (Units)	4	2	3	3

The key factor is shortage of machine capacity. You are required to advice the management as to whether they should continue to produce all or some of these components (which are used in its main product) or they should buy them from a supplier who has quoted the following prices:

A: ₹ 115; B: ₹ 175; C: ₹ 135 and D: ₹ 185.

Sol.:

(Imp.)

Preparation of Statement Showing Profitability

Particulars	Components			
	A	B	C	D
Direct Material	80	100	100	120
Direct Labour	20	25	25	30
Variable Overhead	10	12	15	10
Marginal Cost P.U	110	137	140	160
Purchase Price P.U	115	175	135	185
Excess of purchase price over marginal cost	5	38	–	25
Excess of marginal cost over purchase price	–	–	5	–
Decrease in profitability per machine hour (purchased from outside)	$5 \times 4 = 20$	$38 \times 2 = 76$	–	$25 \times 3 = 75$
Increase in profitability per machine hour (purchased from outside)	–	–	$5 \times 3 = 15$	–

Observation

- Components 'C' should be purchased from outside. Purchase from outside will increase the profitability by 15 per machine hour.
 - Components A, B and D are feasible by producing by own.
- 21. An automobile manufacturing company finds that while the cost of making is its own workshop part no. 0028 is ₹ 6.00 each, the same is available in the market at ₹ 5.60 with no assurance of continuous supply. The cost data is as follows:**

Particulars	₹
Direct Materials	2.50
Direct wages	2.00
Other variable costs	0.50
Depreciation and other fixed costs	1.00
Total	6.00

You are required

- To suggest to the managing director, giving your view to make or buy the part
- To give your view in case the suppliers reduce the price from ₹ 5.60 to ₹ 4.60.

Sol.:

In order to decide whether to make or buy the part no. 0028, fixed expenses should be excluded from the cost as they will be incurred irrespective of the part not being produced.

Thus, the additional cost of the part will be as follows:

	₹
Direct Materials	2.00
Direct wages	2.50
Other variable costs	0.50
Total	5.00

- (a) The Company should make the part is available in the market at ₹ 5.60 because the production of every part will give a contribution of 60 paise, i.e. (5.60 – 5.00) to the Company.
- (b) On the other hand if the part is available in the market at ₹ 4.60, the Company should not manufacture the part, because, the additional cost of producing the part is 40 paise (i.e., ₹ 5.00 – ₹ 4.60) more than the price at which it is available in the market.

In certain cases, inspite of lower variable cost, there may be increase in fixed cost. Therefore it is necessary to find out the minimum quantity required in order to justify the making of product instead of buying. This can be calculated by the following formula :

$$\text{Increase in} = \frac{\text{Fixed cost}}{\text{Contribution per unit}}$$

22. Suresh Ltd., is producing a part at a cost of ₹ 11 per unit. The composition of the cost is as follows,

Materials	3.00
Wages	4.00
Overheads - Variable	2.50
Fixed	1.50
	<u>11.00</u>

Presently, the firm has been incurring a total fixed cost of ₹ 15,000 for manufacturing the current production of 10,000 units. An outsider is offering the same component, in all aspects identical in features, for ₹ 10 per unit. On enquiry, it is found from the firm that the machine that is manufacturing the parts would remain idle as the machinery cannot be utilized elsewhere,

- (i) Should the offer be accepted?
- (ii) Would your answer would be different, if the outsider firm reduces the price to ₹ 9, after negotiation. What is the impact of the fixed costs in the decision-making process?

Sol :

Calculation of Total Variable Cost

Particulars	Amount (₹)
Materials	3.00
Wages	4.00
Overheads - Variable	2.50
Total Variable Cost	9.50

- (i) The given offer should be rejected because the variable cost for manufacturing the product is ₹ 9.50 whereas the outside market price of the same product is ₹ 10, this indicates that every unit bought outside results in loss of ₹ 0.50 per unit of a product.
- (ii) The offer should be accepted in case the firm is agreed to reduce the price of the product to ₹ 9. Generally fixed costs are not considered in decision making, even if the firm manufacture the product by themselves or purchase from any other source.

Short Question and Answers

1. Decision Making.

Ans :

Introduction

- Decision making involves choice between alternatives. Many quantitative and qualitative factors have to be taken into account in decision making. The term cost is very elusive; it has different meanings in different situations.
- A cost accountant examines each situation in depth to decide the kind of cost concepts to be used and plays an important role in decision making by making precise and relevant data available to management.
- In cost studies, a cost accountant should always consider four points for decision makings;
 - (i) He must establish why a choice is necessary
 - (ii) He must separately analyze each available alternatives.

2. Define Marginal Costing.

Ans :

The term 'Marginal Cost' is defined as the amount at any given volume of output by which aggregate costs are changed if the volume of output is increased or decreased by one unit. It is a variable cost of one unit of a product or a service i.e. a cost which would be avoided if that unit was not produced or provided.

3. Features of Marginal Costing.

Ans :

- (i) Costs are divided into two categories, i.e. fixed costs and variable costs.
- (ii) Fixed cost is considered period cost and remains out of consideration for determination of product cost and value of inventories.
- (iii) Prices are determined with reference to marginal cost and contribution margin.

(iv) Profitability of department and products is determined with reference to their contribution margin.

(v) In presentation of cost data, display of contribution assumes dominant role.

(vi) Closing stock is valued on marginal cost.

4. Limitations of marginal costing.

Ans :

- (i) The segregation of semi variable costs often poses a problem
- (ii) Closing stock of work in progress and finished goods are understated which is not acceptable to tax authorities.
- (iii) With the change technology and owing to automation of industries, it results in more fixed cost. Marginal costing fails to reflect the exact change because of adoption of new technology.
- (iv) It does not provide any yardstick to exercise control. So an effective means of control cannot be exercised.
- (v) The technique is not suitable under cost plus contract because of technique ignores fixed cost in calculating total cost.
- (vi) Variable cost per unit remains constant only in the short run but not in the long run.
- (vii) Cost comparison of two jobs will be difficult. Though marginal costing may be same for both the jobs.

5. Pricing decisions.

Ans :

- Pricing decisions is one of the most important decisions that management has to make. Pricing decisions that management has to make.
- Pricing decision is considered most important because pricing decision is not just a marketing decision or a financial decision, rather it is a decision touching on all aspects of a firms

activities, and as such affects the entire enterprise.

- Firstly, the price charged by the firm has a direct bearing by the consumers and as a consequence the in flows of revenues into the firm.
- Secondly, in the long-run they very existence of the firm depends on the pricing decision, that is if the price fixed does not cover all the costs (Variable and fixed), the firm cannot survive. Ultimate survival of the firm solely depends on the revenues generated by the firm.

6. Penetration Pricing.

Ans :

Penetration pricing involves setting low initial prices in order to reach a mass market immediately. In this type of pricing the company's intention is to gain quick acceptance from the mass market and is willing to sacrifice short run profits. After gaining the acceptance of market the price are slowly raised in order to earn profits.

Which pricing strategy a company adopts depends on the intention of the firm whether it wants quick recovery of costs and to make profits or ready to sacrifice short- run benefit for the long run benefits. Both the pricing strategies of pricing are in practice. For example price of small calculators was very high in the introduction stage and later witnessed abnormal fall in it price. T.V.s. Stereo sets. Automobiles are some other examples, which had a heavy initial prices and became cheaper slowly.

7. Level of Activity Planning.

Ans :

- In the contest of profit maximization, management of a concern operating at less than the installed capacity, has to face the problem of planning the level of activity. It is a known fact that the impact of fixed cost per unit will be higher at lower levels or production.
- A concern producing goods on a small scale cannot take advantage of the economics of scale unless it expands itself and produces on large scale. It is also true that a concern has

to increase its output and sell a larger quantity by lowering the price.

When a concern is not working to its full capacity, decision with regard to the level it should operate becomes relevant for the following reasons,

- (i) Increased capacity utilization resulting in increased output results in lower fixed cost per unit, since the same amount of total fixed cost gets spread over a large number of units.
- (ii) It is possible to take advantage of economics of sale by increasing the capacity utilization.
- (iii) Bulk purchases of materials results in lower purchase cost due to quantity discount allowed by the supplier.

8. Key / Limiting Factor.

Ans :

- The limiting factor, which prevents an enterprise from earning unlimited profit, is known as the key factor. Usually this limiting factor is sales.
- A concern may not be able to sell as much as it can produce. But some times a concern cancel all it produces but production is limited due to the shortage of materials, lower plant capacity, or capital. In such a case, decision has to be taken the choice of the product whose production is to be increased, reduced, or stopped.
- The key factor is also called as limiting factor or principle budget factor.
- When there is no limiting factor, the choice of the product will be on the basis of the highest P/V Ratio.
- But when there is scarce or limited resources selection of the product will be on the basis of contribution per unit of scarce factor of production.
- When a limiting is in operation, the contribution per unit of such a factor should be the criterion to judge the profitability of a product. When two or more limiting factors are in operation simultaneously, it is necessary to take all of them into consideration to determine the profitability.

9. Dropping a Product Line.

Ans :

The following factors should be considered before taking a decision about the discontinuance of a product line :

- (i) The contribution given by the product, This contribution is different from profit. Profit is arrived at after deducting fixed cost from contribution. Fixed costs are apportioned over different products on some reasonable basis which may not be very much correct. Hence, contribution gives a better idea about the profitability of a product as compared to profit.
- (ii) The capacity utilization, i.e. whether the firm is working to full capacity or below normal capacity. In case a firm is having idle capacity, the production of any product which can contribute toward the recovery of fixed costs can be justified.
- (iii) The availability of product to replace the product which the firm wants to discontinue and which is already accounting for a significant proportion of the total capacity.
- (iv) The long-term prospects in the market for the product.

10. Make or Buy Decision.

Ans :

A firm may make some products; parts or tools or some times it may buy the same thing from outside. The management must decide which is profitable. In taking such a make or buy decision marginal costing technique helps the management.

Make or buy decisions become necessary when unutilized production facilities exist and the product being produced has a component, which can either be made in the factory itself or purchased from outside market.

While deciding to make or buy, the cost comparison should be made between the marginal cost of manufacture and the price at which the product or component could be obtained from outside. It is profitable to the firm to buy the component from others only when the supplier's price is less than the marginal cost. Fixed costs are excluded on the assumption that they have been already recovered.

Exercise Problems

1. Garden Products Limited, manufacture the "Rain Pour" garden spray. The accounts of the company for the year 1981 are expected to reveal a profit of Rs. 14,00,000 from the manufacture of "Rain Pour" after charging fixed costs of Rs. 10,00,000. The "Rain Pour" is sold for Rs.50 per unit and has a variable unit cost of Rs.20.

Market sensitivity tests suggest the following responses to price changes:

Alternatives	Selling price reduced by	Quantity sold Increased by
A	5%	10%
B	7%	20%
C	10%	25%

Evaluate these alternatives and state which, on profitability consideration, should be adopted for the forth coming year, assuming cost structure unchanged from 1981.

[Ans: Alternative B gives maximum contribution (Rs. 25,44,000) and hence recommended for adoption]

2. The operating statement of Aparna Limited is as follows :

Particulars	Rs.	Rs.	Rs.
Sales (40,000@ Rs. 15)			6,00,000
Costs :			
Materials	120,000		
Labour	1,60,000		
Overheads	80,000	3,60,000	
Fixed costs		1,60,000	
Total cost		5,20,000	
Profit		80,000	

The plant capacity is 50,000 units. A customer from U.S.A is desirous of buying 10,000 units at a net price of Rs. 10 per unit.

Advise the producer whether or not offer should be accepted ?

Will your advice be different if the customer is a local one ?

[Ans: Offer from U.S.A. customer be accepted as it will bring an additional profit of Rs. 10,000. But local customer's offer may threaten the prevailing prices in the market and its impact also should be taken into account]

3. Due to industrial depression, a plant is running at present. At 50 % its capacity. The following details are available:

Cost of production per unit Rs.

Direct material	2
Direct Labour	1
Variable overhead	3
Fixed overhead	2
	8

Production per month 20,000 units

Total cost of production		1,60,000
Sales price	Rs.	1,40,000
Less:	Rs.	<u>20,000</u>

An exporter offers to buy 5,000 units per month at the rate Rs.650 per unit and the company hesitates to accept the offer of increasing its already large operating losses.

Advise whether the company should accept or decline this offer ?

[Ans: The Company should accept the offer as the losses be reduced the losses]

Choose the Correct Answer

1. If the marginal cost is _____ buying price, additional requirement of the component should be met by making rather than buying. [c]
(a) Equal to (b) More than
(c) Less than (d) None of the above
2. If the management decides to manufacture a product in its own factory, the focus should be on [a]
(a) Cost factors (b) All Non-cost factors
(c) Both a and b (d) None of the above
3. If there are large fluctuations in demand, the component should be _____ [a]
(a) Purchased from outside
(b) Made in factory
(c) Should be made in factory in peak season
(d) Should be made in factory in off season
4. In marginal costing profitability of each product is measured on the basis of its. [c]
(a) Cost (b) Profit
(c) Contribution (d) None of the above
5. While making key factor decision, if raw material is key factor then such product should be preferred which offer. [c]
(a) Highest contribution per hour
(b) Highest contribution per unit
(c) Highest contribution per unit of material
(d) None of the above
6. While selecting optimum product mix _____ is the real index of profitability. [b]
(a) Contribution per unit (b) Contribution per unit of key factor
(c) Profit and sales (d) None of the above
7. While selecting optimum product mix. [a]
(a) Ranks are assigned on the basis of highest contribution per unit of key factor
(b) Ranks are assigned on the basis of lowest contribution per unit of key factor
(c) No ranks are assigned
(d) None of the above
8. If desired profit is decided, then normal price should be _____. [a]
(a) Marginal cost + Contribution (b) Marginal cost + Fixed cost – profit
(c) Both a & b (d) None of the above
9. 4000 mobiles need to be made and sold in a monopoly market. The desired profit is Rs 2,00,000. The variable cost per mobile is Rs 100 and the total fixed costs are Rs 40,000. Find out unit selling price. [b]
(a) Rs 160 per mobile (b) Rs 1,600 per mobile
(c) Rs 1.60 per mobile (d) None of the above
10. When there is tough competition and price-cut is on war, the focus should be on _____. [c]
(a) Normal price (b) Depression price
(c) Minimum price (d) None of the above

Fill in the blanks

1. _____ involves choice between alternatives.
2. _____ decisions is one of the most important decisions that management has to make.
3. _____ pricing involves setting a high initial price in order to recover costs as early as possible and make a quick profit and gradual reduction of prices.
4. _____ pricing involves setting low initial prices in order to reach a mass market immediately.
5. _____ decisions are part of long-range decisions.
6. The limiting factor, which prevents an enterprise from earning unlimited profit, is known as the _____.
7. The _____ Mix refers to the total products offered by an organization.
8. _____ regarding product mix are quite important in the firms which are engaged in producing multiple products.
9. _____ or _____ decisions become necessary when unutilized production facilities exist and the product being produced has a component _____.
10. The _____ product can be produced at low cost by the firm, when compared to the outside suppliers.

ANSWERS

1. Decision making
2. Pricing
3. Skimming
4. Penetration
5. Product
6. Key factor
7. Product
8. Decisions
9. Make, buy
10. Finished

FACULTY OF COMMERCE
M.Com II - Semester (CBCS) Examinations
Model Paper - I
ADVANCED MANAGERIAL ACCOUNTING

Time : 3 Hours]

[Max. Marks : 70

Note: Answer all the questions from Part - A and Part - B
Each question carries 4 marks in Part - A and 10 marks in Part - B

PART - A (5 × 4 = 20 Marks)
[Short Answer Type]

ANSWERS

- | | |
|---|-------------------|
| 1. What are Financial Statements? | (Unit-I, SQA-1) |
| 2. Profit Centre | (Unit-II, SQA-5) |
| 3. Capital Maintenance Concept Of Income. | (Unit-III, SQA-6) |
| 4. State the Significance of EVA | (Unit-IV, SQA-1) |
| 5. Features of Marginal Costing. | (Unit-V, SQA-3) |

PART - B (5 × 10 = 50 Marks)
[Essay Answer Type]

6. (a) Discuss the various of Techniques of analysis of financial statements (Unit-I, Q.No.7)
- (OR)
- (b) From the following Trading and Profit and Loss Account of Ramesh & Co. for the year 31th. Dec. 2003 :

Particulars	Rs.	Particulars	Rs.
To Opening Stock	60,000	By Sales	4,00,000
To Purchase	2,75,000	By Closing Stock	75,000
To Wages	25,000		
To Gross Profit c/d	1,15,000		
	4,75,000		4,75,000
To Administrative Expenses	45,000	By Gross Profit b/d	1,15,000
To Selling and Distribution Expenses	10,000	By Interest on Investment	10,000
To Office Expenses	5,000		
To Non Operating Expenses	15,000		
To Net Profit	50,000		
	1,25,000		1,25,000

You are required to calculate :

1. Gross Profit Ratio
2. Operating Ratio
3. Operating Profit Ratio
4. Net Profit Ratio

(Unit-I, Prob.No. 6)

7. (a) Explain the different types of Responsibility Centre.

(Unit-II, Q.No.7)

(OR)

- (b) From the following details analyze the relative performance of two independent responsibility centres.

Particulars	A (Rs.)	B (Rs.)
Sales	10,00,000	12,00,000
Divisional assets	15,00,000	14,00,000
Fixed cost	3,00,000	3,50,000
Variable cost	2,50,000	3,00,000
Capital employed	20,00,000	25,00,000
Cost of capital	8%	9%

(Unit-II, Prob. No. 5)

8. (a) Discuss briefly about Measurement and Reporting of Gains and Losses.

(Unit-III, Q.No.19)

(OR)

- (b) Explain the techniques of Current purchasing power.

(Unit-III, Q.No. 4)

9. (a) Explain the advantages and disadvantages of ROI.

(Unit-IV, Q.No.6)

(OR)

- (b) Explain the various Perspectives of Balanced Score Card.

(Unit-IV, Q.No.15)

10. (a) Explain the process of decision making.

(Unit-V, Q.No.2)

(OR)

- (b) An automobile manufacturing company finds that while the cost of making in its own workshop part no 0028 is Rs. 6.00 each, the same is available in the market at Rs. 5.60 with an assurance of continuous supply. Write a report to the managing director giving your views whether to make or buy this part. Give also your views in case the suppliers reduce the price from Rs. 5.60 to Rs. 4.60. The cost data is as follows :

Material	Rs 2.00 per component
Direct labour	Rs.2.50 per component
Other variable over heads	Rs.0.50 per component
Depreciation and other fixed costs	1.00 per component
	<hr/>
	6.00 per component
	<hr/>

(Unit-V, Prob.No. 18)

FACULTY OF COMMERCE
M.Com II - Semester (CBCS) Examinations
Model Paper - II
ADVANCED MANAGERIAL ACCOUNTING

Time : 3 Hours]

[Max. Marks : 70

Note: Answer all the questions from Part - A and Part - B
Each question carries 4 marks in Part - A and 10 marks in Part - B

PART - A (5 × 4 = 20 Marks)
[Short Answer Type]

ANSWERS

- | | |
|---|-------------------|
| 1. Liquidity Ratios. | (Unit-I, SQA-4) |
| 2. What are the Limitation of Responsi- bility Accounting ? | (Unit-II, SQA-7) |
| 3. Define Inflation Accounting | (Unit-III, SQA-1) |
| 4. Uses of ROI | (Unit-IV, SQA-5) |
| 5. Penetration Pricing. | (Unit-V, SQA-6) |

PART - B (5 × 10 = 50 Marks)
[Essay Answer Type]

6. (a) From the following Trading and Profit & Loss A/c of Rim Zim Limited for the year ended 31st March 1993.
- Calculate
- (i) Gross Profit Ratio
 - (ii) Net Profit Ratio
 - (iii) Operating Ratio
 - (iv) Operating Profit Ratio.

Dr.**Cr.**

Particulars	Amount	Particulars	Amount
To Opening Stock	5,00,000	By Sales	
To Purchases	11,00,000	Cash 3,00,000	
To Wages	3,00,000	Credit 17,00,000	20,00,000
To Factory Overheads	2,00,000	By Closing Stock	6,00,000
To Gross Profit (c/d)	5,00,000		
	26,00,000		26,00,000
To Administration Expenses	75,000	By Gross Profit (b/d)	5,00,000
To Selling & Distribution Exp.	50,000	By Dividend on Investment	10,000

To Interest on Debentures	20,000	By Profit on Sale of Furniture	20,000
To Depreciation	60,000		
To Loss on Sale of Motorcar	5,000		
To Net Profit	3,20,000		
	5,30,000		5,30,000

(Unit-I, Prob.No. 3)

(OR)

(b) Explain briefly about DuPont Analysis

(Unit-I, Q.No.18)

7. (a) S V Ltd. manufactures a product which is obtained basically from a series of mixing operations. The finished product is packaged in the company made glass bottles and packed in attractive cartons. The company is organized into two independent divisions viz. one for the manufacture of the end- product and the other for the manufacture of glass bottles. The product manufacturing division can buy all the bottle requirements from the bottle manufacturing division. The general manager of the bottle manufacturing division has obtained the following quotations from the outside manufacturers for the supply of empty bottles :

Volume (empty bottles)	Total purchases value (`)
8,00,000	14,00,000
12,00,000	20,00,000

A cost analysis of the bottle manufacturing division for the manufacture of empty bottles reveals the following production costs :

Volume (empty bottles)	Total purchases value (`)
8,00,000	10,40,000
12,00,000	14,40,000

The production cost and sales value of the end-product marketed by the product manufacturing division are as under :

Volume (bottles of end-product)	Total cost of end-product (excluding cost of empty bottles)	Sales Value (packed in bottles)
8,00,000	64,80,000	91,20,000
12,00,000	96,80,000	1,27,80,000

There has been considerable discussion at the corporate level as to the use of proper price for transfer of empty bottles from the bottle manufacturing division to the product manufacturing division. This interest is heightened because a significant portion of the divisional general manager's salary is in incentive bonus based on profit centre results.

As the corporate management accountant responsible for defining the proper transfer prices for the supply of empty bottles by the bottle manufacturing division to the product manufacturing division, you are required to show for the two levels of volumes of 8,00,000 and 12,00,000 bottles, the

profitability by using (i) market price and (ii) shared profit relative to the costs involved basis for the determination of transfer prices. The profitability position should be furnished separately for the two divisions and the company as a whole under each method. Discuss also the effect of these methods on the profitability of the two divisions.

(Unit-II, Prob. No.3)

(OR)

(b) Out line the process of Responsibility Accounting.

(Unit-II, Q.No. 3)

8. (a) Explain briefly about Current Cost Accounting Method

(Unit-III, Q.No.5)

(OR)

(b) Arjun Ltd. furnishes the following income statement for the year ending 31st December 2007, prepared on the basis of conventional accounting. You are required to adjust the same for price level changes under CPP method.

Particulars		
Sales		90,000
Less : Cost of goods sold :		
Opening inventory	8,000	
(+) Purchases	60,000	
	68,000	
(-) Closing inventory	6,000	
Add	62,000	
Expenses		
Wages & salaries	6,000	
Other expenses	4,500	
Depreciation on building	700	
Interest	300	73,500
Net Income		16,500
Dividends		4,000
Retained Earnings		12,500

Additional Information

➤ Index of general price level:

January 1, 2007 100

December 31,2007 200

Average Index 150

➤ Interest and dividends are paid on December 31.

➤ Building was purchased when the index was 50.

(Unit-III, Prob.No. 5)

9. (a) Explain the need and Significance of EVA. **(Unit-IV, Q.No.8)**

(OR)

- (b) Explain the Multiple Scorecard measures into a single strategy. **(Unit-IV, Q.No.19)**

10. (a) What is product mix? How marginal costing helps a manager in determination or selection of most profitable product mix?

(Unit-V, Q.No.14)

(OR)

- (b) A company manufactures and markets three products X, Y and Z. All the three products are made from the same set of machines. Production is limited by machine capacity. From the data given below, indicate priorities for products X, Y and Z with a view to maximising profits :

Particulars	Products		
	X	Y	Z
Raw material cost per unit (₹)	11.25	16.25	21.25
Direct labour cost per unit (₹)	2.50	2.50	2.50
Other variable cost per unit (₹)	1.50	2.25	3.55
Selling price per unit (₹)	25.00	30.00	35.00
Standard machine time required per unit in minutes	39	20	28

(Unit-V, Prob.No. 6)

FACULTY OF COMMERCE
M.Com II - Semester (CBCS) Examinations
Model Paper - III
ADVANCED MANAGERIAL ACCOUNTING

Time : 3 Hours]

[Max. Marks : 70

Note: Answer all the questions from Part - A and Part - B
Each question carries 4 marks in Part - A and 10 marks in Part - B

PART - A (5 × 4 = 20 Marks)

[Short Answer Type]

ANSWERS

- | | |
|-----------------------------------|-------------------|
| 1. Define cash flow statement. | (Unit-I, SQA-6) |
| 2. What is dual Pricing? | (Unit-II, SQA-11) |
| 3. Different classes of expenses. | (Unit-III, SQA-9) |
| 4. Balanced Score Card (BSC) | (Unit-IV, SQA-9) |
| 5. Decision Making. | (Unit-V, SQA-1) |

PART - B (5 × 10 = 50 Marks)

[Essay Answer Type]

6. (a) Using the P and L account and Balance Sheet given below, prepare Cash Flow Statement both under direct and indirect method.

Profit and Loss Account for the year ended 31st March, 2005

(Rs. in thousands)

Particulars	Year 2004-05	Year 2003-04
Sales	1,11,780	98,050
Other Income	390	220
Cost of Goods Sold	41,954	39,010
Selling and Administrative Expenses	16,178	12,500
Profit Before Tax	54,038	46,760
Less: Income Tax	21,615	18,704
Profit After Tax	32,423	28,056

Balance Sheet as on 31st March, 2005

(Rs. in thousands)

Liabilities and Shareholder Equity	As on 31-3-05	As on 31-3-04
Equity Share Capital	1,80,000	1,80,000
Retained Earnings	1,34,045	1,01,622
Current Liabilities		
Accounts Payable	3,526	4,330
Income Tax Payable	21,615	—
Dividend Payable	—	25,000
Total Liabilities	3,39,186	3,10,952
Assets		
Fixed Assets	3,93,000	3,70,000
Less: Depreciation	92,400	90,000
Current Assets		
Cash	6,380	6,000
Accounts Receivable: 20,064		
Less: Provision — (972)	19,092	23,568
Inventory : Raw Materials	516	636
Finished Good	598	748
Investments	12,000	—
Total Assets	3,39,186	3,10,952

(Unit-I, Prob.No. 18)

(OR)

(b) (i) State the uses of Financial Statements.

(Unit-I, Q.No.5)

(ii) Explain the Limitations of Financial Statements

(Unit-I, Q.No.6)

7. (a) Explain briefly about Market Based Pricing.

(Unit-II, Q.No. 10)

(OR)

(b) What are the advantages of Responsibility Accounting

(Unit-II, Q.No.4)8. (a) Explain the merits and demerits of capital maintenance concept of income. **(Unit-III, Q.No. 10)**

(OR)

- (b) From the following information, prepare a statement of changes in gross profit for the years 2014 and 2015.

Particulars	2014 (Rs.)	2015 (Rs.)
Sales	5,00,000	5,50,000
Cost of sales	3,00,000	3,25,000
Gross profit	2,00,000	2,25,000
No. of units sold	20,000	25,000

(Unit-III, Prob.No. 12)

9. (a) Explain the EVA concept in measuring financial performance of a company.

(Unit-IV, Q.No.11)

(OR)

- (b) Explain various ways to measure financial performance.

(Unit-IV, Q.No. 3)

10. (a) Explain the various reasons when to make and when to buy of Make or Buy Decision.

(Unit-V, Q.No.17)

(OR)

- (b) A firm has 2 machines, namely machine P and Q. Machine P can be used for production of either product A or product B or both. Machine Q can be used for the production of either product X or Y or both. In order to maintain customer relations, a minimum quantity of 1,500 units each of A and B and 1200 units each of X and Y should be produced by the firm. The production and the cost data for 2003 are as under.

Machine hours available P - 4,500

Q - 5,100

Particulars	Products			
	A	B	X	Y
Machine used	P	P	Q	Q
Machine hours required/unit of output	1.00 ` 200	1.25 ` 250	1.25 ` 300	0.80 ` 256
Selling price/unit	80	100	100	80
Direct materials/unit	90	80	100	125
Direct labour/machine hour	12	12	20	20
Variable overheads/machine hour				

Fixed overhead is ` 4 lakh/annum. An additional expenditure involving a fixed overhead of ` 25,000 annum will convert machine P and Q into a versatile center such that any four of the products can be manufactured on these 2 machines. The rate of output on these machines and direct wage rate will however, remain the same.

You are required to determine the optimal product mix subject to minimum market commitments both before and after the conversion of the machines into a versatile center.