B.COM (H) – Core 10 - Semester IV

MANAGEMENT ACCOUNTING

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SYLLABUS

(Core-10)

MANAGEMENT ACCOUNTING

Objective: To acquaint the students with basic concepts of management accounting, and basic understanding of tools and techniques used for managerial decision making.

CONTENTS: ‘

Unit – I:

Management Accounting: Meaning, nature, scope, and importance of management accounting; Role of management accounting; management accounting vs. financial accounting; Role of management accounting in modern business; Tools and techniques of management accounting.

Unit – II: Ratio Analysis & Cash flow statement

Ratio Analysis:
Meaning and utility of ratios; significance of Ratio analysis; Classification of Ratios – Profitability ratios, Efficiency Ratios, Liquidity Ratios, Solvency Ratios; Advantages and limitations of Ratio Analysis.

Cash flow Statements:
Cash Flow Statements: Meaning and utility of Cash flow statements; Preparation of Cash flow statements – Indirect method; Limitations of Cash flow statements; Cash flow statements vs. Funds flow statements. (Reference to Revised AS-3 and Ind AS-7)

Unit – III:
Absorption & Marginal Costing: P/V Ratio, Break-even analysis, Margin of safety, angle of incidence; Marginal and differential costing as a tool for decision making – make or buy, change of product mix, exploring new markets, shut down decisions.

Unit – IV:

Budgeting & Standard Costing: Concept of budget and budgetary control; objectives, merits and limitations of budgetary system; Master budget, Functional budget, Fixed and Flexible budgets; Zero based budgeting. Standard Costing & Variance Analysis: Meaning of standard cost and standard costing, Advantages and disadvantages of standard costing and variance analysis: Material, Labour, & Overhead.

Learning Outcome: After the completion of this paper, the students will be able to have

Confidence in managing cost issues and also to keep a check on cost control and taking managerial decisions.

Text Books Recommended

1. Management Accounting, S swain/ S.P. Gupta/ A Sharma, V.K. Global Pub. Pvt. Ltd.,
2. Horngreen, Charles T., Gary L. Sundem. Introduction to Management Accounting.
3. Prentice Hall.

Suggested Reading:

1. Jain & Narang, Management Accounting, Kalyani Publications
2. Management Accounting-M Wilson- Cost Accounting-Jena B,Bal S and Das AHimalaya
Publishing House
3. Narasimhan M.S. , Management Accounting, Cengage Learning
4. Cost & Management Accouning, Taxmann Publications
5. Arora, M.N. Cost Accounting – Principles and Practice. Vikas Publishing House, New Delhi.
6. Maheshwari, S.N. and S.N. Mittal. Cost Accounting: Theory and Problems. Shri Mahabir Book Depot, New Delhi.
7. Lal, Jawahar. Advanced Management Accounting Text and Cases. S. Chand & Co., New Delhi.
8. Khan, M.Y. and P.K. Jain. Management Accounting. Tata McGraw Hill, Publishing

UNIT-1

CONCEPTS OF MANAEMENT ACCOUNTING

LEARNING OBJECTIVES:

- To understand different branches of Accounting with their limitations
- To conceptualize the meaning, definition, nature, scope and objectives of Management Accounting
- To analyze the importance/role of Management Accounting
- To differentiate between Management Accounting, Financial Accounting and Cost Accounting
- To know the role of Management Accounting in modern business
- To acquaint with the tools and techniques of Management Accounting

CHAPTER PLAN:

1.1 INTRODUCTION:

Accounting is the process of recording, classifying, summarizing, analyzing and interpreting the financial transactions of the business for the benefit of management and those parties who are interested in business such as shareholders, creditors, bankers, customers, employees and government. Thus, it is concerned with financial reporting and decision making aspects of the business.

Branches of Accounting

Accounting can be groupedinto three categories:

1. Financial Accounting

2. Cost Accounting, and

3. Management Accounting

1.1.1 Financial Accounting

The term 'Accounting' unless otherwise specifically stated always refers to 'Financial Accounting'. Financial Accounting is commonly carried on in the general offices of a business. It is concerned with revenues, expenses, assets and liabilities of a business house.

Financial Accounting has two-fold **objectives**, viz.

1. To ascertain the result of the business in terms of earning of profits or suffering of losses, and

2. To know the financial position of the concern.

The following are the **functional aspects** of financial accounting:

1.Dealing with Financial Transactions

2. Recording of information

3. Classification of Data

4. Summarizing Group of Information

5. Analyzing

6. Interpreting the Financial Information

7. Communicating the Results

Financial Accounting is like a **post-mortem report**. At the most it can reveal what has happened so far, but it does not have any control over the past happenings.

The **limitations** of financial accounting are as follows:

1. It records only quantitative information.

2. It records only the historical cost. The impact of future uncertainties has no place in financial accounting.

3. It does not take into account price level changes.

4. It provides information about the whole concern. Product-wise, process-wise, department-wise or information of any other line of activity cannot be obtained separately from the financial accounting.

5. Cost figures are not known in advance. Therefore, it is not possible to fix the price in advance. It does not provide information to increase or reduce the selling price.

6. As there is no technique for comparing the actual performance with that of the budgeted targets, it is not possible to evaluate performance of the business.

7. It does not tell about the optimum or otherwise of the quantum of profit made and does not provide the ways and means to increase the profits.

8. In case of loss, whether loss can be reduced or converted into profit by means of cost control and cost reduction? Financial Accounting does not answer such question.

9. It does not reveal which departments are performing well? Which ones are incurring losses and how much is the loss in each case?

10. It does not provide the cost of products manufactured

11. There is no means provided by financial accounting to reduce the material losses, i.e. wastage, scrap, spoilage and defectives.

12. Can the expenses be reduced which results in the reduction of product cost and if so, to what extent and how? There is no answer to these questions in financial accounting.

13. It is not helpful to the management in taking strategic decisions like replacement of assets, introduction of new products, discontinuation of an existing line, expansion of capacity, etc.

14. It provides ample scope for manipulation like overvaluation or undervaluation. This possibility of manipulation reduces the reliability.

15. It is technical in nature. A person not conversant with accounting has little utility of the financial accounts.

1.1.2 Cost Accounting

The Institute of Cost and Works Accountants, India defines cost accounting as, "the technique and process of ascertainment of costs. Cost Accounting is the process of accounting for costs, which begins with recording of expenses or the bases on which they are calculated and ends with preparation of statistical data".

To put it simply, when the **accounting process** is **applied for the elements of costs** (i.e., Materials, Labour and Other expenses), it becomes Cost Accounting.

The main **objectives** of cost accounting are as follows:

1. Cost Ascertainment

2. Cost Control

3. Cost Reduction

4. Fixation of Selling Price

5. Providing information for framing Business policy.

Limitations of Cost Accounting

i)GroundedonEstimation: As cost accounting relies heavily on predetermined data, it is not reliable.

ii)No StandardizedProcedure: As there is no uniform procedure, with the same information different results may be arrived by different cost accountants.

iii)Conventions and Estimates: There are number of conventions and estimates in preparing cost records such as materials are issued on an average (or) standard price, overheads are charged on percentage basis, Therefore, the profits arrived from the cost records are not true.

iv) Formalities: Many formalities are to be observed to obtain the benefit of cost accounting. Therefore, it is not applicable to small and medium firms.

v) Expensive: Cost accounting is expensive and requires reconciliation with financial records.

vi) AdditionalTool: Cost Accounting is an additional tool not an essential tool and an enterprise can survive even without cost accounting.

vii) Secondary Data: Cost Accounting depends on financial statements for a lot of information. The errors or short comings in that information creep into cost accounts also.

1.1.3 Management Accounting

Management Accounting is comprised of two words 'Management' and 'Accounting'. It means the study of **managerial aspect of accounting**. The emphasis of management accounting is to redesign accounting in such a way that it is helpful to the management in formation of policy, control of execution and appreciation of effectiveness.

Management Accounting can be viewed as **Management-oriented Accounting**. Basically it is the study of managerial aspect of financial accounting,i.e."accounting in relation to management function". It is developed mainly to help the management in the discharge of its functions and for taking various decisions. The primary task of management accounting is, therefore, to redesign the entire accounting system so that it may serve the operational needs of the firm. It furnishes definite accounting information-past, present or future, which may be used as a basis for management action. The financial data are so devised and systematically developed that they become a unique tool for management decision.Hence, Management Accounting involves the study of accounting information and techniques that managers use in analyzing information.

Management Accounting is not a specific system of accounts, but could be any form of accounting which enables a business to be conducted more effectively and efficiently. Management Accounting, therefore, appears as the extension of the horizon of cost accounting towards emerging areas of management. Management Accounting is largely concerned with providing economic information to managers for achieving organizational goals.Managers use management accounting information to choose strategy to communicate it and to determine how best to implement it. They use management accounting information to coordinate their decisions about designing, producing and marketing a product or service.

1.2 DEFINITION OF MANAGEMENT ACCOUNTING:

Anglo-American Council of Productivity: "ManagementAccounting is the presentation of accounting information in such a way as to assist the management in creation of policy and the day to day operation of an undertaking".

Institute of Chartered Accountants of England and Wales: "Any form of accounting which enables a business to be conducted more efficiently can be regarded as Management Accounting".

American Accounting Association: "It includes the methods and concepts necessary for effective planning for choosing among alternative business actions and for control through the evaluation and interpretation of performances."

Institute of Cost and Management Accountants, London: "Management Accounting is the application of professional knowledge and skill in the preparation of accounting information in such a way as to assist management in the formulation of policies and in the planning and control of the operation of the undertakings".

Institute of Management Accountants (IMA): "Management Accounting is a profession that involves partnering in management decision making, devising planning and performance management systems, and providing expertise in financial reporting and control to assist management in the formulation and implementation of an organization's strategy"

J. Batty: "Management Accountancy is the term used to describe the accounting methods, systems and techniques which, with special knowledge and ability, assist management in its task of maximizing profit or minimizing losses."

Brown and Howard: "Management Accounting is that aspect of accounting which is concerned with the efficient management of a business through the presentation of management of such information as will facilitate efficient and opportune planning and control."

Robert Anthony: "Management Accounting is concerned with accounting information which is useful to management"

CIMA, London: "Management Accounting is an integral part of management concerned with identifying, presenting and interpreting information used for: (a) formulating strategy; (b) planning and controlling activities; (c) decision taking; (d) optimizing the use of resources; (e) disclosure to shareholders and others external to the entity; (f) disclosure to employees; (g) safeguarding assets".

1.3 NATURE /CHARACTERISTICS OF MANAGEMENT ACCOUNTING:

1. Grounded onAccounting Information

Management Accounting is based on accounting information. Management Accounting is a service function and it provides necessary information to different levels of management. Management Accounting involves the presentation of information in a way that suits the managerial needs. The accounting data collected by accounting department is used for reviewing various policy decisions.

2. Cause and Effect Analysis

The role of financial accounting is limited to find out the ultimate result, i.e., profit and loss, whereas management accounting goes a step further. Management Accounting discusses the cause and effect relationship. The reasons for the loss are probed and the factors directly influencing the profitability are also analyzed. Profits are compared to sales, different

expenditures, current assets, interest payables, share capital, etc. to give meaningful interpretation.

3. Use of Special Techniques and Concepts

Management Accounting uses special techniques and concepts according to necessity, to make accounting data more useful. The techniques usually used include financial planning and analyses, standard costing, budgetary control, marginal costing, project appraisal etc.

4. Aids in Taking Important Decisions

It supplies necessary information to the management which may be useful for its decisions. The historical data is studied to see its possible impact on future decisions. The implications of various decisions are also taken into account.

5. Aims at Achieving Objectives

Management Accounting uses the accounting information in such a way that it helps in formatting plans and setting up objectives. Comparing actual performance with targeted figures will give an idea to the management about the performance of various departments. When there are deviations, corrective measures can be taken immediately with the help of budgetary control and standard costing.

6. No Fixed Norms

No specific rules are followed in management accounting as that of financial accounting. Though the tools are the same, their use differs from concern to concern. The deriving of conclusions also depends upon the intelligence of the management accountant. The presentation will be in the way which suits the concern most.

7. ImprovesEfficiency

The purpose of using accounting information is to increase efficiency of the concern. The performance appraisal will enable the management to pin-point efficient and inefficient spots. Efforts are made to take corrective measures so that efficiency can be improved. The constant review will make the staff cost conscious.

8. DeliversInformation and not Decision

Management accountant is only to guide to take decisions. The data is to be used by the management for taking various decisions. ‘How is the data to be utilized’ will depend upon the caliber and efficiency of the management.

9. Involvedin Forecasting

The management accounting is concerned with the future. It helps the management in planning and forecasting. The historical information is used to plan future course of action. The information is supplied with the object to guide management for taking future decisions.

1.4 SCOPE OF MANAGEMENT ACCOUNTING

The advancement in information technology and the ever growing appetite of information consumers in this information age has broadened the scope of management accounting to include things that were not included in the discipline some ten years ago.Management Accounting has moved from a mere information gathering and processing system to an all-encompassing business solution box.

Management Accounting is concerned with presentation of accounting information in the most useful way for the management. Its scope is, therefore, quite vast and includes within its fold almost all aspects of business operations. However, the following areas can rightly be identified to be within the ambit of management accounting:

(**i) Financial Accounting:** Management Accounting is mainly concerned with the rearrangement of the information provided by financial accounting. Hence, management cannot obtain full control and coordination of operations without a properly designed financial accounting system.

(ii) Cost Accounting: Standard costing, marginal costing, opportunity cost analysis, differential costing and other cost techniques play a useful role in operation and control of the business undertaking.

(**iii) Revaluation Accounting:** This is concerned with ensuring that capital is maintained intact in real terms and profit is calculated with this fact in mind.

(iv) Budgetary Control: This includes framing of budgets, comparison of actual performance with the budgeted performance, computation of variances, finding their causes, etc.

(v) Inventory Control: It includes control over inventory from the time it is acquired till its final disposal.

(**vi) Statistical Methods:** Graphs, charts, pictorial presentation, index numbers and other statistical methods make the information more impressive and intelligible.

(vii) Interim Reporting: This includes preparation of monthly, quarterly, half yearly income statements and the related reports, cash flow and funds flow statements, scrap reports, etc.

(viii) Taxation: This includes computation of income in accordance with the tax laws, filing of returns and making tax payments.

(ix) Office Services: This includes maintenance of proper data processing and other office management services, reporting on best use of mechanical and electronic devices.

(x) Internal Audit: Development of a suitable internal audit system for internal control.

(**xi)Management Information System [MIS**]: Management Accounting serves as a centre for collection and dissemination of information.MIS is an essential part of Management Accounting.

1.5 OBJECTIVES OF MANAGEMENT ACCOUNTING

The fundamental objective of management accounting is to enable the management to maximize profits or minimize losses. The evolution of management accounting has given a new approach to the function of accounting. The main objectives of management accounting are as follows:

1. Planning and Policy Formulation

Planning involves forecasting on the basis of available information, setting goals, framing polices, determining the alternative courses of action and deciding on the programme of activities. Management accounting can help greatly in this direction. It facilitates the preparation of statements in the light of past results and gives estimation for the future.

2. Interpretation Process

Management Accounting is to present financial information to the management. Financial information is technical in nature.

Therefore, it must be presented in such a way that it is easily understood. It presents accounting information with the help of statistical devices like charts, diagrams, graphs, etc.

3. Assists in Decision-Making Process

With the help of various modern techniques, management accounting makes decision-making process more scientific. Data relating to cost, price, profit and savings for each of the available alternatives are collected and analyzed and thus it provides a base for taking sound decisions.

4. Controlling

Management Accounting is a useful tool for managerial control. Management Accounting tools like standard costing and budgetary control are helpful in controlling performance. Cost control is affected through the use of standard costing and departmental control is made possible through the use of budgets. Performance of each and every individual operation is controlled with the help of management accounting.

5. Reporting

Management Accounting keeps the management fully informed about the latest position of the concern through reporting. It helps management to take proper and quick decisions. The performances of various departments are regularly monitored and reported to the top management.

6. Facilitates Organizing

Since management accounting stresses more on Responsibility Centres with a view to control costs and fixation of responsibilities, so it also facilitates decentralization to a greater extent.Thus, it is helpful in setting up effective and efficient organization framework.

7. Facilitates Coordination of Operations

Management Accounting provides tools for overall control and coordination of business operations. Budgets are important means of coordination.

1.6 IMPORTANCE/FUNCTIONS OF MANAGEMENT ACCOUNTING

The basic function of management accounting is to assist the management in performing its functions effectively. The functions of the management are planning, organizing, directing and controlling. Management Accounting helps in the performance of each of these functions in the following ways:

(i) Provides Data: Management Accounting serves as a vital source of data for management planning. The accounts and documents are a repository of a vast quantity of data about the past progress of the enterprise which are a must for making forecasts for the future.

(ii) Modifies Data: The accounting data required for managerial decisions is properly compiled and classified. For example, purchase figures for different months may be classified to know total purchases made during each period product-wise, supplier-wise and territory-wise etc.

(iii) Analyses and Interprets Data: The accounting data is analyzed meaningfully for effective planning and decision-making. For this purpose the data is presented in a comparative form. Ratios are calculated and likely trends are projected.

(iv) Serves as a Means of Communicating: Management Accounting provides a means of communicating management plans upward, downward and outward through the organization. Initially, it is a means of identifying the feasibility and consistency of the various segments of the plan. At later stages it keeps all parties informed about the plans that have been agreed upon and their roles in these plans.

(v) Facilitates Control: Management Accounting helps in translatinggiven objectives and strategy into specified goals for attainment by a specified time and secures effective

accomplishment of these goals in an efficient manner. All this is made possible through budgetary control and standard costing which is an integral part of management accounting.

(vi) Uses also Qualitative Information: Management Accounting does not restrict itself to financial data for helping the management in decision making but also uses such information which may not be capable of being measured in monetary terms. Such information may be collected form special surveys, statistical compilations, engineering records, etc.

1.7 ROLE OF MANAGEMENT ACCOUNTING

The role of management accounting can be summarized in following points:

1. Helping Forecast the Future:

Forecasting aids decision-making and answering questions, such as: Should the company invest in more equipment? Should it diversify into different markets? Should it buy another company? Management Accounting helps in answering these critical questions and forecasting the future trends in business.

2. Helping in Make-or-Buy Decisions:

Is it cheaper to procure materials or a product from a third party or manufacture them in-house? Cost and production availability are the deciding factors in this choice. Through management accounting, insights will be developed which will enable decision-making at both operational and strategic levels.

3. Forecasting Cash Flows:

Predicting cash flows and the impact of cash flow on the business is essential. How much cost will the company incur in the future? Where will its revenues come from and will the revenues increase or decrease in the future? Management Accounting involves designing of budgets and trend charts, and managers use this information to decide how to allocate money and resources to generate the projected revenue growth.

4. Helping Understand Performance Variances:

Business performance discrepancies are variances between what was predicted and what is actually achieved. Management Accounting uses analytical techniques to help the management build on positive variances and manage the negative ones.

5. Analysing the Rate of Return:

Before embarking on a project that requires heavy investments, the company would need to analyse the expected rate of return (ROR). If given two or more investment opportunities, how should the company choose the most profitable one? In how many years would the company

break-even on a project? What are the cash flows likely to be? These are all vital questions that can be answered through management accounting.

1.8 ROLE OF MANAGEMENT ACCOUNTANT

The management accountant, often referred to as controller, is the managers of accounting information used in planning, control and decision making areas. He is responsible for collecting, processing and reporting information that well help managers in their planning, controlling and decision making activities. He participates in all accounting activities within the organization.

The following are the Roles of Management Accountant:

1. Participating in Management Process: The management accountant occupies a pivotal position in the organization. He performs a staff function and also has line authority over the accountant and other employees in his office. He educates executives on the best use of accounting information.

2. Maintaining optimum Capital Structure: Management accountant has a major role to play in raising of funds and their application. He has to decide about maintaining a proper mix of debt and equity. The raising of funds through debt is cheaper because of tax benefits and a proper leverage leads to trading on equity.

3. InvestmentOpportunities: A management accountant can assist either person or a firm regarding the investment in different ways. He can suggest how, when and where the investment should be made so that an investor or the firm canearn maximum return.

4. Financial Investigations: A management accountant can assist the management about the financial investigations which is extremely desired to determine the financial position for the interested parties. Relating to issue of shares, amalgamation or mergers, or reconstructions etc to ascertain the reason of decreasing profit or increasing costs, it so happened.

5. Long-term and Short –term Planning: Management accountant plays an important role in forecasting future business and economic events for making future plans i.e., short term and long-term plans, formulating corporate strategy, market study etc.

6. Participating in Management Process: The management accountant occupies a pivotal position in the organization. He performs a staff function and also has line over the accountant and other employees in his office. He educates executives on the need for collecting information and on the ways of using it. He shifts relevant information from the irrelevant and reports the same in a clear form to the management and sometimes to interested external parties.

7. Decision Making; Management accountant provides necessary information to management in taking short-term decision e.g. optimum product mix, make or buy, lease or buy, pricing of product, discontinuing a product etc. and long-term decisions e.g., capital budgeting,investment

appraisal, project financing. However, the job of management accountant is limited to the adequacy of required information, both in a comprehensive as well as reliable form for decision making purposes.

8. Control: The management accountant analyses accounts and prepares reports e.g., standard costs, budgets, variance analysis and interpretation, cash and funds flow analysis, management of liquidity, performance evaluation and responsibility accounting etc. for control.

9.Developing Management Information System: The routine reports as well as reports for long term decision making are forwarded to managerial personnel at all levels to take corrective action at the right time and also uses these reports for taking important decisions.

10. Stewardship Accounting: Management accountant designs the framework of cost and financial accounts and prepares reports for routine financial and operational decision making.

11. CorporatePlanning: He can assist management for long-term planning and advise management regarding amalgamation or mergers or reconstructions including financial planning to see whether effective utilization of resources is made or not. Thus, the role of management accountant cannot be ignored. As such, his services are primarily desired for the efficient management of an undertaking.

1.9 DISTINCTION BETWEEN MANAGEMENT ACCOUNTING, FINANCIAL ACCOUNTING, COST ACCOUNTING

1.9.1 DIFFERENCE BETWEEN COST ACCOUNTING AND FINANCIAL ACCOUNTING

Sl No	Basis	Cost Accounting	Financial Accounting
1	Purpose:	The main purpose of Cost Accounting is to analyze, ascertain and control costs	The main purpose of Financial Accounting is to record financial transactions and prepare financial statements.
2	Decision Making:	The Cost Accounts are basically designed to facilitate decision making in the areas of production, purchase, sales etc.	Financial accounts are of limited use in decision making.
3	Analysis of Cost and Profit:	The Cost Accounting shows the detailed cost and profits for each product, process, job, contract etc.	Financial Accounting shows the overall profit/loss of the entire organization.
4	Transactions Recorded:	Cost Accounting keeps records of both external and internal transactions.	Financial Accounts keep records of only external transactions with outsiders.
5	Access:	In Cost Accounting the outsiders	In Financial Accounting anybody

		generally have no access to cost records.	can have access to Financial Statements of Companies.
6	Control:	Cost Accounting Control all elements of Costs.	Financial Accounting does not exercise adequate control over material, labour and overhead costs.
7	Profit or Loss	Cost Accounting determines the profit or loss of each product, process, job and department.	Financial Accounting determines the profit or loss of the entire business.
8	Units	Cost Accounting records both monetary and physical units such as labour hour, machine hour etc.	Financial Accounting records only monetary units in the books of accounts.
9	Valuation of Closing Stock	Closing Stock is valued at cost price only in Cost Accounting.	In Financial Accounting Closing Stock is valued at cost or market price {Net Realizable value} whichever is lower.
10	Audit	Cost Accounting need not be followed by a system of external audit.	Financial Accounting needs a system of independent audit of the financial records by an external auditor.
11	Tax Assessment	Cost Accounting does not form a basis for tax assessment.	Financial Accounting forms a basis for determination tax liability of the business.
12	Parties	Cost Accounting serves the information needs of the management.	Financial Accounting serves the information needs of owners, creditors, employees and the society at large.
13	Mandatory	Installing a costing system is purely optional.	Maintaining Financial Accounting is mandatory.
14	Lack of Uniformity:	There are no fixed rules and regulations in Cost Accounting.Therefore different cost accounting system may be followed by different firms in the same industry which makes comparison difficult.	There are fixed rules and regulations in Financial Accounting.

1.9.2DIFFERENCE BETWEEN COST ACCOUNTING AND MANAGEMENT ACCOUNTING

The important differences between Cost Accounting and Management Accounting are as follows:

Sl No	Basis	Cost Accounting	Management Accounting
1	Purpose:	The purpose of Cost Accounting is the ascertainment of cost at each stage of production.	The purpose of Management Accounting is to provide information to the management for decision making.
2	Basis:	Cost Accounting is prepared mainly on the basis of past and less emphasis is given for the future.	Management Accounting purely aims at the future based on the past information.
3	Preparation:	Cost Accounting is prepared on the basis of some rules and regulations prescribed by the ICAI (Institute of Cost Accountants of India).	Management Accounting is prepared without adopting any specific and rigid rules. It may be prepared according to the will of the managerial personnel.
4	Reports:	The Reports of the Cost Accounting are subject to statutory audit.	The reports of the Management Accounting are not subject to statutory audit.
5	Useful:	The reports of the Cost Accounting are useful both to the internal and external parties.	The reports of the Management Accounting are useful only for the internal parties.
6	Scope:	Cost Accounting does not include tax planning and tax accounting.	Management Accounting includes tax planning and tax accounting.
7	Evolution:	Cost Accounting evolves due to the limitation of financial accounting,	Management Accounting evolves due to the limitations of cost accounting. It is the managerial aspects of financial accounting and cost accounting.
8	Maintenance of Records:	The maintenance of records is compulsory for complying the statutory requirements in selected industries as notified by Govt. from time to time.	The maintenance of records is purely voluntary and for internal use of management of the Company.
9	Planning Aspect:	Cost Accounting is mainly concerned with short-term planning.	Management Accounting is concerned with short term as well as long term planning of the

			organization.
10	Installation of System:	Cost Accounting can be installed without the help of the Management Accounting in the organization.	Management Accounting system cannot be properly installed without a proper cost accounting system.
11	Derivation of Data:	Cost Accounting data are derived basically from financial accounts.	Management Accounting data are derived from both Cost Accounts as well as from Financial Accounts.
12	Status:	The status of the Cost accountant in the organization comes after the management accountant.	The status of the Management accountant is higher than Cost accountant in the organization due to direct participation in decision making process.

1.9.3DIFFERENCE BETWEEN FINANCIAL ACCOUNTING AND MANAGEMENT ACCOUNTING

Sl No	Basis	Financial Accounting	Management Accounting
1	Objective	Financial Accounting aims at recording business transaction systematically to ascertain profit or loss and financial position at the end of the financial year.	The aim of Management Accounting is to prepare various statements for managerial planning, control and decision making.
2	Time Period	In Financial Accounting the accounts are prepared for a particular period.	InManagement Accounting the reports are prepared from time to time to update with the changing business environment.
3	Audit	In Financial Accounting under Company law Financial accounts are subject to compulsory Audit.	InManagement Accounting audit is optional..
4	Principles	Financial Accounting is prepared as per Generally Accepted Accounting principles (GAAP).	In Management Accounting no set of standing principles are followed.
5	Nature	Financial Accounting is concerned with historical data. It records only those transactions which have already taken place.	The Management Accounting is concerned with both historical data and estimated data.

		Thus, the accounts prepared here are like post-mortem report.	
6	Publication	In Financial Accounting, Financial Statements are published annually for external parties interested in the accounting information.	In Management Accounting the statements and reports are not published. They are meant for internal use of the management.
7	Quickness	In Financial Accounting, reporting is slow and time consuming. Hence, one has to wait till the end of the accounting year to get the financial statements.	In Management Accounting, reporting is very quick as it is meant for decision making.
8	Nature of Information	Financial Accounting is concerned with quantitative information expressed in terms of money.	Management Accounting is concerned with both qualitative and quantitative information.
9	Reporting	In Financial Accounting, Financial reports are prepared not only for the organization but for others interested in the accounting information of the business.	InManagement Accounting, the reports are prepared for internal use only.
10	Legal Compulsion	Preparation of financial accounts is mandatory to comply with statutory requirements.	Management Accounting is not compulsory.

1.10 ROLE OF MANAGEMENT ACCOUNTING IN MODERN BUSINESS:

Management Accounting is required to satisfy the demands of the current economic environment. There is a need for more innovative and useful management accounting techniques to improve productivity, to reduce costs, to improve quality, to determine accurate product costs to satisfy managerial needs of planning, decision making and control.

1. Activity-Based Costing (ABC) and Management:

The demand for more accurate and relevant management accounting information has led to the development of activity-based costing and activity-based management. Activity-based costing improves the accuracy of assigning costs by first tracing costs to activities and then to products or customers that consume these activities. Process value analysis, on the other hand, emphasizes activity analysis— trying to determine why activities are performed and how well they are performed.

The objective is to find ways to perform necessary activities more efficiently and to eliminate those that do not create customer value. Activity-based management is a system- wide, integrated approach that focuses management's attention on activities with the objective of improving customer value and the resulting profit. Activity-based management emphasizes Activity- Based Costing (ABC) and process value analysis.

2. Increasing Customer Value:

Globalisation has brought a wave of change in the way business operates and creates value for the customer. Now the market is not firm-centric but customer-centric. Customer value is a key focus of every firm. Firms can establish a competitive advantage by creating better customer value for the same by reducing cost than that of competitors with value addition to the product.

Customer value is the difference between what a customer receives (customer realization) and what the customer gives up (customer sacrifice). Increasing customer value means increasing customer realization or decreasing customer sacrifice, or both.

Increasing customer value to create a sustainable competitive advantage is achieved through selection of strategies. Cost information plays a critical role in this process and does through a process called as strategic cost management. Strategic cost management is the use of cost data to develop and identify superior strategies that can produce a sustainable competitive advantage. A focus on customer value ensures that the management accounting system should produce information about both realization and sacrifice.

3. Cross-Functional Perspective:

Management Accounting has a cross-functional perspective and management accountant must understand all functions of the business, from manufacturing to marketing and customer service. When customer value is attempted to be increased, all the functions of a business become interrelated; a decision affecting one, affects others as well.

A cross-functional perspective helps us to see the forest, not just one or two of the trees. This broader vision allows managers to increase quality, reduce the time required to serve customers and improve efficiency. In this perspective, management accounting helps other business functions through providing useful information and analysis.

4. Total Quality Management (TQM):

Continuous improvement is fundamental for establishing a state of manufacturing excellence. Manufacturing excellence is the key to survival in today's world-class competitive environment. A philosophy of total quality management, in which manufacturers strive to create an environment that will enable workers to manufacture perfect (zero-defect) products, has replaced the "acceptable quality" attitudes of the past.

Quality cost measurement and reporting are key features of a management accounting system for both manufacturing and service industries. In both cases, the management accounting system should be able to provide both operational and financial information about quality, including information such as the number of defects, quality cost reports, quality cost trend reports and quality cost performance reports.

5. Enhancing Efficiency and Reducing Time:

Improving efficiency in business activities is of vital concern in all business enterprises. Both financial and non-financial measures of efficiency are needed. Cost is a critical measure of efficiency. Trends in costs over time and measure of productivity changes can provide important measures of the efficiency of continuous improvement decisions. (Output measured in relation to the inputs).

Reducing time in all phases of production cycles, selling and distribution should be an important target for all business houses. Firms should deliver products or services quickly by eliminating non-value-added time and time of no-value to the customer. Decrease in non-value added time has correspondence with increase in quality.

Now-a-days, the technological innovation has increased for many industries and the life of a particular product can be quite short. Managers must be able to respond quickly and decisively to changing market conditions. Information to allow them to accomplishthis must be available from a management accounting information system.

6. Electronic Business (E-Business):

E-business is doing business transaction through information and communication technology. E-commerce is buying and selling products using information and communication technology. Business firms can expand sales and lower costs through e-business compared to paper-based transactions. Management accounting plays significant role in e-business through providing relevant cost information about its benefits, risks and opportunities. For example, business managers need to know the cost per electronic transaction versus cost per paper transaction.

1.11TOOLS AND TECHNIQUES USED IN MANAGEMENT ACCOUNTING

Some of the important tools and techniques used in management accounting are briefly explained below.

1. Financial Planning

The main objective of any business organization is maximization of profits. This objective is achieved by making proper or sound financial planning. Hence, financial planning is considered as best tool for achieving business objectives.

2. Financial Statement Analysis

Profit and Loss account and Balance Sheet are important financial statements. These statements are analysed for different period. This type of analysis helps the management to know the rate of growth of business concern. This analysis is done through comparative financial statements, common size statements, ratio analysis and trend analysis.

3. Cost Accounting

Cost Accounting presents cost data in product wise, process wise, department wise, branch wise and the like. These cost data are compared with predetermined one. This comparison of two costs enables the management to decide the reasons responsible for the difference between these costs.

4. Funds Flow Analysis

This analysis finds out the movement of fund from one period to another. Moreover, this analysis is very useful to know whether the fund is properly used or not in a year when compared to the previous year. The net working capital changes and funds lost from operation are also found out through this analysis.

5. Cash Flow Analysis

The movement of cash from one period to another can be found out through this analysis. Besides, the reasons for cash balance and changes between two periods are also found out. It studies the cash from operation and the movement of cash in a period under the distinct heading of operating activities, financing activities and investing activities.

6. Standard Costing

Standard cost is predetermined cost. It provides a yard stick for measuring actual performance. It is used to find the reasons for the variances if any.

7. Marginal Costing

Marginal costing technique is used to fix the selling price, selection of best sales mix, best use of scarce raw materials or resources, to take make or buy decision, acceptance or rejection of bulk order and foreign order and the like. This is based on the fixed cost, variable cost and contribution.

8. Budgetary Control

Under Budgetary control techniques, future financial needs are estimated and arranged according to an orderly basis. It is used to control the financial performances of business concern. Business operations are directed in a desired direction.

9. Revaluation Accounting

The fixed assets are revalued as per the revaluation accounting method so that the capital is properly represented with the assets value. It helps to find out the fair return on capital employed.

10. Decision-Making Accounting

A business problem can be solved by choosing any one of the best and most profitable alternatives. To select such alternative, the relevant costs are compared. Thus, accounting informationare used to solve the business problem which are arising out of increasing complexity of nature of business.

11. Management Information System (MIS)

Free flow of communication within the organization is essential for effective functioning of business. Hence, the management can design the system through which every employee of an organization can assess the information and used for discharging their duties and taking quality decisions.

12. Statistical Techniques

There are a lot of statistical techniques used in removing management problems. Methods of least square, Regression analysis, Correlation analysis, Time series analysis and Statistical quality control etc. are some examples of statistical techniques.

13. Management Reporting

The management accountant is preparing the report on the basis of the contents of profit and loss account and balance sheet and submit the same before the top management. Thus, management reports disclose the strength and weakness indifferent areas of operating activities and financial activities. These identifications are highly useful to management in exercising control and taking appropriate decision.

14. Ratio Analysis

It is used by management in the discharge of its basic functions of forecasting, planning, coordination, communication and control. It paves the way for effective control of business operations by undertaking an appraisal of both the physical and monetary targets.

Summary of Tools and Techniques of Management Accounting:

1. Based on Financial Accounting Information

- Analysis of Financial Statements through Ratio Analysis.
- Analysis of Financial Statements through Comparative statements,Common size statements, Trend, Graph and Diagram.
- Funds flow and Cash flow analysis.

- Return on Capital Employed Techniques**.**

2. Based on Cost Accounting Information

- Marginal costing (including cost-volume-profit analysis).
- Differential costing.
- Standard Costing.
- Analysis of Cost Variances.

3. Based on Mathematics

- Operation Research.
- Linear Programming.
- Network Analysis.
- Queuing theory and Game Theory.
- Simulation Theory.

4. Based on Future Information

- Budgetary Control.
- Business Forecasting.
- Project Appraisal or Evaluation.

5. Miscellaneous Tools

- Managerial Reporting.
- Integrated Auditing.
- Financial Planning.
- Revaluation Accounting.
- Decision Making Accounting.
- Management Information System.

1.12 LIMITATIONS OF MANAGEMENT ACCOUNTING

Management Accounting, being comparatively a new discipline, suffers from certain limitations which limits its effectiveness. These limitations are as follows:

1. Limitations of Basic Records: Management Accounting derives its information from financial accounting, cost accounting and other records. The strength and weakness of the management accounting, therefore, depends upon the strength and weakness of these basic records. In other words, their limitations are also the limitations of management accounting.

2. Persistent Efforts: The conclusions drawn by the management accountant are not executed automatically. He has to convince people at all levels because people by nature are resistant to change. In other words, he must be an efficient salesman in selling his ideas.

3. Management Accounting is only a Tool: Management Accounting cannot replace the management. Management accountant is only an adviser to the management. The decision

regarding implementing his advice is to be taken by the management. There is always a temptation to take an easy course of arriving at decision by intuition rather than going by the advice of the management accountant.

4. Wide Scope: Management Accounting has a very wide scope incorporating many disciplines. It considers both monetary as well as non-monetary factors. These factors bring inexactness and subjectivity in the conclusions obtained through it.

5. Top-Heavy Structure: The installation of Management Accounting system requires heavy costs on account of an elaborate organization and numerous rules and regulations. It can, therefore, be adopted only by big concerns.

6. Opposition to Change: Management Accounting demands a break away from traditional accounting practices. It calls for a rearrangement of the personnel and their activities which is generally not liked by the people involved.

7. Evolutionary Stage: Management Accounting is in its evolution stage. It has, therefore, the same impediments as a new discipline will have, e.g., fluidity of concepts, raw techniques and imperfect analytical tools. This all creates doubt about the very utility of management accounting. The rapid changes in the business scenario are big challenge before management accounting.

1.13 REVIEW QUESTIONS:

1. Discuss in detail the functions of management accounting. Explain the nature and scope of management accounting.

2. Explain the term ‘management accounting’ and state the objectives of management accounting.

3. ‘Management Accounting is the presentation of accounting information in such a way as to assist management in the creation of policy and in the day to day operations of the undertaking’. Elucidate this statement.

4. ‘Management Accounting is nothing more than the use of financial information for management purpose’. Explain this statement and clearly distinguish between financial accounting & management accounting.

5. What do you understand by ‘Management Accounting’? How does it differ from Cost Accounting?

6. How does management accounting differ from Financial Accounting? What are the limitations of Management Accounting?

7. ‘Management Accounting aims at providing financial result of the business to the management for taking decisions.’ Explain by bringing out advantages of Management Accounting.

8. Describe fully the limitations of Financial Accounting and point out how Management Accounting helps in overcoming them.

10. “Management Accounting is Financial Accounting bend at its elastic point.” How far do-you agree with this statement? Explain.

10. Explain the features of Management Accounting.

11. “There is an intimate relationship between Management Accounting and finance function.” Elucidate.

12. “Management Accounting is concerned with information which is useful to management.” Explain.

13. “A management accountant is both an information provider and a part of management” Explain.

14. “Management Accounting is the best tool for management to achieve its objectives”. Elucidate.

15. How does management accounting help planning and controlling the functions of an organization?

16. Define “Management Accounting” and state its important tools and techniques.

UNIT-2

CASH FLOW STATEMENT

LEARNING OBJECTIVES:

-To understand the meaning, nature, objective of Cash Flow Statement

-To learn the classification of activities under Cash Flow Statement

-To acquaint with the provisions of Indian Accounting Standard on Cash Flow Statement

-To know different steps of preparation of Cash Flow Statement

-To analyze the merits and demerits of Cash Flow Statement

-To differentiate between Cash Flow Statement, Income Statement and Funds Flow Statement

CHAPTER OUTLINE:

1.16 Theoretical Questions

1.17 Practical Questions

1.1 INTRODUCTION

"**Cash is King**"; is a known fact, that it is the basis of any business. No bills, employee payment, expenses payment would be made without cash. Expansions or addition to businesses can happen only through cash. In financial terms, Cash FlowStatement is a statement (report) of flows (both in and out of the business) of cash. Monitoring the cash situation of any business is the key. The income statement would reflect the profits but does not give any indication of the cash components. The important information of what the business has been doing with the cash is provided mainly by the Cash FlowStatement. Like the other financial statements, the Cash FlowStatement is also usually drawn up annually, but can be drawn up more often. It is noteworthy that Cash FlowStatement covers the flows of cash over a period of time (unlike the balance sheet that provides a snapshot of the business at a particular date). Also, the Cash FlowStatement can be drawn up in a budget form and later compared to actual figures.

1.2 MEANING OF CASH FLOW STATEMENT

1. It is a **summary** of the actual or anticipated **incomings and outgoings of cash** in a firm over an accounting period (month, quarter, and year). It answers the questions: Where the cash came (will come) from? Where it went (will go)?

2. Cash Flow Statements **assess the amount, timing, and predictability of cash-inflows and cash-outflows**, and are used as the basis for budgeting and business-planning.

3. A Cash FlowStatement provides **information about the changes** in **cash and cash equivalents** of a business by classifying cash flows into operating, investing and financing activities. It is a key report to be prepared for each accounting period for which financial statements are presented by an enterprise**.**

NOTE: Cash and Cash Equivalents generally consist of the following: Cash in hand, Cash at bank& Short term investments that are highly liquid.

1.3 OBJECTIVES OF PREPARING CASH FLOW STATEMENT

1. Cash Flow Statement shows inflow and outflow of cash and cash equivalents from various activities of a company during a specific period under the main heads i.e., operating activities, investing activities and financing activities.

2. Information through the Cash Flow Statement is useful in assessing the ability of any enterprise to generate cash and cash equivalents and the needs of the enterprise to utilize those cash flows**.**

3. Taking economic decisions requires an evaluation of the ability of an enterprise to generate cash and cash equivalents, which is provided by the Cash Flow Statement

4. Statement of cash flows provides important insights about the liquidity and solvency of a company which are vital for survival and growth of any organization.

5. It enables analysts to use the information about historic cash flows for projections of future cash flows of an entity on which to base their economic decisions.

6. By summarizing key changes in financial position during a period, Cash Flow Statement serves to highlight priorities of management.

7. Comparison of cash flows of different entities helps to reveal the relative quality of their earnings since cash flow information is more objective as opposed to the financial performance reflected in income statement.

1.4 CLASSIFICATION OF CASH FLOW ACTIVITIES:

Cash flow activities are to be classified into three categories:

- ⇒ **Operating Activities**
- ⇒ **Investing Activities**
- ⇒ **Financing Activities**

This is done to show separately the cash flows generated / used by these activities, thereby helping to assess the impact of these activities on the financial position and cash and cash equivalents of an enterprise.

1.4.1 Cash Flows from Operating Activities:

Operating activities are the activities that comprise of the primary / main activities of an enterprise during an accounting period. For example, for a garment manufacturing company, operating activities include procurement of raw material, sale of garments, incurrence of manufacturing expenses, etc. These are the principal revenue generating activities of the enterprise**.** Hence, Operating activities are the principal revenue-producing activities of the enterprise. Operating activities include cash effects of those transactions and events that enter into the determination of net profit or loss. Cash flows from operating activitiesinclude the followings:

- Cash receipts from sale of goods and the rendering services;
- Cash receipts from royalties, fees, commissions and other revenue;
- Cash payments to suppliers for goods and services;
- Cash payments to and on behalf of employees;

- Cash receipts and payments of an insurance enterprise for premiums and claims annuities and other policy benefits;
- Cash payments or refunds of income taxes unless they can be specifically identified with financing and investing activities; and
- Cash receipts and payments relating to future contracts, forward contracts, option contracts, and swap contracts when the contracts are held for dealing or trading purpose.

1.4.2 Cash Flows from Investing Activities:

Cash flow from investing activities includes the movement of cash flows owing to the purchase and sale of assets. Investing activities are the acquisition and disposal of long term assets and other investments not included in cash equivalent. In other words, investing activities include transactions and events that involve the purchase and sale of long-term productive assets (e.g., land, building, plant and machinery, etc.) not held for resale and other investments. The following are the examples of cash flows arising from investing activities:

(a) Cash payments to acquire fixed assets (including intangibles). These payments include those relating to capitalized research and development costs and self-constructed fixed assets.

(b) Cash receipts from disposalof fixed assets (including intangibles).

(c) Cash payments to acquire shares, warrants, or debt instruments of other enterprises and interests in joint ventures (other than payments for those instruments considered to be cash equivalent and those held for dealing or trading purposes).

(d) Cash receipt from disposal of shares, warrants, or debt instruments of other enterprises and interest in joint ventures (other than receipts from those instruments considered to be cash equivalents and those held for dealing or trading purposes).

(e) Cash advances and loans made to third parties (other than advances and loans made by a financial enterprise).

(f) Cash receipts from repayment of advances and loans made to third parties (Other than advances and loan of a financial enterprise).

(g) Cash receipts and payments relating to futurecontract, option contract, and swap contracts except when the contracts are held for dealing or trading purposes.

1.4.3 Cash Flows from Financing Activities

It includes financing activities related to long-term funds or capital of an enterprise. Financing activities are activities that result in changes in the size and composition of the owners' capital and borrowings of the enterprisee.g., cash proceeds from issue of equity shares, debentures, raising long-term loans, repayment of bank loans, etc.

Financing activities are activities that result in changes in the size and composition of the 'owners' capital (including preference share capital in the case of a company) and borrowings of the enterprise. The following are the examples of cash flows arising from financing activities:

(a) Cash proceeds from issuing shares or other similar instruments;

(b) Cash proceeds from issuing debentures, loans notes, bonds and other short term borrowing;

(c) Cash payments of amount borrowed;

(d) Payment of dividend.

Special Items: In addition to the general classification of three types cash flow, Ind AS-7 provides for the treatment of the cash flows of certain special items as under:

(a)Foreign Currency Cash Flows: Cash flow arising from transactions in a foreign currency should be recorded in an enterprise's reporting currency by applying to the foreign currency amount the exchange rate between the reporting currency and foreign currency at the date of cash flow. A rate that approximates actual rate may be used if the result is substantially the same as would arise if the rates at the date of cash flows were used. Unrealised gains and losses arising from changes in foreign exchange rate changes on cash and cash equivalent held or due in foreign currency is reported in the Cash FlowStatement in order to reconcile cash and cash equivalents at the beginning and end of the period.

(b) Extraordinary Items: The cash flows associated with extraordinary items such as bad debts recovered, claims from insurance companies, winning of a law suit or lottery etc., are disclosed separately as arising from operating, investing or financing activities in the Cash FlowStatement.

(c)Interest and Dividends: The treatment of interest and dividends, received and paid, depends upon the nature of enterprise, that is, financial enterprises or other enterprises, as follows:

(i) In the case of financial enterprises, cash flows arising from interest paid and interest and dividend received, should be classified as cash flows from operating activities.

(ii) In the case of other enterprises-(a) cash flows arising from interest paid should be classified as cash flows from financing activities while interest and dividend received should be classified as cash flows from investing activities; (b) dividends paid should be classified as cash flows from financing activities.

(d)Taxes on Income: Cash flows arising from taxes on income should be separately disclosed and should be classified as cash flows from operating activities unless they can be specifically identified with financing and investing activities.

(e) Acquisition and Disposal of Subsidiaries and Other Business Units: The aggregate cash flows arising from acquisitions and from disposals of subsidiaries or other business units should be presented separately and classified as investing activities.

(f) Non-Cash Transaction: Investing and financing transactions that do not require the use of cash or cash equivalents should be excluded from a Cash FlowStatement. Such transactions should be disclosed elsewhere in the financial statements in a way that provides all the relevant information about these investing and financing activities. The exclusion of non-cash transactions from the Cash FlowStatement is consistent with the objective of a Cash FlowStatement as these do not involve cash flows in the current period. Following are examples of non-cash transactions:

(i) The acquisition of assets by assuming directly related liabilities;

(ii) The acquisition of an enterprise by means of issue of shares;

(iii) Conversion of debt into equity.

1.5 MAIN HEADS OF CASH FLOW STATEMENT:

Cash Flows from Operating Activities (A)	xxx
Cash Flows from Investing Activities (B)	xxx
Cash Flows from Financing Activities (C)	xxx
Net Increase (Decrease) in Cash and Cash Equivalents (A + B + C)	**xxxxx**
Add: Cashand Cash Equivalents at the Beginning	xxx
Cash and Cash Equivalents at the End	**xxxxx**

1.6 METHODS OF PREPARING THE CASH FLOW STATEMENTS

Operating activities are the main source of revenues and expenditures, thereby cash flow from the same needs to be ascertained. The cash flow can be reported through two ways:

(a)Direct method that discloses the major classes of gross cash receipts and cash payments

(b)Indirect method that has the net profit or loss adjusted for effects of (1) transactions of a non-cash nature, (2) any deferrals or accruals of past/future operating cash receipts and (3) items of income or expenses associated with investing or financing cash flows.

DIRECT METHOD:

In the direct method, the major heads of cash inflows and outflows (such as cash received from trade receivables, employee benefits, expenses paid, etc.) are to be considered.

As different lines of items are recorded on accrual basis in statement of profit and loss, certain adjustments are to be made to convert them into cash basis such as the following:

1. Cash receipts from Customers = Revenue from operations + Trade Receivables at the beginning – Trade Receivables at the end.

2. Cash payments to Suppliers = Purchases + Trade Payables atthe Beginning – Trade Payables at the End.

3. Purchases = Cost of Revenue from Operations – Opening Inventory + Closing Inventory.

4. Cash Expenses = Expenses on accrual basis + Prepaid expenses in the Beginning and Outstanding expenses in the End – Prepaid expenses in the End and Outstanding expenses in the Beginning.

INDIRECT METHOD:

Indirect method of ascertaining cash flow from operating activities begins with the amount of net profit/loss. This is so because statement of profit and loss incorporates the effects of all operating activities of an enterprise. However, Statement of Profit and Loss is prepared on accrual basis (and not on cash basis). Moreover, it also includes certain non-operating items such as interest paid, profit/loss on sale of fixed assets, etc.) and non-cash items (such as depreciation, goodwill written-off, etc). Therefore, it becomes necessary to adjust the amount of net profit/loss as shown by Statement of Profit and Loss for arriving at cash flows from operating activities.

1.7 INDIAN ACCOUNTING STANDARD ON CASH FLOW STATEMENT

The Ind AS-7 “Statement of Cash Flows” deals with cash flow. It prescribes two formats for the presentation of Cash Flow Statement. These formats are given in Tables 1 and 2

TABLE 1: CASH FLOW STATEMENT (DIRECT METHOD)

Cash FlowFrom Operating Activities		
Cash receipts from customers	xxx	
Cash paid to suppliers and employees	(xxx)	
Cash generated from operation	xxx	
Income Tax Paid	(xxx)	
Cash Flow before extraordinary item	xxx	
± Extraordinary Items	xxx	
Net cash from Operating Activities (A)		xxxx
Cash FlowFrom Investment Activities		
Purchase of fixed assets	(xxx)	
Proceeds from sale of equipment	xxx	
Interest received	xxx	
Dividend received	xxx	
Net cash from Investing Activities (B)		xxxx

Cash FlowFrom Financing Activities		
Proceeds from issuance of share capital	xxx	
Proceeds from long-term borrowings	xxx	
Repayments of long-term borrowings	(xxx)	
Interest paid	(xxx)	
Dividend paid	(xxx)	
Net cash from Financing Activities (C)		xxxx
Net Increase in Cash and Cash Equivalents (A+B+C)		**xxxxx**
Add: Cash and cash equivalents at the beginning of the period		xxx
Cash and Cash Equivalents at the End of the period		**xxxxx**

TABLE 2: CASH FLOW STATEMENT (INDIRECT METHOD)

Cash Flow From Operating Activities		
Net Profit before Taxation and Extraordinary item	xxx	
Adjustment for:		
Depreciation	xxx	
Foreign exchange loss	xxx	
Interest income	xxx	
Dividend income	xxx	
Interest expense	xxx	
Operating profit before working capital changes	xxx	
Increase in current assets	(xxx)	
Decrease in current assets	xxx	
Decrease in current liabilities	(xxx)	
Increase in current liabilities	xxx	
Cash generated from operation	xxx	
Income tax paid	(xxx)	
Cash Flow before extraordinary item	xxx	
± Extraordinary Items	xxx	
Net cash from Operating Activities (A)		xxxx
Cash FlowFrom Investment Activities		
Purchase of fixed assets	(xxx)	
Proceeds from sale of equipment	xxx	
Interest received	xxx	
Dividend received	xxx	
Net cash from Investing Activities (B)		xxxx
Cash FlowFrom Financing Activities		
Proceeds from issuance of share capital	xxx	
Proceeds from long-term borrowings	xxx	
Repayments of long-term borrowings	(xxx)	
Interest paid	(xxx)	
Dividend paid	(xxx)	
Net cash from Financing Activities (C)		xxxx
Net increase in Cash and Cash Equivalents(A+B+C)		**xxxxx**

Add: Cash and cash equivalents at the beginning of the period		xxx
Cash and Cash Equivalents at the End of period		**xxxxx**

1.8 BASIC INFORMATION FOR PREPARATION OF CASH FLOW STATEMENT

The following basic informationis required to prepare a Cash Flow Statement:

1. Comparative Balance Sheet: The first and the foremost requirement is the comparative Balance Sheet in the beginning and end of the period to find out the changes taking place in different items of the Balance Sheet.

2. Income Statement for the period under consideration: The Income Statement of the period is also required to find out the cash generated or used in the operation of the firm.

3. Additional Information: Together with Balance Sheet and Income Statement other relevant information is also required to identify the hidden information, if any.

1.9 STEP BY STEP PROCEDURE TO PREPARE CASH FLOW STATEMENT

1. Calculate the Net Increase or Decrease in Cash and Cash Equivalent. For this purpose the opening balance of total cash and equivalents is compared with the closing balance of cash and equivalents. The net increase/decrease as shown here is the figure to be explained by Cash Flow Statement. Table 1.4 explains the procedure for this.

TABLE 1.4: INCREASE/DECREASE IN CASH AND CASH EQUIVALENT

	Opening Bal.	**Closing Bal.**
Cash in Hand	xxx	xxx
Cash at Bank	xxx	xxx
Short-term Investment	xxx	xxx
Total	**xxxxx**	**xxxxx**

The difference between the totals of opening and closing balances will be the increase or decrease in cash and equivalents during the period. It may be noted that if there are only one or two items of cash etc., then the table as above need not be prepared and the net increase or decrease may be ascertained by simple observation only.

2. Net Cash Flow from Operating Activities: The term operating activities refers to the normal business transactions relating to goods and services being traded by the firm e.g. sale and purchase of goods and services. On the basis of the information contained in the Comparative Balance Sheet and the Income Statement and the additional information, the net cash flow generated or used by operating activities may be ascertained. The Income Statement prepared by

the firm gives the net profit figure earned by the firm, on an accrual basis i.e. all items in the Income Statement are incorporated on the basis of earned/ accrued even if not resulting cash movements. So, profit or loss as shown by the Income Statement may not result in increase/decrease in cash balance by the same amount. In order to prepare the Cash Flow Statement, what is required is the amount of cash generated or used by operating activities. For this purpose, the non-cash and non-operating items are adjusted to the net profit figures as reported in the Income Statement. In the Cash Flow from Operating Activities, the purpose is to convert the net profit (accounting) which is based on accrual concept to the cash flow from operations. Ind AS-7 has given two procedures to find out the net cash from operating activities as follows:

(a) **Direct Method:** In Direct method, an attempt is made to convert the given Income Statement into a cash basis Income Statement. All the sales, purchases, expenses etc. are analyzed to find out the cash effect of all these items as follows:

(i) The Cash Realized from Sales may be ascertained as follows:		
Cash Sales		xxx
Credit Sales (as given in Income Statement)	xxx	
Less: Closing Balance of Debtors	xxx	
Closing Balance of Bills	xxx	
Add: Opening Balance of Debtors	xxx	
Opening Balance of Bills	xxx	
Cash generated from Credit sales	xxx	xxx
Total Cash Generated		**xxxxx**
(ii) The Cash Paid for Purchases may be ascertained as follows:		
Cost of goods sold (As given in Income Statement)		xxx
Less: Opening Stock		xxx
Add: Closing Stock		xxx
Total Purchases		xxx
Add: Opening balance of Creditors		xxx
Less: Closing balance of Creditors		xxx
Cash paid for Purchases		**xxxxx**
Similarly, Cash Paid for any Expense item may be ascertained as follows:		
Expense (as given in Income Statement)		xxx
Add: Outstanding in the beginning		xxx
Less: Outstanding at the end		xxx
Cash paid for Expenses		**xxxxx**

Under Direct method, all non-cash expense items such as depreciation, writing off the fictitious assets, amortization of intangible asset, etc. are ignored. Similarly, profit or loss on sale of assets/investments is also not considered.

(b) Indirect Method: In the indirect method, the net profit (before tax and extraordinary items) figure is the starting point. This profit figure is adjusted for non-cash and non-operating items to find out the cash from operating activities. Generally, the adjustment is required for the following items:

(i) Non-cash expenses such as depreciation, intangible and fictitious assets written off, loss on sale of assets/investment, etc. are added back.

(ii) Non-cash and Non-operating incomes such as profit on sale of assets/investments, interest income, dividend income, interest accrued but not received are deducted from the net profit to arrive at the cash from operating activities.

(iii) Changes in current accounts and current liabilities during the year are also adjusted to find out the cash from operating activities.

Under the Indirect method the cash from operating activities may be finally ascertained as shown in Table 3.

TABLE 3: CASH FLOW FROM OPERATING ACTIVITIES

	Amount
Net Profit Before Tax and Extraordinary Items	xxx
+ Depreciation	xxx
+ Provision for contingencies	xxx
+ Provision for retirement benefits	xxx
+ Loss on sale of fixed assets	xxx
+ Loss/(Profit) on disposal of investments	xxx
+ Interest paid	xxx
- Dividend received	(xxx)
- Interest received	(xxx)
Operating Profit Before Working Capital Changes	
Adjustment for:	
+ Decrease/ (increase) in trade and other receivables	xxx
+ Decrease/ (increase) in inventories	xxx
+ Decrease/ (increase) in trade payables	xxx
Cash Generated From Operations	xxx
- Direct taxes paid	(xxx)
Cash FlowBefore Extraordinary Items	xxx
± Extraordinary item	xxx
Net Cash Inflow/ (Outflow) From Operations	**xxxxx**

3. Calculation of Cash provided by Financing and Investment Activities: All other items (except current accounts already considered in step 2 above) are analysed in the light of additional information to find out the resultant cash flow, if any. For this purpose, different items and information are classified into financing activities and investing activities.

4. Preparation of Cash Flow Statement (CFS): On the basis of information collected and calculations made in the above steps, now the Cash Flow Statement can be prepared as per any of the formats given earlier (Table 1 and 2). The net cash flow provided by operating activities plus financing activities plus investing activities is equal to the net change in cash and equivalents (as calculated in step 1).

5.Other Items: If there is any other investment or financing transaction (not already covered in step 3 above) that should be disclosed in the Cash Flow Statement e.g., there may be a purchase of an asset by issue of capital or debenture. This transaction will not find place in the usual Cash Flow Statement but must be disclosed to make the Cash Flow Statement a useful and a meaningful document.

1.10UTILITY / USES, IMPORTANCE OR SIGNIFICANCE OF CASH FLOW STATEMENT

The main uses and importance of Cash FlowStatement can be summarized as follows:

1.Evaluation of Liquidity Position : This statement helps to analyse whether short period liabilities like creditors, bank overdrafts, bills payable, outstanding expenses can be paid easily with the regular receipts (Inflow) of cash or not. There should be balance in inflow and outflow to keep liquidity and smooth working conditions in business.

2. Comparison in Intra-firm and Inter-firm: With the help of Cash FlowStatement, intra firm (within the firm) and inter firm (with other firms) can be carried out to know whether the liquidity position is improving or deteriorating over the period of time.

3. Arrangement of Future Needs: The requirement of cash and availability of cash can be calculated easily after a specified period regularly to know deficit or surplus of cash to make timely arrangement.

4. Cash Generated by Various Activities Separately: Cash flow Statement is divided into three separate activities. . These activities are (a) Operating (b) Investing (c) Financing. It shows cash generated by each activity separately.There may be positive or negative generation of cash by any of the activity but in the end total of all these three activities shows the ultimate cash position.

5. Calculation of the Position of Repayments of Liabilities on Time: Cash FlowStatement helps to find out whether the business has sufficient cash to pay or plan to pay its liabilities and fulfil its other needs like (a) Repayment of loans (b) funds for replacement of plant, machinery, vehicles or other fixed assets or not on time.

6.Useful to Outsiders : Cash Flow statement is very useful to outsiders like Bankers, Investors, Lenders, Debenture- holders, Creditors to judge and analyse the long-term as well as short-term liquidity and cash position of the business and taking decisions regarding financial position.

7. It Provides Test for Managerial Decision: For the long-term success of the business and generating higher profits, the most important rule for the management should be "Maximum Fixed Assets should be purchased from funds generated from long-term sources of funds like (a) Shares (b) Debenture (c) Mortgages (d) Ploughing back of profits etc. and these liabilities should be repaid out of cash generated from operating activities of the business.

8. Explains Causes of Change in Cash: Cash FlowStatement explains the reasons for change or deviation in cash or cash equivalent between the two Balance Sheets which provides useful tips and reasons for change in cash over the period.

9. Explanation Regarding Net Profit and Cash Balance: Sometimes a very funny position arises in the organisation like profits are very high while cash balance is very low even there may be situation that cash is not sufficient to pay salary bill, or power bill or for purchase of raw material. On the other hand, sometimes profits are very low but large amount of cash balance either in hand or in bank. The reason for this situation may be issuing shares, raising loans or selling fixed assets etc.

10. Working Capital and Operating Activities Relation: The success of the business lies in the fact that maximum needs of the working capital should be fulfilled through the cash flow from operating activities. Funds from long period sources should be used for fixed assets and other profit generating activities to provide strength/ stability, soundness and liquidity to business.

11. Dividend Payment and Cash Resources: Regular payment of dividend is a positive sign of growing and progressive business year by year. Payment of dividend increases Goodwill, Credibility among investors and better public image of organisation as well as of management. But these dividends should be paid out of the profits and reserves and not from borrowed funds or funds raised on sale of fixed assets

12. Other Uses:

(i)Cash Flow Statements help in knowing the liquidity / actual cash position of the company which funds flow and P&L are unable to specify.

(ii)As the liquidity position is known, any shortfalls can be arranged for or excess can be used for the growth of the business

(iii)Any discrepancy in the financial reporting can be gauged through the Cash FlowStatement by comparing the cash position of both.

(iv)Cash is the basis of all financial operations. Therefore, a projected Cash FlowStatement will enable the management to plan and control the financial operations properly.

(v)Cash Flow analysis together with the ratio analysis helps measure the profitability and financial position of business.

(vi)Cash FlowStatement helps in internal financial management as it is useful in formulation of financial plans.

1.11LIMITATIONS/DIS-ADVANTAGES OF CASH FLOW STATEMENT

These can be summarized as follows:

1. It ignores Non-cash Transactions: While preparing Cash FlowStatement, non-cash transactions are not included or are not considered. These transactions may be:

(a) Issue of Bonus Shares

(b) Conversion of Debentures into shares.

(c) Purchase of Fixed assets by issuing shares or consideration other than cash.

2. Closing Cash Balance can be manipulated or window dressed by Management: If management wants, cash balance can be easily manipulated by:

(d) Postponing payments

(e) Postponing cash purchases

(f) Fast collection from debtors around closing dates of final accounts.

3. **It is not a Substitute to an Income Statement** (Profit and Loss Account/Statement of Profit and Loss)**:** In Profit and Loss Account, non-cash items like depreciation, writing off goodwill, preliminary expenses etc. are included which reduces the profits while in Cash Flowstatement these are ignored which results into difference in Net Income (profits) and cash flow during the same period.

4. It ignores the Accrual Concept of Accounting: In the accounting system the accounts are prepared on accrual basis. It means income earned whether received or not and expenditure incurred whether paid or not are to be considered for true and fair calculation of the results of business at the end of accounting year.But Cash FlowStatement is prepared on cash basis of accounting. It is prepared on the basis of actual inflow and outflow of cash.

5. No True Judgment of Liquidity: Liquidity of a business cannot be judged solely upon cash or bank balance but other current assets like debtors, stock, bills receivable etc. which can be converted into cash easily in a short period. Thus, ability to pay current liabilities cannot be judged by cash and bank balance alone.

6. It is a Historical Document: Cash FlowStatement is prepared on the basis of two consecutive Balance Sheets taking into account the various information provided in those documents. So this is related to past period and thus, a historical document. For expansion and growth future planning is needed.

7. It is based on Secondary Data: This document is based on already prepared Income Statement and Balance Sheet thus, for preparing Cash FlowStatement secondary data are used.

8. Other Limitations:

(i)Through the Cash FlowStatement alone, it is not possible to arrive at actual P&L of the company as it shows only the cash position. It has limited usage and in isolation, it is of no use and requires Balance sheet, Profit & Loss A/C for its projections. Cash FlowStatement does not disclose net income from operations. Therefore, it cannot be a substitute for income statement

(ii) The cash balance as shown by the Cash FlowStatement may not represent the real liquidity position of the business because it can be easily influenced by postponing the purchases and other payments

(iii) Cash flow Statement cannot replace the funds flow statement. Each of the two has a separate function to perform.

1.12DIFFERENCE BETWEEN CASH FLOW STATEMENT AND INCOME STATEMENT

Sl No	Basis	Cash Flow Statement	Income Statement
1	Disclosure	It is a statement of inflows and outflows of cash from operating, investing and financing activities during a period.	It shows the net profit/net loss during the period.
2	Scope	Cash Flow Statement provides information about cash flows of an entity and its scope is limited only to the extent of cash flows from operating, investing and financing activities.	Income Statement focuses on the ascertainment of results of the operations of the entity. It requires the measurement of period's income by revenue recognition and matching expenses.
3	Activities Covered	Cash Flow Statement provides information not only about operating activities but also about investing and financing activities.	It focuses on the results of the operations of the business and does not provide information about investing and financing activities.
4	Earning Per Share	Cash Flow Statement does not provide information about	Schedule III of Companies Act, 2013, requires the

		earning per share.	statement of Profit and Loss to state the basic and diluted earnings per share also.
5	Revenue & Expenses	Cash Flow Statement does not show revenues recognized, or expenses incurred during the period.	Income Statement shows the revenue recognized and expenses incurred as per relevant Accounting Standards.
6	Nature	Items shown in Cash Flow Statement are objective and factual.	Several items in Income Statement are based on judgement and subjectivity.
7	Preparation	Cash Flow Statement can be prepared only after Balance Sheet and Income Statement are prepared.	Income Statement is to be prepared before Balance Sheet and Cash Flow Statement.

1.13DIFFERENCE BETWEEN CASH FLOW STATEMENT AND FUNDS FLOW STATEMENT

Sl No	Basis	Cash Flow Statement	Funds Flow Statement
1	Disclosure	It discloses the inflowandoutflow ofcash and cashequivalentsunder theheading of operating.Investingand Financing activities.	It discloses the changes of net working capital.
2	BasisofAccounting	It is prepared undercashbasis.	It is prepared under accrualbasis.
3	Usefulness	It is usedfor shortterm financialplanning.	It is used for long term financialplanning.
4	DistinctHeading	It shows inflows andoutflows of cashunder threedistinct headings-Operating, Investing and Financingactivities.	It shows sources and applicationsof funds without any heading.
5	Prescribedformat	It is prepared asperprescribedformat of IndAS-7.	There is no suchprescribedformat.
6	Scope	It's scope is narrow asonlycash and cashequivalentsareconsidered.	It's scope is wide as the concept of fund is net working capital i.e. total current assets minustotal current liabilities.
7	Changes of Working Capital	It shows the changes in working capital more clearly.	It shows the changes in working capital at a glance.

1.14 DIFFERENCE BETWEEN CASH FLOW STATEMENT AND BALANCE SHEET

Sl No	Basis	Cash Flow Statement	Balance Sheet
1	Meaning	A statement that shows the cash inflow and outflow of the company.	A statement that shows the assets owned and the liabilities owed by the company.
2	Classified into	Three parts	Two parts
3	Importance	Helpful in budgeting and forecasting.	Discloses financial position of the company.
4	Information Disclosed	Movement of cash and cash equivalent.	Assets, Equity and Liabilities.
5	Basis	It is prepared taking profit & loss account and balance sheet into consideration.	It is prepared taking profit & loss account into consideration.

1.15 ILLUSTRATIONS:

Illustration 1:

The following are the list of Transactions for Ram Software Limited (RSL) for 2019

On March 1	Ram & others invest 50,000 in cash in RSL.
On March 2	Ram took a loan of 20,000 from Venugopal for RSL. Being a nice friend, Venugopal does not demand any interest on the loan amount and asks it to be repaid in six months' time.
On March 3	RSL purchased for cash two computers, each costing 29,000
On March 4	RSL purchased supplies especially stationary for 6,000 on credit.
On March 19	RSL completes its maiden sale of software to a retail store and receives a price of 12,000.
On March 21	RSL pays 2000 to its creditors for supplies.
On March 29	RSL pays salaries to its employees, amounting to 4,000 and office rent 1,200.
On March 30	RSL delivers a software package for a shoe shop. The customer agrees to pay the price of 8,000 a week later.
On March 31	Ram withdraws 3,500 for his personal use.

At the end of the month, you are required to prepare its statement of cash flow following

Direct Method.

Solution:

The first and second transactions of raising owner's equity and taking a loan would be part of its financing activities as cash inflows.

The third transaction involving RSL purchasing two computers would be a part of its investing activities cash outflow.

The fourth transaction would not lead to any change in its cash position and hence would not be part of its Cash FlowStatement.

The next transaction on March 19, wherein RSL completes its maiden sale of software to a retail store and receives a price of 12,000 would be a part of its operating cash inflow. On March 21, RSL pays 2,000 cash (Part of its payables) to its supplier resulting in an operating cash outflow.

RSL pays salaries to its employees, amounting to 4,000 and office rent 1,200 resulting in an operating cash outflow.

RSL delivers Software package for a shoe shop worth 8,000 and the customer agrees to pay the price week later. This transaction would result in neither a cash inflow nor a cash outflow and hence there would be no change in our statement of cash flow. On the other hand, accrual principle would have taken this transaction as an increase in the revenue of the company by a similar amount as part of its profit and loss account.

On March 31, the owner withdraws 3,500 from the profits of the company. We may consider this outflow of the company's profit as the dividend resulting in a cash outflow due to the firms financing activities.

A summary of all the above transactions would be:

CASH FLOW STATEMENT OF RAM SOFTWARE LIMITED

(For the period 1 stMarch 2019 to 31st March 2019)

Particulars	**Details ( )**	**Amount ( )**
Cash Flow From Operating Activities		
Cash received from customers	12,000	
Cash paid to suppliers, rent, and employees	(7,200)	
Net Cash Provided By Operating Activities (A)		**4,800**
Cash Flow from Investing Activities		
Purchase of office equipment	(58,000)	
Net Cash Provided By Investing Activities (B)		**(58,000)**
Cash Flow from Financing Activities		

Capital invested by owner, Equity	50,000	
Withdrawal by owner	(3,500)	
Loan	20,000	
Net Cash Provided By Financing activities(C)		**66,500**
Net Increase (Decrease) in Cash Position (A+B+C)		**13,300**
Add: Beginning Cash Balance		0
Cash Balance At The End		**13,300**

Note: The negative figures are presented in brackets.

Please note that the adjustment entries done, based on the matching principle (such as depreciation on fixed assets and expiry of inventory), would result in no change in statement of cash flow.

Illustration 2:

ShikariShambu was running an investigating agency,ShikariShambu Security Services Limited. From the summary cash accountof the firm, prepare the Cash FlowStatement for the year ended 31st March, 2013 by using **Direct Method**.

SUMMARY CASH ACCOUNT

For the year ended 31st March, 2013

Receipts	**Amount ( )**	**Payments**	**Amount ( )**
Cash balance as on 1.04.12	10,000	Cash purchases during the year	2,00,000
Issue of equity shares	15,000	Factory expenses incurred	25,000
Issue of preference shares	15,000	Wages & salary paid	15,000
Cash sales for the period	2,30,000	Income tax paid	5,000
Sale of fixed assets	60,000	Dividend paid	15,000
		Repayment of loan	40,000
		Balance on 31.03.13	30,000
Total	**3,30,000**	**Total**	**3,30,000**

Solution:

As we read in the chapter, preparation of the cash flow statement can be done using two methods, viz, the direct method and the indirect method.

Only the calculation of cash flow from operating activities is different under both the methods, though the results are the same. We use the direct method here. The direct method requires the gross receipts and payments to be disclosed. Accordingly, our cash flow statement would be:

CASH FLOW STATEMENT

SHIKARI SHAMBU SECURITY SERVICES LIMITED

For the year ended 31st March 2013

Particulars	**Details ( )**	**Amount ( )**
Cash Flow From Operating Activities(A)		
Receipt from customers (cash sales)	2,30,000	
Payment to suppliers (cash purchases)	(2,00,000)	
Payment for factory expenses	(25,000)	
Payment for salary & wages	(15,000)	
Income tax paid	(5,000)	
Net Cash Flow From Operating Activities		**(15,000)**
Cash Flow From Investing Activities(B)		
Sale of fixed asset	60,000	
Net Cash Flow From Investing Activities		**60,000**
Cash Flow From Financing Activities(C)		
Issue of equity shares	15,000	
Issue of preference shares	15,000	
Repayment of loan	(40,000)	
Dividend paid	(15,000)	
Net Cash Flow From Financing Activities		**(25,000)**
Increase in Cash Balance (A) +(B) + (C)		**20,000**
Add: Opening Cash Balance		10,000
Closing Cash Balance		**30,000**

Note: The negative figures are presented in brackets.

Interpretation: The Company has shown a very weak performance wherein the cash has been generated through the sale of fixed assets and through issue of shares other than through operations. The cash was basically utilized for repayment of loan and for paying the dividends.

Illustration 3:

From the following summary cash account of Bismaya Limited, Prepare Cash Flow Statement for the year ending 31st March 2019 in accordance with **Ind AS- 7 using Direct method**.

SUMMARY OF CASH ACCOUNTOF BISMAYA LIMITED

FOR THE YEAR ENDING 31ST MARCH 2019

(Figures in Thousands)

Particulars	**Amount( )**
Balance on 01.04.2018	50
Issue of equity share	300
Received from customers	2,800
Sale of fixed assets	100
Total	**3,250**
Payment to suppliers	2,000
Purchase of fixed assets	200
Overhead expenses	200
Wages and salaries	100
Taxation	250
Dividend	50
Repayment of bank loan	300
Balance on 31.03.2019	150
Total	**3,250**

Solution:

CASH FLOW STATEMENT OF BISMAYALIMITED
For the year ending 31.12.2019

(Figures in Thousands)

Particulars	**Details ( )**	**Amount ( )**
Cash Flow from Operating Activities(A)		
Cash received from customers	2,800	
Cash paid to suppliers and employees (2,000+200+100)	(2,300)	
Cash Generated From Operation	**500**	
Income tax paid	(250)	
Net Cash Flow From Operating Activities		**250**

Cash Flow from Investing activities(B)		
Purchase of fixed assets	(200)	
Proceed from sale of fixed assets	100	
Net Cash Flow From Investing Activities		**(100)**
Cash Flow from Financing Activities(C)		
Issue of equity share	300	
Repayment of bank loan	(300)	
Dividend paid	(50)	
Net Cash Outflow in Financing Activities		**(50)**
Net Increase in Cash and Cash Equivalent During The Period(A+B+C)		**100**
Add: Cash and Cash Equivalent at the Beginning		50
Cash and Cash Equivalent At The End		**150**

1.16 SELF ASSESMENT QUESTIONS

1. What is meant by Cash Flow Statement? State its main objectives.

2. State the uses of Cash Flow Statement. What are the objectives of preparing it?

3. How are the various activities classified (as per Ind AS-7) while preparing the Cash Flow Statement?

4. Describe 'direct' and 'indirect' methods of ascertaining cash flow from operating activities.

5. Enumerate the various steps involved in the preparation of Cash Flow Statement.

6. Prepare a format of cash flow from operating activities under direct and indirect methods.

7. What is a Cash Flow Statement? Write the differences between a funds flow statement and cash flow statement.

8. What is meant by Cash Flow Statement? Explain briefly how the statement is prepared as per Ind-AS 7.

9. Elaborate the importance and limitations of Cash Flow Statement?

10. What is the purpose of preparing Cash Flow Statement? How is it prepared? Explain and illustrate.

RATIO ANALYSIS

(Financial Ratios compare the results in different line items of the financial statements. The analysis of these ratios is designed to draw conclusions regarding the financial performance, liquidity, leverage and asset usage of a business.): Anonymous

Learning Objective:

To understand the meaning of Ratio and Ratio analysis

To know the uses/significance/importance/utility of Ratio Analysis

To identify various limitations of Ratio Analysis

To acquaint with different classification of Ratios

To comprehend the use of Ratio Analysis for studyingliquidity, solvency and profitability of a business firm

To conceptualize the construction of financial statements from given ratios

Chapter Outline:

1.1 Meaning of Ratio

1.2 Meaning of Ratio Analysis

1.3 Uses/Significance/Importance/Utility of Ratio Analysis

1.4 Limitation of Ratio Analysis

1.5 Classification of Ratios

1.6 Liquidity Ratios

1.7 Efficiency/Activity/Turnover Ratios

1.8 Solvency Ratios

1.9 Capital Structure/Leverage Ratios

1.10 Profitability Ratios

1.11 Market Based Ratios/Ratio for prospective Investors

1.12 DuPont Analysis

UNIT-2

RATIO ANALYSIS

1.1 MEANING OF RATIO

A ratio is a simple arithmetical expression of the relationship of onenumber to another. It may be defined as the indicated quotient of twomathematical expressions. In general words, a ratio is an expression of relationship of one figure with another. It may be defined as the relationship or proportion that one amount bears to another. It is found by dividing a figure with another. A ratio may be expressed in percentage.

Accounting ratios express relationships worked out among various accounting data which are mutually interdependent and which influence each other in significant manner. Financial ratios express arithmetical relationship between two figures or two groups of figures of the financial statements which are related to each other.

Expression of Ratios:

A ratio is an expression of the quantitative relationship between two numbers. In simple language, ratio is one number expressed in terms of another and can be worked out by dividing one number by the other. A ratio can be expressed in the form of a fraction, number of times, percentage or in proportion. Hence, there are three ways of expressing ratios:

(a)Pure Ratio or Simple Ratio: In this form, the item of financial statements is expressed by simple division of one number by another e.g., if current assets of a company are 20,000 and current liabilities are 10,000, the ratio of current assets to current liabilities is shown as:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{20,000}{10,000} = 2:1$$

(b) Rate or So many Times: In this form, it is calculated how many times an item is, in comparison to other item. For example, Cost of goods sold of a company is 10,000 and Average Inventory is 2,000, then stock turnover is:

Cost of goods sold÷ Average Inventory = 5times

(c) Percentage: Percentage is one kind of ratio in which the base is taken as equal to hundred (100) and the quotient is expressed as per hundred of the base. For example, if an institution earns a gross profit of 10,000 and sales is 50,000, the ratio of gross profit to sales, in terms of percentageis :

$$= \frac{.10,000}{.50,000} \times 100 = 20\%$$

1.2 MEANING OF RATIO ANALYSIS

Ratio Analysis is a very important tool of financial analysis. It is the process of establishing a significant relationship between the items of financial statements to provide a meaningful understanding of the performance and financial position of a firm. So,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. It is not an end in itself and is only a means of better understanding of financial strengths and weaknesses of a firm. A ratio will be meaningful only when it is analyzed and interpreted.

Steps in Ratio Analysis:

The Ratio Analysis requires four steps as follows:

1. Selection of relevant data from the financial statements depending upon the objective of the analysis.

2. Computation of appropriate ratios from the above data.

3. 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.

4. Interpretation of the ratios.

Approaches to Ratio Analysis:

There are three approaches or ways of comparing ratios:

(a) Cross-Section Analysis:

One way of comparing the ratio or ratios of a firmis to compare them with the ratio or ratios of some other selected firm in thesame industry at the same point of time. So, it involves the comparison of twoor more firm's financial ratios at the same point of time. The Cross-SectionAnalysis helps the analyst to find out as to how a particular firm hasperformed in relation to its competitors. The firm’s performance may becompared with the performance of the leader in the industry in order touncover the major operational inefficiencies. In this type of an analysis, thecomparison with a standard helps to find out the quantum as well as directionof deviation from the standard. It is necessary to look for the large deviationson either side of the standard could mean a major concern for attention. TheCross-Section Analysis is easy to be undertaken as most of the data requiredfor this may be available in financial statements of the firm.

(b)Time-Series Analysis

The analysis is called Time-Series Analysis when the performance of a firm isevaluated over a period of time. By comparing the present performance of afirm with the performance of the same firm over last few years, anassessment can be made about the trend in progress of the firm, about thedirection of progress of the fir. The information generated by the Time-SeriesAnalysis can also help the firm to assess whether the firm is approaching longterm goals or not. The Time-Series Analysis can be extended to coverprojected financial statements. In particular, the Time Series Analysis looksfor (i) Important trends in financial performance, (ii) Shift in trend over theyears, and (iii) Significant deviations if any, from other set of data. So in this case,ratio of 5 to 10 years is compared at a time to find out the trend.

(c)Combined Analysis:

If both the Cross-Section and Time Series Analyses are combined together to study the behavior and pattern of ratios, then meaningful and comprehensive evaluation of the performance of the firm can definitely be made. A trend of ratios of a firm compared with the trends of the ratios of the standard firm can give good results. For example, the ratio of Operating Expenses to Net Sales for a firm, may be higher than the industry average, however, over the years it has been declining for the firm, whereas the industry average has not shown any significant changes.

Interpretation of Ratios:

Ratios are not in themselves an end. They are the means of financial analysis. To make them useful, they have to be interpreted. Interpretation of ratio needs skill, intelligence and foresightedness. The inherent limitations of ratio analysis should also be kept in mind while interpreting ratios. The interpretation of ratios can be made in the following ways:

(a) Interpretation on the Basis of Single Ratio: Broadly, no meaningful conclusion can be drawn by one single ratio. However, there are few ratios which can be considered in isolation. For example, 2:1 is a well proven convention for current ratio. Hence, continuous fall in the ratio is considered as a sign of weak liquidity position of the concern. Such ratios are very few where rules of thumb may be applied and which alone are capable of some meaningful interpretation.

(b) Interpretation on the Basis of group of Related Ratios: There is large number of ratios which are well interpreted when supported by certain other related ratios. For example, current ratios may be supported by liquidity ratios to draw more dependable conclusions. Similarly, ratios of profit of sales can be well interpreted when it is considered with reference to net worth turnover ratio.

(c) Interpretation on the Basis of Historical Trends: In this method, a firm's performance is compared with its own past over a period of time and trend is noted on the basis of figures of the

same ratio of past few years. This is a most popular method of appraising the performance of the firm. When financial ratios are compared over a period of time, it gives an indication of the direction of change. But while interpreting ratios from comparison over time, the analyst must pay attention to the changes in the firm's policies, accounting procedures and also price level changes. Sometimes, current performance is evaluated by comparing the ratios with its past average.

(d) Interpretation on the Basis of Inter-Firm Comparison: Ratios of one firm can also be compared with the ratios of other firms in the same industry or with the average of all firms in the industry. But while making such comparison, the analyst has to be very careful regarding the difference of accounting methods, policies and procedures adopted by different firms.

(e) Interpretation on the Basis of Projected Ratios (or Future Expectations): Ratios for the future can be projected and these may be taken as standard for comparison with ratios calculated on the basis of actual performance. This method is not used usually in practice.

(f) Interpretation on the Basis of Similar Firms: If we compare the firm with similar firms in other industries, we often gain a better insight into the financial condition. For example, if we are examining a growth of firm in a non-growth industry, it makes sense to compare it with other growth firms in other industries.

(g) Interpretation on the Basis of Common Sense: The analyst may also use his subjective judgment and reasons for the purpose. For example, a 20% return on investment may be considered reasonable as a norm.

1.3USE/SIGNIFICANCE/IMPORTANCE /UTILITY OF RATIO ANALYSIS:-

Mainly the persons interested in the analysis of the financial statements can be grouped under three heads (i) Owners or investors (ii) Creditors and (iii) Financial executives. The importance of analysis varies materially with the purpose for which it is calculated. The primary information which seeks to be obtained from these statements differs considerably reflecting the purpose that the statement is to serve.

The significance of these ratios varies for these three groups as their purpose differs widely. These investors are mainly concerned with the earning capacity of the company whereas the creditors including bankers and financial institutions are interested in knowing the ability of enterprise to meet its financial obligations timely. The financial executives are concerned with evolving analytical tools that will measure and compare costs, efficiency, liquidity and profitability with a view to make intelligent decisions. Hence, the use, significance, importance of ratio analysis can be highlighted as below:

1.Helpful to Management: The ratio analysis proves to be of significant value to the management in the process of the discharge of its elementary functions such as planning, co-

ordination, communication and control. In short, it paves the way for effective control of the enterprise in the matter of achieving physical and monetary targets.

2. Helpful in Trend Analysis: The ratio analysis facilitates a firm to consider the time dimension into account, i.e. whether the financial position of a firm is showing any improvement or deterioration over years. This is affected through the use of trend analysis. With the help of the financial analysis one can ascertain whether the trend is favourable or unfavourable.

3. Use in Comparative Study: Ratioanalysis also helps in comparative study. It helps to make an inter-firm comparison either between different departments of a firm or between two firms employed in the identical types of business or between the same firms on two different dates.

4.Helpful for Communication: With the help of ratio analysis, it is possible to know the changes that had taken place in the business between two periods. In this way the weakness of business concern can easily be found out. In brief, ratios are helpful in communication of information.

5.Helpful in Determining the Standards: Keeping in mind the old ratios and present operating efficiency, the standard can be fixed. In this way ratio analysis is considered to be essential part of budgetary control and standard costing.

6.Helpful in Effective Control: On the basis of ratios, by establishing standards the effective control can be exercised upon the activities of the firm. On the comparison of standard ratios with actual ratios, adverse financial position can be found out and accordingly corrective measures can be taken.

7.Helpful in the Evaluation of Efficiency: With the help of ratio analysis, comparison of current year figures can be made with those of previous years. Similarly, comparison of profitability, effectiveness and financial soundness can be made between business concerns. In this way, the use of ratio analysis can be made for measuring the effectiveness of business concern.

8. Helpful in Evaluation of Financial Soundness: With the help of liquidity, solvency, profitability and capital gearing ratios, detailed information can be gathered which are related to financial soundness of any organization.

9.Helpful for Interested Parties in the Firm: Through ratio analysis the internal and external parties interested in the firm also get benefited. The workers of the firm may use the information presented in the financial statements as basis for requesting increase in wages and salaries. By studying profitability ratios, investors can take decision for investment or not.

1.4 LIMITATION OF RATIO ANALYSIS

The ratio analysis is one of the most powerful tools of financial management. Though, ratios are simple to calculate and easy to understand, they suffer from some serious limitationswhich are summarized as below:

1. Limited use of Single Ratio: A single ratio in itself is meaningless; it does not furnish a complete picture. In other words, one single ratio, used without reference to other ratios, may produce misleading results. Hence, a number of related ratios are to be calculated for proper analysis and interpretation of financial statements. For example, to test the liquidity wemake use of all the liquidity ratios.

2. IgnoresQualitative Factors: The ratio facilitates quantitative analysis only. The qualitative factors which are so important for the successful functioning of the organization are completely ignored and hence, whatever conclusions drawn may be distorted.

3.Only a part of the information needed in the process of Decision Making: It should also be remembered that ratio analysis helps in providing only a part of the information needed in the process of decision making. Any information drawn from the ratios must be used with that obtained from other sources so as to ensure a balanced approach in solving the ticklish issues.

4.Possibility of Window Dressing: Ratio depends on figures of the financial statements. But in most cases, the figures are window dressed. As a result, the correct picture cannot be drawn up by the ratio analysis.

5.Different meaning to Accounting Terms: Comparisons are also made difficult due to difference in definitions of various terms used in computing ratios. For example, terms like shareholders' funds, capital employed, working capital etc. are used in different sense by different people. Hence, unless the meanings of relevant terms are properly defined, the use of ratios may lead to wrong comparisons and conclusions.

6. Variation in Accounting Policies: Comparison between two variables proves worth provided their basis of evaluation is identical. But in reality, it is not possible, such as methods of valuation of stock in trade or charging different methods of depreciation on fixed assets etc. That is different methods are followed by different firms for their valuation, in that case, comparison will practically be of no use.

7. Difficulty in evolving Standard Ratios: It is very difficult to ascertain the normal or standard ratio in order to make a proper comparison.

8. Historical Analysis: Ratios are developed in the past as they are obtained from the financial statements which are considered to be historical documents. A financial analyst is more concerned with the probable happenings in the future rather than those in the past. These ratios cannot be completely relied upon as reflecting current conditions.

9. Effect of Price Level Changes is not taken into account:A change in price level can seriously affect the validity of comparisons of ratios computed for different time periods.

10. Personal Bias: Ratios are only means of financial analysis and not an end itself. They can be affected with the personal ability and bias of the analyst. Generally, different analyst may interpret the same ratio in different ways.

1.5 CLASSIFICATION OF RATIOS

Financial ratios are classified in to various groups. Their actual classification depends upon the objects of analysis, nature of party interested in analysis and the source and quantity of data available. The following four forms of ratio classification are more common in actual use.

Statement wise Classification	Classification by Users	Classification according to Importance	Functional Classification
1.Balance sheet Ratios 2.Profit and Loss account Ratio 3.Composite or Mixed Ratios	1.Ratio for Management 2.Ratio for Shareholders 3.Ratio for Creditors	1.Primary Ratio 2.Secondary Ratio	1.Liquidity Ratio 2.Efficiency Ratios/Activity Ratios 3.Solvency Ratios 4.Leverage/Capital Structure Ratios 5.Profitability Ratios(Based on Sales & Based on Capital) 6.Market Based Ratios/Ratios for Prospective Investors

1.Statement-wise Classification:

It is most traditional classification of financial ratios. This classification is based on accounting statement providing information necessary for the calculation of various ratios. There are three types of ratios on the basis of financial statements:-

(a)Balance sheet Ratios: When both figures for ratio computation are extracted from the balance sheet of the business, the ratio is called balance sheet ratio. Such ratios are often called as financial ratios also. e.g.,Current ratio, Liquidity ratio, Proprietary ratio, Fixed asset ratio, Capital gearing ratio, Book value per share.

(b)Profit and Loss Account Ratio: When both figures for ratio computation are extracted from the profit and loss account, the ratioiscalledprofit and loss account ratio.e.g. Operating ratio, Expenses ratio, Net profit ratio, Gross profit ratio, Stock turnover ratio.

(c) Composite or Mixed Ratios: In such ratio, one items or a group of items is taken from balance sheet and the other from profit and loss account.e.g, Return on capital employed, Return on share holder's fund, Current assets turnover ratio, Ratio of net sales to fixed assets.

2.Classification by Users:

(a) Ratio for Management: These ratios are used by managers for measuring the effectiveness of management of the businesse.g,Operating Ratio, Return on capital employed, Stock turnover Ratio, Debtors turnover Ratio, Solvency Ratio.

(b) Ratio forCreditors: These ratios are used by creditors for assessing the creditworthiness of the businesse.g,Current Ratio, Solvency Ratio, Creditors turnover Ratio, Fixed asset Ratio, Asset cover Ratio, Debt service Ratio.

(c) Ratio forShareholders: These ratios are used by the shareholders for assessing the return or solvency of the businesse.g,Return on shareholders' fund, Capital gearing Ratio, Dividend coverRatio, Yield rate, Proprietary Ratio.

3.Classification According to Importance:

This classification is being adopted by the British Institute of Management for inter-firm comparisons. In this classification, all the ratios are classified into two groups:

(a) Primary Ratio: This is one which is of prime importance to a concern e.g, return on capital employed, asset turnover etc.

(b) Secondary Ratio: The ratios which support or explain the primary ratio is called secondary ratio.

4.Functional Classification:

1	2	3	4	5	6
Liquidity Ratios	**Efficiency Ratios**	**SolvencyRatios**	**Leverage Ratios**	**Profitability Ratio**	**Market Based Ratios**
1.Current Ratio, 2.Liquidity Ratio, 3.Absolute liquid Ratio	1. Stock/Inventory turnover Ratio 2. Debtors/ Receivables turnover Ratio 3. Creditors/Payables turnover Ratio 4. Current Assets Turnover Ratio 5. Working	1. Debt-Equity Ratio /Debt-Net worth Ratio 2. Proprietary Ratio/Equity Ratio 3. Solvency Ratio 4. Fixed Assets to Net worth Ratio 5. Funded Debt to Capitalization Ratio	1. Capital gearing Ratio or Gear Ratio 2.Debt –Total Fund Ratio 3. Ratio of total investments to Long-term liabilities 4. Ratio of fixed asset to funded debt 5. Ratio of reserve to	a)General Profitability Ratios(Profit in relation to Sales) 1.Gross Profit Ratio 2.Operating Ratio 3.Operating Profit Ratio 4.Expenses Ratio 5.Net Profit	1. Earnings per Share (EPS) 2. Dividend Payout Ratio (D/P Ratio) 3. Dividend Yield Ratio 4. Price Earnings Ratio (P/E Ratio) 5. Price to Book

	Capital Turnover Ratio 6. Fixed Assets Turnover Ratio 7. Total Assets Turnover Ratio 8. Net Tangible Assets Turnover Ratio 9. Capital/Net worth Turnover Ratio	6. Fixed Assets to Total Long-term fund Ratio or Fixed Assets Ratio 7. Ratio of tangible assets to total debts 8. Debt-Service coverage Ratio/ Interest coverage Ratio/ Fixed Charges Coverage Ratio 9. Preference Dividend Coverage Ratio 10.Cash to debt service Ratio or Debt cash flow coverage Ratio	equity capital 6. Ratio of current liabilities to proprietor's funds	Ratio (b)Overall Profitability Ratios(Profit in relation to Investment) 1.Return on Equity(ROE) 2.Return on Net worth(RONW) 3.Return on Investment(ROI) 4.Return on Assets(ROA) 5.Return on Capital Employed(ROCE)	Value Ratio (P/B Ratio)

(a)LiquidityRatios: These ratios measure the short term debt repaying capacity of a businesse.g., Current Ratio, Liquidity Ratio, Absolute liquid Ratio or Cash Ratio.

(b)EfficiencyRatios: These ratios measure the efficiency with which assets are being used by the businesse.g., Total asset turnover Ratio, Fixed asset turnover Ratio, Working capital turnover Ratio, Inventory turnover Ratio, Debtor turnover Ratio, Creditors turnover Ratio.

(c)Solvency Ratios: These ratios measure the long term debt repaying capacity of the business. e.g. Debt equity Ratio, Proprietary Ratio, Solvency Ratio or Debt to total assets Ratio, Fixed assetRatio, Capital gearing Ratio, Debt-service Ratio or Interest coverage Ratio.

(d) Leverage Ratio: These ratios measure the relationship between finance provided to the firm by the outsiders and the owners. They also indicate the risk of debt finance, e.g. Capital Gearing Ratio, Ratio of Total Investment to long-term liability, Ratio of Fixed Assets to Funded Debt, Ratio of Current liability to Proprietor's funds.

(c)Profitability Ratios: These ratios measure the profit earning capacity of the business. These ratios can be computed in relation to sales or in relation to capital.

(i)Ratio Based on Sales: e.g., Gross profitRatio, Operating profit Ratio, Expenses Ratio, Operating profit Ratio, Net profit Ratio.

(ii)Ratio Based on Capital:e.g.,Return on shareholders' fund, Return on capital employed, Return on equity capital.

(f)Market Based Ratios: These ratios are used by prospective investor before investing in a stock,.e.g. Earnings per share, Book value per share, Capitalization Ratio, Dividend Yield Ratio, Dividend Payout Ratio, Dividend cover Ratio.

1.6 LIQUIDITY RATIOS

The short term creditors of a company, like suppliers of goods on credit andcommercial banks providing short-term loans, are primarily interested in knowingthe company's ability to meet its current or short term obligations as and whenthese become due. The short term obligations of a firm can be met only whenthere are sufficient liquid assets. Therefore, a firm must ensure that it does notsuffer from lack of liquidity or the capacity to pay its current obligations. Even avery high degree of liquidity is not good for the firm because such a situationrepresents unnecessarily excessive funds of the firm being tied up in currentassets.

The importance of adequate liquidity is the sense of the ability of a firm to meet its current/ short-term obligation when they become due for payment. It reflects the short-term financial strength of the firm. Liquidity is basic to continuous operations of the firm. In fact, it is pre-requisite for the very survival of a firm.

The object of liquidity analysis is to examine the firm's ability to meet its current obligation out of short-term resources. However, a very high degree of liquidity is not desirable because it implies that funds are idle as they earn very little. It is not good from profitability point of view. Hence, a proper balance between the two contradictory requirements i.e. liquidity and profitability is required for efficient financial management. It becomes, therefore, necessary to determine the degree of liquidity of the firm.

The ratios which indicate the liquidity of a firm are known as Liquidity Ratio. The following are ratios calculated to measure the liquidity of a firm:

1. Current Ratio
2. Quick Ratio
3. Absolute Liquid Ratio

1. CurrentRatio:

Current Ratio is the most common and widely used ratio for measuring liquidity. Being related to working capital analysis, it is also called the Working Capital Ratio. This ratio indicates the relationship between total current assets and total current liabilities of a firm. This is calculated by dividing current assets by current liabilities.

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

Current assets(Will be converted in to cash	Current liabilities (Payable within one year)

within one year)	
Ex: Cash in hand, Cash at bank, Debtors, Prepaid expenses, Short term deposits, Short term investments, Bills receivable, Money at call and short notice, Stock of finished goods, Stock of work in progress, Stock of raw materials	Ex: Bills payable, Income tax payable, Creditors, Outstanding expenses, Bank overdraft, Provision for taxation, Interest due on fixed liabilities, Reserve for unbilled expenses, Installment payable on long-term loans.

Illustration 1: On December 31, 2010 Company B had total asset of 150,000,equity of 75,000, non-current assets of 50,000 and non-current liabilities of 50,000. Calculate the Current Ratio.

Solution

To calculate current ratio, we need to calculate current assets and currentliabilities first:

Current Assets = Total Asset − Non-Current Assets = 150,000 − 50,000 = 100,000

Total Liabilities = Total Assets − Total Equity = 150,000 − 75,000 = 75,000

Current Liabilities = 75,000 − 50,000 = 25,000

Current Ratio = 100,000 ÷ 25,000 = 4

Interpretation:

1. CurrentRatio is a good measure of liquidity. It indicates the rupees of current assets available for each rupee of current liability.

2. Higher the current ratio, the larger the amount of rupees available per rupee of current liability, the more the firm's ability to meet current obligation and greater the safety of funds of short-term creditors.

3. But too high current ratio may be good from creditors point of view, but it can never be good from view of the owners. Too high current ratio shows weak investment policy, excessive stock etc. Such a situation cannot be good for the profitability of the business.

4. On the other hand, low current ratio shows shortage of working capital in the business and it may endanger the survival of the firm. Hence, the current ratio in business should be appropriate.
5.A ratio of **2:1 (two times current assets to current liabilities)** is considered satisfactory as **a rule of thumb.**

6. In inter-firm comparison, the firm with the higher current ratio has better liquidity or short term solvency.

7. It is important to note that the norm of 2:1 should not be followed blindly. We should pay attention to the quality and nature of current assets. If major portion of current assets consists of debtors, prepaid expenses and slow moving obsolete stock, then even twice the current assets may prove insufficient to pay the short-term liabilities when due for payment.

8.On the other hand, if the firm is capable of making immediate arrangement of cash easily in case of emergency, then a lower than 2:1 ratio may be treated satisfactory.

9. Hence, it would be necessary to consider the following factors while deciding the standard of current ratio:

- Nature of business: If the business is of speculative nature, then a higher current ratio is necessary. Similarly, if the business is of seasonal nature, then it would be appropriate to change current ratio according to fluctuation is output and sales.
- Plans to introduce by the firm in the near future and amount required for them.
- Credit period allowed and received.
- Nature of stock, if the major portion of inventory is of raw materials or it consists of slow moving and obsolete stock, then a higher current ratio would be essential. On the other hand, if inventory consists of fast moving finished goods, then possibility of their conversion into cash would be higher and so even a lower current ratio may be good.
- In case of heavy fixed charges of long-term loans, a higher current ratio would be appropriate and essential.

Limitations:

1. It is a crude measure of financial liquidity as it does not take into account the liquidity of the individual component of current assets. Cash and bills receivable are more liquid in comparison to inventories, prepaid expenses and sundry debtors. But in computing this ratio they all are treated at par.

2. The greatest weakness of current ratio is the possibility of window dressing and manipulation. The current ratio can be improved by making payment of current liability at the year-end or by over valuing current assets and under valuing current liabilities.

3. The current ratio is largely affected by seasonal fluctuations.

4. Conclusions drawn on the basis of current ratio only may be misleading because in spite of high current ratio, the firm may unable to pay its current liabilities,if major portion of current asset consists of raw materials slow moving or obsolete finished goods or unrecoverable debtors. Hence, it is not proper to rely upon this ratio only for analyzing liquidity of the firm.

2. Quick or Acid Test Ratio or LiquidRatio:

Quick Ratio, also known as Acid Test Ratio or Liquid Ratio, is a morerigorous test of liquidity than the current ratio. The term liquidity refers to theability of a firm to pay its short term obligations as and when they become due. Quick Ratio may be defined as the relationship between quick/liquid assets andcurrent or liquid liabilities. An asset is said to be liquid if it can be converted intocash within a short period without loss of value. In that sense cash in hand andcash at bank are the most liquid assets. The other liquid assets include billsreceivable, sundry debtors, marketable securities and short term or temporaryinvestments. Prepaid expenses and Inventories cannot be termed as liquid assetbecause they cannot be converted into cash without loss of value. A ratio of **1:1 is considered as satisfactory Quick Ratio**.

The ratio is used as a compliment of current ratio. This ratio is calculated for assessing the capacity of the firm to make immediate payment of its liabilities. This ratio discloses the relationship between liquid assets and current liabilities.

$$\text{Quick or Acid Test Ratio or Liquid Ratio} = \frac{\text{Quick Assets or Liquid Assets}}{\text{Current Liabilities}}$$

Quick Assets/Liquid assets= Current assets-Stock-Prepaid expenses

Illustration 2

Calculate Quick Ratio from the information:

Stock 60,000 ; Cash 40,000; Debtors 40,000; Creditors 50,000,Bills Receivable 20,000; Bills Payable 30,000; Advance Tax 4,000,Bank Overdraft 4,000; Debentures 2,00,000; Accrued interest 4,000.

Solution

Quick Assets = Current Assets – Stock – Advance Tax

Quick Assets = 1,68,000 – (60,000 + 4,000) = 1,04,000

Current Liabilities = 84,000

Quick Ratio = Quick Assets / Current Liabilities

= 1,04,000/ 84,000= 1.23:1

Illustration 3

X Ltd. has a current ratio of 3.5:1 and quick ratio of 2:1. If excess of current assets over quick assets represented by stock is 1, 50,000, calculate current assets and current liabilities.

Solution

Let Current Liabilities = X

Current Assets = 3.5X

And Quick Assets = 2X

Stock = Current Assets – Quick Assets

1,50,000 = 3.5X – 2X

1,50,000 = 1.5X

X = 1,00,000

Current Assets = 3.5X = 3.5 × 1,00,000 = 3,50,000.

Illustration 4

Calculate the current ratio and quick ratio from the following information:

Working capital 9,60,000; Total debts 20,80,000; Long-term Liabilities 16,00,000; Stock 4,00,000; Prepaid expenses 80,000.

Solution

Current Liabilities = Total debt- Long term debt

= 20,80,000 – 16,00,000= 4,80,000

Working capital = Current Assets – Current liability

9,60,000 = Current Assets – 4,80,000

Current Assets = 14,40,000

Quick Assets = Current Assets – (stock + prepaid expenses)

= 14,40,000 – (4,00,000 + 80,000)= 9,60,000

Current Ratio = Current Assets / Current liabilities

= 14,40,000/4,80,000= 3:1

Quick Ratio = Quick Assets / Current liabilities

= 9,60,000/4,80,000= 2:1

3. AbsoluteLiquidity Ratio:

It is more rigorous test of liquidity of a firm. It is calculated by dividing cash and marketable securities (termed as super-quick current assets) by quick or liquid liabilities. It is calculated as follows:

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

Absolute liquid assets= Cash in hand, cash at bank and short term highly liquid marketable securities.The acceptable norm for thisratio is **50% or 0.5:1.**

Illustration 5

Calculate Absolute Liquid Ratio from the following information

Goodwill 50,000 ,Cash at Bank 30,000,Plant and machinery 4,00,000 Inventories 75,000,Trade investments 2,00,000, Bank overdraft 70,000,Marketable securities 1,50,000, Sundry creditors 60,000,Bills receivable 40,000, Bills payable 90,000,Cash in hand 45,000, Outstanding expenses 30,000.

Solution

Absolute Liquid Ratio = Absolute Liquid Assets/Current Liabilities

Absolute Liquid assets = Mark. Securities+ Cash in hand and at Bank

= 1,50,000+ 45,000+ 30,000 = 2,25,000

Current Liabilities = Bank overdraft + Creditors + Bills Payable+ Outstanding Expenses

= 70,000+ 60,000+ 90,000+ 30,000 = 2,50,000

Absolute Liquid Ratio = Absolute Liquid Assets/Current Liabilities

= 2,25,000/ 2,50,000= 0.9

Illustration6

From the following information regarding current assets and current liabilities of Sun Ltd, Comment upon the liquidity of the concern:

Current Liabilities	**Amount ( )**	**Current Assets**	**Amount ( )**
Creditors	27,000	Cash	42,000
Bills Payable	12,000	Debtors	20,000
Outstanding expenses	5,000	Bills receivable	15,000
Provision for tax	18,000	Stock	35,000
Bank overdraft	10,000	Investment in Government securities	24,000
		Prepaid expenses	10,000
		Interest receivable	1,000
Total	**72,000**	**Total**	**1,47,000**

Solution:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{1,47,000}{72,000} = 2.04:1$$

$$\text{Quick Ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}} = \frac{1,02,000}{72,000} = 1.4:1$$

$$\text{Absolute Liquid Ratio} = \frac{\text{Absolute Liquid Assets}}{\text{Current Liabilities}} = \frac{66,000}{72,000} = 0.92:1$$

Working Note:

Quick Assets=Current Assets-Stock-Prepaid Expenses=1,47,000-35,000-10,000=1,02,000

Absolute Liquid Assets=Cash+Government Securities=42,000+24,000=66,000

Comment: All the three ratios show good liquidity position as all the three ratios are more than rule of thumb. The rule of thumb for current ratio is 2:1, quick ratio is 1:1and absolute liquid ratio is 0.5:1.

1.7 EFFICIENCY/ACTIVITY/TURNOVER RATIOS

Activity Ratios, sometimes referred to as Operating Ratios or Management Ratios, measure the efficiency with which a business uses its assets, such asinventories, accounts receivable and fixed (or capital) assets. The morecommonly used operating ratios are the average collection period, the inventoryturnover, the fixed assets turnover, and the total assets turnover. These ratios indicate the efficiency of management in the use of resources,both short term and long term. The overall performance of a company isevaluated on the basis of its ability to make sales using minimum resources.Turnover Ratios reflect the speed at which assets are utilized in effecting sales. Ahigher turnover ratio means efficient use of funds by management in generatingmore sales. The important turnover ratios are:

1. Stock/Inventory turnover Ratio
2. Debtors/Receivables turnover Ratio
3. Creditors/Payables turnover Ratio
4. Current Assets Turnover Ratio
5. Working Capital Turnover Ratio
6. Fixed Assets Turnover Ratio
7. Total Assets Turnover Ratio
8. Net Tangible Assets Turnover Ratio
9. Capital/Net worth Turnover Ratio

1. Stock Turnover Ratio/Inventory Turnover Ratio/Stock Velocity

This ratio is calculated to consider the justification of amount of capital employed in stock. Under it, rate of conversion of stock into sales (i.e. stock velocity) is known by establishing relationship between cost of goods sold and inventory. This ratio indicates the amount of sales per rupee of investment in inventory. This is calculated by dividing cost of goods sold of a period by the average stock of that period.

$$\textbf{Inventory Turnover Ratio} = \frac{\textbf{Cost of Goods Sold}}{\textbf{Average Inventory (at cost)}}$$

Note:

1. Cost of goods sold = Opening stock +Net Purchases + Direct expenses – Closingstock

Or

Cost of goods sold = Net sales – Gross Profit

2. Average inventory = (Opening inventory +Closing inventory)/2

3.Inventory here will mean inventory of **finished goods only.**Because it only is capable of being sold.

4.This ratio may be calculated on the basis of Net sales but in such situation average inventory will be taken at sale price. In departmental stores, where inventory is usually valued at sale price, this ratio is calculated on this basis (i.e. Net sales/ Average inventory at selling price).

5. If average stock cannot be known then this ratio may be calculated with the figure of closing inventory (i.e. Net sales/ Closing stock).
6. In case of manufacturing concern inventory turnover ratio may be known separately for raw material and finished goods both applying the following formulae:

$$\text{Raw material Turnover Ratio} = \frac{\text{Raw material Consumed}}{\text{Average Inventory of Raw material}}$$

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

7. Anotherapproach of this ratio is computation of **stock velocity**.Stock velocity can be measured in months also by applying following formula.

$$\text{Stock velocity in months} = \frac{\text{Average Stock}}{\text{Cost of Goods Sold}} \times 12 \text{ months}$$

This ratio indicates the period during which supply of goods may be maintained out of current stock without its replenishment.

8. Some people calculate average age of inventory also together with inventory turnover.

Average age of Inventory: This represents the number of working days, on an average, an item remains in the firm's inventory. It is also called **inventory conversion period**. It is calculated as follows:

$$\text{Average Age of Inventory} = \frac{\text{Number of working days in a Year}}{\text{Inventory Turn Over Ratio(ITR)}}$$

Note: The number of working days in a year differs from organisation to organization.It may be taken as 365/360/300. The shorter the average age of firm's inventory, the more liquid or active it may be considered.

Interpretation:

1.Inventory Turnover Ratio (ITR) is an indicator of velocity of flow of inventory in business**.** This shows the rate of conversion of stock into sales. In fact, inventory policy of management and liquidity of firm both may be tested by this ratio. This is also a measure of marketing capacity of the firm.

2. No standard rate or norm can be determined for this ratio.Because it based more on nature of industry and sales policy of the firm. Hence, this ratio should be compared with the firm's own past ratios and ratios of other similar firms or with industry average.

3. Comparatively higher inventory turnover ratio is an indicator of expansion of business (efficiency in sales increases) and efficient management of inventory because it shows higher sales with lesser investments in inventory. Such firms may earn high profits even at low margin of profit. On the contrary, a fall in this ratio is an indicator of dull business and over-investment in inventories.

4. A too high inventory turnover ratio may not necessarily always imply a favourable situation. It may be the result of very low level of inventory which results in shortage of goods or a position of stock-out whenever demand increases. It may also be the result of firm's policy to buy frequently in small lots at some higher prices.

5. Similarly, low inventory turnover may not necessarily always imply an unfavourable situation. It may be result of management policy of keeping high inventory when price rise is anticipated or stock shortage in near future is anticipated, or when some sizeable order is anticipated, for which immediate supply is required. Hence, for drawing correct conclusion, causes of changes in this ratio should be examined precisely.

Illustration 7

Calculate Stock turnover Ratio from the following information of Sanjit Limited:

Opening Stock 20,000,Purchases 1,09,000, Direct Expenses 1,000,Closing Stock 40,000,Administration Expenses 5,275,Selling & Distribution Expenses 10,000,Sales 2,50,000.

Solution:

Cost of goods sold=Opening stock +Net Purchases + Direct expenses – Closing stock = 20,000+ 1.09,000+ 1,000 40,000= 90,000

Average Stock= (Opening inventory +Closing inventory)/2 = (20,000+40,000)/2 = 30,000

Stock Turn Over Ratio = (Cost of Goods Sold/Average Inventory) = 90,000/ 30,000=3 times

Illustration 8

Calculate Stock Turnover Ratio from the following information related to Swapna Limited:

Opening Stock 46,400,Purchases 3,87,200,Sales 5,12,000,Gross Profit:25% on Sales.

Solution:

Cost of goods sold=Sales-Gross Profit= 5,12,000-(25%on 5,12,000)= 5,12,000- 1,28,000 = 3,84,000

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

Or 3,84,000= 46,400+ 3,87,200+0-Closing Stock

Or Closing Stock= 46,400+ 387,200- 3,84,000= 49,600

Average Stock= (Opening inventory +Closing inventory)/2 = (46400+49600)/2= 48,000

Stock Turn Over Ratio = (Cost of Goods Sold/Average Inventory) = 3,84,000/ 48,000 =8Times

Illustration 9

Compute the merchandise turnover of Paswan Ltd for each of the following three years shown below and give your interpretation of the result.

Particulars	**2018 (In)**	**2017 (In)**	**2016 (In)**
Cost of goods sold	5,16,378	4,53,740	6,41,425
Average inventory	2,36,420	3,01,231	5,39,850

Solution:

$$\text{Stock Turnover Ratio (STR)} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

$$2018 = \frac{5,16,378}{2,36,420} = 2.19 \text{ times}$$

$$2017 = \frac{4,53,740}{3,01,231} = 1.51 \text{ times}$$

$$2016 = \frac{6,48,425}{5,39,850} = 1.20 \text{ times}$$

Interpretation: As it is clear from the above calculations,stock turnover has shown an increasing trend during the years under review. It implies that the sales level per rupee invested in stock has been increasing continuously. An analysis of absolute amounts of stock shows that the company is following the policy of reducing investments in stock each year. All this is an indication of company's efficient inventory control policy and sales capability.

2. Debtors Turnover Ratio or Receivable Turnover Ratio (DTR)

A concern may sell goods on cash as well as on credit. Credit is one of theimportant elements of sales promotion. The volume of sales can be increased byfollowing a liberal credit policy. The effect of a liberal credit policy may result in tying up substantial fundsof a firm in the form of trade debtors (or receivables). Trade debtors are expectedto be converted into cash within a short period of time and are included incurrent assets. Hence, the liquidity position of concern to pay its short termobligations in time depends upon the quality of its trade debtors.

Debtors Turnover Ratio or **Accounts Receivable Turnover Ratio** indicates thevelocity of debt collection of a firm. In simple words, it indicates the number oftimes average debtors (receivable) are turned over during a year.This ratio is a qualitative analysis of a firm's marketing and credit policy and debtors realizations. It is calculated to know the uncollected portion of credit sales in the form of debtors by establishing relationship between trade debtors and net credit sales of the business. The following formula is applied for this purpose.

$$\text{Debtor Turnover Ratio DTR} = \frac{\text{Net Credit Sales}}{\text{Average Trade Debtors}}$$

Note:

1. Trade Debtors means Debtors plus Bills Receivables.

2. Average Trade Debtors =(Opening Trade Debtors + Closing Trade Debtors)/2

3.It should be noted thatprovision for bad and doubtful debts should not be deducted since this may givean impression that some amount of receivables has been collected.

4. Net credit sales consist of gross credit sales minus sales returns.

5. Debtors and bills receivable arising from irregular or non-trading activities (such as bills receivables received on sale of a fixed assets) are not included in this calculation.

6. If cash sales are negligible, then calculation may be made from net total sales figure in place of net credit sales.

7.When theinformation about opening and closing balances of trade debtors and credit salesis not available, then the debtors turnover ratio can be calculated by dividing thetotal sales by the balance of debtors (inclusive of bills receivables) given. Andformula can be written as follows:

Debtors Turnover Ratio = Total Sales / Debtors

Interpretation:

1.Accounts receivable turnover ratio or Debtors' turnover Ratio indicates thenumber of times the debtors are turned over a year.

2. The higher the value ofdebtors' turnover the more efficient is the management of debtors or more liquidthe debtors are. Aincrease in this ratio each year is an indicator of efficiency of marketing and credit policy of the firm.

3. Similarly, low debtors turnover ratio implies inefficientmanagement of debtors or less liquid debtors.

4. It is the reliable measure of thetime of cash flow from credit sales.

5. There is no rule of thumb which may be usedas a norm to interpret the ratio as it may be different from firm to firm.Hence, this ratio should be compared with the firm's own past ratios and ratios of other similar firms or with industry average.

Average Collection Period:

In analyzing the debtors, usually average collection period is also calculated with debtors' turnover ratio. The period indicates the period taken in the realization or collection of debtors. In other words, it represents the average number of days for which a firm has to wait before its receivables are converted into cash. The purpose of calculating this period is to find out the ratio of cash flow from collection of debtors. There are three formula for computation of average collection period:

$$\text{Average Collection Period} = \frac{\text{Average Trade Debtors}}{\text{Credit Sales Per Day}}$$

$$\text{Average Collection Period} = \frac{\text{Average Trade Debtors} \times \text{Number of working Days in a Year}}{\text{Net Credit Sales}}$$

$$\text{Average Collection Period} = \frac{\text{Number of Working Days in a Year}}{\text{Debtor Turn Over Ratio(DTR)}}$$

Notes:

1. Credit Sales Per Day = (Net Credit Sales/Number of working Days in a year)

2. Number of working days in a year differs from organization to organization. It may be taken as 365/360/300.

Interpretation:

1.This ratio measures the quality of debtors. A short collection period impliesprompt payment by debtors. It reduces the chances of bad debts. Similarly, alonger collection period implies too liberal and inefficient credit collectionperformance. It is difficult to provide a standard collection period of debtors.

2. The average collection period is compared with actual trade terms (i.e. credit period allowed in sales terms) to examine the managerial efficiency in debt collection. In this respect, the general rule is that average collection period should not exceed the stated credit period on trade terms plus 1/3rd of such period. If average collection period exceeds 4/3 of stated credit period, it will indicate either liberal credit policy or slackness of management in realizing debts. A higher average collection period also implies that chances of bad debts are more.

3. The average collection period is affected by change in sales terms, change in policy in respect of including or excluding cash and installment sales in the sales, special sales campaign at the close of the accounting year, direct sales to consumers, price changes, effectiveness of credit collection and sales department, strikes and luck-outs and nature of trade cycle.

Illustration 10

From the following information of Ezra Limited calculate Debtors Turnover Ratio (DTR)and Average Collection Period(ACP)

Particulars	Amount( )
Total Sales for the Year	2,62,000
Cash Sales	20%of Total Sales
Sales Return out of credit sales	15,000
Opening Balance of Sundry Debtors	10,000
Opening Balance of Bills Receivable	2,000
Closing Balance of Sundry Debtors	15,000
Closing Balance of Bills Receivable	3,000

Solution:

Net Credit Sales = Total Sales-Cash Sales-Sales Return out of Credit Sales = 2,62,000-(20% of 2,62,000)- 15,000 = (2,62,000-52,500-15,000) = 1,95,000

Opening Trade Debtors =Opening Debtors+ Opening Bills Receivable = 10,000+ 2,000 = 12,000

Closing Trade Debtors =Closing Debtors+ Closing Bills Receivable = 15,000+ 3,000 = 18,000

Average Trade Debtors =(Opening Trade Debtors + Closing Trade Debtors)/2 = (12,000+18,000)/2= 30,000/2 = 15,000

Debtor Turnover Ratio = Net Credit Sales/Average Trade Debtors = 1,95,000/ 15,000 =13 Tmes.

Average Collection Period=(Number of working Days in a Year/Debtor Turnover Ratio) =365Days/13=28.07 days or 28 Days(Approximately)

Illustration 11

A manufacture sells to retailer on terms 2.5% discount in 30 days, 60 days net. The debtors and receivable at the end of March on past three years and net sales for all these three years as under:

Particulars	2018 (In)	2017 (In)	2016 (In)
Debtor	85,582	33,932	54,845
Bills receivable	9,242	3,686	4,212
Net sales	4,43,126	3,37,392	2,68,466

Determine the average collection period for each of these three years and comment.

Solution:

$$\text{Average collection period or average age of receivables} = \frac{\text{Trade receivables}}{\text{Net credit sales}} \times 365$$

$$2016 = \frac{59,054}{2,68,466} \times 365 = 80 \text{ days}$$

$$2017 = \frac{37,618}{3,37,392} \times 365 = 41 \text{ days}$$

$$2018 = \frac{94,824}{4,43,126} \times 365 = 78 \text{ days}$$

Comments: As stated, credit period is 60 days.Hence collection period should not exceed 60+1/3rd of 60= 80 days. It is a matter of satisfaction that all the three years, firm's average collection period has never crossed this limit. It may be taken as an indication of alertness of sales manager towards credit collection.

Illustration 12

Jagannath Ltd sells goods on cash as well as on credit. The following particulars are taken from their books of accounts for the year ending 31st March 2019:

Particulars	**Amount ( )**
Total sales	10,00,000
Cash sales	2,00,000
Sales return	70,000
Total debtors (31/3/2019)	90,000
Bills receivable (31/3/2019)	20,000
Provision for bad debts (31/3/2019)	10,000

Calculate the average collection period.

Solution:

$$\text{Average collection period} = \frac{\text{Trade receivables}}{\text{Net credit sales}} \times 365 = \frac{1,10,000}{7,30,000} \times 365 = 55 \text{ days}$$

Whereas trade receivables= .90,000 + . 20,000= . 1,10,000

Net credit sales= .10,00,000 – .2,00,000 – .70 000= 7,30 000

3. Creditors Turnover Ratio(CTR)/Payables Turnover Ratio:

LikeDebtorsturnoverRatio, Creditor's turnover Ratio may also be calculated. The short-term creditors (i.e. suppliers of goods) are very much interested in this ratio, as it shows the firm's trend of payment to its short-term creditors. This ratio shows the relationship of net credit purchases and averagetrade creditors.

$$\textbf{Creditor Turnover Ratio DTR} = \frac{\textbf{Net Credit Purchase}}{\textbf{Average Trade Creditors}}$$

Note:

1. Trade Creditors means Creditors plus Bills Payables.

2. Average Trade Creditors = (Opening Trade Creditors + Closing Trade Creditors)/2

3. Net credit Purchaseconsist of gross credit purchases minus purchase returns.

4. Creditors and Bills Payable arising from irregular or non-trading activities (such as bills payable on purchase of a fixed assets) are not included in this calculation.

5. If cash purchases are negligible, then calculation may be made from net total purchases figure in place of net credit purchases.

6. When the information about opening and closing balances of trade creditors and credit purchases is not available, then the creditors turnover ratio can be calculated by dividing the total purchases by the balance of creditors (inclusive of bills Payables) given. And formula can be written as follows: **Creditors Turnover Ratio = Total Purchases / Creditors**

Interpretation:

This ratio indicates the velocity with which the creditors are turned over in relation to purchases. Higher the creditors velocity, better it is. A fall in the ratio shows delay in payment to creditors.

Average Payment Period

While analyzing creditors, usually average payment period is also calculated. This period discloses the time taken by the firm in making payment to its trade creditors.Average payment period ratio gives the average credit period enjoyed from the creditors. It can be calculated using any one the following three formulae:

$$\text{Average Payment Period} = \frac{\text{Average Trade Creditors}}{\text{Credit Purchases Per Day}}$$

$$\text{Average Payment Period} = \frac{\text{Average Trade Creditors} \times \text{Number of working Days in a Year}}{\text{Net Credit Purchases}}$$

$$\text{Average Payment Period} = \frac{\text{Number of Working Days in a Year}}{\text{Creditor Turn Over Ratio(CTR)}}$$

Interpretation:

1. The average payment period ratio represents the number of days by thefirm to pay its creditors.

2. A high Creditor's turnover Ratio or a lower credit periodratio signifies that the creditors are being paid promptly. This situation enhancesthe credit worthiness of the company.

3. However a very favorable ratio to this effectalso shows that the business is not taking the full advantage of credit facilitiesallowed by the creditors.

4. Average disbursement period is compared with credit period allowed by suppliers of goods to know promptness or delay in payment.

Illustration 13

From the following information of Aiswarya Limited calculate Creditors Turnover Ratio and Average Payment Period:

Particulars	**Amount( )**
Credit Purchases during the year	5,30,000
Purchase return(Out of credit purchase)	30,000
Opening Creditors	90,000
Closing Creditors	50,000
Opening Bills Payables	20,000
Closing Bills Payables	40,000

Solution:

Net Credit Purchase Credit Purchase-Purchase Return = .5,30,000- .30,000 = .5,00,000

Opening Trade Creditor =Opening Creditor+Opening Bills Payable = .90,000+ .20,000= .1,10,000

Closing Trade Creditor =Closing Creditor+Closing Bills Payable = .50,000+ .40,000= .90,000

Average Trade Creditor =(Opening Trade Creditor +Closing Trade Creditor)/2 = (.1,10,000+ .90,000)/2 = .2,00,000/2= .1,00,000

Creditor Turn Over Ratio =Net Credit Purchase/Average Trade Creditor= .5,00,000/ .1,00,000 = 5 times

Average Payment Period = Number of Working Days in a year/Creditor Turnover Ratio =365 Days/5 =73 Days

Illustration 14

A trader purchases goods both on cash and credit terms. The following particulars are obtained from the books:

Particulars	**Amount ( )**
Total purchases	2,00,000
Cash purchases	20,000
Purchase return	34,000
Creditors at the end	70,000
Bills payable at the end	40,000
Reserve for discount on creditors	5,000

Calculate the average payment period.

Solution:

Step-I: Net credit purchase= Total purchase - Cash purchase - Purchase return

= .2,00,000 - .20,000 - .34,000 = 1,46,000

Step-II:

$$\text{Average payment period} = \frac{\text{Creditors + Bills payable}}{\text{Net credit purchase}} \times 365$$

$$= \frac{70,000+40,000}{1,46,000} \times 365 = 275 \text{ days}$$

Illustration 16

The following ratios are taken from Jagannath Traders:

Particulars	**Details**
Stock velocity	5 months
Debtors velocity	2.5 months
Creditors velocity	3 months
Gross profit Ratio	30%

Gross profit for the current year ended 31st March 2019 amounts to 9,00,000. Closing stock of the year is 30,000 more than the opening stock. Bills receivable amounts to 50,000 and bills payable to 30,000. Find out Amount of sales, sundry debtors, closing stock and sundry creditors.

Solution:

Amount of Sales:

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

$$30 = \frac{9,00,000 \times 100}{\text{Sales}} = 30,00,000$$

Sundry Debtors:

$$\text{Debtors velocity} = \frac{\text{Debtors + BR}}{\text{Net credit sales}} \times 12 \text{ months}$$

$$2.5 = \frac{\text{Debtors + 50,000}}{\text{30,00,000}} \times 12$$

Therefore debtors = .6,25,000- .50,000 = 5,75,000

Closing Stock:

Cost of goods sold= Sales-gross profit= .30,00,000 – (30% of . 30,00,000) = 21,00,000

$$\text{Stock velocity (in months)} = \frac{\text{Average stock}}{\text{Cost of goods sold}} \times 12 \text{ months}$$

$$5 = \frac{\text{Average stock}}{\text{21,00,000}} \times 12$$

Therefore average stock = 8,75,000

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

$$= 8{,}75{,}000 = \frac{\text{Opening stock + (30,000 + Opening stock)}}{2}$$

Therefore average stock = 8,60,000

Closing stock = 8,60,000 + .30,000 = 8,90,000

Sundry Creditors:

Net credit purchases= Cost of goods sold + closing stock – opening stock= .(21,00,000 + 8,90,000 – 8,60,000) = 21,30,000

$$\text{Creditors velocity} = \frac{\text{Creditors + B/P}}{\text{Net credit purchases}} \times 12 \text{ months}$$

$$3 = \frac{\text{Creditors} + 30{,}000}{21{,}30{,}000} \times 12$$

Therefore Creditors = . 5,32,500 – . 30,000 = .5,02,500

4. CurrentAsset Turnover Ratio:

In order to examine truly the liquidity of a firm, it is essential to measure the effectiveness and efficiency with which the firm is managing its current assets, specially debtors and stock.This ratio measures the utilization and effectiveness of current assets by establishing relationship of current assets with net sales. It is calculated as below.

$$\textbf{Current Asset TurnoverRatio} = \frac{\textbf{Net Sales (or Cost of Sales)}}{\textbf{Current Assets}}$$

This ratio is useful for those concerns where use of fixed assets is negligible. Higher the ratio, better it is.

5. Working Capital Turnover Ratio or Ratio of Sales to Working Capital:

Working capital turnover Ratio indicates the velocity of the utilization of networking capital. This ratio is a measure of efficiency of working capital utilization.This ratio represents the number of times the working capital is turned over inthe course of yearIt is calculated as follows:

$$\textbf{Working Capital Turnover Ratio} = \frac{\textbf{Net Sales (or Cost of Sales)}}{\textbf{Net Working Capital}}$$

Note: Net Working Capital = Current Assets- Current Liabilities

Interpretation:

1. A high working capital turnover ratio shows the efficient utilization of working capital.

2**.** But too high or too low ratio indicates over-trading and under-trading respectively. Both these situations are harmful for the smooth conduct of the business.

3. However, the ratio should be interpreted along with inventory turnover and debtor turnover ratios.

Illustration 17

From the following particulars of Abhijit Limited, compute Current Assets Turnover Ratio and Working capital Turnover Ratio:

Particulars	Amount( )
Cash	10,000
Bills Receivable	5,000
Sundry Debtor	25,000
Stock	20,000
Sundry creditors	30,000
Cost of Sales	1,40,000

Solution:

Current Assets = Cash + Bills Receivable + Sundry Debtors +Stock = .(10,000+5,000 +25,000+30,000) = .70,000

Current Liabilities = Sundry Creditors = .30,000

Net Working Capital = Current Assets- Current Liabilities = .(70,000-30,000) = .40,000

Current Asset Turnover Ratio = Cost of sales/Current Assets = .1,40,000/ .70,000 =2 times.

Working Capital Turnover Ratio = Cost of Sales/Net Working Capital = .1,40,000/ .40,000 = 3.5 times

6. FixedAsset Turnover Ratio or Ratio of Sales to Fixed AssetsRatio

This ratio measures management's ability of efficient and profitable use of fixed assets. It indicates the firm's ability to generate sales per rupee of investments in net fixed assets. It is calculated as follows:

$$\textbf{Fixed Asset Turnover Ratio} = \frac{\textbf{Net sales (or Cost of sales)}}{\textbf{Net Fixed assets}}$$

Interpretation:

1. This ratio assumes more significance in manufacturing concerns because of comparatively higher investment in fixed assets in these concerns.

2. Higher the ratio, better it is. But this ratio varies from one industry to other. In labour intensive industries, it is expected to be high and in capital intensive industries (where investment in fixed assets is high), it is bound to be low.

3.Inmanufacturing industry**5: 1** is considered to be satisfactory**.**

4.A high fixed asset turnover ratio indicates efficiency of management in utilizing the fixed assets

5. But a very high fixed assets turnover is an indication of over trading on fixed assets.

6. On the other hand, a low fixed assets turnover ratio indicates under or inefficient utilization of fixed assets or over-investment in fixed assets.

7.If a business shows a weakness in this ratio, its plant may be operating belowcapacity and the management should be looking at the possibility of selling the lessproductive assets.

8. As there is no direct relationship between the sales and fixed assets, this ratio is of use only in manufacturing concerns.

7. TotalAssets Turnover Ratio:

This ratio shows relationship between total assets of the company and its total sales or cost of sales. This ratio takes into account both net fixed asset; and current assets. This ratio is a measure of effectiveness of the use of total assets in the working of the concern. It is calculated as follows:

$$\textbf{Total Asset Turnover Ratio} = \frac{\textbf{Net Sales (or Cost of Sales)}}{\textbf{Total Assets}}$$

Interpretation:

1. It also gives an indication of the efficiency with which assets are used.

2.A low ratio means that excessive assets are employed to generate sales.

3. A ratio of **2:1** asset turnover is considered satisfactory.

4. If the ratio is very high, it may be considered that the concern is over trading on fixed assets and if it is very low it indicates over-investments in assets and underutilization of total capacity.

8. Net Tangible Assets Turnover Ratio or Ratio of Sales to Net Tangible Assets:

It is calculated as follows:

$$\textbf{Net Tangible Asset Turnover Ratio} = \frac{\textbf{Net Sales (or Cost of Sales)}}{\textbf{Net Tangible Assets}}$$

Note: Net tangible asset are calculated by taking sum of all assets excluding intangible assets and deducting total liabilities from this sum.

Interpretation:

Higher the ratio, better it is but if this is too high, it implies over-utilization of firm's goodwill. This is called as over trading.

9. Capital or Net WorthTurnover Ratio or Ratio of Sales to Capital or Net Worth:

This ratio is a measure of efficiency of utilization of shareholders capital. Efficient use of capital is an indicator of profitability of business and managerial efficiency. It is calculated as follows:

$$\text{Capital or Networth Turnover Ratio} = \frac{\text{Net Sales}}{\text{Share Capital or Net Worth}}$$

Some authors suggest that total capital employed should match with net sales and they can calculate the ratio as follows:

$$\text{Capital or Networth Turnover ratio} = \frac{\text{Net Sales}}{\text{Total Capital Employed}}$$

Total capital implies shareholders fund plus long-term debt. Higher the ratio, better it is. A higher ratio indicates more profits while low ratio would result low profits. A very high capital turnover ratio would indicate over-trading and a very low capital turnover ratio leads to under-trading.

1.8 Solvency Ratio:

The term solvency refers to the ability of the concern to meet its long-term commitments. Solvency is examined with reference to the firm's capacity to pay interest regularly and eventually repay on maturity the sum borrowed. Long-term creditors as well as present and prospective shareholders are interested in the analysis of solvency of a company. The following ratios are calculated for examining long-term solvency of a concern:

1. Debt-Equity Ratio /Debt-Net worth Ratio
2. Proprietary Ratio/Equity Ratio
3. Solvency Ratio
4. Fixed Assets to Net worthRatio
5. Funded Debt to Capitalization Ratio
6.Fixed Assets to Total Long-term fund Ratio or Fixed Assets Ratio
7.Ratio of tangible assets to total debts
8. Debt-Service coverage Ratio/ Interest coverage Ratio/ Fixed Charges Coverage Ratio
9. Preference Dividend Coverage Ratio
10.Cash to debt service Ratio or Debt cash flow coverage Ratio

1. Debt-Equity Ratio or Debt-Net worthRatio:

A firm uses both equity and debt for financing its assets. The ratio of thesetwo sources of funds is terned as Debt Equity Ratio. This ratio indicates the relationship between external equities and internal equities. This is also known as External-Internal Equity Ratio. It is calculated as follows:

$$\text{Debt} - \text{Equity Ratio} = \frac{\text{Outsider's Long} - \text{term Fund(Debt)}}{\text{Shareholder's Fund or Networth(Equity)}}$$

Outsider's Long term Fund(Debt)	Shareholder's Fund/Net-worth (Equity)
Debenture or Bond+ Long- Term loan from Financial Institutions + Other long-term Borrowings	Preference share capital +Equity share capital, +Capital reserve, Retained earnings and any other reserves representing the accumulated profit – Accumulated Losses (if any)

Note: Some authors consider the meaning of debt as Total Borrowed Funds. Hence they calculate Debt equity ratio as (Total Borrowed funds/Shareholder's Fund).Total Borrowed funds include both long term and short term borrowings orcurrent liabilities. It is the aggregate of bonds, debentures, bank loans and all thecurrent liabilities.

Interpretation

1. A low ratio signifies a smaller claim of debt- holders. More precisely, the greater the debt-equity ratio, greater the risk to debt- holders.

2. This ratio indicates the extent of cushion available to the debt- holders on liquidation of the borrower concern. Lower the ratio, greater security for the debt- holders. A high debt equity ratio is a danger signal for the debt- holders because in case of fall in profits of the concern, it may not be able to bear the heavy burden of interest and also not able to repay its debts on time.

3. But shareholders stand to gain from the high debt equity ratio because

- They can retain the control of the company with less contribution and thus bearing lesser risks.
- In case of increase in the profitability of the company, their earning per share will increase very fast. This is called trading on equity.

4. Low debt equity ratio provides sufficient safety margin to debt- holders but it indicates company's failure to use low-cost outsiders fund to magnify shareholders earnings.

5. The standard norm of Debt-Equity ratio is 2:1. It indicates that total borrowedfund can be two times of equity or owned funds. The intention is to maximize thereturn of equity shareholders by taking, advantage of cheap borrowed funds. However lending institutions prefer a debt equity ratio of 1:1.

2. Proprietary Ratio/ Equity Ratio:

This ratio is also known as Equity Ratio orShareholders Equity to Total Equity Ratio or Net Worth to Total Assets Ratio. It indicates the relationship of owner's funds (shareholders equity) to total assets or total equities.

$$\text{Proprietary Ratio or Equity Ratio} = \frac{\text{Shareholder's Fund}}{\text{Total Assets}}$$

Note: This ratio can be represented in percentage also which will indicate the percentage of owner's fund to total assets.

Interpretation:

1. The purpose of this ratio is to know the proportion of total assets financed by the owners.

2. There are no generally accepted norms for this ratio.

3.Higher the ratio lesser the dependence for capital on outside sources, better the long-term solvency and greater the protection to the debt- holders of the firm.

4.In case of stability in earnings of the firm, comparatively a lower ratio can also be accepted.

3. Solvency Ratio or Debt to total asset Ratio:

It is also known as Debt Ratio.It is the ratio of total borrowed funds to total assets (also equal to totalliabilities). It indicates the relative contribution of outsiders in financing theassets of the firm. This ratio indicates the relationship of total liabilities of the firm to its total assets. This is why it is also known as the ratio of total liabilities to total assets. It measures the proportion of total assets financed by outside creditors. It is calculated by using any of the following two ratios

$$\text{Solvency Ratio} = \frac{\text{Total Borrowed Funds}}{\text{Total Assets}}$$

$$\text{Solvency Ratio} = 100 - \text{Equity Ratio}$$

Interpretation:

1. The higher this ratio, the greater is the dependence of the firm on outsiders for its financing. The position of debt holder in this case is not safe in the event of winding up.

4. Proprietor's Liability Ratio:

This ratio indicates the relationship between two main sources of financing i.e. proprietor's fund /shareholder's fund and outsider's loans (or liabilities). It is calculated as follows:

$$\text{Proprietor's Liability Ratio} = \frac{\text{Proprietor's Funds}}{\text{Total Liabilities}}$$

Interpretation:

Higher the ratio better is the security of debt holders.

5.Fixed Assets to Net worth Ratio or Ratio of Fixed Assets to Proprietor's Fund

The ratio shows the relationship between net fixed assets and Net worth. An important aspect of financial soundness is that all fixed assets of the business are financed out of shareholder's funds. If fixed assets are more than owner's funds then it implies that fixed assets have been financed with outside sources (i.e. borrowed money) also. In such a case, if the debt holders demand for repayment of their loans, the firm may have to face serious financial problems because amount invested in fixed assets cannot be taken back. Hence, if owner's funds exceed the fixed assets, it is treated as a good proof of firm's long-term solvency.
This ratio is calculated by dividing the value of fixed assets after depreciation by proprietor's fund.

$$\text{Fixed Assets to Net worth Ratio} = \frac{\text{Net Fixed Assets}(\text{Fixed Assets} - \text{Depreciation})}{\text{Networth}}$$

Interpretation:
1. This ratio should not exceed 1:1.
2.On the contrary, lesser the ratio, better the position because in such a case proprietor's funds will be available for working capital needs because in such case proprietor's funds will be available for working capital needs also.
3.Usually, a ratio of 0.67:1 (i.e. fixed assets are about two-third of the proprietor's funds) is considered satisfactory.

6. Fixed Assets to Total Long-term fund Ratio or Fixed Assets Ratio

This is an improvement over fixed assets to net worth ratio. The modern view of financial experts is that fixed assets could be financed by long-term loans also together with proprietor's funds. Hence for long-term solvency analysis the relationship of fixed assets should be established with total long term funds (proprietor's funds plus long-term loans). Fixed assets ratio is calculated for this purpose. It is calculated as follows:

$$\text{Fixed Assets Ratio} = \frac{\text{Net Fixed Assets(Fixed Assets} - \text{ Depreciation)}}{\text{Total long term funds}}$$

Interpretation:

1. This ratio should not exceed 1:1. If it exceeds 1:1, it implies that short-term funds of the firm have also been applied for acquiring fixed assets which in no way be considered appropriate.
2. The general rule is that fixed assets should not exceed 2/3rd of total long-term funds so that rest of the long-term funds could be utilized for meeting working capital requirement.

7. Ratio of tangible assets to total debts

This ratio indicates the relationship of tangible assets to total debts.

$$\text{Ratio of Tangible Assets to Total Debts} = \frac{\text{Tangible Assets}}{\text{Total Debts}}$$

Interpretation:

This ratio measures the ability of the firm to pay its debt, as it shows the extent to which total liabilities of the firm can be repaid its tangible assets. Higher the ratio greater is the security of the creditors.

8. Debt Service Ratio (DSR) or Interest Coverage Ratio

This ratio relates the fixed interest charge to the income earned by the business. It indicates whether the business has earned sufficient profits to pay periodicallythe interest charges. This ratio is calculated to evaluate the debt-servicing capacity of the firm. It is calculated by dividing the net profit before interest and taxes by fixed interest charges.

$$\text{Debt Service Ratio} = \frac{\text{Earning Before Interest \& } Taxes(EBIT)}{\text{Fixed Charges}}$$

Interpretation:

1. This ratio is very meaningful for the long-term creditors of the firm because it measures the firm's capacity to pay interest on its loans on due dates.
2. It also measures the margin of safety for the lenders. Higher the ratio, better is the position of long-term creditors.
3.But a too high interest coverage ratio may mean that firm is not taking adequate advantage of trading on equity to increase the earning per share.
4. Eight to nine times interest cover is considered as satisfactory for an industrial concern.
5. A sharp decline in this ratio may endanger payment of interest and the firm will find it difficult to raise additional funds.
6. The interest coverage ratio does not take into account other fixed obligations like payment of preference dividend and repayment of loan instilments.

Illustration 18

If the net profit (after taxes) of a firm is 75,000 and its fixed interest charges on Interest onLong-term borrowings are 10,000. The rate of income tax is 50%.Calculate Debt service Ratio / Interest coverage Ratio

Solution:

Particulars	**Amount( )**
Net profit (after taxes) of a firm	75,000
Add: Taxes (50% of Profit Before Tax)	75,000
Net profit (before taxes)	**1,50,000**
Add: Interest on Long-term Borrowing	10,000
Earnings Before Interest & Taxes(EBIT)	**1,60,000**

Interest Coverage Ratio = EBIT/Interest Charges = .1,60,000 / .10,000= 16 times

9. Preference Dividend Coverage Ratio:

It is calculated as follows:

$$\text{Preference Dividend Coverage Ratio} = \frac{\text{Profit After Tax(PAT)}}{\text{Preference Dividend}}$$

Interpretation:

1. This ratio is an index of the risk accruing to preference shareholders.
2. Coverage of at least 2 is considered standard.

10. Cash to Debt Service Ratio or Debt Cash Flow Coverage Ratio:

Some authors find Cash to debt service Ratio as a better measure to judge firm's ability to meet its long-term obligations. As the firm has to pay debt service charges in cash, so in order to analyze firm's long term liquidity, it is better to calculate this ratio on the basis of total cash inflows instead of net income. If the firm has created sinking fund to repay the long-term loans, then, annual contribution to sinking fund shall also be added to interest charges and the following formulae shall be applied.

$$\text{Debt Cash Flow CoverageRatio} = \frac{\text{Annual Cash Flow Before Interest and Tax}}{\text{Interest} + [(\text{Sinking Fund Appropriation on Debt})/(1 - \text{Tax Rate})]}$$

Interpretation:

1. If it is not possible to calculate precisely the amount of annual cash inflows, then the amount arrived at by adding depreciation and other non-cash expenses to the amount of net profit before interest and tax may be used in place of annual cash inflows.

2. High coverage ratio would be required in firms whose incomes are very instable.The firms whose incomes are stable; comparatively a low coverage ratio will be sufficient.

Illustration 19

From the following information calculate

1. Interest Coverage Ratio
2. Debt cash flow coverage Ratio

Particulars	**Amount**
Net income after tax	1,56,370
Depreciation charged	20,000
Tax rate	50% of net income
5% mortgage Bonds	2,50,000
Fixed interest Charges	14,750
Sinking fund appropriation	5% of outstanding debentures

Solution:

Particulars	**Amount( )**
Net income after tax	1,56,370
Add: Taxes(50% Tax on Profit before tax)	1,56,370
Net Income before tax	**3,12,740**
Add: Fixed Interest Charges	14,750
Net Profit Before Interest & Taxes(EBIT)	**3,27,490**
Add: Depreciation Charged	20,000
Annual Cash flow before interest and tax	**3,47,490**

$$\text{Interest Coverage Ratio} = \frac{\text{Net profit before interest and income tax}}{\text{Fixed interest charges}}$$

$$= \frac{3,27,490}{14,750} = 22 \text{ times approximately}$$

$$\text{Debt cash flow coverage Ratio} = \frac{\text{Annual cash flow before interest and tax}}{\text{Interest} + [(\text{ Sinking fund appropriation on debt})/ (1-\text{Tax rate })]}$$

$$= \frac{3,47,490}{14,750+[(12,500)/(1-0.50)]} = 8.7 \text{ times}$$

Illustration-20

From the following Balance Sheet of Deepak Ltd. compute:

a) Equity Ratio of Proprietory Ratio

b) Debt- Equity Ratio

c) Funded Debt to Capitalization Ratio

d) Fixed Assets to Net Worth Ratio

e) Solvency Ratio

f) Current Assets to Proprietory Fund Ratio

g) Fixed Asset Ratio

Balance Sheet of Deepak Limited

Equity & Liabilities	
Equity Share Capital	3,00,000
9% Preference Share Capital	1,50,000
Reserve Fund	50,000
Profit and Loss A/c	20,000
Share Premium	10,000
8% Debentures	2,00,000
6% Mortgage Loan	60,000
Sundry Creditors	80,000
Income Tax Provision	20,000
Depreciation Fund	50,000
Total	**9,40,000**
Assets	90,000
Goodwill	90,000
Land and Building	1,00,000
Plant & Machinery	2,50,000
Equipment	60,000
Furniture & Fittings	80,000
Sundry Debtors –Less Provision (92,000 – 2,000)	90,000
Bills Receivables	1,00,000
Stock-in hand	1,20,000
Cash Balance	45,500
Prepaid Insurance	1,500
Preliminary Expenses	2,000
Discount on Issue of Debentures	1,000
Total	**9,40,000**

Solution:

a) Equity Ratio $= \frac{\text{Shareholder's Funds}}{\text{Total Assets}}$

Shareholder's Funds

= Equity Share Capital + Preference Share Capital + Reserve Funds + Profit and Loss A/c + Share Premium – Preliminary Expenses – Discount on Issue of Debentures

= 3,00,000 + 1,50,000 + 50,000 + 20,000 + 10,000 – RS. 2,000 – 1,0000

= 5,27,000

Total Assets

= Total Assets – Preliminary Expenses – Discount on Issue of Debentures – Depreciation Fund

= 9,40,000 – 2,000 – 1,000 – 50,000

8,87,000

Note: Preliminary Expenses and Discount on Issue of Debentures are deferred expenses are not assets.

Equity Ratio $= \frac{5,27,000}{8,87,000} = 0.59$

b) Debt-Equity Ratio $= \frac{\text{Outsider's Funds}}{\text{Shareholder's Funds}}$

Outsider's Funds

= 8% Debentures + 6% Mortgage Loan + Sundry Creditors + Income Tax Provision

= 2,00,000 + 60,000 + 80,000+ 20,000

= 3,60,000

Debt Equity Ratio $= \frac{3,60,000}{5,27,000} = 0.68$

c) Funded Debt to Capitalization Ratio $= \frac{\text{Funded Debt}}{\text{Total Capitalization}}$

Funded Debt = Long-term loans

= 8% Debentures + 6% Mortgage Loan

= 2,00,000 + 60,000

= 2,60,000

Total Capitalization = Shareholders Funds + Long-term loans

= 5,27,000 + 2,60,000

= 7,87,000

$$\text{Funded Debt to Total Capitalization Ratio} = \frac{2,60,000}{7,87,000} = 0.33$$

d) $$\text{Fixed assets to Net Worth Ratio} = \frac{\text{Net Fixed Assets}}{\text{Net Worth}}$$

Net Fixed Assets

= Goodwill + Land and Building + Plant and Machinery + Equipments + Furniture & Fittings – Depreciation Fund

=RS. 90,000 + 1,00,000 + 2,50,000 + 60,000 + 80,000 – 50,000

= 5,30,000

Net Worth = Net Worth is the same as Shareholders Funds

$$\text{Fixed assets to Net Worth Ratio} = \frac{5,30,000}{5,27,000} = 1.01$$

e) $$\text{Solvency Ratio} = \frac{\text{Total Liabilities to Outsiders}}{\text{Total assets}}$$

Total Liabilities to Outsiders

= 8% Debentures + 6% Mortgage Loan + Sundry Creditors + Income Tax Provision

= 2,00,000 + 60,000 + 80,000 + 20,000

= 3,60,000

$$\text{Solvency Ratio} = \frac{3,60,000}{8,87,000} = 0.41$$

f) Current Assets to Proprietors' Funds Ratio $= \dfrac{\text{Current Assets}}{\text{Proprietors' Funds}}$

Current Assets

= Sundry Debtors + B/R + Stock –in-trade + Cash Balance + Prepaid Insurance

= 90,000 + 1,00,000 + 1,20,000 + 45,500 + 1,500

3,57,000

Proprietors' Funds = Shareholders Funds

$$\text{Current Assets to Proprietors' Funds Ratio} = \frac{3,57,000}{5,27,000} = 0.68$$

g) Fixed Assets Ratio $= \dfrac{\text{Net Fixed Assets}}{\text{Total Long-term Funds}}$

Total Long-term Funds = Shareholders Funds + Long-term borrowings (Funded debt)

= 5,27,000 + 2,60,000

= 7,87,000

$$\text{Fixed Assets Ratio} = \frac{5,30,000}{7,87,000} = 0.67$$

Illustration:21

From the following Balance Sheet of Deepa Ltd. compute:

i) Funded Debts to Capitalization Ratio

ii) Total Liabilities to Total Assets Ratio

iii) Fixed Assets Ratio

iv) Total Fixed Assets to Proprietors' Equity

v) Total Current Assets to Proprietory Equity Ratio

vi) Interest Coverage Ratio

Balance Sheet of Deepa Ltd as at 31st Dec. 2017

Equity & Liabilities	
20,000 Equity Shares of 10 each fully paid	2,00,000
8% 10,000 Preference Share of 100 each, fully paid	1,00,000
General Reserve	50,000
Securities Premium	25,000
Profit and Loss A/c	1,00,000
10% Debentures	1,00,000
12% Mortgage Loan	50,000
Sundry Creditors	50,000
Bills Payable	10,000
Total	**6,85,000**
Assets	
Plant & Machinery (Net)	2,00,000
Land and Building (Net)	1,00,000
Closing Stock	1,50,000
Debtors	80,000
Bills Receivables	60,000
Cash and Bank	95,000
Total	**6,85,000**

Net Profit before Interest and Taxes (EBIT) amounted to 40,000.

Solution:

Before calculating the actual ratios, the following components are computed:

Funded Debts

10% Debentures	1,00,000
12% Mortgage Loan	50,000
	1,50,000

Total Capitalization

Equity Share Capital	2,00,000
Preference Share Capital	1,00,000
General Reserve	50,000
Securities Premium	25,000
Profit and Loss A/c	1,00,000
10% Debentures	1,00,000
12% Mortgage Loan	50,000
	6,25,000

Total Liabilities to Outsiders

10% Debentures	1,00,000
12% Mortgage Loan	50,000
Sundry Creditors	50,000
Bills Payable	10,000
	2,10,000

Total Assets

Fixed Assets	3,00,000
Current Assets	3,85,000
	6,85,000

Total Long-Term Fund

Shareholders' Fund	
Equity Share Capital	2,00,000
Preference Share Capital	1,00,000
General Reserve	50,000
Securities Premium	25,000
Profit and Loss A/c	1,00,000
	4,75,000
Other Long-term Funds	
10% Debentures	1,00,000
12% Mortgage Loan	50,000
	6,25,000

Total Fixed Interest Charges

Debenture Interest	10,000
Mortgage Loan	6,000
	16,000

(i) Funded Debts to Total Capitalization Ratio $= \frac{\text{Funded Debts}}{\text{Total Capitalization}} \times 100$

$$= \frac{1,50,000}{6,25,000} \times 100 = 24\%$$

(ii) Total Liabilities to Total Assets Ratio $= \frac{\text{Total Liabilities to Outsiders}}{\text{Total Assets}} \times 100$

$$= \frac{2,10,000}{6,85,000} \times 100 = 31\%$$

(iii) Fixed Assets Ratio $= \frac{\text{Fixed Assets}}{\text{Total Long-m Funds}} \times 100$

$$= \frac{3,00,000}{1,50,000} \times 100 = 200\%$$

(iv) Total Fixed Assets to Proprietors' Fund Ratio $= \frac{\text{Total Fixed Assets}}{\text{Proprietors' Fund}} \times 100$

$$= \frac{3,00,000}{4,75,000} \times 100 = 63\%$$

(v) Total Current Assets to Proprietors' Fund Ratio $= \frac{\text{Total Current Assets}}{\text{Proprietors' Fund}} \times 100$

$$= \frac{3,85,000}{4,75,000} \times 100 = 81\%$$

(vi) Interest Coverage Ratio $= \frac{\text{Net Profit before Interest \& Tax (EBIT)}}{\text{Fixed Interest Charges}}$

$$= \frac{40,000}{16,000} = 2.5 \text{ times}$$

1.9 CAPITAL STRUCTURE RATIOS OR LEVERAGE RATIOS

A firm's capital structure is the relation of debt to equity as sources of a firm's asset. Ratios used for capital structure analysis are known as leverage ratios. These ratios measure the relationship between finance provided to the firm by the outsiders and the owners. They also indicate the risk of debt finance. Hence, both the owners and creditors of the firm are interested in the analysis of capital structure. The long-term creditors of the firm are interested mainly evaluating firm's capacity of repayment the principal and amount on the maturity and timely payment of interest on their loans. A finance manager can increase significantly rate of dividend and worth of investments of equity shareholders by appropriate leverage.

Purpose of Leverage Ratios:

1. Identifying Sources of Funds: The firm finances all its resources from debt to equity sources. The amount of resources from each source is shown by these ratios.

2. Measuring the Finance Risk: One measure of the degree of risk prevailing from debt financing is provided by these ratios. If the firm has been increasing the percentage of debt in its capital structure over a period of time, this may indicate an increase in risk for its shareholders.

3. Forecasting Future Borrowing Prospects: If the firm is considering expansion and needs to raise additional money, the capital structure ratios offer an indication of whether debt funds will be available. If the ratios are too high, the firm may not be able to borrow.

Types of Leverage Ratio:

Following ratios may be calculated for leverage analysis:

1. Capital gearing Ratio or Gear Ratio
2.Debt –Total Fund Ratio
3. Ratio of total investments to Long-term liabilities
4. Ratio of fixed asset to funded debt
5. Ratio of reserve to equity capital
6. Ratio of current liabilities to proprietor's funds

1. CapitalGearing Ratio or Gear Ratio:

This is most important ratio for analyzing the capital structure of a concern. The term capital gearing denotes the extent of reliance of a company on fixed cost bearing securities (preference share capital and debt capital) as against equity funds (i.e. equity share capital and surplus). In simple words, capital gearing implies financing of a business enterprise through fixed interest and dividend carrying securities. Capital gearing Ratios express relationship between fixed cost bearing capital and variable cost bearing capital.

$$\text{Capital Gearing Ratio} = \frac{\text{Fixed Cost Bearing Capital}}{\text{Variable Cost Bearing Capital}}$$

If fixed cost bearing capital is greater proportion than variable cost bearing capital (i.e. the ratio is more than 1) the business enterprise is said to be highly geared. The business enterprise is said

to be low geared when fixed cost capital is less than variable cost bearing capital (i.e. ratio is less than 1).

Interpretation:

1. A company can increase the return on equity shareholders by adopting high gearing policy. But this is possible only when the rate of interest/ dividend payable on fixed cost bearing capital is less than the rate of earnings on total capital employed in the firm.
2. In the case of loan capital, there is also the benefit of tax shield because interest on loan capital is a permissible deduction from profits for the purpose of ascertaining taxable income.
3. Hence, by adopting the policy of high gearing, return on equity shareholders exceed even the return on capital employed. This is known as trading on equity. But this policy is profitable only when the cost of capital is less than the additional earning from it. In case of reverse situation, the equity shareholder may have not only to lose their dividend but sometimes their capital also to meet out this loss. Hence, the policy of high gearing is very risky and speculative. The equity share holders dwell upon feast and fast under such circumstances.
4. During boom, dividend on these shares and consequently their market value rise sharply and on reverse circumstances (i.e. during depression) they fall sharply.

Illustration-22

Following is the capital structure of A Ltd and B Ltd. As on 31st March 2017:

Particulars	**A Ltd( )**	**B Ltd( )**
Equity share capital	5,00,000	1,00,000
10% Preference share capital	1,00,000	2,00,000
12% Debentures	Nil	3,00,000
General reserve	2,50,000	2,50,000

During the year 2018, each company earned profit of RS. 2,00,000 before interest and taxes. The rate of tax is 50%. Comment on the capital gearing of the two companies.

Solution:

$$\text{CGR} = \frac{\text{Fixed cost bearing capital}}{\text{Variable cost bearing capital}}$$

$$\text{A Ltd} = \frac{1,00,000}{7,50,000} = 0.13:1$$

$$\text{B Ltd} = \frac{5,00,000}{37,50,000} = 1.43:1$$

2. Debt to Total Funds Ratio:

It is a modified version of Debt-Equity Ratio. It represents how much amount of outside long-term liabilities are related to total capital structure of the firm. This ratio is computed by dividing the long-term debts by the amount of Total funds. This is computed as below:

$$\text{Debt} - \text{Total Fund Ratio} = \frac{\text{Total Long} - \text{Term Debts}}{\text{Total Funds}}$$

3. Ratio of Total Investments to Long-term Liabilities:

It expresses relationship of total long-term funds to long-term liabilities:

$$\text{Ratio of Total Investments to Long} - \text{term Liabilities} = \frac{\text{Long term Fund (Share holder's Fund} + \text{Long} - \text{termLiabilities)}}{\text{Long term Liabilities}}$$

Note: As a general rule, proportion of long-term liabilities should be very high.

4. Ratio of Fixed Asset to Funded Debt:

This ratio determines the margin of safety to funded debt, such as debentures. The debentures of a company are usually issued by mortgaging the fixed assets. Hence, higher the ratio of fixed asset to debentures, the greater will be the security of debenture holders. It is calculated as follows:

$$\text{Ratio of Fixed Asset to Funded Debt} = \frac{\text{Fixed Asset}}{\text{Funded Debt}}$$

5. Ratio of Reserve to Equity Capital:

It is calculated as follows:

$$\text{Ratio of Reserve to Equity Capital} = \frac{\text{Revenue Reserve}}{\text{Equity Capital}} \times 100$$

This ratio throws light on dividend policy of the management. Higher the ratio, more conservative is dividend policy of the management and better is the growth potentiality of the company.

6. Ratio of current liabilities to proprietor's funds:

This ratio is calculated by

$$\text{Ratio of current liabilities to proprietor's funds} = \frac{\text{Current liabilities}}{\text{Proprietor's funds}}$$

This ratio measures short-term borrowings as compared to funds provided by the proprietors. The norm is 35%.

1.10 PROFITABILITY RATIO

A business firm is basically a profit earning organization. The profitability is generally treated as an indicator or efficiency of business activities. It depends upon the amount of sales, nature of costs and efficiency of business activities. It depends upon the amount of sales, nature of costs and efficient use of resources. Profitability is analysed by different parties according to their interest.

- To the management, profits are the test of efficiency and a measure 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 taxpaying capacity and the basis of legislation action,
- To customers a hint to demand for price cut'
- To an enterprise, less cumbersome source of finance for growth and existence and
- To the country, an index of economic progress.

For reliable and meaningful analysis of profitability, three of four ratios should be calculated. A single ratio may lead to misleading conclusions. This analysis is of two kindsi.e. general profitability analysis, overall profitability analysis.

General Profitability Ratios(Profit in relation to Sales)	**Overall Profitability Ratios(Profit in relation to Investment)**
1.Gross Profit Ratio	1.Return on Equity(ROE)
2.Operating Ratio	2.Return on Net worth(RONW)
3.Operating Profit Ratio	3.Return on Investment(ROI)
4.Expenses Ratio	4.Return on Assets(ROA)
5.Net Profit Ratio	5.Return on Capital Employed(ROCE)

General profitability analysis

In this type of analysis profit is related to the volume of operation or sales. The different types of General Profitability Ratios are as under:

1. Gross profit Ratio:

This ratio establishes relationship between gross profit and net sales. This indicates gross profit margin to net sales and usually expressed in percentage. The formula is as follows:

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

Notes:

1. The two main components of this ratio are gross profit and net sales.
2. Gross profit is the excess of net sales over the cost of goods sold.
3.Net sale is found out of deducting sales returns from gross or total sales.

Interpretations:

1. Gross profit Ratio is very important ratio of measuring profitability of an enterprise.
2. It indicates the management the margin of the profit left to cover indirect expenses.
3. In other words, it indicates the extent to which the selling price of goods may decline without resulting in losses.
4. Higher the ratio, better it is.
5. But there is no rule of thumb for gross profit ratio. It may vary from business to business, industry to industry and also for different units within the same industry.
6. Hence, a firm's gross profit ratio should be compared with own past ratio or with ratio of the competitive firms.
7. However, the gross profit should be adequate to cover administrative, selling and distribution expenses and to provide for fixed charges, dividends and desired reserves.
8. **A decrease in Gross profit Ratio may be due to any of the following causes:**

- Reduction in selling price without corresponding decrease in cost.
- Increase in raw material prices without corresponding increase in sale price.
- Theft, damage or misappropriation of stock
- Under valuation of closing stock
- Increase in cost of production due to over investment in plant and machinery and their unfavourable location
- Rise in wage rate and direct costs.
- Goods purchased for personal use wrongly included in the purchase of the business.

9.**Increase in Gross profit Ratio may be due to**

- Increase in sale price
- Decrease in raw material and other direct cost
- Under- valuation of opening stock and over- valuation of closing stock
- Inflating sales by including goods sent on consignment or goods sent on sale or approval basis.

2. OperatingRatio:

This ratio is calculated by dividing the operating cost (i.e. cost of goods sold plus all operating expenses) by net sales.

$$\text{Operating Ratio} = \frac{(\text{Cost of Goods Sold} + \text{Operating Expenses})}{\text{Net Sales}} \times 100$$

Notes:

1. Operating expenses means the sum of administrative, selling and distribution expenses.
2.100 minus operating ratio is operating profit ratio.
3. Operating profit ratio measures efficiency and general profitability of the business.

Interpretations:

1. Lower the ratio, higher the profit left for recouping the non-operating expenses and higher the net profits.
2. There is no rule of thumb for this ratio as it may differ from firm to firm depending upon the nature of the business.
3. However, 75 to 85 percent may be considered to be a satisfactory rate in case of manufacturing concern.
4. Though operating ratio is good indicator of operating efficiency of the firm but it should be used cautiously because it reflects a combined effect of number of factors.

3. Operating Profit Ratio or Operating Margin Ratio

The operating profit of a business is the profit after meeting all operating expenses incurred in the regular course of operations. It is a measure of operating efficiency of a business. The ratio is calculated by dividing operating profit or earnings before interest and taxes [EBIT] by Net Sales.

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

Notes:

1. Operating Profit =Net Sales-(Cost of Goods sold + Operating Expenses)
2. This ratio can also be computed as: Operating Profit Ratio=100-Operating Ratio

4. ExpensesRatio:

Expense Ratios indicate the relationship of various expenses to net sales. The operating ratio reveals the average total variations in expenses. But some of the expenses may be increasing while some may be falling. Hence, expense ratios are calculated by dividing each item of expenses or group of expenses with the net sales. The ratio can be calculated for individual items of expense or a group ofitems of a particular type of expense like cost of sales ratio, administrative expense ratio, selling expense ratio, materials consumed ratio etc.

It is calculated to show the relationship of each item of manufacturing cost and operating expenses to net sales. These ratios help in analyzing the causes of variation of operating ratio. The following formula used for calculation of expenses ratio is as follows:

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

Note: It is to be remembered that these ratios should be calculated separately for each item of fixed and variable expenses. The ratio of variable expenses should remain constant while the ratio of fixed expenses should fall with the increase in sales.

Interpretations:

1. These ratios show how much part of net sales is involved in recouping various operating expenses.

2. By comparing these ratios with respective past ratios or with the standards determined by management or with ratios of similar firms in the industry, economy or diseconomy of each item of expenses can be determined.
3. These ratios throw light on managerial efficiency and profitability of the firm.
4. The lower the operating ratio, the larger is the profitability and higher the operating ratio, lower is the profitability.

5. Net Profit Ratio:

This ratio measures the rate of net profit on sales.Net profit Ratiois the ratio of net profit (after taxes) to net sales. It is expressedas percentage. This is calculated as follows:

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

Note: Some authors calculate this ratio on the basis of net operating profit after tax in place of net profit after tax. In calculating net operating profit, non operating incomes and expenses are excluded.

Interpretations:

1.This ratio is the measure of overall profitability and efficiency of the firm.
2. The higher the ratio, the better is the profitability of the firm.

Illustration 23:

Following is the Income Statement of M/S Raman & Co. for the year ending 31st March 2018.

Particulars	**Amount( )**	**Particulars**	**Amount( )**
To opening stock	45,750	By sales	3,00,000
To purchases	1,89,150	By closing stock	59,100
To carriage	1,200		
To wages	3,000		
To Gross Profit	1,20,000		
	3,59,100		**3,59,100**
To administrative expenses	60,600	By Gross Profit	1,20,000
To finance expenses		By non-operating income	
Interest	720	Interest	900
Discount	1,440	Dividend	2,250
Bad debts	2,040	By profit on sale of securities	450
To selling expenses	7,200		
To non-operating expenses	1,200		
To net profit	50,400		
	1,23,600		**1,23,600**

You are required to calculate

1. ExpensesRatio
2. Gross profit Ratio
3. Net profit Ratio

4. Operating Ratio
5. Operating profit Ratio

Solution:

1. ExpensesRatio

$$\text{Administrative expenses Ratio} = \frac{\text{Administrative expenses}}{\text{Sales}} \times 100$$

$$= \frac{60,600}{3,00,000} \times 100 = 20.2\%$$

$$\text{Finance expenses Ratio} = \frac{\text{Finance expenses}}{\text{Sales}} \times 100$$

$$= \frac{4,200}{3,00,000} \times 100 = 1.4\%$$

$$\text{Selling and distribution expenses Ratio} = \frac{\text{Selling and distribution expenses}}{\text{Sales}} \times 100$$

$$= \frac{7,200}{3,00,000} \times 100 = 2.4\%$$

$$\text{Non-operating expenses Ratio} = \frac{\text{Non-operating expenses}}{\text{Sales}} * 100$$

$$= \frac{1,200}{3,00,000} \times 100 = 0.4\%$$

2. Gross Profit Ratio

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

$$= \frac{1,20,000}{3,00,000} \times 100 = 40\%$$

3. Net Profit Ratio

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

$$= \frac{50,400}{3,00,000} \times 100 = 16.8\%$$

Alternatively,

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

$$= \frac{48,000}{3,00,000} \times 100 = 16\%$$

4. Operating Ratio

$$\text{Operating Ratio} = \frac{(\text{Cost of goods sold}+\text{operating expenses})}{\text{Sales}} \times 100$$

$$= \frac{(1{,}80{,}000+ 72{,}000)}{3{,}00{,}000} \times 100 = 84.0\%$$

5. Operating Profit Ratio

= 100- Operating Ratio= 100-84= 16%

Overall Profitability Ratios

It is the analysis of profitability in relation to the volume of capital employed or investment in the business. Management and shareholders are interested in ascertaining the return on capital employed, return on shareholders' funds etc. The important tests applied to measure overall profitability are:

1. Return on Equity Capital (ROEC)
2. Return on Net worth (RONW)
3. Return on Investment (ROI)
4. Return on Assets (ROA)
5. Return on Capital Employed (ROCE)

Note: While calculating all the above ratios the following Income statement must be used

INCOME STATEMENT FOR OVERALL PROFITABILITY RATIO COMPUTATION

Particulars	**Amount**
Net Sales	XXX
Less: Cost of Goods sold	XXX
Gross Profit	**XXX**
Less: Operating Expenses(Administrative & Selling & Distribution Expenses)	XXX
Earnings Before Interest & Taxes(EBIT)	**XXX**
Less: Interest	XXX
Profit Before Tax(PBT)	**XXX**
Less :Tax	XXX
Profit After Tax(PAT)	**XXX**
Less: Preference Dividend	XXX
Earnings Available for Equity Shareholders(A)	**XXX**
Number of Equity Share Holders(B)	XXX
Earning per Share(EPS){A ÷ B}	**XXX**

1. Return on Equity Capital (ROEC)

In real sense, ordinary shareholders are the real owners of the company. They assume the highest risk in the company.Thus ordinary shareholdersare more interested in the profitability of a company and the performance of acompany should be judged on the basis of return on equity capital of thecompany. Return on equity capital shows the relationship between profits of a company available for its equity share holders and its equity capital. This ratio is calculated with the help of the following formulae:

$$\textbf{Return on Equity Capital} = \frac{\textbf{Earning Available for Equity Shareholders}}{\textbf{Equity Share Capital(Paid} - \textbf{up)}} \times \textbf{100}$$

Notes:

1. A small variation of this ratio is to calculate the return on shareholders total equity in the company which is equal to the sum of paid up equity share capital, reserves, surplus and security premium account.
2. If there is change in equity share capital during the year, then a simple average of opening and closing capital would be taken to calculate this ratio.

Interpretations:

1. This ratio is more meaningful to the equity shareholders. It examines the earning capacity of equity share capital.
2. In fact the ratio provides the real test of managerial efficiency in utilizing the equity shareholders money.
3. There is no rule of thumb for this ratio. Hence, higher the ratio, better it is.
4. However, the ratio may be compared with other similar firms or with the firm's own past.

Illustration : 24

Calculate return on equity share capital from the following information of Rajesh Limited:
Equity share capital: 10,00,000 ; 9% Preference share capital: 500,000;Taxation rate: 50% of net profit; Net profit before tax: 400,000.

Solution:

Particulars	**Amount( )**
Net Profit Before Tax	4,00,000
Less Tax (50%)	2,00,000
Profit After Tax	**2,00,000**
Less Preference Dividend(9% on 5,00,00)	45,000
Earning available for Equity Share Holders	**1,55,000**

$$\text{Return on Equity Capital} = \frac{\text{Earning Available for Equity Shareholders}}{\text{Equity Share Capital(Paid} - \text{up)}} \times 100$$

$$= (1{,}55{,}000/10{,}00{,}000) \times 100 = 15.5\%$$

2. Return on Shareholder's Fund or Proprietor's Fund or Net worth:

This ratio measures the profitability of the concern in relation to total investments made by the shareholders (or proprietors) in the business. It is calculated by dividing net profit after interest and taxes by shareholder's fund.

$$\text{Return on Shareholder's Fund} = \frac{\text{Profit After Tax}}{\text{Shareholder's Fund}}$$

Notes:

1. The excess of total assets over total outsider's liability of an enterprise is known as shareholder's fund or proprietor's funds or net worth.
2. Alternatively, the sum of share capital (whether equity or preference) and accumulated profits (capital reserves plus all revenue reserves plus undistributed profits) minus losses, if any, is also known as shareholder's investment.
3. Experts suggest that in calculating this ratio, average shareholder's investment should be used in place of shareholder's investments.
4. Averagesshareholder's funds or average proprietor's fund is the simple average of shareholder's investment (or proprietor's funds) at the beginning and at the end of the year.
5. However, if fresh capital has been introduced in the business at the end of the year, such capital should be excluded in this calculation.
6. This ratio reveals the efficiency of utilization of shareholder's fund, higher the ratio better are the results.

Significance:

1. This ratio provides a good basis of evaluating overall profitability and managerial ability of financing the business. In fact, it is one of the most important relationships used in financial statement analysis.
2. This ratio is of great importance to the present and prospective shareholders as well as the management of the company. Some main uses of this ratio are as follows:

- This return determines the earning power of shareholder's investments. As the primary objective of business is to maximize its earnings, this ratio indicates the extent to which this objective is being achieved.
- A comparison of this ratio of the firm with that of the other firms or with industry average determines the adequacy of return.
- This ratio helps in forecasting future earning capacity of the business. For this purpose, trend analysis is most helpful.

3. Return on Total Investment/Return on Investment (ROI):

This is measure of managerial efficiency of utilizing funds invested in the firm. This is calculated as follows.

$$\textbf{Return on Investment ROI} = \frac{\textbf{Earning Before Interest \& } Tax(EBIT)}{\textbf{Total Investment}} \times \textbf{100}$$

Note: Total investment implies shareholder's funds plus long-term liabilities.
Interpretation: Higher the ratiobetter is the profitability of the company.

4. Return on Total Assets or Total Resources (ROA):

Profitability can be measures in terms of the relationship between net profits and total assets of the firm. This ratio is also called as profit to asset ratio. This is calculated as follows:

$$\textbf{Return on Assets ROA} = \frac{\textbf{Earning Before Interest \& } Tax(EBIT)}{\textbf{Total Assets}}$$

Interpretation: Higher the ratiobetter is the overall profitability position.

5. Return on Capital Employed (ROCE)

The prime objective of making investments in any business is to obtainsatisfactory return on capital invested. Hence, the return on capital employed isused as a measure of success of a business in realizing this objective.Return on capital employed establishes the relationship between the profitand the capital employed. It indicates the percentage of return on capitalemployed in the business and it can be used to show the overall profitability andefficiency of the business. Hence, astudy of profit in relation to size of investment is known as return on capital employed. In other words, return on capital employed implies finding out ratio of net profit on capital employed in the firm. This is the only satisfactory measure of examining the overall operating efficiency or profitability of a business entity. In fact, it is an evaluation of efficiency in using funds entrusted to management.

Significance of ROCE:

1. Measure of overall efficiency: It is a suitable measure of overall efficiency or profitability of the concern because it is calculated keeping in view profit, sales and capital employed. In fact, it is good measure of efficiency in utilizing funds entrusted to the management.

2. Disclosure of Borrowing Policy: This clarifies borrowing policy of the firm. A firm should not borrow normally at a rate of interest higher than return on capital employed.

3. Basis of inter-company comparisons: It provides a sound basis for inter-company comparisons. If the magnitude of the profits of two companies is the same, it does not necessarily mean that efficiency level of the two is equal. Its true examination is possible only by calculating return on capital employed. Higher the return, more efficient is the firm.

4. Basis of inter-departmental comparison: This return can be used in appraising and comparing divisional or departmental performances. Similarly, in a multiple product firm, profitability of various products inter-departmentally can be examined by calculating their returns separately.

5. Helpful in capital budgeting decisions: The technique is also used to examine the profitability of a capital expenditure proposal or in the project evaluation. Projects providing a

return less than return on capital employed are normally not considered. Thus, return on capital employed provides a yardstick for approving or disapproving a capital expenditure project.

6. Integral part of budgetary control system: Return on capital employed can become an integral part of a budgetary control system. It can evaluate the progress of the business.

7. Helpful in projecting long-term pricing policy: The technique is also used both for tactical and strategic decisions particularly in deciding long-term pricing policy. The price of the product should be fixed in such a way that the price recovers not only the cost of product but ensures a reasonable rate of return on capital employed.

8. Helpful in designing the capital structure: This ratio can also be usefully employed in designing the overall capitalization and capital structure. It means that management should borrow funds from the market only when the return on capital employed is more than the fixed charges on such funds.

Computation of ROCE:

The term capital employed has been defined by various committees and experts in various firms. The term is mainly used in the following four meanings: Gross Capital Employed, Net Capital Employed, Proprietor's Net Capital Employed and Average Capital Employed.

$$\text{Return on Gross Capital Employed} = \frac{\text{Adjusted Net Profit}}{\text{Gross Capital Employed}} \times 100$$

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

$$\text{Return on Proprietor's Net Capital Employed} = \frac{\text{Adjusted Net Profit}}{\text{Proprietor's Net Capital Employed}} \times 100$$

$$\text{Return on Average Capital Employed} = \frac{\text{Adjusted Net Profit}}{\text{Average Capital Employed}} \times 100$$

Meaning of CapitalEmployed: The term capital employed has been defined by various committees and experts in the following forms:

Gross Capital Employed:

It implies the sum of all fixed and current assets of the firm. It is also sometimes called total resources of the concern. Thus, return on gross capital employed is the same as return on total resources (or assets) discussed earlier. However, the following concept may also be used for this calculation.

Gross Capital Employed = Equity Share Capital + Preference Share Capital + Reserve and Surplus + All Long term and Short term External Loans

Or

Gross Capital Employed = All Net Fixed Assets + Current Assets (includingGoodwill of the firm but excludingFictitious Assets)

NetCapital Employed:

It is calculated by deducting the current liabilities from the sum of all fixed and current assets. Alternatively, the sum of fixed assets and working capital is net capital employed. It is also known as total investment i.e. shareholder's fund plus assets (e.g investments made outside business)

Net CapitalEmployed = Equity Share Capital + Preference Share Capital + Reserve and Surplus + Long Term Loans

Proprietor's Net capital employed: It is calculated by deducting all outside liabilities from the sum of total fixed and current assets. Alternatively, it may be calculated by taking sum of paid up share capital, reserves and undistributed profits and deducting losses and fictitious assets from the sum. The return on proprietor's net capital employed is the same as return on shareholder's investment.

Proprietor's Net capital = Equity Share Capital + Preference Share Capital + Reserve and Surplus – Accumulated Losses, if any

Average Capital Employed:

Capital employed should represent truly the capital invested in the business throughout the year. For this purpose, it is better to calculate average capital employed in place of capital employed. The logic is that profits are earned in the business throughout the year and they remain in use in the business and dividend is distributed out of it only at the end of the year. Hence, for taking into consideration the profit earned during the year average capital employed should be calculated in the following two ways:

(a) By taking simple average of capital employed at the beginning and end of the year.

In other words, it may be found out by dividing the sum of opening and closing capital employed by two.

(b)By adjusting half of the profits of the year in capital employed.

If net capital employed at the end of the year is known, then half of the profits (after deducting interest and tax) should be deducted to calculate average net capital employed. On the contrary,

if the net capital employed in the beginning of the year is known then half of the profits earned during the year would be added.

Choice of appropriate concept:

1. The choice of appropriate concept out of three mentioned above depends upon the purpose of computation of return on capital employed.
2. If the purpose is to show proprietor's (or the shareholders) profit earned, then the concept of proprietor's net capital employed should be used.
3. But if the purpose is to indicate the effectiveness of the business or to reflect the efficiency of internal management, then the use of the concept of gross capital employed is most suitable.
4. However, of these two, the concept of net capital employed is preferred.

Adjustment made at the time of computing Capital Employed

The following adjustments are required in different assets and liabilities which are included in calculation of capital employed.

(a) Fixed assets: All fixed assets are included in the calculation of capital employed. There are three accepted alternatives of valuing fixed assets. Gross value, net value and replacement cost. Out of these, net value basis is generally used but due to inflationary trend in the economy for the last six decades, the accountants consider replacement cost as an appropriate basis for the valuation of fixed assets but this would require recomputation of provision for depreciation.

If any fixed asset remains idle due to abnormal or unusual events, such as trade recession, fire or obsolescence or under work, then it should not be included in capital employed. But idle machines and tools required for normal operation of plant would be included in capital employed.

(b)Intangible Assets: These assets such as goodwill, patent, trade mark, copy right etc. are not considered in the computation of capital employed but when assets are taken at their historical cost and payment has been made for acquiring goodwill etc. in that case such intangible assets should be included in the computation of capital employed.

(c) Cash in hand and at Bank: Cash, by nature, is an idle asset. Hence, only so much amount of cash should be included in capital employed which is essential for normal working of the business. If there has been abnormal inflow of cash in to business (such as an issue of fresh issue of shares or sale of fixed assets), then such cash should not be included in the cash computation of capital employed. As cash requirements of a business vary from period to period, it would be appropriate to treat average cash requirement as the normal amount of cash for the purpose of computation of capital employed.

(d) Debtors: Tradedebtors are included in capital employed after deducting the bad debts and provision to this effect.

(e) Stocks: All type of stocks excluding obsolete and useless stocks are included in capital employed. Stock should be valued on proper basis and there must be consistency in respect of method of valuation.

(f)Investments: Considerable difference is found in respect of investment s according to nature and purpose of computation. If the purpose of computing return on capital employed is to assess the effectiveness of the business and efficiency of the management, then all those investments should be excluded which do not affect managerial efficiency, such as investments outside the businessi.e. non-trading investments. In such case income from non-trading investments should not be included in profit. On the contrary, internal investment and trade investments for enhancing of the company should be included in capital employed. If the amount of outside investment is substantial, return on capital employed may be calculated in two ways i.e. One by including such investments and the other by excluding such investments.

(g) Fictitious Assets: Fictitiousassets such as preliminary expenses, deferred revenue expenditures, discount on issue of shares or debentures etc. should always be excluded from capital employed.

Meaning of Adjusted Profit

The meaning and definition of profit will differ according to the method of computation and meaning of capital employed. Profit for this purpose should be determined taking into account the following rules:

(a) Profit must match with the capital employed. Hence, if any asset is not included in capital employed, income from that asset or loss from its write off should not be included for calculating profit for this purpose. For example, if non-trading investments are not included in capital employed, income from such investments should not be included in profits. Hence, income from such investments should be deducted from given net profits.
Similarly, write off of fictitious assets and intangible assets should be added back to nullify their effects.

(b) If long-term liabilities are a part of capital employed, interest paid on such loans should be added back to the profits. Similarly, if return to be calculated on gross capital employed, interest on short term loans should also be added back to the profits because these liabilities also form part of gross capital employed.

(**c)**Abnormal and non-recurring losses or gains should not be included in the profits. Hence, appropriate adjustment in net profit should be done to nullify their effect.

(d) If fixed assets are valued at replacement cost, then depreciation charged to profit and loss account should be based on their replacement cost.

(e) Profit should match with capital employed with reference to period also. It means that income of any previous year or subsequent year should not be included in current year's profit.

(f) In determining profit, due consideration should be given to all accepted principles and conventions of accounting.

(g)A clear distinction has to be made between revenue expenditure and capital expenditure in calculating profit and a conservative approach should be adopted in the calculation of profit.

(h) Return on capital employed should be calculated on the basis of net profits before tax because income tax is not a business expenses and it has no relationship with profit earning capacity of the business and it is paid only after profit is earned.

Illustration 25:

Following are the summarized Profit and Loss Account and Balance Sheet of Lipun Ltd for the year ended 31st December, 2017.

Profit and Loss Account

To Opening Stock	1,00,000	By Sales	13,00,000
To Purchases	9,00,000	By Closing Stock	2,00,000
To Wages	60,000		
To Freight and Carriage	10,000		
To Gross Profit	4,30,000		
	15,00,000		**15,00,000**
To Office and Administrative expenses	1,00,000	By Gross Profit	4,30,000
To Selling and Distribution expenses	1,10,000	By Interest on Govt. Securities	12,000
To Interest on debentures	10,000	By Profit on sale of plant	8,000
To Interest on bank overdraft	5,000		
To Depreciation	15,000		
To Loss on sale of machine	10,000		
To Provision for tax	1,00,000		
To Net Profit	1,00,000		
	4,50,000		**4,50,000**

Balance Sheet as on 31st Dec. 2018

Equity & Liabilities	
Equity Share Capital	4,00,000
8% Preference Share Capital	2,00,000

Reserves	60,000
Profit & Loss A/c	40,000
10% Debentures	1,00,000
Bank Overdraft	50,000
Other Current Liabilities	1,50,000
Total	**10,00,000**
Assets	
Land & Building (Net)	2,50,000
Plant & Machinery (Net)	3,00,000
Investment in Govt. Securities	1,00,000
Stocks	2,00,000
Sundry Debtors	1,00,000
Cash	40,000
Discount on Issue of Shares	10,000
Total	**10,00,000**

You are required to calculate:
(i) Return on Gross Capital Employed.
(ii) Return on Net Capital Employed.

Solution:

Calculation of Capital Employed

Land and Building	2,50,000
Plant and Machinery	3,00,000
Stocks	2,00,000
Sundry Debtors	1,00,000
Cash	40,000
	8,90,000

Net Capital Employed = Gross Capital Employed – Current Liabilities

= 8,90,000 – (50,000 + 1,50,000)

= 6,90,000

Calculation of Adjusted Profits

Net Profit as per P/L A/C	1,00,000
Add: Loss on sale of Machine	10,000
Interest on debentures	10,000
Provision for tax	1,00,000
	2,20,000
Less : Interest on Govt. Securities	12,000
Less: Profit on sale of plant	8,000
Adjusted Profit for Return on Net Capital Employed	**2,00,000**

Note: To find out adjusted profits for return on gross capital employed further 5,000 should be added back to 2,00,000 for interest on bank overdraft as current liabilities are included in gross capital employed.

$$\text{Return on Gross Capital Employed} = \frac{\text{Adjusted Net Profits}}{\text{Gross Capital Employed}} \times 100$$

$$= \frac{2,05,000}{8,90,000} \times 100 = 23.03\%$$

$$\text{Return on Net Capital Employed} = \frac{\text{Adjusted Net Profits}}{\text{Net Capital Employed}} \times 100$$

$$= \frac{2,00,000}{6,90,000} \times 100 = 28.98\%$$

(Note: Capital employed can also be found as average capital employed by deducting half of the profits earned for the year.)

1.11 MARKET BASED RATIOS OR RATIOS FOR PROSPECTIVE INVESTORS

Market based Ratios are used by shareholders and investors to evaluate the performance of a company in the market place. These ratios include:

1. Earnings per Share (EPS)

2. Dividend Payout Ratio (D/P Ratio)

3. Dividend Yield Ratio

4. PriceEarningsRatio (P/E Ratio)

5. Price to Book Value Ratio (P/B Ratio)

1. Earning PerShare (EPS):

The shareholders are interested mainly in capital appreciation of their investment and higherdividend per share. Both the variables are affected mainly by earnings of the company and the most suitable way of expressing these earnings is earning per share.It is small variation of return on equity capital. Here, earnings are expressed per share instead of in percentage. Earning per share is calculated by dividing net profits after tax and preference divided by total number of equity shares.

$$\text{Earnings Per Share EPS} = \frac{\text{Earning available for Equity Shareholders}}{\text{Number of Equity Shares}}$$

Notes:

1. Earnings available for Equity Shareholders = Profit after tax-Preference Dividend
2. Here, the number of equity shares excludes the shares authorized but not issued, forfeited, cancelled, surrendered or repurchased.

Interpretations:

1. Earnings per share are a good measure of profitability. Market value of a share is usually determined on the basis of its EPS. Higher the EPS, better it is. EPS of a company may be compared with that of similar companies or companies' own past.

2. The increasing trend of earnings per share increases the possibility of higher cash dividend and capital bonus and this affects favorably the market value of the share.

3. Although earnings per share are the most widely published and used data, it should not be believed blindly because of the following reasons.. First, EPS cannot represent the various financial operations of the business. Secondly, comparison of the EPS of different companies can be distorted by the effect of different accounting procedure relating to stock in trade, depreciation and the like. Therefore, EPS should be examined with other ratios.

2. Dividend Payout Ratio:

This is a ratio of dividend per share to earnings per share. It indicates the extent to which earnings per share have been used for paying dividend and what portion of earnings has been retained in the business for growth and future uncertainties.

$$\text{Dividend Payout Ratio} = \frac{\text{Dividend Per Share}}{\text{Earning Per Share}} \times 100$$

Note: Sometimes we also calculate Retention Ratio =100-Dividend Pay outRatio. It represents that percentage of earnings which is retained and ploughed back in business.

Interpretations:

1. Guidelines for this ratio vary widely. Companies often attempt to pay approximately 50% of their earning as dividends.
2. If the firm is experiencing a need for funds to support its operation, it might allow the dividends to decline in relation to earnings.
3. But if the firm lacks opportunities to use funds generated by retained earnings, it might allow the dividends to increase in relation to earnings.
4. In either case, consistency of dividend payment would be important to investors, so changes should be gradual

3. Dividend Yield Ratio:

Dividend is declared as percentage on paid-up capital. But the return, de facto is more or less, depends upon lower or higher market price of a share respectively. It is this rate which is crucial from the point of view of fresh investors in particular who desire dividends as a source of income. This is calculated as follows:

$$\text{Dividend Yield Ratio} = \frac{\text{Dividend Per Share}}{\text{Market Price Per Share}}$$

Interpretation: The ratio compares the rate of dividend with the market price of the share. This ratio is calculated to know the effective return for the owners.

4. Price-Earnings Ratio (P/E Ratio)

It is the ratio between market price per equityshare and earning per share. The ratio is calculated to make an estimate of appreciation in the value of ashare of a company and is widely used by investors to decide whether or not tobuy shares in a particular company. It is also called P/E multiples. Following formula is used to calculate price earnings ratio:

$$\text{Price Earnings Ratio} = \frac{\text{Market Price Per Share}}{\text{Earning Per Share}}$$

Interpretation:

1. This is most widely used ratio in the stock exchange by the investors. This ratio indicates upto how much the public is ready to pay for future earning prospects of the company.
2. A high price-earnings ratio indicates investor's faith in stability and appreciation of company's earnings.
3. This ratio can be used in forecasting market value of the share on a certain future date.

Market price per share= PE Ratio × EPS

4. The market value of a share is affected by many market factors. Hence, this ratio is used by knowing the position of over- valuation of share.
5. Sixteen times earnings multiple is considered appropriate. Hence, if price earning ratio is more than 16 times, the share may be concluded as overvalued.
6. This ratio may also be used to determine capitalization of a share. As this ratio largely depends upon market factors, it differs from company to company within the same industry and also for the same company over a period.

5. Price to Book value Ratio (P/B Ratio):

The PBV Ratio is the market price per share divided by the book value per share. The market price per share is simply the stock price. The book value per share is a firm's assets minus its liabilities, divided by the total number of shares.

$$\text{Price to Book Value Ratio} = \frac{\text{Market Price Per Share}}{\text{Book Value Per Share}}$$

Notes: The market price per share is simply the stock price. The book value per share is a firm's assets minus its liabilities, divided by the total number of shares.

Interpretation:

1. A higher P/B Ratio implies that investors *expect* management to create more value from a given set of assets, or else equal (and/or that the market value of the firm's assets is significantly higher than their accounting value).
2. P/B Ratios do not, however, directly provide any information on the ability of the firm to generate profits or cash for shareholders.
3. This ratio also gives some idea of whether an investor is paying too much for what would be left if the company went bankrupt immediately.

Illustration- 26

The information provided by Jagan Ltd is as follows:

Particulars	**Amount ( )**
9% Preference Shares of 10 each	3,00,000
Equity share 10 each	8,00,000
Profit after tax 60%	2,70,000
Depreciation	60,000
Equity dividend	20%
Market price per equity share	40

You are required to calculate the following.

1. The dividend yield on equity shares
2. The cover for preference and equity shares
3. The earning per share
4. The price earnings ratio
5. The net cash flow.

Solution:

1. Dividend Yield $= \frac{\text{Dividend per share}}{\text{Market price per share}}$

$= \frac{2}{40} = 0.05 \text{ or } 5\%$

Whereas Dividend per share = 20% of 10 = 2

2.Cover of Preference Dividend $= \frac{\text{Profit after tax}}{\text{Preference Dividend}}$

$$= \frac{2,70,000}{27,000} = 10 \text{ times}$$

Cover of Equity Dividend $= \dfrac{\text{Earning after Preference Dividend}}{\text{Equity Dividend}}$

$$= \frac{2,70,000 - 27,000}{1\ 60,000} = 1.52 \text{ times}$$

3.Earning Per Share (EPS) $= \dfrac{\text{Net profit after preference dividend}}{\text{Number of equity shares}}$

$$= \frac{2,70,000 - 27,000}{80,000} = 3.04$$

4.Price EarningsRatio $= \dfrac{\text{Market price per share}}{\text{earnings per share}}$

$$= \frac{40}{3.04} = 13.16 : 1$$

5.Total Cash Flow = N.P after tax + Non cash expenditure

= 2,70,000 + 60, 000 = 3,30,000

Net cash flow = Total cash flow – Dividend on shares

1.12 DU PONT ANALYSIS

DuPont Analysis is an extended examination of Return on Equity (ROE) of a company. This analysis was developed by the DuPont Corporation in the year 1920. ROE is that it is an important measure of profitability that only requires two numbers to compute: net income and shareholders' equity. ROE is computed by dividing Net Income with shareholder's equity (ROE=Net Income/Shareholder's equity). If this number goes up, it is generally a good sign for the company as it is showing that the rate of return on the shareholders' equity is rising. The

problem is that this number can also increase simply when the company takes on more debt, thereby decreasing shareholder equity. This would increase the company's leverage, which could be a good thing, but it will also make the stock riskier. Hence, without a way of breaking down ROE components, investors could be duped into believing a company is a good investment when it's not. In this context, DuPont Analysis explains how to break apart ROE and gain a much better understanding of where movements in ROE are coming from.

There are two variants of DuPont analysis: the original three-step equation, and an extended five-step equation.

The Three-Step DuPont Calculation

$$\text{ROE} = \frac{\text{Net Income}}{\text{Shareholder's Equity}}$$

Multiplying the equation by *(Sales / Sales)*, we get:

$$\text{ROE} = \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Shareholder's Equity}}$$

Now by multiplying the above equation by (*Assets / Assets*), we end up with the three-step DuPont identity

$$\text{ROE} = \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Shareholder's Equity}}$$

Or ROE=Profit Margin× Total Assets Turnover× Equity Multiplier

Components of Three Step DuPont Analysis

This analysis has 3 components to consider;

1. Profit Margin– This is a very basic profitability ratio. This is calculated by dividing the net profit by total revenues. This resembles the profit generated after deducting all the expenses. The primary factor remains to maintain healthy profit margins and derive ways to keep growing it by reducing expenses, increasing prices etc, which impacts ROE.

For example; Company X has Annual net profits of 1000 and Annual turnover of 10000. Therefore the net profit margin is calculated as

Net Profit Margin= Net profit/ Total revenue= 1000/10000= 10%

2. Total Asset Turnover– This ratio depicts the efficiency of the company in using its assets. This is calculated by dividing revenues by average assets. This ratio differs across industries but is useful in comparing firms in the same industry. If the company's asset turnover increases, this positively impacts the ROE of the company.

For example; Company X has revenues of 10000 and average assets of 200. Hence the asset turnover is as follows

Asset Turnover= Revenues/Average Assets = 1000/200 = 5

3. Equity Multiplier –It **is** a measure of how much the company is leveraged. This refers to the debt usage to finance the assets. More the ratio higher is the leverage and vice versa. The companies should strike a balance in the usage of debt. The debt should be used to finance the operations and growth of the company. However usage of excess leverage to push up the ROE can turn out to be detrimental for the health of the company.

Interpretation of the DuPont Analysis:

If a company's ROE goes up due to an increase in the net profit margin or asset turnover, this is a very positive sign for the company. However, if the equity multiplier is the source of the rise, and the company was already appropriately leveraged, this is simply making things riskier. If the company is getting over-leveraged, the stock might deserve more of a discount despite the rise in ROE. The company could be under-leveraged as well. In this case, it could be positive and show that the company is managing itself better.

Even if a company's ROE has remained unchanged, examination in this way can be very helpful. Suppose a company releases numbers and ROE is unchanged. Examination with DuPont analysis could show that both net profit margin and asset turnover decreased, two negative signs for the company, and the only reason ROE stayed the same was a large increase in leverage. No matter what the initial situation of the company, this would be a bad sign.

The Five-Step DuPont Calculation

The five-step, or extended, DuPont equation breaks down net profit margin further. From the three-step equation we saw that, in general, rises in the net profit margin, asset turnover and leverage will increase ROE. The five-step equation shows that increases in leverage don't always indicate an increase in ROE.

The Five-Step Calculation

Since the numerator of the net profit margin is net income, this can be made into earnings before taxes (EBT) by multiplying the three-step equation by 1 minus the company's tax rate:

$$\mathbf{ROE} = \frac{\mathbf{Earning\ Before\ Tax}}{\mathbf{Sales}} \times \frac{\mathbf{Sales}}{\mathbf{Assets}} \times \frac{\mathbf{Assets}}{\mathbf{Shareholder's Equity}} \times (\mathbf{1 - Tax\ Rate})$$

We can break this down one more time since earnings before taxes is simply earnings before interest and taxes (EBIT) minus the company's interest expense. So, if there is a substitution for the interest expense, we get:

$$\mathbf{ROE} = \left(\frac{\mathbf{EBIT}}{\mathbf{Sales}} \times \frac{\mathbf{Sales}}{\mathbf{Assets}} - \frac{\mathbf{Inerest\ Expenses}}{\mathbf{Assets}}\right) \times \frac{\mathbf{Assets}}{\mathbf{Shareholder's Equity}} \times (\mathbf{1 - Tax\ Rate})$$

ROE= (OPM×AT−IER) × EM × TRR

Where: OPM=Operating profit margin

AT=Asset Turnover Ratio

IER=Interest Expense Rate

EM=Equity Multiplier

TRR=Tax Retention Rate

Interpretation

If the company has a high borrowing cost, its interest expenses on more debt could mute the positive effects of the leverage. The five-step equation shows that increases in leverage don't always indicate an increase in ROE.

1.13CONSTRUCTION OF FINANCIAL STATEMENTS FROM RATIOS

Ratios are worked out from financial statements ie, Profit and loss accountand Balance sheet. In a reverse approach, one can prepare the financialstatements in a concise or summarized form from the ratios and additionalinformation. In order to prepare Balance sheet or Profit and Loss account, studentsmust have a clear idea regarding the contents of a typical balance sheet andprofit and loss account. Using the given information and ratios students maywork out the missing figures in a logical sequence.

Illustration 27:

From the following data relating to a firm, prepare Balance Sheet of the firm as at 31st Dec, 2018:

Particulars	
Annual Sales	36,00,000
Sales to Net Worth	4 times
Current Liabilities to Net Worth	50%
Total Debts to Net Worth	80%
Current Ratio	3:1
Sales to Inventory (ITR)	6 times

Average Collection Period	73 days
Fixed Assets to Net Worth	30%

Solution:

Net Worth:

$$\text{Sales to Net Worth} = \frac{\text{Sales}}{\text{Net Worth}}$$

$$\text{or,} \quad 4 = \frac{36,00,000}{\text{Net Worth}}$$

$$\text{or,} \quad \text{Net Worth} = 9,00,000$$

Current Liabilities:

$$\text{Current Liabilities to Net Worth} = \frac{\text{Current Liabilities}}{\text{Net Worth}}$$

$$\text{or,} \quad \frac{50}{100} = \frac{\text{Current Liabilities}}{9,00,000}$$

$$\text{or,} \quad \text{Current Liabilities} = 4,50,000$$

Long Term Debts:

$$\text{Total Debts to Net Worth} = \frac{\text{Total Debts}}{\text{Net Worth}}$$

$$\text{or,} \quad \frac{80}{100} = \frac{\text{Total debts}}{9,00,000}$$

$$\text{or,} \quad \text{Total Debts} = 7,20,000$$

Long Term Debt = Total Debts – Current Liabilities

= 7,20,000 - 4,50,000

= 2,70,000

Current Assets:

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

$$\text{or,} \quad 3 = \frac{\text{Current Assets}}{4{,}50{,}000}$$

$$\text{or,} \quad \text{Current Assets} = 13{,}50{,}000$$

Inventory:

$$\text{Sales to Inventory} = \frac{\text{Sales}}{\text{Inventory}}$$

$$\text{or,} \quad 6 = \frac{36{,}00{,}000}{\text{Inventory}}$$

$$\text{or,} \quad \text{Inventory} = 6{,}00{,}000$$

Debtors:

$$\text{Debtors' Turnover Ratio} = \frac{\text{Debtors}}{\text{Sales}} \times 365$$

$$\text{or,} \quad 73 \text{ days} = \frac{\text{Debtors}}{36{,}00\ 000} \times 365$$

$$\text{or,} \quad \text{Debtors} = 7{,}20{,}000$$

Cash and Bank Balance:

Current Assets= Stock + Debtors + Cash & Bank

Or, 13,50,000= 6,00,000+ 7,20,000 + Cash & Bank

Or, Cash & Bank= 30,000

Fixed Assets:

$$\text{Fixed Assets to Net Worth} = \frac{\text{Fixed Assets}}{\text{Net Worth}}$$

$$\text{or,} \quad 30 = \frac{\text{Fixed Assets}}{9{,}00{,}000}$$

$$\text{or,} \quad \text{Fixed Assets} = 2{,}70{,}000$$

Balance Sheet as on 31st Dec. 2018

Particulars	
Equity & Liabilities	
Net worth	9,00,000
Long term Debts	2,70,000
Current Liabilities	4,50,000
Total	**16,20,000**
Assets	
Fixed Assets	2,70,000
Current Assets:	
Stock	6,00,000
Debtors	7,20,000
Cash at Bank	30,000
Total	**16,20,000**

1.14 RATIOS AT A GLANCE

Liquidity and SolvencyAnalysis

Ratio	**Formulae**	**Comments/Remarks**
Current Ratio	Current assets/ Current liabilities	A ratio of2: 1 (two times current assets to current liabilities) is considered satisfactory as a rule of thumb.
Quick or Acid Test Ratio or Liquidity Ratio	Quick assets/ Current liabilities	1 : 1 is considered satisfactory
Absolute liquidity	(Cash + marketable securities) / (Liquid liabilities or Current	0.5 : 1 is considered standard

Ratio	liabilities)	
Stock turnover Ratio	Cost of goods sold/ Average stock [cost of goods sold= (sales –GP) or Opening stock+ purchases – closing stock) , Average stock = (Opening stock + closing stock)/2]	No standard rate or norm can be determined for this ratio because it is based more on nature of industry and sale policy of the firm.
Stock velocity (in months)	(Average stock/ Cost of goods sold) × 365 days or 12 months or 52 weeks	
Average age of inventory	365/ Inventory turnover Ratio (ITR)	The shorter the average age of the firm's inventory, more liquid or active it may be considered.
Debtors Turnover Ratio (DTR)	(Average trade receivables/ net credit sales) ×100	Higher the value of debtors turnover, the more efficient is the management of debtors.
Average collection period	No of working days / DTR	It should not exceed the stated credit period on trade terms plus 1/3rd of such period. At high average collection period also implies that chances of bad debts are larger.
Creditors Turnover Ratio	Average accounts payable / Net credit purchases	Lower the ratio better is the liquidity position of the firm. Higher creditor's turnover ratio indicates weak liquidation position.
Creditors Turnover or velocity	Net credit purchases / Average accounts payables	Higher the creditors velocity, better it is. A fall in the ratio shows delay in payment to creditors.
Debt-Equity Ratio or Debt-worth Ratio	External equity / Internal equity or Long-term fund / Shareholder's fund or net worth	1:1 debt equity is considered satisfactory. However, in case of a well established concern 2: 1 debt equity ratio even more may also be considered satisfactory.

Proprietary Ratio	Shareholder's fund / Total assets or Shareholder's fund / Total equity	Higher the ratio lesser the dependence for working capital on outside sources, better the long-term solvency, stability and greater the protection to the creditors of the firm.
Solvency Ratio	Total borrowed Fund / Total Assets or 100-Equity Ratio	Higher the ratio, the greater is the dependence of the firm on outsiders.
Fixed assets to net worth Ratio or Fixed assets to proprietary fund	Fixed assets (after depreciation) / Total long-term fund	This ratio should not exceed 1:1. On the contrary, lesser the ratio, better the position because in such a case proprietors funds will be available for working capital need also. Usually, a ratio of 0.67: 1 is considered satisfactory.
Fixed assets to long-term fund or Fixed assets Ratio	Fixed assets (after depreciation) / Total long-term fund	This ratio should not exceed 1:1. If it exceeds 1:1, it implies that short-term funds of the firm have also been applied for acquiring fixed assets which is in no way be considered appropriate.
Ratio of current assets to proprietor's fund	Current assets/ Proprietor's fund	There is no rule of thumb for this ratio.
Ratio of current assets to total liabilities	Current assets/ Total liabilities	There is no rule of thumb for this ratio.
Proprietor's liability Ratio	Proprietor's fund / Total liabilities	Higher the ratio better is the security of the creditor.
Ratio of tangible assets to total debts	Tangible assets / Total debt	Higher the ratio greater is the security of the creditor.
Debt service Ratio or Interest Coverage Ratio	Net income (before charging interest and income tax) / Fixed interest charges	Higher the ratio better is the position of long-term creditors. But a too high interest coverage ratio may mean that the firm is not taking adequate advantage of trading on equity to increase the earning per share. Eight to

		nine times interest cover is considered as satisfactory for an industrial concern.
Preference dividend coverage Ratio	Net income after interest tax) / Preference dividend	Coverage of 2 is considered as standard.
Cash to debt service Ratio or Debt cash flow coverage Ratio	(Annual cash flow before interest and tax) / (Interest +SF appropriation / 1 - T	High coverage would be required in firms whose incomes are very instable and the firms whose incomes are stable.

Profitability Analysis

General profitability Ratio

Ratio	Formulae	Comments/remarks
Gross profit Ratio	(Gross profit / Net sales) × 100	Higher the ratio better is. But there is no rule of thumb for gross profit ratio.
Operating Ratio	(Operating cost / Net sales) ×100 [Operating cost = COGS + operating expenses]	Lower the ratio, higher the profit left for recouping the non-operating expenses and higher the net profit. There is no rule of thumb for this ratio as it may differ from firm to firm depending upon the nature of its business. However, 75 to 85 percent may be considered to be a satisfactory rate in case of manufacturing concern.
Expenses Ratio	(Particular expenses / Net sales) ×100	The lower the ratio, the greater the profitability of the business.
Net profit Ratio	(Net profit / Net sales) ×100	Higher the ratio better is profitability of the firm.

Overall profitability analysis

Ratio	Formulae	Comments/remarks
Return on equity share capital	[Net profit (after tax and preference dividend) / Paid up equity share capital] × 100	There is no rule of thumb for this ratio. Hence higher the ratio better it is. However, this ratio may be compared with that of similar firms or with the firm's own past.
Earnings per share (EPS)	[Net profit after tax and preference dividend / No. of equity shares	Higher the EPS better it is.
Return on shareholder's investment (or Proprietor's fund or net worth)	[Net profit (after interest and tax) / Shareholder's fund] × 100	Higher the ratio better are the results.
Return on total investment	(Net profit before interest and tax/ Total asset) × 100	The higher the ratio, the greater the profitability of the business.
Return on total assets or total resources	(Profit before interest and tax/ Total asset) × 100	Higher the ratio better it is.
Return on capital employed	(Profit before tax/ Capital employed) × 100	Higher the ratio better it is.

Activity Analysis- Sales Ratios

Ratio	Formulae	Comments/remarks
Stock turnover Ratio	Explained in liquidity analysis	
Debtors Turnover Ratio(DTR)	Explained in liquidity analysis	
Creditors Turnover Ratio	Explained in liquidity	

	analysis	
Total assets turnover Ratio	Net sales (or Cost of sales) / Total assets	2:1 assets turnover ratio is considered satisfactory.
Fixed asset turnover Ratio or Ratio of sales to fixed asset	Cost of sales (or Net sales) / Fixed assets (net)	Higher the ratio better it is. In manufacturing industry 5:1 ratio is considered satisfactory.
Current asset turnover Ratio	Net sales (or cost of sales) / Current assets	Higher the ratio better it is.
Net tangible asset turnover Ratio	Net sales / Net tangible asset	Higher the ratio better it is. But if it is too high it implies over utilization of firm's goodwill. This is called over trading.
Working capital turnover Ratio	Net sales (or Cost of sales) / Working capital	A high working capital turnover ratio shows the efficient utilization of working capital. But too high or low ratio indicates over-trading and under trading respectively.
Capital or Net worth turnover Ratio	Net sales / Share capital or Net worth	Higher the ratio better it is. A higher ratio indicates more profits while low ratio would result low profits. A very high capital turnover ratio would indicate over-trading or under capitalization.

Capital Structure Analysis or Leverage Ratios

Ratio	**Formulae**	**Comments/remarks**
Capital gearing Ratio or Gear Ratio	(Fixed cost bearing capital/ Variable cost bearing capital) or (Variable cost bearing	Policy of high gearing is very risky. In other words, lower the gearing, higher the gearing

	capital / Fixed cost bearing capital) or (Fixed cost bearing capital / equity)	ratio and higher the gearing, lower the gearing ratio.
Debt equity Ratio	It is already discussed in long-term solvency.	
Ratio of total investments to Long-term liabilities	[Long term fund (Share holder's fund + Long-term liabilities)] / Long term liabilities	As a general rule the proportion of long-term liabilities should not be very high.
Ratio of fixed asset to funded debt	Fixed asset / Fixed debt	Higher the ratio of fixed assets to debentures, the greater will be the security of debenture holders.
Ratio of reserve to equity capital	(Revenue reserve / Equity capital) × 100	Higher the ratio, more conservative is the dividend policy of the management and better is the growth potentiality of the company.
Ratio of current liabilities to proprietor's funds	Current liabilities / Proprietor's funds	The norm is 35%.

Ratios for prospective investors

Ratio	**Formulae**	**Comments/remarks**
Earning per share(EPS)	Net profit after preference dividend / Number of equity shares	Higher the ratio, better the performance and higher the future of the company
Book value per share	Shareholders fund / Number of shares	Now this ratio has lost its importance
Price EarningsRatio (PER)	Market price per share / Earning per share	A high price earnings ratio indicates investor's faith in the stability and appreciation of company earnings.

Market price per share	PER / EPS	If price earnings ratio is more than 16 times, the share may be concluded as overvalued.
CapitalizationRatio	Earning per share/ Market price per share	
Dividend yield Ratio	Dividend per share / Market price per share	
Dividend payout Ratio (D/P Ratio)	(Dividend per share / Earning per share) × 100	Guidelines for this ratio vary widely. Companies often attempt to pay approximately 50% of their earnings as dividends.
Cover of Preference and Equity Dividends	(Earning after tax / Preference Dividend) or (Earning after Preference Dividend / Equity Dividend)	Higher the cover better it is.

1.15 SELF ASSESMENT QUESTIONS:

1. What do you mean by Ratio Analysis? Discuss the advantages and limitations of Ratio Analysis.

2. “Ratio analysis is an important tool for judgment of the health of any organization.” Discuss.

3. What are the factors affecting the efficacy of ratios?

4. Who are the major users of ratio analysis? Explain in detail.

5. “Ratio are indicators-sometimes pointers but not in themselves powerful tools of the management.” Explain.

6. What is liquidity ratio? Discuss its significance to a firm.

7. What are the important profitability ratios? How are they calculated?

8. Explain and illustrate any two of the followings:

(a) Debtors turnover Ratio (b) Creditors turnover Ratio (c) Inventory turnover Ratio

9. Describe any five accounting ratios.

10. Explain which financial ratio will be useful to the following

(a) Potential investor of a company

(b) Company's own management

11. What are the important Profitability Ratios? How are they worked out? Explain and illustrate?

12. Define Return on capital employed(ROCE)? Discuss different methods of calculating the same with example?

13. Examine the relationship between Liquidity, Solvency and profitability of a business in context of ratio analysis?

14."Ratio analysis is a tool to examine the health of a business with a view to make the financial results more intelligible."-Discuss.

15. By applying ratio analysis how would you find out the followings:

(i)Whether the company is able to pay off its maturing obligations?

(ii)Whether the collection system is effective?

(iii)Whether the company is accumulating excess stock?

(iv)Whether the company relies too much on loan?

(v)Whether the profit earning capacity is good?

UNIT-3
ABSORPTION COSTING AND MARGINAL COSTING

Chapter Outlines

2.0 LEARNING OBJCTIVES

After studying this chapter, you should be able to understand:

- Explain concept of absorption and marginal costing.
- Distinguish between absorption costing and marginal costing.
- Explain the managerial application of CVP analysis.
- Explain the concept of angle of incidence.

2.1 INTRODUCTION

In cost accounting, cost of production per unit of the goods produced or services provided is calculated with the help of the various methods such as Unit Costing Method, job costing, Batch Costing contract Costing or Process Costing. Marginal costing is not a method of calculating the cost of production as the above given methods are but it is a technique applicable to the existing methods to find out the effect on profits if changes are made either in the volume of output or in the type of output. Thus marginal costing is a technique which helps the management in taking various routine and special or crucial decisions for running the organisational activities like (i) To continue with a product or not, (ii) To change the selling price as per the market conditions, (iii) To change the method of production, (iv) To make or buy decision, (v) To decide about sales mix.

2.2 MEANING OF MARGINAL COST

(i) According to I.C.M.A. London, 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. In practice this is measured by the total variable attributable to one unit." In this context, a 'Unit' may be single article, a batch of articles, an order, a stage of production capactiy, a man-hour, a process or a department.

(ii) According to Blocker and Weltmore, "Marginal cost is the increase or decrease in the total cost which result from producing or selling additional unit of a commodity or from a change in the method of production or distribution."

Marginal cost is the aggregate of variable costs. It is the cost of producing one additional unit. The marginal cost concept is based on the distinction between fixed and variable costs. Marginal cost is the total of variable costs only and fixed costs only and fixed costs are ignored.

So, after analysing the definition we can say that with the increase in one unit of output, the total cost is increased and this increase in total cost from the existing to the new level is known as 'Marginal Cost'.

For example, for the production of 1,000 units of product, the variable costs per unit is `5 and fixed costs are `5,000 per annum. If the production is increased by one unit, the marginal cost will be:

Total cost of 1, 000 units:

Fixed costs = ` 5,000

Variables costs (1, 000 units × 5) = ` 5,0000

Total cost = Fixed Costs + Variables Costs

= `5,000 + ` 5,000 = ` 10, 000

Per unit costs = $\frac{10,000}{1,000}$ = `10/-

Total cost of 1,001 units:

Fixed costs	` 5,000
Variable costs (1, 001 units × 5)	`5,005
Total costs	`10,005

Marginal cost = ` 10,005 – ` 10,000 = ` 5

Hence, marginal cost is `5. This is the change in total cost due to change in one unit of output.

2.3 MEANING OF MARGINAL COSTING

According to the Institute of cost and management accountants, London, Marginal costing is defined as "The ascertainment of marginal cost and of the effect on profit of changes in volume or type of output by differentiating between fixed costs and variable costs. In this technique of costing only variable cost are charged to operations, processes or products, while the fixed costs are to be written off against profits in the period in which they arise."

Thus, in this context, we can say that marginal costing is a technique which is concerned with the changes in costs and profits result from changes in volume of output. Marginal costing is also known as 'Variable Costing'.

2.4 ABSORPTION COSTING / TOTAL COSTING

Absorption costing is the total cost technique. It is the practice of charging all costs, both variable and fixed, to operations, processes or products. Under absorption costing all costs whether variable or fixed are treated as product cost. Absorption costing is also known as full costing technique.

This method employs highly arbitrary way of apportionment of overheads which reduces the practical utility of cost data for controlling purposes.

Illustration 2.1

The following information relates to a company:

Production 40, 000 units

Sales 40, 000 units

Selling Price ` 30 per unit

Direct Material ` 5 per unit

Direct Labour `4 per unit

Overheads :

Variables `3 per unit

Fixed ` 1,00, 000

Calculate net profit under :

(a) Absorption Costing Method : (b) Marginal Costing Method.

Solution:

Income Statement (Absorption Costing)

Sales Particulars	`	`
Sale (40,000 units `30)		12,00,000
Less : Cost of goods sold :		
Direct Material (40,000 × 5)	2,00,000	
Direct Labour (40,000 × 4)		1,60,000
Overheads :		
Variable (40,000 × 3)	1,20,000	
Fixed	1,00,000	5,80,000
Net Profit		6,20,000

Income Statement (Marginal Costing)

Particulars	`	`
Sale (40,000 × `30)		12,00,000
Less : Variable Cost :		
Direct Material (40,000 × 5)	2,00,000	
Direct Labour (40,000 × 4)		1,60,000
Variable Overheads (40,000 × 3)	1,20,000	4,80,000
Contribution		7,20,000
Less : Fixed Cost		1,00,000
Net Profit		6,20,000

Illustration 2.2

The following information relates to a company:

Production	40,000 units
Sales	30,000 units
Selling Price	`30 per unit
Direct Materials	` 5 per unit
Direct Labour	
Factory Overheads:	
Variable	`3 per unit
Fixed	`1, 00,000
Selling and Distribution overheads:	
Variable	`1 per unit
Fixed	` 45,000

Calculate:

(i) Net Profit under Absorption Costing Method.
(ii) Net Profit under Marginal Costing Method.

Solution:

Income Statement (Absorption Costing)

Sales Particulars	`	`
Sale (30,000 × 30)		9,00,000
Less : Cost of Sales :		
Direct Material (40,000 × 5)	2,00,000	
Direct Labour (40,000 × 4)	1,60,000	
Factory overheads :		
Fixed	1,00,000	
Variable (40,000 × 3)	1,20,000	
Less : Closing Stock $\left(\frac{5,80,000}{40,000} \times 10,000 \text{ units}\right)$	5,80,000	

	1,45,000	
	4,35,000	
Add : Selling and Distribution Overheads :		
Fixed	45,000	
Variable (30,000 × 1)	30,000	5,10,000
Net Profit		3,90,000

Note : Closing stock value of Total Cost.

Income Statement (Marginal Costing Method)

Particulars	`	`
Sale (30,000 × 30)		9,00,000
Less : Variable Cost :		
Direct Material (40,000 × 5)	2,00,000	
Direct Labour (40,000 × 4)	1,60,000	
Factory Overheads (40,000 × 3)	1,20,000	
Less: Closing Stock $\left(\frac{4,80,000}{40,000}\times 10,000 \text{ units}\right)$	4,80,000	
	1,20,000	
	3,60,000	
Add: Selling and Distribution (30,000 × 1) :	30,000	3,90,000
Contribution		5,10,000
Less: Fixed Cost:		
Factory Overheads	1,00,000	
Selling and Distribution Overheads	45,000	1,45,000
Net Profit		3,65,000

Note: Closing stock value of Variable Cost.

2.5 SPECIAL TERMS FOR UNDERSTANDING MARGINAL COST

(i) Contribution
(ii) Profit Volume Ratio (P/V ratio)
(iii) Break Even Analysis
(iv) Break Even point (BEP)
(v) Break Even Graph
(vi) Angle of Incidence
(vii) Sales for Desired Profit
(viii) Margin of Safety (M/S)

2.5.1 Contribution

Contribution is the difference between Sales and Variable Cost or marginal cost. In other words, contribution is defined as the excess of sales over variable cost. Contribution first contributes to fixed cost and then to profit. Higher contribution means more profit and lower contribution means less profit. So the management of an organisation tries to increase contribution for higher earning.

Contribution can be represented as :

1. $\text{Contribution} = \text{Sales} - \text{Variable Cost(Marginal Cost)}$
2. $\text{Contribution} = (\text{per unit}) = \text{Selling price per unit} - \text{Variable cost per unit}$
3. $\text{Contribution} = \text{Fixed Cost} \pm \text{Profit / Loss}$

   or $C = F \pm P / L$
4. $\text{Contribution} = \text{Sales} \times P / V \text{ Ratio}$

For example, if the selling price of a product is R 100 per unit and its variable cost is R 60 per unit, contribution per unit is `40 (`100 – ` 60).

2.5.2 Profit Volume Ratio

The profit/volume ratio, also called the 'contribution ratio' or 'marginal ratio', is defined as the relationship between contribution and sales. In other words, profit/volume ratio is a ratio of contribution to sales and it can be expressed as under:

$$\text{P / V Ratio} = \frac{\text{Contribution per unit}}{\text{Sales per unit}}$$

(i) $$\text{P / V Ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100 \text{ or } = \frac{C}{S} \times 100$$

(ii) $$\text{P / V Ratio} = \frac{\text{Sales} - \text{Variable Cost}}{\text{Sales}} \times 100$$

(iii) $$\text{P/V Ratio} = \frac{\text{Fixed Cost+Profit}}{\text{Sales}} \times 100 \text{ or } = \frac{F+P}{S} \times 100$$

(iv) $$\text{P / V Ratio} = \frac{\text{Change in profit contribution}}{\text{Change in sales}} \times 100$$

(v) $$\text{P / V Ratio} = 1 - \text{variable Cost Ratio}$$

Example: If selling price of product is ` 100 and the variable cost is `75 per unit, then P/V ratio is : Marginal costing and Break Even Analysis

$$\text{P / V Ratio} = \frac{100-75}{100} \times 100 = \frac{25}{100} \times 100 = 25\%$$

2.5.3 Cost-Volume-Profit (CVP) Analysis or Break Even Analysis

CVP analysis is the relationship among cost, volume and profit. In CVP analysis, an attempt is made to measure variations of costs and profit with volume of production. In other words, it is a technique of management accounting which determines profit, cost and sale volume at different levels of production. When volume of production increases, cost per unit decreases because fixed cost remains constant. Again, with the increase in volume of output there are chances of decrease in cost per unit and increase in profit per unit. Thus, cost–volume profit analysis helps the management in profit planning because we can determine the amount of profits at different levels of activity and the volume of sales to earn desire profit can also be determined. In this regard, Herman C.Heiser rightly said 'the most significant single factor in profit planning of the average business is the relationship between the volume of business, costs and profits."

The study of cost – volume – profit analysis is also known as break-even analysis because break-even analysis refers to the study of relationship between costs, volume and profit at different levels of production or sales.

2.5.4 Break-even Point:

Break-even point may be defined as the point of sales volume at which total revenue equals total costs. It is the point of no profit, no loss. When the total sales of a business is equal to its total costs, it is known to break-even point. At this point, contribution is equal to fixed costs. If a business is producing more than the break-even point there shall be profit to the business organisation otherwise it would suffer a loss. The detailed study of Break-even point is known as Break-even Analysis.

2.5.5 Break-even Chart: Graphic Method

Break-even chart is a tool of presentation of the information relating to production quantity, sales and profits of a business organisation. With the help of this chart the break-even point can be known as well as the amount of profit or loss at the various levels of output and margin of safety can be found out. It also provides us the knowledge about the relationship between fixed and variable costs as well as the contribution and profit-volume(P/V) relationship. Break-even chart shows the relationship between cost, volume and profit. Break-even point is the most important information out of the all above information and due to this reason, it is known as break-even chart.

Methods of Drawing a Break-even chart

For drawing a break-even chart, one should have information regarding production capacity, variable costs and fixed costs of a business organisation.

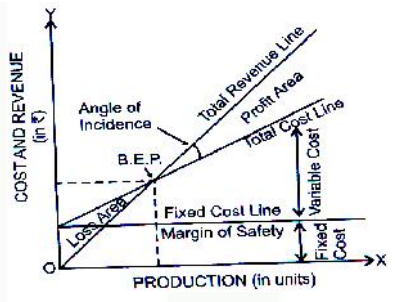
Firstly, a table is prepared to know about the fixed cost, total costs and total sales at various levels of output.

First Method (BEP Chart) :

(i) Volume of production/output or sales (in units/rupees) is plotted on X-axis (horizontal axis).

(ii) Cost and sales revenue are shown in Y-axis (vertically).

(iii) On Y-axis, fixed costs are shown first. A parallel line to X-axis is drawn which means that fixed costs remain constant at each level of input. Total cost line is drawn upward from the starting point of fixed cost line. To draw total cost line, the total costs points are plotted at various levels of output with the help of table and a line is drawn thereafter joining all these points. This line is called total cost line.



(iv) Sales values at various levels of output are plotted and a line is drawn joining these points. This line is called total revenue line.

(v) The point at which total cost line and total revenue line intersect each other is called break-even point.

(vi) A perpendicular is drawn, from this point, to X-axis to know the break-even point in units and sales revenue at break-even point can be known by a perpendicular Y-axis from this point.

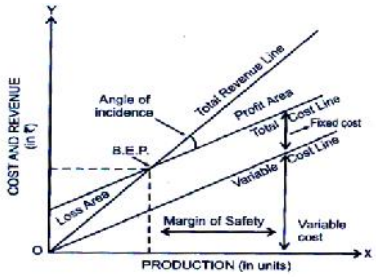
(vii) The area on the left of break-even point represent the loss area and on the right of BEP indicates the profit area.

(viii) The angle between sales or total revenue line and total cost line in profit area is called 'angle of incidence'. The wider the angle the greater is the profit and vice-versa.

(ix) Difference between the present sales and Break-even sales on the graph shows the margin of safety.

Second Method (BEP Chart) :

In this method, variable costs are shown first and fixed cost line is drawn parallel and upward to the variable cost line. The fixed cost line drawn represents the total cost of various levels of output. With the help of this chart, contribution can be known at various levels of output by the differences between total sales (revenue) line and variable cost line.



Third Method (Contribution Chart):

In this method, fixed cost line is drawn parallel to X-axis. The contribution line is drawn from the origin point which increases with the increase in the output. The contribution line and fixed cost line inter sects each other that points are called break-even point:

2.5.6 Angle of Incidence:

The angle formed at the intersection of the total sales curve and the total cost curve is known as angle of incidence. Bigger the angle of incidence higher will be the profits and smaller the angle of incidence the lower will be the profits. To improve this angle contribution should be increased either:

(i) By raising the selling price or

(ii) By reducing Variable cost or

(iii) By both the way.

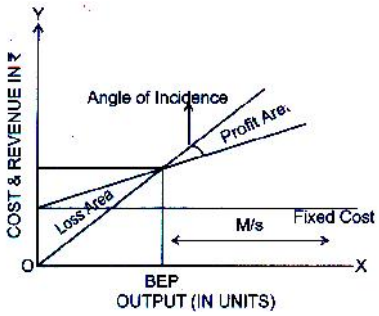
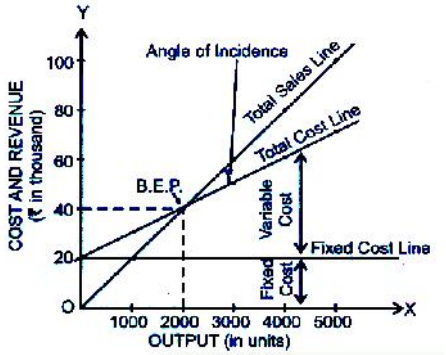


Illustration 2.3

Plot the following data on a graph and determine break-even point: selling price = ` 20 per unit, Variable Cost = ` 10 per unit, Fixed Cost ` 20,000.

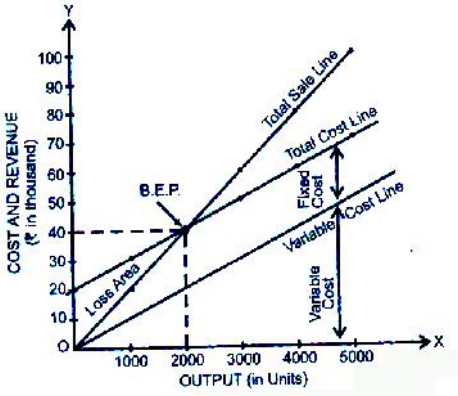
Output (in units)	Variable Cost (10 per unit)	Fixed Expenses	Total Cost	Total Sales	Contribution	Profits
0	0	20,000	20,000	0	0	–20,000
1,000	10,000	20,000	30,000	20,000	10,000	–10,000
2,000	20,000	20,000	40,000	40,000	20,000	–
3,000	30,000	20,000	50,000	60,000	30,000	10,000
4,000	40,000	20,000	60,000	80,000	40,000	20,000
5,000	50,000	20,000	70,000	1,00,000	50,000	30,000

First Method



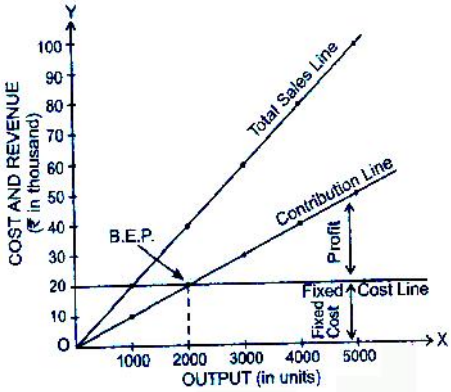
B.E.P. = 2,000 units or `40,000

Second Method



B.E.P. = 2,000 units or `40,000

Third Method



B.E.P. = 2,000 units or `40,000

Calculation of Break-even point: Algebraic Method

1. **Break-even Point in units :** It can be calculated with the help of following formula:

$$\text{Break-even point (in units)} = \frac{\text{Fixed Cost}}{\text{Selling Price per unit} - \text{Variable Cost per unit}}$$

or $$\text{B.E.P.} = \frac{\text{Fixed Cost}}{\text{Contribution per unit}}$$

or $$\text{B.E.P.} = \text{F C / C}$$

2.Break-even point in terms of money value :

$$\text{Break-even point (Rupees)} = \frac{\text{Fixed Cost} \times \text{Sales}}{\text{Sales} - \text{Variable Cost}}$$

or $$\text{B.E.P.} = \frac{\text{Fixed Cost} \times \text{Sales}}{\text{Contribution}}$$

With the help of P / V ratio, B.E.P can be calculated as follows :

$$\text{B.E.P.} = \frac{\text{Fixed Cost}}{\text{P / V Ratio}}$$

New Break-even Point : If the selling price of a product changes, contribution will be changed. As a result, new Break-even point will be as follows:

$$\text{(i) New B.E.P. (in units)} = \frac{\text{Fixed Cost}}{\text{New Selling Price} - \text{Variable Cost}}$$

or $$= \frac{\text{FC}}{\text{New Contribution}}$$

$$\text{(ii) New B.E.P. (Rupees)} = \frac{\text{Fixed Cost}}{\text{New P / V Ratio}}$$

Calculation of selling price when Break-even point is shifted

When break-even point is shifted, selling price will be calculated in the following manner:

$$\text{New Contribution} = \frac{\text{Fixed Cost}}{\text{New BEP (in units)}}$$

$$\text{Sales} = \text{New Contribution} + \text{Variable cost}$$

Illustration 2.4

From the following information, calculate:
(i) BEP (in units)
(ii) BEP (in `)
Sales of 50,000 units @ `6
Variable Costs @ ` 4
Total Fixed Costs ` 80,000

Solution:

(i) $$\text{B.E.P. (in units)} = \frac{\text{Fixed Costs}}{\text{Contribution Per unit}} = \frac{80,000}{2(6-4)} = 40,000 \text{ units}$$

Contribution = selling price – Variable Cost
or C = S – V
C = ` 6 – ` 4 = ` 2

(ii) B.E.P. (in Rs) = $\frac{\text{Fixed Cost} \times \text{Sales}}{\text{Sales} - \text{Variable Cost}}$

$= \frac{80,000 \times (50,000 \times 6)}{(50,000 \times 6) - (50,000 \times 4)} = \frac{80,000 \times 3,00,000}{3,00,000 - 2,00,000}$

$= \frac{80,000 \times 3,00,000}{1,00,00} =$ `2,40,000

or with the help of P/V ratio, BEP is :

BEP (in `) = $\frac{\text{Fixed Costs}}{\text{P/V Ratio}}$

$\text{P/V Ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100 = \frac{C}{S} \times 100 \; [C = S - V]$

Marginal Costing and Break Even Analysis

and C = Selling Price per unit – Variable Cost

= ` 6 – `4 = ` 2

∴ P/V Ratio = $\frac{2}{6} \times 100 = 33.33\%$

BEP (in `) = $\frac{\text{Fixed Costs}}{\text{P/V Ratio}} = \frac{80,000 \times 100}{33.33} =$ `2,40,000

2.5.7 Sales for Desired Profit

Marginal Costing technique can be applied for maintaining a desired level of profit. Due to competition, the price of the products may have to be reduced. The change in sales price affects the profitability of a concern. Marginal costing helps the management to know how many units have to be sold to maintain the desired level of profits. In order to achieve the desired level of profit the required sales can be calculated by the following formula:

(a) When total amount of desired profit is given :

(i) Required sales to earn desired profit (in units) = $\frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{Contribution per unit}}$

(ii) Required sales to earn desired profit = $\frac{\text{Fixed Cost} + \text{Desired profit}}{\text{P/V Ratio}}$

(b) When desired profit per unit is given :

(i) Sales (in units) = $\frac{\text{Fixed Cost}}{\text{Contribution per unit} - \text{profit per unit}}$

(ii) Sales (in Rs) = $\frac{\text{Fixed Cost}}{\text{Contribution per unit} - \text{Profit per unit}} \times \text{Selling Price Per unit}$

Illustration 2.5

Following data are collected from the record of a manufacturing unit of scooter :

Selling price of a scooter is ` 32,000

Fixed cost of a scooter is ` 2,000

Variable cost of a scooter is ` 23,000

In the given period 1000 scooters were sold.

Calculate break -even point of the company and how many scooters should be sold to earn the same profit, if company reduces the selling price of scooter by ` 2000 per scooter?

Solution:

Total Fixed = ` 2000 × 1000 = ` 20,00,000

$$\text{Break} - \text{even point} = \frac{\text{Fixed Cost}}{\text{Contribution per unit}}$$

$$= \frac{20,00,000}{9,000} = 222.22 \text{ [C= S–V= `32,00 – `23,000 = `9,000] or = 222 Scooters.}$$

The present profit of the company is as follows:

Variable cost per scooter	`23,000
Fixed cost per scooter	`2,000
Total cost per scooter	`25,000

Selling price of a scooter is ` 32,000

Profit of the company per scooter is `32,000 – ` 25,000 = ` 7,000

Total profit is (`7,000 × 1,000) = ` 70,00,000

To earn the same profit with a reduced price by ` 2000, the number of scooters can be found out as follows:

New Selling Price = `32,000 – ` 2,000 = ` 30,000

Fixed Cost = `20,00,000

Described profit = `70,00,000

New contribution per unit = `30,000 – ` 23,000

= `7, 000

$$\text{Sales} = \frac{\text{FC} + \text{Desired profit}}{\text{Cost per unit}} = \frac{20,00,000 + 70,00,000}{7,000}$$

= 1,285.71 or = 1,286 scooters.

2.5.8 Margin of Safety:

Margin of safety is the difference between actual sales and sales at break-even point. For example, if actual sales of a company is `10,00,000 and the sales at break-even point is `4,00,000 the difference between these two figures `6, 00, 000 (10,00,000 – 4,00,000) is margin of safety. Margin of safety can be calculated by the following formulae:

(i) $\text{Margin of safety (in units)} = \text{Actual sales (in units)} - \text{sales at B.E.P.(in units)}$

(ii) $\text{Margin of sales(in Rupees)} = \text{Actual sales(in Rupees)} - \text{sales at B.E.P.(in Rupees)}$

(iii) $\text{Margin of safety} = \frac{\text{Profit}}{\text{P / V Ratio}} \times 100$

(iv) $\text{Margin of safety(\%)} = \frac{\text{Margin of Safety}}{\text{Actual Sales}} \times 100$

Illustration 2.6

The data below relate to a company:

Sales	`1,50,000
Fixed Cost	`45,000
Profit	`15,000

Calculate:

(i) P/V ratio at present

(ii) P/V ratio, if selling price is increased by 10%.

(iii) P/V ratio, if selling price is decreased by 20%.

Solution:

Sales(S) = `1,50,000.

Fixed Cost(FC) = ` 45,000

Profit(P) = `15,000

S – V = FC + P

`1,50,000 – V = ` 45,000 + ` 15,000

or V = `1,50,000 – `60,000 = ` 90,000

(i) P/V ratio at present is:

Since P/V ratio = $\frac{C}{S}\times 100 = \frac{1,50,000-90,000}{1,50,000}\times 100 \because C = S - V$

$= \frac{60,000}{1,50,000}\times 100 = 40\%$

(ii) Calculation of P/V Ratio, if selling price is increased by 10%:

Sales Value = `1,50,000 + ` 1,50,000 × $\frac{10}{100}$

= ` 1,50,000 + 15,000 = ` 1,65,000

P/V ratio = $\frac{S-V}{S}\times 100 = \frac{1,65,000-90,000}{1,65,000}\times 100$

$= \frac{75,000}{1,65,000}\times 100 = 45.45\%$

(iii) Calculation of P/V ratio, if selling price is decreased by 20%:

In this case, sale value would be ` 1,50,000 – ` 30,000 = ` 1,20,000

P/V Ratio = $\frac{S-V}{S}\times 100$

$= \frac{1,20,000-90,000}{1,20,000}\times 100 = \frac{30,000}{1,20,000}\times 100 = 25\%$

Illustration 2.7

Following information is available from the records of a company:

Year	Sales (`)	Profit/Loss (`)
I	5,00,000	2,000 (Loss)
II	7,00,000	2,000 (Profit)

Selling price is given ` 100 per unit

Calculate:

(i) Fixed Cost

(ii) Break-even point in units

(iii) Sale in units for desired profit of ` 28,000.

Solution:

P/V Ratio = $\frac{\text{Change in profit / Contribution}}{\text{Change in Sales}}\times 100 = \frac{4000}{2,00,000}\times 100 = 2\%$

(i) Fixed Cost:

S × P/V Ratio = P + FC

I Year: ` $5,00,000\times\frac{2}{100} = FC + (-2,000)$

` 10,000 = Fc – 2,000

FC =` 10,000 + ` 2,000 = ` 12,000

II Year: $7,00,000\times\frac{2}{100} = FC + 2,000$

` 14,000 = FC + ` 2,000

FC = `14,000 – ` 2,000 = `12,000

(ii) B.E.P. $= \frac{FC}{P/V\ Ratio} = \frac{12,000}{2} \times 100 =$ `6,00,000

B.E.P.(in units) $= \frac{6,00,000}{100} = 6,000$ units

(iii) Sale of units for a profit of ` **28,000:**

Sale $= \frac{FC + DP}{P/V\ Ratio} = \frac{12,000 + 28,000}{2} \times 100$

$= \frac{40,000}{2} \times 100 =$ `20,00,000

Sales (in units) $= \frac{20,00,000}{100} = 20,000$ units

2.6 MANAGERIAL APPLICATION OF CVP ANALYSIS

2.6.1 Fixation of Selling Price:

Fixation of selling price is an important function of management. Under normal circumstances, the price is fixed to cover the fixed as well as variable cost and to earn the profit. But under other circumstances, the product may be sold at a price below the total cost. These circumstances may arise due to stiff competition, trade depression, for accepting additional orders, for exporting, etc. In such circumstances, the price should be fixed on the basis of marginal cost in such a manner so as to cover the marginal cost and contribute something towards the fixed costs. In the following circumstances production may be continued even if the selling price is below the marginal cost:

(i) To dispose of surplus stocks.
(ii) To eliminate the competitor from the market.
(iii) To utilise idle capacity.
(iv) To explore new markets.
(v) To explore foreign markets in order to earn foreign exchange.
(vi) when company deals with perishable products.
(vii) when company wants to introduce a new product in the market.
(viii) when the labour cannot be retrenched.
(ix) when company wants to avoid extra losses by closing down the business.

Illustration 2.8

The P/V Ratio of a company is 75%. Marginal cost of the product is `50. Determine the selling price of the product.

Solution:

If selling price is `100
Variable cost will be ` 25
and contribution is `75
Selling price of the product, when the marginal cost is `50, will be:

$= \frac{100}{25} \times 50 =$ `200

Assumptions Underlying Break-Even Charts

There are a number of assumptions which are made while drawing a break-even chart, such as :

(i) All costs can be separated into fixed and variable costs.
(ii) Fixed costs remain constant at all levels of activity.
(iii) Variable cost fluctuates directly in proportion to changes in the volume of output.
(iv) Selling prices per unit remain constant at all levels of activity.
(v) There is no opening or closing stock.
(vi) There will be no change in opening efficiency.

(vii) Product mix remains unchanged or there is only one product.
(viii) The volume of output or production is the only factor which influences the cost.

Advantages Or Uses of Break-Even Charts

Computation of break-even point or presentation of cost, volume and profit relationship by way of break-even charts has the following advantages:

1. Information provided by the break-even chart is in a simple form and is clearly understandable even to a layman. The whole idea of the problem is presented at a glance.
2. The break-even chart is very useful to management for taking managerial decisions because the chart studies the relationship of cost, volume and profit at various levels of output. The effects of changes in fixed costs and variables costs at various levels of output and that of changes in the selling price on the profits can be depicted very clearly by way of break-even charts.
3. The break-even charts help in knowing and analysing the profitability of different products under various circumstances.
4. A break-even chart is very useful for forecasting (the costs and profits), planning and growth.
5. The break-even chart is a managerial tool for control of costs as it shows the relative importance of fixed cost in the total cost of a product.
6. Besides determining the break-even point, profits at various levels of output can also be determined with the help of break-even charts.
7. The break-even charts can also be used to study the comparative plant efficiencies of business.

Limitations of Break–Even Charts

Despite many advantages, a break-even chart suffers from the following limitations:

1. A break-even chart is based upon a number of assumptions, discussed above, which may not hold good under all circumstances. For example, fixed costs do not remain constant after a certain level of activity; variable costs do not always vary in direct proportion to changes in the volume of output because of the laws of diminishing and increasing returns; selling prices do not remain the same forever and for all levels of output due to competition and changes in general price level; etc.
2. A break-even chart provides only a limited information. We have to draw a number of charts to study the effects of changes in the fixed costs, variable costs and selling prices on the profitability. In such cases, it becomes rather more complicated and difficult to understand.
3. Break-even charts present only cost-volume profit relationships but ignore other important considerations such as the amount of capital investment, marketing problems and government policies, etc.
4. A break-even chart does not suggest any action or remedies to the management as a tool of management decisions.
5. More often, a break-even chart presents only a static view of the problem under consideration.

2.6.2 Maintaining a Desired Level of Profit

Marginal Costing techniques can be applied for maintaining a desired level of profit. Due to competition, the price of the products may have to be reduced. The change in sales price, variable cost and product mix affects the profitability of a concern. Marginal costing helps the management to know of profit the sales can be ascertained by the following formula;

$$\text{Sales} = \frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{P / V Ratio}}$$

Illustration 2.9

The price structure of a cycle made by a company is as follows:

	**Per Cycle ` **
Materials	600
Labour	200
Variable overheads	200
	1000
Fixed overheads	500

Profit	500
Selling price	2,000

This is based on the manufacture of one lakh cycles per annum. The company expects that due to competition they will have to reduce selling prices, but they want to keep the total profit intact. How many cycles will have to be made to get the same amount of profit if:

(a) the selling price is reduced by 10%.

(b) the selling price is reduced by 20%.

Solution:

Total Fixed Costs = 500 × 1 lakh = 500 lakhs

Total Present Profit = 500 lakhs

$$\text{Sales} = \frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{Contribution per unit}}$$

(a) If selling price is reduced by 10%: Use

New selling price = (2,000 – 10 % of 2,000)

= 2,000 – 200 = ` 1,800

$$\text{Sales} = \frac{500 + 500}{1,800 - 1,000}$$

$$= \frac{1000}{800} \times 1,00,000 = 1,25,000 \text{ Cycles}$$

(b) If selling price is rescued by 20%:

New selling price = (2,000 – 20 % of 2,000)

= 2,000 – 400 = `1,600

$$\text{Sales} = \frac{500 + 500}{1,600 - 1,000}$$

$$= \frac{1000}{600} \times 1,00,000 = 1,66,667 \text{ Cycles}$$

2.6.3 Key or Limiting Factor:

A key factor or limiting factor is a factor which limits or puts a restriction on production or sales and restricts a company from making unlimited profits. Limiting factors may be availability of raw material, labour, sales finance, plant capacity, etc. When contribution and key factors are known, the profitability of a product can be measured as under:

$$\text{Profitability} = \frac{\text{Contribution}}{\text{Key Factor}}$$

For example:

(i) When limiting factor is the availability of labour:

$$\text{Profitability} = \frac{\text{Contribution}}{\text{Key Hours}}$$

(ii) When limiting factor is raw material:

$$\text{Profitability} = \frac{\text{Contribution}}{\text{Materials in Kg}}$$

Illustration 2.10

A company is producing two products A and B. The particulars of the company are as follows:

	Product A (` per unit)	Product B (` per unit)
Sales	75	80
Material Cost	15	20
Labour Cost	20	15
Direct Expense	10	12
Variable overheads	10	15
Machine Hours used	3 hrs	2 hrs
Consumption of material	2 kg	3 kg

Comment on profitability of each product, if both use the same raw material, when:

(i) Total sales potential in units is key factor.

(ii) Total sales potential in values is key factor.

(iii) Raw material is in short supply.

(iv) Production Capacity (in terms of machine hrs.) is the key factor.

Solution:

	Product A (` per unit)	Product B (` per unit)
Sales	75	80
Marginal Cost		
Materials	15	20
Wages	20	15
Direct expense	10	12
Variable overheads	10	15
Total Marginal Cost	55	62
Contribution (Sales – Total marginal cost)	20	18
Contribution (per ` of Sales) (Contribution/Sales)	20/75 = ` 0.266	18/80 =` 0.225
Material consumed contribution per kg of materials	20/2kg = ` 10	18/3kg ` 6
Contribution per hour	20/3 hrs = `6.6	18/2 hrs `9

Comments:

(i) When total sales potential in units is limited, product A is more profitable as its contribution per unit is more than that of product B.

(ii) When total sales potential in value is limiting factor, product A is more profitable as it has more contribution as per sales in rupees than that of product B.

(iii) Product A is more profitable than product B, when raw material is in short supply.

(iv) Product B is more profitable that product A, when production capacity in terms of machine hours is the key factor.

2.7 SUMMARY

- Marginal cost is the aggregate of variable costs. It is the cost of producing one additional unit.
- Absorption costing is the total cost technique. It is the practice of charging all costs, both variable and fixed, to operations, processes or products.
- Contribution is the difference between Sales and Variable Cost or marginal cost.
- Break-even chart is a tool of presentation of the information relating to production quantity, sales and profits of a business organisation.
- The angle formed at the intersection of the total sales curve and the total cost curve is known as angle of incidence.

- Marginal Costing techniques can be applied for maintaining a desired level of profit.
- Fixation of selling price is an important function of management. Under normal circumstances, the price is fixed to cover the fixed as well as variable cost and to earn the profit.

2.8 KEY TERMS

Marginal cost -Marginal cost is the aggregate of variable costs.

Marginal costing- marginal costing is a technique which is concerned with the changes in costs and profits result from changes in volume of output.

Absorption Costing- Absorption costing is the total cost technique. It is the practice of charging all costs, both variable and fixed, to operations, processes or products.

Higher contribution- Higher contribution means more profit

Break-even Analysis- In CVP analysis, an attempt is made to measure variations of costs and profit with volume of production.

Break-even point- Break-even point may be as the point of sales volume at which total revenue equals total costs.

2.9 QUESTIONS AND EXERCISES

1. What is 'cost and profit'? Bring out its importance.

2. 'Profit-Volume analysis' is a technique of analysing the costs and profits at various 'level of volume'. Explain how such analysis helps management.

3. (a) Your boss is looking over a Break-even Chart which you have constructed to portray the cost volume profit relationship of proposed plan of operations. He comments 'The chart only tells me more we sell more profits we make'. What is your reply?

(*b*) What are the limitations of a break even chart.

4. Explain the technique of marginal costing and state its importance in decision-making.

5. (*a*) State distinction between Marginal Costing and Absorption Costing as regards valuation of finished goods inventories.

(*b*) State the circumstances in which 'contribution approach to price is most suitable'. If this approach is adopted, what are the special items of cost or revenue that have to be considered when quotation for an export order is made ?

6. (*a*) What benefits are gained from Marginal Costing ? Are there any pitfalls in the application of Marginal Costing ? Discuss these matters critically.

(*b*) Give a brief account of practical application of marginal costing which you consider sound from a policy point of view.

7. What is Break-even Analysis ? Discuss its assumptions and uses.

8. State the implications of selling the product of a multiple firm at a price less than the marginal cost. When would you advocate selling below the marginal cost ?

9. 'Cost-Volume-Profit' relationship provides the management with a simplified framework for an organization which is thinking on a number of its problems. Discuss.

10. 'The proper treatment of fixed costs presents a problem in full cost pricing'. Explain this statement. Give suitable illustrations.

11. Explain with suitable illustrations the following statements:

(*a*) 'In the very long run all costs are differential'.

(*b*) 'In the long run profit calculated under absorption costing will be the same as that under variable costing'.

12. State four different methods of finding out the break-even point graphically.

13. Explain how semi-variable costs could be split into fixed and variable costs.

14. What is meant by differential cost? Explain the practical utility of differential cost analysis.

15. What is meant by break-even analysis? Explain the important assumptions and practical significance of break-even analysis.

16. What are the uses of break-even analysis and direct costing?

17. Mention the types of problems which a Management Accountant can expect to solve with break-even analysis.

18. 'Marginal Costing is an administrative tool for the management to achieve higher profits and efficient operation'. Discuss.

19. Explain under what circumstances marginal costing plays important role in price fixation ?

20. Explain how marginal costing technique is useful in day-to-day decision making.

21. What are the cheif advantages of break-even analysis ? Outline the assumptions behind this analysis.

22. Write briefly about Cost-Volume-Profit Analysis'.

23. Examine the concept of 'Margin of Safety' and give its uses for decision-making.

24. Explain the concept of *BEP* and *CVP*. Explain as to how are they useful for the managers for their decision-making.

25. What are the limitations of marginal costing? Explain.

26. Distinguish between Marginal Costing and Total Costing techniques of cost Analysis. How are the Profit Statements under the two techniques Present ?

27. Mention any four important factors to be considered in Marginal Costing Decisions.

28. Discuss the relationship between Angle of Incidence, Break-even and Margin of Safety.

UNIT 4
BUDGETARY CONTROL

Chapter Outlines

5.0. LEARNING OBJECTIVES

After studying this chapter, you should be able to understand:

- Explain Budget, Budgeting.
- Explain Budgetary control and distinguish between Budget and forecast.
- Explain precautions in Budgeting.
- Explain the advantages of Budgetary control.
- Explain kinds of Budgets.
- Explain the advantages and disadvantages of zero-Base Budgeting.

5.1 INTRODUCTION

Budgetary Control is an important tool for the management to make optimum use of limited business resources and to maximize the profits of business. In order to maximize the profits of business effective control on cost is must. In budgetary control, plans are made in advance for various business activities like purchases, sales and productions, etc. These plans are termed as budget and the actual results are compared with the budgets and the variance are discussed and analyzed.

5.2 MEANING OF BUDGET

" Budget is a financial and/or quantitative statement, prepared prior to defined period of time , of the policy to be pursued during that period for the propose of attaining a given objective . It may include income, expenditure and the employment of capital." **-I.C.M.A London**

5.2.1 Meaning of Budgetary Control:-

(i) "Budgetary control is the establishment of budgets relating to the responsibilities of executives to the requirement of a policy and continuous comparison of actual with budget results, either to secure by individual action of objectives of that policy to provide a solid basis for its revision."

(ii) "Budgetary control is the planning in advance of the various functions of a business so that the business as a whole can be controlled." **-Wheldon**

5.2.2 Budgetary Control as a Management Tool

• Advantages of Budgetary Control

(i) Definite Objectives: Under budgetary control, every department is given a target to be achieved. The efforts are made to achieve the specific aims.

(ii) Reduction in Cost of Production: In budgetary control, the various departments prepare the budgets and this results in reduction in cost of production. Moreover, every businessmen tries to reduce the cost of production and opts for more profitable combinations of products.

(iii) Coordination: The working of different departments is properly coordinated and a 'Master Budget is prepared for effective coordination and cooperation among various departments of the organisation.

(iv) Maximum Profits: Under budgetary control, the resources are utilised efficiently in an organisation as each person is aware of his task and the best way by which it is to be performed,

(v) Reduces Uncertainty: Under budgetary control, the managers are forced to map out future courses of action clearly. Thus, uncertainty is reduced to minimum.

(vi) Determining Weaknesses: The deviations in budgeted and actual performance will enable the determination of weak spots. By pin-pointing responsibility for inefficient performance, budgetary control helps managers trace weak spots early and take remedial steps.

(vii) Economy: The planning of expenditure will be systematic and there will be economy in spending. The resources are used to the best advantage. The benefits derived for the enterprise will ultimately extend to industry and then to national economy.

(viii) Adoption of Standard Costing: The use of performance standards in financial matters and operational activities help the adoption of standard costing.

(ix) Optimum use of Resources: The resources of the organisation are used to the best advantage as the objectives are clear and each level of management is aware of its task. It directs enterprise activity towards maximisation of efficiency, productivity and profitability.

(x) **Effective Control:** It is a very important tool for effective control because under it the actual performance is compared with the budgets and remedial steps are taken in case of deviation, if any.

(xi) **Successful Planning:** Budgets are based on plans and all the departmental managers are informed about the expectations from them. The extent of expenditure that they can incur is [aid down in the budget alongwith the expected profits of their department. The departmental managers make their utmost effort to achieve the target and thus much help is obtained in the success of the plans.

(xii) Inculcates the feeling cost consciousness: Budgetary control inculcates the feeling of cost consciousness among workers. Thus, it increases productivity and operating economy.

(xiii) Introduction of Incentive schemes: Budgetary control system also enables the introduction of incentives schemes of remuneration. The comparison of budgeted and actual performance will enable the use of such schemes. Thus, efficient workers become more efficient and inefficient workers start becoming efficient.

Thus it can be said that "Budgetary control improves planning, aids in coordination and helps in having comprehensive control.

5.2.3 Limitations of Budgetary Control

To maximise the profit of the business and industry budgeting control is an important managerial technique but the technique of the budgetary control has following limitations:

(i) Based on Estimates: Budgets are based on estimates regarding an event the success of budget depends upon experience and estimates. Thus, these estimates cause the failure of budgetary control system.

(ii) Co-operation: The success of the budgetary control system depends upon the co-operation and co-ordination among the various levels of the management. The lack of co-ordination and co-operation at the operating level results into failure of budgetary control.

(iii) **Time Effect:** The world is changing everyday like change in price, change in demand, change in government policies, create problems in achieving the budgetary targets. So, budget needs revision for their success but this revision is a very costly affair.

(iv) **Excessive Cost of Budgetary System:** To apply and implement budgetary control system successfully needs heavy expenditure, which may not be possible for small scale organisations.

(v) **Internal Disputes:** Each and every departmental head wants more and more financial outlay for their respective departments which becomes a cause of contention (dispute) among the various departments of the organisation.

(vi) **Opposition of Budgets:** Employees and Managerial personnel are of the view that budgetary control will reveal their efficiency and inefficiency at the various levels and hence because of fear of inefficiency they oppose the implementation of budgetary control system.

(vii) **Pressure Devices:** Budgets are perceived by the work force as pressure devices imposed by top management. This can have an adverse effect on labour relations.

(viii) **Success Depends Upon the Support of Top Management:** If the top management is dynamic and enthusiastic then it will bring success to the budgetary control. On the other hand, if the top management is dull and lethargic then the system will collapse.

5.2.4 Difference between Budget and Forecast

Basis	Budget	Forecast
Concept	It relates to planned events and is the quantitative expression of business plans and policies for the future.	It is the estimate or inference about the future probable events which may or may not be accurate.
Control device	It is an important control device for the management.	It represents a probable event over which no control can be exercised.
Provision for correction	The difference between actual performance and budgeted performance can be found out under budgetary control and necessary steps taken to rectify the deficiencies, if any.	Here, there is no such provision-
Period	It is prepared separately for each accounting period.	It may covers a long period.
Sequence	Budgeting begins where forecasting ends.	Forecasting provides a logical basis for preparing budgets.
Scope	Budgets have limited scope. It can be made of phenomenon capable of being expressed quantitatively.	Forecasts are wider in scope and it can be made in those spheres also where budgets cannot interfere

5.3 BUDGETARY CONTROL SYSTEM

5.3.1 Precautions in Budgeting/Budget Administration/Essentials/Installation of Budgetary Control system

For the successful implementation of the budgetary control system, the following steps should be considered:

(i) Objectives and Policy of Business: The budget is prepared for the achievement of the business objectives. Therefore, the objectives of the business should be clear. Business policy is made to attain the business objectives.

(ii) Budget Period: Budget period refers to the period of time for which the budget is prepared. The budget period depends on the various factors such as nature of business, timing of availability of finance, period required for manufacturing the products, etc. Generally there are two types of budget - short term and long term budgets, cash budget, sales budget, income and expenditure budget are short term budgets whereas capital expenditure budget, research and development budget are long term budget.

(iii) Budget Committee: Budget committee will have the managers of various departments like production, marketing, sales, finance, etc. The managers of each department prepare budgets for their own department and submit it to the committee. The main functions of this committee are as follows:

(a) To provide previous years data to departmental managers for making budgets,

(b) To determine business policy regarding budgets.
(c) To prepare master budget.
(d) To review the departmental budgets and to establish coordination among them, etc.

(iv) Budget Centres: It is that part of the organisation which is selected for budgetary control such as sales department, purchase department, production department, etc. Each budget centre prepares a separate budget. A budget centre must be clearly demarcated to facilitate the formulation of various budgets with the help of concerned departmental heads.

(v) Budget Manual: A budget manual helps in knowing in writing the role of every employees and the ways of undertaking various tasks. It helps in avoiding ambiguity in time. Any problem arising from the operation of a budgetary controls system can be settled through the budget manual. Thus, Budget manual is a written document or booklets which covers the following matters:

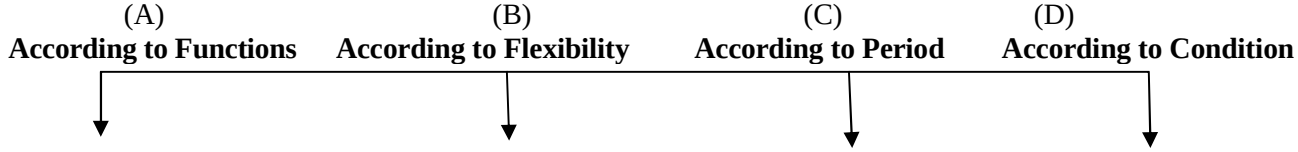
(a) It states the functions of various officials connected with the formulation of budgets.
(b) Duties, responsibilities' of various officials connected with the preparation of budgets.
(c) Objectives and benefits of budgetary control system.
(d) Length of various budget periods.
(e) Specimen forms and number of copies for preparing budget report.

(vi) **Budget Key Factor:** A factor which sets a limit to the total activity is known as budget factor / key factor / limiting factor. There may be a limitation on the quantity of goods a concern may sell. In this case, sales will be a key factor and all other budgets will be prepared by keeping in view the amount of goods the concern will be able to sell. The raw material supply may be limited; so, production, sales and cash budgets will be decided according to raw materials budget. Similarly, plant capacity may be a key factor if the supply of other factors is easily available. The key factors may not necessarily remain the same. The sales may be increased by adding more salesmen and advertisement. The raw material supply may be limited at one time and it may be easily available at another *time*.

(vii) Organisation for Budgetary Control: For the successful preparation of budgets, a proper organisation is a must. There must be cooperation among all the departments. Therefore, keeping in mind the cooperation and coordination, an organisation chart is prepared

(viii) Budget Officer: The chief executive appoints some person as budget officer. The budget officer works as a coordinator among different departments. He determines the deviations between actual performance and budgeted and takes necessary step to rectify the deficiencies. He also informs the top management about the performance of different departments.

5.3.2 Kinds of Budgets



1. Sales Budget
2. Production Budget
3. Materials Budget
4. Labour Budget
5. Plant Budget
6. Overhead Budget
7. Research & Development Budget
8. Cash Budget
9. Master Budget

1. Fixed Budget
2. Flexible Budget

1. Long Period Budget
2. Short Period Budget

1. Basic Budget
2. Current Budget

5.3.3 Functional Budgets

According to Functions

(1) Sales Budget: A sales budget is an estimate of expected sales during a budget period. It is the most important budget and it is called the backbone of the enterprise. A sales budget is the starting point on which other budgets are based.

In sales, budget expected sales are expressed in quantity as well as in value. A sales manger is made responsible for preparing sales budget. The following factors should be taken into account while preparing a sales budget:

(i) Past sales figures and facts; (ii) Availability of raw materials; (iii) Seasonal fluctuations; (iv) Plant capacity; (v) State of competition in the market; (vi) Availability of finance; (vii) Government policy; (viii) Selling price and quality of the products of competitors; (ix) Development of market.

The following informations can be obtained with the help of sales budget:

(i) Sales target; (ii)Possibility of sales in different areas; (iii) What efforts should be made for increasing sales in new areas? (iv) How much amount is required to increase the sales?

Illustration 5.1

A company manufactures two types of products A and B and sells them in the markets of Ambala and Panchkula. The following information is made available for the current year:

Market		Budgeted Sales	Actual Sales
Ambala	: A	400 units at ` 9 each	500 units at ` 9 each
	: B	300 units at `21 each	200 units at ` 21 each
Panchkula	: A	600 units at ` 9 each	700 units at ` 9 each
	: B	500 units at `21 each	400 units at ` 21 each

Market studies reveal that product A is popular as it is under priced. It is observed that if its price is increased by 11 it will get a ready market. On the other hand, product B is overpriced and market could absorb more sales if its selling price is reduced to `20. The management has agreed to give effect to the above price changes.

On the above basis, the following estimates have been prepared by sales manager:

Percentage increase in Sales over Current Budget

Product	Ambala	Panchkula
A	+ 10%	+ 5%
B	+ 20%	+ 10%

With the help of an intensive advertisement campaign, the following additional sales above the estimated sales:

Product	Ambala	Panchkula
A	60 units	70 units
B	40 units	50 units

You are required to prepare a budget for sales incorporating the above estimates.

Solution:

Sales Budget

Market	Product	Budget for Current Period			Actual Sales			Budget for Future		
		Qn.	Price(`)	Value (`)	Qn.	Price(`)	Value(`)	Qn.	Price(`)	Value(`)
Ambala	A	400	9	3.600	500	9	4,500	50	10	5,000
	B	300	21	6,300	200	21	4,200	0	20	8,000
		700	—	9,900	700	—	8,700	900	—	13.000
Panchkula	A B	600	9	5,400	700	9	6,300	70	10	7,000
		500	21	10,500	400	21	8,400	0	20	12,000
	Total	1,100		15,900		—	14,700	1,300		19,000

Budgeted Sales for the future has been calculated as under:

Ambala		Panchkula	
Product A	Product B	Product A	Product B
400		600	500
(10% of 400) 40	(20% of 300) 60	(5% of 600) 30	(10% of 500) 50
440	360	630	550
60	40	70	50
500	400	700	600

(2) Production Budget: Production budget is a forecast of production and cost of production for a budget period. A production manager is made responsible for preparing production budget. A production budget is prepared on the basis of sales budget. The sales budget presents demand while the production budget makes adequate arrangements for the fulfilment of this demand. The object of this budget is to manufacture the product at the minimum cost. A proper production planning is essential for preparing the production budget.

The following factors should be taken into account while preparing production budget:

(i) The optimum plant capacity utilization
(ii) Avoidance of bottlenecks due to shortage of materials and labour
(iii) Key factors
(iv) Quantity of different products
(v) Opening stock, closing stock and estimated sales
(vi) Availability of physical resources

Example of Production Budget is as follows:

Production Budget

	Products		
	A Units	B Units	C Units
Stock on 31st Dec. 2014	5,000	10,000	15,000
Add: Budgeted Sales	50,000	60,000	70,000
	55,000	70,000	85,000
Estimated Stock on 1st Jan.,	4,000	6,000	8,000
2014 Production requirement	51,000	64,000	77,000

Illustration 5.2

From the following data, prepare a Production Budget for a company: Stocks for the budget period:

Product	**as on 1st January 2014**	**as on 30th June 2014**
A	8000	10,000
B	9000	8,000
C	10,000	14,000

Requirement to fulfill sales programme:

A	60,000 units
B	50,000 units
C	80,000 units

Solution:

Production Budget

	Products		
	A Units	B Units	C Units
Sales	60,000	50,000	80,000
Add: Stock on 30th June, 2014	10,000	8,000	14,000
	70,000	58,000	94,000
Less: Stock on 1st January, 2014	8,000	9,000	10,000
Production requirement	62,000	49,000	84,000

(3) Materials Budget: Material budget is prepared for determining the requirement of raw material for production. This budget depends upon sales and production budget. The materials are purchased as per the requirements of production department. The number of units to be produced multiplied by the rate of consumption of raw materials will give the figure of materials required. The units of materials required multiplied by the rate per unit of raw material will give a figure of material cost.

Total material required = (Quantity of material required per unit)ò(Budgeted output)

Material cost = (Units of material required) ò(Rate per unit of Raw material)

The raw materials budget will enable the fixation of minimum stock level, maximum level and re-ordering level.

(4) Labour Budget: The labour required for manufacturing the product is known as direct labour and the labour which cannot be specified with production is called indirect labour. Labour budget is prepared for making possible the continuous availability of labour for attaining the production targets. This budget is useful for anticipating labour time required for production.

Labour Cost is determined as under:

Labour Cost = Labour hours ò Rate of pay per hour

Labour budget provides the following information:

(i) Number and types of workers required,
(ii) Rate of remuneration payable to the workers of different categories and availability of them.
(iii) Time and cost of training to be provided to the labourers.
(iv) The number of workers to be required more in the year.

(5) Plant Budget: In big enterprises where plants are valuable and most of the production is carried out with the help of machinery, preparation of plant budget becomes essential. Plant budget provides the following informations:

(i) Department wise the number of machines.
(ii) Original cost, depreciation and current value of machineries.
(iii) Work for which each machine is to be used.
(iv) Need to purchase new machines and amount required thereof.
(v) Production capacity of machines.
(vi) Remaining life of machines, etc.

(6) Overheads Budget: Overheads budget is prepared for the estimation of indirect expenses related to production, i.e., indirect material, indirect labour and other indirect expenses. This budget is classified into following parts:

(i) Factory overheads Budget
(ii) Financial overheads Budget
(iii) Sales overheads Budget
(iv) Administrative Overheads Budget

(7) Research and Development Budget: It is a long term budget. It is prepared for the expansion of business and to adopt new techniques of production. In this budget, the

estimates are made for expenses on current research programmes. Development starts where research ends and development ends where actual production commences. Thus, development is the stage between research and actual production.

(8) Cash Budget: Cash budget is a statement of estimates of cash position for the budget period. It is a plan of estimated receipts and payments of cash for the budget period. It can be prepared for any time period. Normal time period of cash budget is half year which is further sub-divided into the months. It helps in planning and control of the financial requirements of the organisation. Cash budget ensures that cash is available in time for carrying out business activities and meeting financial obligations. If there is any shortage of cash, then time by arrangements can be profitability used in temporary investments. In cash budget, estimate regarding each item of cash receipt and payment is made at the time of its preparation.

Cash-receipts items: Cash sales, credit sales having regard to credit collection policy, interest, dividend, the amount received on shares and debentures, bank loan, the amount of tax refund, rent receivable, etc.

Cash-payments items: Cash purchase of raw materials, payment made to suppliers of credit purchases of raw materials, wages, salaries, manufacturing expenses, administrative expenses, selling and distribution expenses, research and development expenses, repayment of bank loans and public deposits, redemption of preference shares and debentures, payment of taxes, interest and dividends.

•Importance of Cash Budget

The importance of preparing a cash-budget are as follows:

1. It serves as a device for planning and controlling of receipts and payments of cash to ensure availability of cash in an adequate amount.
2. It enables the management to prepare borrowing and repayment schedule will in advance.
3. It enables the management to take advantages of cash discount.
4. It enables the management to plan for financing a new project and expansion modernization of an existing project.
5. It enables the management to plan for dividend payment.

•Methods of Preparation of Cash Budget

(I) Receipt and Payment Method
(II) Adjusted Profit and Loss Account Method
(III) Projected Balance Sheet Method

(I) Receipt and Payment Method: In this method, estimated cash receipts and payments are taken into consideration. Cash receipts and cash-payment items we have discussed earlier.

Illustration 5.3

Prepare a cash budget for the month of May, June and July 2014 on the basis of the following information:

(1) Income and Expenditure Forecasts:

Months	Credit Sales (`)	Credit Purchases (`)	Wages (`)	Manufac-turing Expenses (`)	Office Expenses (`)	Selling Expenses (`)
March	60,000	36,000	9,000	4,000	2,000	4,000
April	62,000	38,000	8,000	3,000	1,500	5,000
May	64,000	33,000	10,000	4,500	2,500	4,500
June	58,000	35,000	8,500	3,500	2,000	3,500
July	56,000	39,000	9,500	4,000	1,000	4,500
August	60,000	34,000	8,000	3,000	1,500	4,500

(2) Cash balance on 1st May, 2014 `8,000.

(3) Plant costing `16,000 is due for delivery in July and payable 10% on delivery and the balance after 3 months.

(4) Advance tax `8,000 each is payable in March and June.
(5) Period of credit allowed (i) by supplier - two months and (ii) to customers-one month.
(6) Lag in payment of manufacturing expenses – ½ month.
(7) Lag in payment of office and selling expenses - one month.

Solution:

Cash Budget

Particulars	May 2014 (`)	June 2014 (`)	July 2014 (`)
Opening Balance	8,000	13,750	12,250
Add: Receipts			
Credit Sales	62,000	64,000	58,000
	70,000	77,750	70,250
Less: Payment			
Credit Purchase	36,000	38,000	33,000
Wages	10,000	8,500	9,500
Manufacturing Expenses	3,750	4,000	3,750
Office Expenses	1,500	2,500	2,000
Selling Expenses	5,000	4,500	3,500
Plant - Payment on delivery	—	—	1,600
Advance Tax	—	8,000	
Total	56,250	65,500	53,350
Closing Balance	13,750	12,250	16,900

Working *Notes:*

(i) Since the period of credit allowed by suppliers is two months, the payment for credit purchases in March will be made in May and so on.
(ii) Since the period of credit allowed to customers is one month, the receipt for credit sales in April will be in May and so on.
(iii) One half of the manufacturing expenses of April and one half of May will be paid in May, i.e., (1/2 of ` 3,000) + (1/2 of `4,500) = `3,750 and so on.
(iv) Office and selling expenses of April shall be paid in May and so on.
(v) Opening balance of cash for the month of June has been ascertained after finding out closing balance of May and for July after closing balance of June.

(ii) Adjusted Profit and Loss Method: In this method, the cash balance and net profit disclosed by Profit and Loss Account and Balance Sheet does not represent the fair amount of cash, since some such items take place in Profit and Loss Account which do not affect the outflow and inflow of the cash. Therefore, all such non-cash items are to be adjusted just to get the correct estimate of real cash. The formula for calculating closing cash balance is given below:
Opening Cash Balance + Net Profit + Non - Cash expenses + Decrease in Current Assets+ Increase in Current Liabilities + Sales of Fixed Assets of Issue of Shares and Debentures - Increase in Current Assets - Decrease in Current Liabilities - Payment of Tax and Dividend- Purchase of Fixed assets – Redemption of Shares and debentures etc. = Closing Cash Balance.

(iii) Balance Sheet Method: Under this method, a forecasted or budgeted balance sheet is prepared at the end of the budget period. In this method, all assets and liabilities (except Cash and Bank Balance) are shown. If the amount of budgeted liabilities exceeds the budgeted assets, the difference will be cash or bank balance at the end of budget period. If the amount of budgeted assets are in excess of liabilities, the difference will be bank overdraft.

Illustration 5.4

From the following information prepare a Cash Budget by the Adjusted Profit and Loss Method, for ABC Limited:

BALANCE SHEET
(as on 31st December, 2013)

Liabilities	Amount (`)	Assets	Amount (`)
Equity Share Capital	50,000	Cash	7,360
Debentures	29,400	Stock	24,760
Creditors	26,920	Debtors	19,600
ACC Depreciation	20,000	Investments	40,000
Profit & Loss A/c	53,400	Plant	88,000
	1,79,720		1,79,720

Forecasted Profit and Loss Account

Particulars	Amount (`)	Particulars	Amount (`)
To ACC Depreciation A/c	8,800	By Gross Profit b/d	80,000
To Income Tax	2,000	By Profit on sale of Investment	800
To Interest	1,200	By Interest	4,000
To Admn. & Selling Exp.	4,000		
To Loss on Sale of Plant	3,200		
To Net Profit c/d	65,600		
	84.800		84,800
To Dividend	4,000	By Net Profit b/d	65,600
To Balance c/d	61 ,600		
	65,600		65,600

Additional *Information:*

(i) Investment Costing `4,000 were sold for ` 4,800.
(ii) New Plant Costing `32,000 was purchased during the year.
(iii) An old plant costing `24,000 and accumulated depreciation of `16,800 was sold for `4,000.

Balance on 31st December, 2014:

Stock `37,000; Debtors ` 33,280;

Creditors v 40,000; Debentures `20,000;

Equity shares issued during the year`20,000

Solution:

CASH BUDGET

(Adjusted Profit and Loss Method)

Particulars	Amount(`)	Amount (`)
Opening Cash Balance		7,360
Add: Budgeted Net Profit	65,600	
Depreciation written off	8,800	
Increase in Creditors	13,080	
Loss on sale of Plant	3,200	
Sale of Investment	4,800	
Issue of Shares	20,000	
Sale of old Plant	4,000	1,19,480
		1,26,840
Less: Purchase of Plant	32,000	
Redemption of Debentures	9,400	
Payment of Dividend	4,000	
Profit on sale of Investment	800	
Increase in Debtors	13,680	
Increase in Stock	12,240	72,120
Closing Balance of Cash		54 *720*

Illustration 5.5

By using the data of Illustration 5.4, prepare a Cash Budget showing Cash at Bank on 31st December, 2014, under 'Balance Sheet Method'.

Solution:

Budgeted Balance Sheet
(On 31st December, 2014)

Liabilities	Amount (`)	Assets	Amount (`)
Equity Share Capital	70,000	Plant Investment Stock	96,000
Profit and Loss A/c (53,400 + 61	1,15,000	Debtors Cash at Bank (Bal.	36,000
,600) Debentures Ace.	20,000	Figure)	37,000
Depreciation (20,000 + 8,800 - 16,800)	12,000		33,280
Creditors	40,000		54,720
	2,57,000		2,57,000

9. Master Budget: A master budget is prepared for the business as a whole, combining all the budgets for a period into this budget. It is the summary of all subsidiary functional budgets, prepared by the concern. Before preparing a master budget, it is necessary to prepare sales budget, purchase budget, cash budget, production budget, overheads budget, etc. Thus, the master budget is a summary budget which incorporates all functional budgets in a capsule form. It shows budgeted income statement for the budget period and budgeted balance sheet at the end of the budget period. The master budget requires the approval of the budget committee before it is put into action. The master budget co-ordinates the budgets of all the departments.

5.3.4 Flexibility Budgets

On the basis of flexibility, budgets can be classified as follows:

(1) Fixed Budget: According to **I.C.M.A., London,** *"Fixed budget is a budget which is designed to remain unchanged irrespective of the level of activity attained."*

It does not change with the change in level of activity actually attained. It is prepared for a given level of activity and does not take note of changes in the circumstances. Therefore, it becomes useless for comparison with actual performance when level of activity changes.

(2) Flexible Budget; According to **I.C.M.A., London,** *"A flexible budget is a budget designed to change in accordance with the level of activity actually attained."*

A flexible budget provides budgeted costs at different levels of activity. It varies with the level of activity attained. Flexible budget is desirable in the following cases:-

(i) Where the business is new or estimation of demand is not possible.
(ii) Where the business is subject to the vagaries of nature such as soft drinks, etc.
(iii) Where sales are unpredictable.
(iv) Where the demands for the product keep changing due to change in fashion and tastes of customers.
(v) Where production cannot be estimated due to irregular supply of necessary material and labour.

Illustration 5.6

Prepare a Flexible Budget for the production at 80% and 100% activity on the basis of following information:

Production at 50% capacity	5,000 units
Raw Material	` 80 per unit
Direct labour	` 50 per unit
Direct Expenses	`15 per unit
Factory Overhead	`50,000 (50% fixed)
Administration Overhead	` 60,000(60% variable)

Solution:

Flexible Budget

Particulars	50% Capacity 5,000 units (`)		80% Capacity 8,000 units (`)		100% Capacity 10,000 units (`)	
	Per unit	Total	Per unit	Total	Per unit	Total
Raw Material	80	4,00,000	80	6.40.000	80	8,00,000
Direct Labour	50	2,50,000	50	4,00,000	50	5,00,000
Direct Expenses	15	75,000	15	1,20,000	15	1,50,000
Prime Cost	145	7,25,000	145	11,60,000	145	14.50,000
Factory Expenses:						
(Fixed 50%)	5	25,000	3.125	25.000	2.50	25,000
(Variable 50%)	5	25,000	5	40.000	5	50,000
Works Cost	155	7,75,000	153.125	12,25,000	152.50	15,25,000
Administration Exps.						
Fixed (40%)	4.80	24,000	3.00	24,000	2.40	24,000
Variable (60%)	7.20	36,000	7.20	57,600	7.20	72,000
Total Cost	167	8,35,000	163.325	13,06,600	162.10	16,21,000

Note: 1. Variable cost per unit and total fixed costs remain constant irrespective of changes on activity levels.

2. Total variable cost and fixed cost per **unit vary with the** changes in the activity levels.

5.3.5 Period Budgets

(i) Long Period Budgets: Long period budgets are those budgets which incorporate planning for five to ten years and even more. Research and development budget is an example of long period budget.

(ii) **Short Period Budgets:** Short period budgets are prepared for the period less than one year. Material budget, Cash budget, etc. are the examples of short period budgets.

5.3.6 Condition Budgets

(i) Basic Budget: A basic budget is one which is established for use unaltered over a long period of time. Current circumstances are not considered while preparing this budget.

(ii) **Current Budget:** A current budget is one which is established for use over a short period of time and it is related to current conditions. This budget is more useful than basic budget.

Illustration 5.7

ABC Ltd. prepared the budget for the production of one lakh unit of the one type of commodity manufactured by them for a costing period as under:-

Raw Material	*Z* 2.52 per unit
Direct Labour	? 0.75 per unit
Direct Expenses	? 0.10 per unit
Works overheads (60% Fixed)	? 2.50 per unit
Admn. overheads (80% Fixed)	? 0.40 per unit
Selling overheads (50% Fixed)	? 0.20 per unit

Actual production during the period was only 60,000 units. Calculate the budget cost per unit.

Solution:

Flexible Budget

Particulars	1,00,000 Units		60,000 Units	
	Per unit	Amount (`)	Per unit	Amount (`)
Raw Material	2.52	2,52.000	2.52	1,51,200
Direct Labour	0.75	75,000	0.75	45,000
Direct expenses	0.10	10,000	0.10	6,000
Prime Cost	3.37	3,37,000	3.37	2,02,200
Works Cost: (60% Fixed)	1.50	1,50,000	2.50	1,50,000
(40% Variable)	1.00	1 .00.000	1.00	60.000
Admn. Overheads: (80% Fixed)	0.32	32.000	0.53	32.000
(20% Variable)	0.08	8,000	0.08	4,800
Cost of Production	6.27	6,27,000	7.48	4,49,000
Selling Overheads:				
50% Fixed	0.10	10.000	0.17	10.000
50% Variable	0.10	10,000	0.10	6,000
Total Cost	6.47	6,47,000	7.75	4,65,000

• Programme Budgeting

Programme budgeting was firstly used by Department of Defence in U.S.A. in 1961. It focuses on process of allocating funds.

5.4 ZERO-BASE BUDGETING STRATEGY (ZBB)

Zero-base budgeting is also known as "De nova budgeting", i.e., budgeting from beginning. In other words, it is beginning from zero base, assuming that nothing is happened in the past. The concept of zero base budgeting can be applied from a home budget to the national budget. In a home budget, a housewife prepares the budget of next month after ignoring the current and past budget (expenditures) altogether.

1. According to **Certified Institute of Management Accountants, London,** *"Zero base budgeting is a method of budgeting whereby all activities are re-evaluated each time a budget is set. Discrete levels of each activity are valued and a combination chosen to match funds available."*
2. According to **Peter A Pyher,** "A *planning and budgeting process which requires each manager to justify his entire budget request in detail from scratch (hence zero base) and*

shifts the burden of proof to each manager to justify why he should spend money at all. The approach requires that all activities be analysed in decision packages which are evaluated by systematic analysis and ranked in order of importance." Peter Pyher is known as the father of Zero Base Budgeting as he introduced ZBB at Texas Instruments in USA in 1969.

Thus we can say that in zero base budgeting, every year is taken as a new year and previous year is not taken as a base. It starts from a "Zero base" and every function within an organization is analysed for its needs and costs. Budgets are then built around what is needed for the upcoming period, regardless of whether the budget is higher or lower than the previous one.

Steps Involved in the Process of Zero Base Budgeting

For implementing zero base budgeting, following necessary steps are taken

1. Determining the objectives of zero base budgeting.
2. Developing decision unit i.e., a department of an organization where decisions are taken. Decision units are developed for cost benefit analysis.
3. Development decision packages: Decision package summaries the scope of work requirement, anticipated benefits, time schedule etc.
4. Ranking of decision packages on the basis of benefits to the organization.
5. Allocation of resources on the basis of ranking of decision packages.

Advantages of Zero-Base Budgeting

1. Efficient allocation of resources, as it is based on needs and benefits rather than history.
2. It helps in identifying and eliminating wasteful and obsolete operations.
3. It helps in detecting inflated budgets.
4. It increases communication and coordination within the organization.
5. It enables the management to find cost effective ways to improve operations.
6. Responsibility and accountability are more specifically fixed under zero based budgeting as compared to traditional budgeting.
7. It increases staff motivation by providing greater initiative and responsibility in decision making.
8. It is useful in Government department where all expenditure are incurred on the basis of budgets.
9. It focuses on cost benefit analysis to reach on maximization of profit of the company.
10. It can be used for implementation of "Management by objective' (MBO). Thus it can be used not only for fulfillment of the objective, but also for variety of the purpose.
11. It identifies activities involving wasteful expenditure.
12. It involves rational decision making.
13. It promotes operating efficiency.

Limitations of zero-Base Budgeting

1. It is more time consuming than traditional budgeting as every single item is paid attention to afresh.
2. It requires specific training due to increased complexity as compared to traditional budgeting.
3. It increases paper work.
4. Cost of preparing the decision package may be very high.
5. There is a problem in defining decision units and decision packages.
6. Wrong cost-benefit analysis may hamper the future growth of the organization. For example, cutting present advertisement cost may effect future sales. Similarly, cutting research and development cost may effect the future growth and cost effectiveness of the organization.
7. The concept ZBB needs clarity at top management level otherwise conflict among departments may affect the overall profitability of the organizations.

   ZBB is highly relevant in 'continuous improvement' environment because of its nature of continuous evaluation of costs and benefits. This technique is relevant for effective utilization of

resources and increasing the profitability of the organizations. So ZBB can be implemented as a planning device in the overall corporate strategy.

SELF-ASSESMENT QUESTION

1. What do you understand by "Budgeting" ? Mention the type of budget that the Management of a big industrial concern would normally prepare.
2. What is budget ? What is sought to be achieved by Budgetary Control.
3. Has 'Budgetary Control' any significance with management accounting ?
4. Outline a plan for sales budget and purchases budget. What considerations are necessary in the preparation of such budgets ?
5. Mr. Managing Director is surprised that his profit every year is quiet different from what be wants or expects to achieve. Someone advised him to install a formal system of budgeting. He employs a fresh accountant to do this. For two years, the accountant faithfully makes all budgets based on previous year's accounts. The problem remains unsolved. Advise Mr. Managing Director and the Accountant on what steps they should take. Make assumption about what is lacking.
6. (*a*) What do you mean by budgetary control with reference to manufacturing-cum-selling enterprise.
   (*b*) What factors would influence the selection of budget period between two firms carrying on diverse activities ?
   (*c*) What do you mean by flexible budget allowance ? How is it ascertained ? Explain with a cogent example.
7. (*a*) What do you mean by budgetary control ? Explain the objectives of budgetary control with special reference to a large manufacturing concern.
   (*b*) Explain what is meant by flexible budget and its utility. Prepare a proforma of flexible budget of a manufacturing concern for their imaginary activity, levels in a suitable form.
8. (*a*) What do you understand by budget and budgetary control ? Give example of five budgets that may be prepared and employed by a manufacturing concern.
   (*b*) What is the principal budget factor ? Give a list of such factors and explain how you would proceed to prepare budgets in the case of a manufacturing company.
9. Are you in agreement with the view that Budgeting should better be called profit planning and control.
10. 'Why do responsible people in an organization agree to accept budgetary control in theory but resist in practice' ? Explain.
11. 'If the sales forecast is subject to error then there is no basis of budgeting'. Do you agree ? Also explain how flexible budget can be used to help control cost.
12. Explain the procedure you would follow to prepare a projected Profit and Loss Account and Projected Balance Sheet. Explain also use of these statements.
13. 'Budgetary control improves planning, aids in coordination and helps in having comprehensive control'. Elucidate this statement.
14. Describe in brief the modus operandi for the purpose of preparation of a production budget. What are the principal considerations involved in budgeting production ?
15. What do you understand by budget and budgetary control ? How far is a budgetary control a tool in the hands of management ?
16. What is 'zero-base budgeting' ?

17. What do you understand by the terms ‘Budget’ and ‘Budgetary Control’ ? What are the advantages of ‘budgetary control’ ?

18. What is the mechanism of master budget ?

Discuss the difficulties which arise and how are they overcome in forecasting sales and preparing sales budget in a jobbing concern.

19. (*a*) What is master budget ? How is it prepared ?

(*b*) Explain zero-based budgeting.

20. Write an essay on zero-based budgeting and highlight its procedure, norms and superiority over functional budgeting.

21. What are different types of functional budgets which are prepared by a large scale manufacturing concern ?

UNIT-4

STANDARD COSTING

Standard Costing: Meaning

Standard costing is a system of accounting that uses predetermined standard costs for direct material, direct labor, and factory overheads. Standard costing is the second cost control technique, the first being **budgetary control**. It is also one of the most recently developed refinements of **cost accounting**. The standard costing technique is used in many industries due to the limitations of **historical costing**. Historical costing, which refers to the task of determining **costs** after they have been incurred, provides management with a record of what has happened. For this reason, historical costing is simply a post-mortem of a case and has its own limitations. For managers within a company, exercising **control** through standards and standard costs is a creative program aimed at determining whether the organization's resources are being used optimally.

Standard costs are typically determined during the budgetary control process because they are useful for preparing flexible budgets and conducting performance evaluations. The use of standard costs is also beneficial in setting realistic prices. Along with this, standard costs help to identify any **production costs** that need to be controlled. Importantly, comparison of **actual cost** with standard cost shows the variance. When correctly analyzed, this shows how to correct adverse tendencies. The current category "Standard Costing and Variance Analysis" discusses the technique of standard costing and **variance analysis**, which is aimed at **profit** improvement mainly by reducing materials, labor, and overhead costs.

Standard Cost: Definition

There are different definitions of **standard costing**, all of which emphasize the use and determination of **standard cost**. Hence, it is useful to understand the meaning of standard cost. A standard cost is one that a company expects at the outset of a year under a normal level of operational efficiency. Standard costs are used periodically as a basis for comparison with actual costs. Standard costs may be termed **commonsense costs**. This reflects the view that a standard cost represents the best judgment of management about what costs the business operations will involve when undertaken efficiently. According to Brown & Howard, "standard cost is a pre-determined cost which determines what each product or service should cost under given circumstances."

Blocker defined standard cost as follows:

A pre-determined cost based upon engineering specifications and representing highly efficient production for quality standard with a fixed amount expressed in terms of dollars for materials, labor, and overhead for any estimated quantity of production.

The Institute of Cost and Management Accountants (ICMA) defined standard cost in the following way:

A pre-determined cost which is calculated from management's standards of efficient operation and the relevant necessary expenditure. It may be used as a basis for price fixation and for cost control through variance analysis.

In ICMA's definition of standard cost, the phrase "management's standards of efficient operation" is important. This is because standard cost is ascertained on this basis.

The standard of efficient operation is decided based on previous experience, research findings, or experiments. The standard is generally defined as that which is attainable but only after substantial effort. Standard cost serves as a measure against which actual cost is compared. If actual cost does not exceed standard cost, performance is treated as fully efficient.

Standard cost also plays a role in evaluating staff performance. For example, by analyzing the difference between actual costs and standard costs, management can identify the factors leading these differences.Standard costs also assist the management team when making decisions about long-term pricing.

Features of Standard Costing System

1. Standard cost is a predetermined cost. It is based on past experience and is referred to as a **common sense cost**, reflecting the best judgment of management.

2. Standard cost relates to a product, service, process or an operation. It is also determined for a normal level of efficiency of operation.

3. Standard cost is used to measure the efficiency of future production or future operations. For this reason, it provides a useful basis for cost control.

4. Also, standard cost may be expressed in terms of money or other exact quantities.

Advantages of Standard Cost

This section highlights the most important advantages of standard cost.

1.First, standard costs serve as a yardstick against which actual costs can be compared.The difference between standard cost and actual cost are called variances. For proper control and performance measurement in an organization, variances should be measured and analyzed. This also ensures that regular checks are made on **expenditures**.

2. The second advantage is that if immediate attention is taken, control over costs is greatly facilitated. A proper standard costing system assists in achieving cost control and cost reduction.

3. Standard cost also helps to motivate employees. This is because the system can be used to provide an incentive scheme wherein variance is minimized.

4. Production and pricing policies are formulated with certainty when standard cost systems are in place. This helps to keep costs in check.

5. The last advantage of using standard cost is that even when other standards and guidelines are constantly being revised, standard cost serves as a reliable basis for evaluating performance and control costs.

Nature and Purpose of Standard Costing System

The main purpose of standard cost is to provide management with information on the day-to-day control of operations.

1. Standard costs are predetermined costs that provide a basis for more effectively controlling costs. Standard cost offers a criterion against which actual costs incurred by the **business** can be measured and analyzed.

2. The difference between actual costs and standard costs is known as variance. Variance is identified and carefully analyzed, and it is reported to managers to inform suitable corrective actions.

Applicability of Standard Costing

Standard costing is applicable under diverse conditions. It requires the following:

- There should be an output or the production of a sufficient volume of a standard product
- The methods, operations, and processes of production should be capable of standardization
- The costs should be controllable

Standard costing techniques have been applied successfully in all industries that produce standardized products or follow **process costing** methods.

Examples of such industries include sugar, fertilizers, cement, footwear, breweries and distilleries, and others.

Public utilities such as transport organizations, electricity supply companies, and waterworks can also apply standard costing techniques to control costs and increase efficiency.

In jobbing industries, as well as industries that produce non-standardized products, it is not possible to apply the technique advantageously.

Objectives of Using Standard Costing System

Within an organization, there are several objectives that a **standard costing system** may be established to help achieve.

1. First, a standard costing system may be used to control costs, which is achieved mainly by setting standards for each type of cost incurred: material, labor, and **overhead**.

2. This also helps to analyze variance and, hence, enables managers to be effective in controlling the costs for which they are held responsible.

3. The second objective that a standard costing system may be used to achieve is to help in setting **budgets**. Third, such a system may be used to provide useful and detailed information for managerial planning and decision-making.

4. Fourthly, a standard costing system may be used to assess the performance and efficiency of staff and management.

5. Finally, standard costing is a control technique that follows the feedback control cycle. Therefore, the feedback system may help to eliminate unwanted costs in the future, leading to a potential reduction in costs.

Preliminaries to Consider Before Using a Standard Costing System

When deciding whether to use standard costing in a business, several preliminaries have to be considered. These preliminaries are:

1. Establishing cost centers
2. Classification and codification of **accounts**
3. Types of standards
4. Setting the standards

1. Establishing Cost Centers

A cost center is a location, person, or item of equipment (or a group of these) for which costs may be ascertained and used for the purpose of cost control. Cost centers may be personal cost centers or impersonal cost centers. Personal cost centers are related to a person, while impersonal cost centers are related to a location or item of equipment. Establishing cost centers is needed to allocate responsibilities and define lines of authority.

2.Classification and Codification of Accounts

Classification or grouping of accounts is essential for standard costing.

Accounts should be classified in such a way that the cost elements of every cost center are clearly and precisely reflected. Codes and symbols are assigned to different accounts to make the collection and analysis of costs more quick and convenient.

Types of Standards

A standard is a predetermined measure relating to materials, labor, or overheads. It is a reflection of what is expected, under specific conditions, of plant and personnel.

A standard is essentially an expression of quantity, whereas a standard cost is its monetary expression (i.e., quantity multiplied by price). It shows what the cost should be.

In setting standards, the key question is to decide on the type of standard to be used in fixing the cost. The main types of standards are ideal, basic, and **currently attainable standards**.

1. Ideal Standards

Ideal standards, also called perfection standards, are established on a maximum efficiency level with no unplanned work stoppages.

They are tight standards which in practice may never be obtained. They represent the level of attainment that could be reached if all the conditions were perfect all of the time.

Ideal standards are effective only when the individuals are aware and are rewarded for achieving a certain percentage (e.g., 90%) of the standard.

2. Basic Standards

Basic standards are long-term standards and they remain the same after being computed for the first time. They are projections that are rarely revised or updated to reflect changes in products, prices, and methods.

Basic standards provide the basis for comparing actual costs over time with a constant standard. They are used primarily to measure trends in operating performance.

3. Currently Attainable Standards

A currently attainable standard is one that represents the best attainable performance. It can be achieved with reasonable effort (i.e., if the company operates with a “high” degree of efficiency and effectiveness).

These standards make proper allowances for normal recurring interferences such as machine breakdown, delays, rest periods, unavoidable waste, and so on.

It is assumed that these are unavoidable interferences and are a fact of life. However, allowances are not made for any avoidable interference with output.

The currently attainable standard is the most popular standard, and standards of this kind are acceptable to employees because they provide a definite goal and challenge to them.

Setting the Standards or Establishing a Standard Costing System

Establishing a standard costing system for materials, labor, and overheads is a complex task, requiring the collaboration of a number of executives.

For this purpose, a Standards Committee is established. The Standards Committee generally consists of:

- Production Manager
- Purchase Manager
- Personnel Manager
- Production Engineer
- Sales Manager
- Cost Accountant

The Budget Committee and Standards Committee can be combined into one committee.

The Standards Committee is responsible for fixing standards. It also assists in the effective application of standards, as well as making necessary changes as new circumstances render previous standards obsolete. Before fixing standards, a detailed study of the functions involved in the manufacturing of the product is necessary. While fixing standard costs, the fundamental principle to be observed is that the set standards are attainable so that these are taken as yardsticks for measuring the efficiency of actual performances. The setting up of standard costs requires the consideration of quantities, price or rates, and qualities or grades for each element of cost that enters a product (i.e., materials, labor, and overheads).

VARIANCE ANALYSIS

Variances may be classified into:

(i) Favourable and Unfavourable Variances, and
(ii) Controllable and Uncontrollable Variances

(i) Favourable and Unfavourable Variances: When the actual cost incurred is less than the standard cost, the deviation is known as **'favourable variance'** whereas, when the actual cost incurred is more than the standard cost, the variance is treated as **'unfavourable* or 'adverse*.** A favourable variance reflects the efficiency while unfavourable variance indicates inefficiency. Favourable variance is also known as positive (+) or credit variance and viewed only as profits whereas adverse variance is known as negative (-) or debit variance and is viewed as losses. In other words, any variance which increases the actual profit is favourable variances and any variance which decreases the actual profit is unavoidable variable. Favourable variance is designated by (F) and unfavourable or adverse by (A).

(ii) Controllable and Uncontrollable Variances: A variance is said to be controllable if primary responsibility of a specified person or department can be identified. For example, excess usage of materials by production department is controllable being the responsibility of the foreman of the said department. On the other hand, when variance is due to the factors beyond the control of the concerned person, it is said to be uncontrollable. For example, increase in wage rate of workers on account of strike or government policy, etc. No individual person or department can be held responsible for uncontrollable variances.

Variance analysis is a process of analysing variances by sub-dividing the total cost variance in such a way that the management of the concern can assign the responsibility for off standard performance. It also leads to ascertain the magnitude of each of the variances and reasons thereof. In variance analysis, the attention of the management is drawn not only to the monetary value of unfavourable and favourable managerial performance but also the responsibility and reasons for the same.

Material Variances

Material forms a very high percentage of the total cost. It is very important to study its cost variance. Material variances consist of the following variances:

(1) Material Cost Variance (MCV)
(2) Material Price Variance (MPV)
(3) Material Usage/Quantity/Volume Variance (MQV)
(4) Material Mix Variance (MMV)
(5) Material sub-usage Variance/Revised Material Quantity Variance {RMQV}
(6) Material Yield Variance (MYV)

Classification of Cost Variances

(1) Material Cost Variance (MCV): *"Material cost variance is the difference between the standard cost of materials specified for the actual output and actual cost of materials used."* **— I.C.M.A., London**

It is expressed as:

MCV= Standard Cost of Material for Actual Output — Actual Cost of Material

or $(SQ \times SP) - (AQ \times AP)$

SQ stands for Standard Quantity for Actual Output

SP stands for Standard Price

AQ stands for Actual Quantity

AP stands for Actual Price

Standard Quantity for Actual Output is computed as follows

$$\frac{\text{Standard Quantity}}{\text{Standard Output}} \times \text{Acual output}$$

(2) **Material Price Variance** (MPV): Material price variance is the portion of the Material Cost Variance which arises due to the difference between the standard price specified and actual price paid. It can be expressed as:

Material Price Variance - Actual Quantity (Standard Price - Actual Price) or MPV = AQ (SP - AP)

The **reasons** for the material price variance may be the following:

(i) Change in market price
(ii) Change in quantity of purchase
(iii) Change in quality of material purchased
(iv) Emergency purchases leading to higher prices
(v) Discounts not availed
(vi) Rush order to meet shortage of supply, etc.

(3) Material Usage/Quantity/Volume Variance: Material usage variance is the difference between the standard quantity specified and the actual quantity used. This variance may arise due to the following **reasons:**

(i) Use of inferior material
(ii) Poor inspection of material
(iii) Lack of due care in the handling of materials
(iv) Abnormal wastage, theft, pilferage of materials
(v) Setting of improper standards
(vi) Improper maintenance of machine, etc.

It may be expressed as:

Material Usage Variance = Standard Price (Standard Quantity for Actual Output- Actual Quantity)
or MUV = SP(SQ-AQ)

Relationship among MCV, MPV and MUV:

MCV = MPV + MUV

Illustration 4.1

The standard material required for production is 5,200 kg. A price of `2 per kg has been fixed for the materials. The actual quantity of materials used for the product is 5,600 kg. A sum of ` 14,000 has been paid for the materials.

Calculate: (a) Material Cost Variance; (b) Material Price Variance; (c) Material Usage Variance.

Solution:

Standard Quantity = 5,200 kg
Standard Price = ` 2 per kg
Actual Quantity = 5,600 kg

$$\text{Actual Price} = \frac{14,000}{5,600} = \text{` } 2.50 \text{ per kg}$$

(a) Material Cost Variance (MCV):

$MCV = (SQ \times SP) - (AQ \times AP)$
$= (5,200 \times 2) - (5,600 \times 2.50)$
= ` 10,400 – `14,000 = `3,600 (Adverse)

(b) Material Price Variance (MPV):

MPV = AQ{SP - AP} = 5,600 {2-2.50}= 5600×(-0.50) = `2,800 (Adverse)

(c) Material usage variance (MUV):

MUV =SP(SQ-AQ)
= 2(5,200-5,600)
= 2×(-400) = `800 (Adverse)

Verification:

MCV =MPV + MUV = `3,600(Adv.) = 2,800 (Adv.) + 800 (Adv.)

Illustration 4.2

In a brass foundry, the standard mixture consists of 60% Copper and 40% Zinc. The standard loss of production is10% on input. From the actual production in a month calculate the Material Cost Variance and analyse it:

Copper 50kg@`30 per kg (standard 60kg)
Zinc 50 kg@`20per kg (Standard 40 kg)

Actual Output: 86 kg
SP and AP are the same

Solution:

	Standard Mix			Actual Mix		
	SQ(kg)	SP(`)	Std. Cost(`)	AQ(kg)	AP(`)	Actual Cost(`)
Copper	60	30	1800	50	30	1,500
Zinc	40	20	800	50	20	1,000
	100		2,600	100		2,500
Less (10%) (Loss)	10			14		
	90			86		

Material Cost Variance (MCV) = (Std. Cost – Actual Cost)
Std. Cost – (SQ for Actual Output ×SP)
SQ for Actual Output will be computed as follows:

$$\text{Copper} = \frac{60}{90}\times 86 = 57.33$$

$$\text{Zinc} = \frac{40}{90}\times 86 = 38.22$$

Now, MCV for Copper = $(57.33\times 30)-(50\times 30)$ = ` 220 (Fav.)

MCV for $=(38.22\times 20)-(50\times 20)$ = ` 236 (Adv.)

= `16 (A|dv.)

This is explained by

(i) Material Price Variance = Nil

(ii) Material Mix Variance = (SQ-AQ)×SP

Copper = $(60-50)\times 30$ = `300 (Fav.)

Zinc = $(40-50)\times 20$ = `200 (Fav.)

= `100 (Fav.)

(iii) Material Yield Variance = (AY -SY)×SC per unit

$=(86-90)\times 28.89$*

= `116 (Adv.)

$*\text{SC} = \frac{2600}{90} =$ `28.89

Verification

MCV = MPV + MMV + MYV
`16 (Adv.) = Nil + `100 (Fav.) + `116(Adv.)
`16 (Adv.) = `16(Adv.)

Note: Since SPO and AP are the same and Standard Total Quantity and actual Total Quantity are the same, there will be no Material Price variance and Material Usage Variance.

Illustration 4.3

The standard material cost for a normal mix of one tonne of chemical Z is based on:

Chemical	Usage (Kg)	Price Per Kg. (`)
A	240	6
B	400	12
C	640	10

During a month, 12.5 tonnes of Z were produced from:

Chemical	Consumption (Tonnes)	Cost (`)
A	3.2	22,400
B	4.8	60,000
C	9.0	94,500

Analyse the Variances:

Solution:

(i) SQ for Actual output:

A = 240×12.5 = 3,000 Kg

B = 400 × 12.5 = 5,000 Kg

C = 640 × 12.5 = 8,000 Kg

Total SQ = 16,000Kg

(ii) **Total AQ = 3.200 + 4,800 + 9,000 = 17,000 Kg.**

(iii) **RSQ**

$$A = \frac{3,000}{16,000} \times 17,000 = 3,187.5 \text{ Kg.}$$

$$B = \frac{5,000}{16,000} \times 17,000 = 5,312.5 \text{ Kg.}$$

$$C = \frac{8,000}{16,000} \times 17,000 = 8,500 \text{ Kg.}$$

Computation of Material Cost Variances

Material	SQ for AQ	SP(`)	SQ + SP(`)	AQ	AP(`)	AQ× AP(`)	RSQ	RSQ×SP(`)
A	3,000	6	18,000	3,200	7.0	22,400	3,187.5	19,125
B	5,000	12	60,000	4,800	12.5	60,000	5,312.5	63,750
C	8,000	10	80,000	9,000	10.5	94,500	8,500.00	85,000
	16,000			17,000				
Loss	3,500			4,500				
	12,500		1,58,000	12,500		1,76,900		1,67,875

(1) **Material Cost Variance (MCV) = (SQ ò SP) – (AQò AP)**

= `1,58,000 – `1,76,000

= `18,000 (A)

(2) **Material Price Variance (MPV)** = AQ (SP – AP)

A = 3,200(6-7) = `3,200 (A)

B = 4,800 (12–12.5) = `2,400 (A)

C = 9,000 (10–10.5) = `4,500(A)

MPV = `10,100(A)

(3) **Material Usage Variance (MUV)** = SP (SQ- AQ)

A = 6 (3,000 – 3,200) = `1,200 (A)

B = 12 (5,000–4,800) = `2,400(F)

C = 10 (8,000 – 9,000) = `10,000(A)

MUV = 8,800(A)

(4) Material Mix Variance (MMV) = SP (RSQ-AQ)

A = 6(3,187.5 – 3,200) = `75(A)

B = 12(5,312.5 – 4,800) = `6,150 (A)

C = 10(8,500 – 9,000) = 5,000 (A)

MMV = `1,075(F)

(5) Material Yield Variance (MYV)

MYV = (Actual Yield – Std. Yield) ×SC per unit

Actual Yield = 12,500

Standard Yield = (12,500/16,000)×17,000 = 13,281

Standard Cost = 1,58,000/12,500 = 12.64

MYV = (12,500 – 13.281) × 12.64 = `9,875 (A)

Alternatively, MYV = SP(SQ – RSQ)

MYV = (SQ×SP) – (RSQ×SP)

= (1,58,000 – 1,67,875)

= `9,875 (A)

Verification:

1. MCV = MPV + MUV
   18,900 (A) = 10,100(A) + 8,800 (A)
   18,900(A) = 18,900 (A)
2. MUV = MMV + MYV
   8,800(A) = 1,075(F) + 9,875 (A)
   8,800 (A) = 8,800 (A)

Labour Variances

These may be two main reasons of the occurrence of deviations in cost of direct labour:

(i) Difference in actual rates and standard rates of labour and

(ii) *The* variation in the actual time taken by the workers and standard time allowed to them for performing a job or an operation.

The various labour variances may be arranged as follows:

(1) Labour Cost Variance (LCV): It is the difference between the *standard labour* cost and *actual labour cost* of the product.

LCV = (Standard Rate × Standard Time for Actual Output*)-(Actual Rate × Actual Time)

$$*\frac{\text{Standard Time}}{\text{Standard Output}}\times\text{Actual output}$$

$$\boxed{\text{LCV}=(\text{SR}\times\text{ST})-(\text{AR}\times\text{AT})}$$

Labour cost variance may be analysed further as (i) Labour rate variance, and (ii) Labour efficiency variance.

(2) Labour Rate Variance (LRV): It is that portion of labour cost variance which is due to the difference between the standard rate specified and the actual rate paid. It would occur due to the following **reasons:**

(i) Employment of one or more workers of different grade than the standard grade,
(ii) Excessive overtime,
(iii) Overtime work in excess of that provided in the standard,
(iv) New workers not being allowed full wage rates, etc. The formula for calculating LRV is as under: Labour Rate Variance (LRV) = Actual Time x {Standard Rate - Actual Rate)

$$\boxed{\text{or LRV}=\text{AT}(\text{SR-AR})}$$

(3) Total Labour Time/Efficiency Variance (TLEV): It is that portion of labour cost variance which arises due to the difference between the *Standard Labour hours specified* and the *actual labour hours spent.* It may arise due to the following **reasons:**

(i) Wrong selection of workers,
(ii) Higher labour turnover,
(iii) Lack of supervision,
(iv) Poor working conditions,
(v) Defective machinery, tools and equipment,
(vi) Use of non-standardised materials,
(vii) Inefficiency of workers, etc.

TLEV = Standard Rate x {Standard Time for Actual Output* - Actual Time)

$$*\frac{\text{Standard Time}}{\text{Standard Output}}\times\text{Actual output}$$

TLEV = SR × (ST - AT) TLEV can be divided into three parts:
(i) Simple LEV = SR x (ST for Actual output - AT worked*)
* AT Allowed - Idle Time - Holiday Time
(ii) Idle Time Variance* = Idle Time x SR
Note: Idle time is always adverse,
(iii) Holiday/Calendar Variance - Holiday Time x SR

Note: Holiday/Calendar Variance is always adverse.
TLEV = SLEV + Idle Time Variance + Holiday Variance

Labour Idle Time Variance: It is that portion of labour efficiency variance which may arise due to abnormal wastage of time on account of strikes, power out, non-availability of raw-material, breakdown of machinery etc.

$$\boxed{\text{Idle Time Variance} = \text{Idle Time (Hours)}\times\text{Standard Rate}}$$

(4) Labour Mix Variance (LMV): Where workers of two or more than two types are engaged in the difference between the standard composition of workers and the actual gang (or group) of workers is known as 'Labour Mix Variance'. It is calculated as under:

$$\boxed{\text{LMV} = \text{Labour Mix Variance (LMV)}= \text{SR(RST-AT)}}$$

$$\text{Revised Standard Time (RST)} = \frac{\text{Standard Time}}{\text{Total Standard Time}}\times\text{Total Actual Time}$$

(5) Labour Yield Variance (LYV): It is that portion of labour efficiency variance which arises due to the difference between actual output of worker and standard output of worker specified. It is calculated as follows:

(LYV) = SC×(Actual Yield – Revised Standard Yield*)

SC stands for standard cost of Labour per unit of standard output

SC is calculated as follows:

$$SC = \frac{\text{Standard Cost of Labour}}{\text{Standard Output}}$$

$$\text{*Revised Standard Yield} = \frac{\text{Standard Yield}}{\text{Standard Mix of Labour before Idle and Holiday Time}} \times \text{Actual mix of Labour before Idle and Holiday Time}$$

Illustration 4.4

From the following information, compute labour cost variance, labour efficiency variance and labour rate variance.

		Standard	
Workers	Hours	Rate per hour (`)	Total Amount (`)
A	10	3.00	30.00
B	15	4.00	60.00
		Actual	
A	20	3.00	60.00
B	5	4.50	22.50

Solution:

(a) Labour Cost Variance (LCV):

LCV = (ST×SR) – (AT×AR)

Worker A = (10 × 3) – (20 × 3) = `30 (Adv.)

Worker B = (15 × 4) – (5 × 4.50) = `37.50 (Fav.)

= `7.50 (Fav.)

(b) **Labour Efficiency Variance (LEV):**

LEV = (ST - AT) ×SR

A = (10 - 20) × 3 = `30 (Adv.)

B = (15 - 5) × 4 = `40 (Fav.)

= `10 (Fav.)

(c) Labour Rate Variance (LRV)L

LRV = (SR – AR) ×AT

A = (3 - 3) ×20 = 0

B = (4 – 4.50) × 5 = `2.50 (Av.)

= `2.50 (Adv.)

Verification:

LRV = LEV + LRV

7.50 (Fav) = 10 (Fav.) + 2.50 (Adv.)

`7.50 (Fav.) = `7.50 (Fav.)

Illustration 4.5

Calculate Labour Variance from the following information:

Labour Rate = `1 per hour

Hours as Standard per unit = 12 Hours

Actual Date:

Units Produced = 1,000

Actual Labour Cost = `10,000

Hours Worked actually = 12,500 Hours

Solution:

Standard Time (ST) = 1000×12 = 12,000 Hours
Standard Cost = 12,000×1 = `12,000

Labour Cost Variance (LCV) = (Standard Cost – Actual Cost)
= (12,000 – 10,000)
= `2,000 (Fav.)

Labour Rate Variance (LRV)= (SR – AR)ò AT
$(1.00 - 0.80) \times 12,500$ = `2,500 (Fav)

Actual Rate= $\frac{10,000}{12,500}$ = `0.80 per hour

Labour Efficiency Variance (LEV): (ST – AT) òAT
LEV = (12,000 – 12,500) ×1
= `500 (Adv.)

Verification:
LCV = LRV + LEV
`2,000(Fav.) = `2,500 (Fav.) + `500 (adv.)
`2,000 (Fav.) = `2,000(Fav.)

Illustration 4.6
From the following information, calculate labour variance

Standard wages:
Grade X : 90 Labourers at `2 per hour
Grade Y: 60 Labourers at `3 per hour

Actual Wages:
X: 80 Labourers at `2.50 per hour
Y: 70 Labourers at `2.00 per hour

Budgeted Hours = 1,000
Actual Hours = 900
Budgeted Gross Production = 5,000 units
Standard Loss = 20%
Actual loss = 900 units

Solution:

	Standard			Actual		
Grade	Time (Hours)	Rate (`)	Amount(`)	Time (Hours)	Rate (`)	Amount (`)
				(80×900)		
X(90×1000)	90,000	2	1,80,000	72,000	2.50	1,80,000
Y(60×1,000)	60,000	3	1,80,000	63,000	2.00	1,26,000
				(70×900)		
	1,50,000		3,60,000	1,35,000		3,06,000

(i) Labour Cost Variance (LCV):
Standard Cost for actual production – actual Cost
Here actual production = 5,000 – 900 =4,100 units
So, Standard cost for actual Production:

$\frac{3,60,000}{4,000} \times 4,100$ = `3,69,000

Standard Production (SP) = 5,000- 1,000 = 4,000 units
LCV = `3,69,000 - `3,06,000
= `63,000 (Fav.)

(ii) **Labour Rate Variance (LRV):** AT (SR – AR)
Grade X = 72,000 (2 – 2.50) = `36,000 (Adv.)

Grade Y = 63,000 (3 – 2.00) = `63,000 (Fav.)
= 27,000(Fav.)

(iii) **Labour Efficiency Variance (LEV):**

SR (ST for actual Output – Actual Time)

ST for Grade X= $\frac{90,000}{4,000} \times 4,100 = 92,250$ hrs

ST for Grade Y = $\frac{60,000}{4,000} \times 4,100 = 61,500$ hrs

LEV:

Grade X = 2(92,250 – 72.000) = `40,500 (Fav.)
Grade Y = 3(61,500 – 63,000) = `4,500 (Adv.)
= 36,000 (Fav.)

Labour efficiency Variance can be further analysed as follows:

(iv) Labour Mix Variance (LMV): SR (RST – Actual Time)

RST = $\frac{\text{Standard Time}}{\text{Total Standard Time}} \times \text{Total Actual Time}$

Grade X = $\frac{90,000}{1,50,000} \times 1,35,000 = 81,000$ hrs

Grade Y = $\frac{60,000}{1,50,000} \times 1,35,000 = 54,000$ hrs

LMV:

Grade X = 2(81,000 – 72,000) = `18,000 (Fav.)
Grade Y = 3(54,000 – 63,000) = `27,000 (Adv.)
= `9,000 (Adv.)

(v) Revised Efficiency Variance (REV):

SR (ST for actual Output – RST)

Grade X = 2(92,250- 81,000) = `22,500 (Fav.)
Grade Y = 3(61,500 – 54,000) = `22,500 (Fav.)
= `45,000 (Fav.)

Verification:

1. LEV = LMV + REV
   `36,000 (Fav.) = `9,000 (Adv.) + `45,000(Fav.)
   `36,000 (Fav.) = `36,000 (Fav.)
2. LCV = LRV + LEV
   `63,000 (Fav.) = `27,000 (Fav.) + `36,000 (Fav.)
   `63,000 (Fav.) = `63,000 (fav.)

Note: Revised Efficiency Variance (REV) is equal to Labour Yield variance:

Labour Yield Variance = Standard Cost per unit × (Standard Output for Actual Mix – Actual Output)

Here, Standard Cost per unit = $\frac{3,60,000}{4,000} = `90$

Standard Output for Actual Mix = $\frac{\text{standard Output}}{\text{Standard Mix}} \times \text{Acutal Mix}$

$= \frac{4,000}{1,50,000} \times 1,35,000 = 3,600$

Labour Yield Variance = 90 (4,100 – 3,600) = `45,000 (Fav.)

Overhead Variances

Overhead variance is the difference between the standard overhead specified and actual overhead incurred.

Overhead variance is divided into:

(A) Variable Overhead variance.

(B) Fixed Overhead Variance

(A) Variable Overhead Variance

Variable cost varies in proportion to the level of output, while cost is fixed per unit. As such the standard cost per unit of these overheads remains the same irrespective of the level of output attend.

(1) Variable Overhead Cost Variances. The variable overhead cost variance represents the difference between the standard cost of variable overhead for actual output and the actual variable overhead incurred during the period.

Variable Overhead Cost Variance

= (Actual Output × St. Variable Overhead Rate per unit) - Actual Variable Overhead Cost

Or

= (St. Hours for Actual Output × St. Variable Overhead Rate per Hour)

–Actual Variable Overhead Cost

(2) Variable Overhead Expenditure Variance. It is the difference between the actual variable overhead rate per hour and standard variable overhead rate per hour multiplied by the actual hours worked. It is also known as 'Budget Variance'.

Variable Overhead Expenditure Variance

= (St. Variable Overhead Rate x Actual Hours) - Actual Variable Overheads

Or

= Recovered Variable Overheads - Actual Variable Overheads

(3) Variable Overhead Efficiency Variance. The variable overhead efficiency variance is calculated by taking the difference in standard output and actual output multiplied by the standard variable overhead rate.

Variable Overhead Efficiency Variable = St.Variable Overhead Rate × (St. Quantity – Actual Quantity) Or

= SVOR × (SHAO – AH)

Where SVOR = Standard Variable Overhead Rate per hour; SHAO = Standard Hours for Actual Output;

AH = Actual Hours. **Confirmation:**

Variable Overhead Variance = V.O. Expenditure Variance + V.O. Efficiency Variance

Illustration 4.7

From the following information, calculate: (a) Variable Overhead Variance, (b) Variable Overhead Expenditure Variance, and (c) Variable Overhead Efficiency Variance.

1. Standard hours per unit: 3; Variable Overhead per hour: `5
2. Actual Variable Overhead incurred: ` 4,20,000
3. Actual Output: 30,000 units
4. Actual Hours worked: 1,00,000 hours.

Solution:

(a) Variable Overhead Variance = Standard Variable Overhead - Actual Variable Overhead

= (3 × ` 5 × 30,000 units) – `4,20,000

= `4,50,000 – ` 4,20,000 = ` 30,000 (F)

(b) Variable Overhead Expenditure Variance

= Standard Variable Overhead for Actual Time - Actual Variable Overhead = (Standard Overhead Rate × Actual Hours) - A.V.O.

= (` 5 × 1,00,000 hours) - `4,20,000

= ` 5,00,000 – ` 4,20,000 = `80,000 (F)

(c) Variable Overhead Efficiency Variance = Standard Variable Overhead on Actual Production
– Standard Variable Overhead for Actual Time
= (3 × `5× 30,000units)-( `5×1,00,000 hours)
= ` 4,50,000-`5,00,000 = ` 50,000 (A)

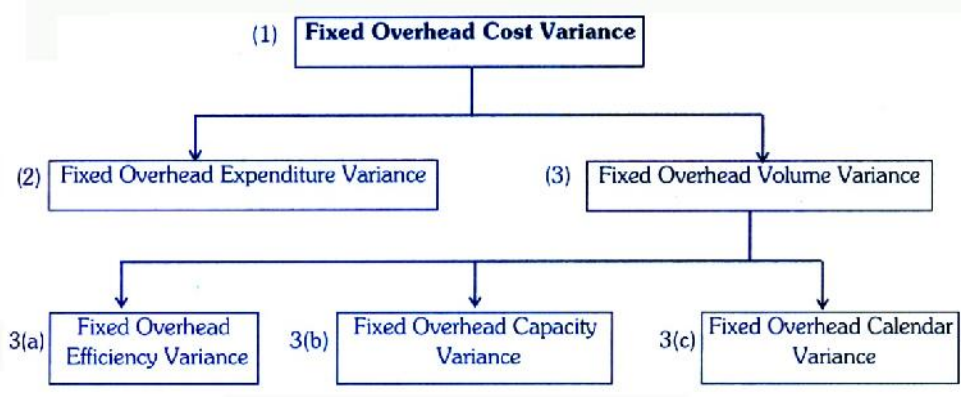
Confirmation:

Variable Overhead Variance = V.O. Expenditure Variance + V.O. Efficiency Variance.
` 30,000 (F) = ` 80,000 (F) + ` 50,000 (A)
` 30,000 (F) = ` 30,000 (F).

(B) **Fixed Overhead Variance**

Fixed overhead variance reveals all items of expenditure which are more or less remain constant irrespective of level of output or number of hours worked. Fixed overhead variance depends upon two factors, which are: (i) fixed expenses incurred and (ii) volume of production obtained.

The volume of production depends upon (a) capacity at which the factory works, (b) number of days factory works, and (c) efficiency at which factory works.



Classification of Fixed Overhead Variances

(1) Fixed Overhead Cost Variance. It shows the difference between the standard cost of fixed overheads recovered for actual output and actual cost of fixed overheads incurred.

Fixed Overhead Cost Variance = Standard Fixed Overheads - Actual Fixed Overheads

Or

= (Actual Output x Standard Fixed Overhead Rate) – Actual Fixed Overheads Fixed Overhead Cost Variance may be classified as:

(a) Fixed Overhead Expenditure Variance;
(b) Fixed Overhead Volume Variance.

(2) Fixed Overhead Expenditure Variance. It is that part of fixed overhead cost variance which arises due to the difference between budgeted fixed overhead expenditure and the actual fixed overhead expenditure relating to a specified period.

Fixed Overhead Expenditure Variance = Budgeted Fixed Overheads - Actual Fixed Overheads

Or

= (Standard Overhead Rate x Budgeted Output) - Actual Overhead Rate x Actual Output)

(3) Fixed Overhead Volume Variance. This variance reveals the difference between fixed overhead recovered on actual output and fixed overheads on budgeted output. It is the result of difference in volume of production multiplied by the standard rate. Fixed Overhead Volume Variance = Recovered Fixed Overheads - Budgeted Fixed Overheads

Or

= (Actual Output x Standard Overhead Rate) - (Budgeted Output x Standard Overhead Rate) Fixed overhead volume variance can further be analysed as (a) Fixed Overhead Efficiency Variance, (b) Fixed Overhead Capacity Variance and (c) Fixed Overhead Calendar Variance

3 (a) Fixed Overhead Efficiency Variance. It is that part of fixed overhead volume variance which is due to the difference between the budgeted efficiency of production and the actual efficiency attained. The actual quantity produced and standard quantity fixed might be different because of higher or lower efficiency of workers employed in manufacturing of goods. Fixed Overhead Efficiency Variance = Recovered Fixed Overheads - Standard Overheads

Or

= Standard Overhead Rate (Actual Quantity - Standard Quantity)

3 (b) Fixed Overhead Capacity Variance. The variance which is related to the over or under utilisation of plant capacity is known as fixed overhead capacity variance. Strikes, lock-out, idle time, etc., lead to under-utilisation and overtime, extra shift, etc., lead to over-utilisation. Fixed Overhead Capacity Variance = Standard Overhead Rate per unit (Revised Budgeted Output - Budgeted Output)

Or

Hours = Standard Rate per hour (Revised Budgeted Hours - Budgeted Hours) Whereas, Revised Budgeted Nos. = Actual Working days x Budgeted Hrs. per Day.

3 (c) **Fixed Overhead Calendar Variance.** It is that part of volume variance which arises due to the difference between the number of working days anticipated in the budget period and the actual working days in the budget period. The number of working days in the budget are arrived at by dividing the number of annual days by twelve. But the actual days of a month may be more or less than the standard days and with the result there may be calendar variance. Fixed Overhead Calendar Variance = possible Fixed Overheads - Budgeted Fixed Overheads

Or

= (Standard Rate of Overhead per hour x Possible Hours)
−(Standard Overhead Rate per hour x Budgeted Hours)

Possible Hours = Standard Working hours per day x Actual Number of Working days.

Or Fixed Overhead Calendar Revised Variance = (Standard Rate per hour/day) × (Excess or Deficit Hours/Days Worked)

Fixed Overhead Capacity Revised Variance = Standard Overhead - Possible Overhead

Illustration 4.8

From the following data calculate Fixed Overhead Variances

	Budgeted	Actual
Output	20,000 units	18,000 units
Number of Working Days	25	28
Fixed Overheads	`40,000	`41,000

There was an increase of 10% in capacity

Solution:

$$\text{Standard Overhead Rate} = \frac{\text{Standard Fixed Overheads}}{\text{Standard Output}}$$

$$= \frac{40{,}000}{20{,}000 \text{ Units}} = `2.00$$

(a) Fixed Overhead Cost Variance

= Standard Fixed Overheads - Actual Fixed Overheads

= (Actual Output x Standard Fixed Overhead Rate)
- Actual Fixed Overheads

FOCV = (18,000 units – ` 2.00) – ` 41,000 = ` 36,000 – ` 41,000

= ` 5,000 (A)

(b) Fixed Overhead Expenditure Variance

= Budgeted Fixed Overheads - Actual Fixed Overheads

FOE×V = ` 40,000 – ` 41,000 = `1,000 (A)

(c) Fixed Overhead Volume Variance

= Recovered Fixed Overheads - Budgeted Fixed Overheads

= (Actual Output x Standard Overhead Rate)

- (Budget Output x Standard Overhead Rate)

= (18,000 units × ` 2.00) –(20,000 units x `2.00)

FOW = ` 36,000 – ` 40,000 = ` 4,000 (A)

(d) Fixed Overhead Efficiency Variance

= Standard Overhead Rate (Actual Quantity - Standard Quantity)

Standard Quantity (without increase) = Budgeted Quantity

=20,000 units

Increase in Capacity @ 10% = 2,000 units

∴ Standard Production = 22,000 units

(+) Standard Production for 3 days

i.e., $(28-25)\,\text{days}\left(\frac{22,000\,\text{units}}{25\,\text{days}}\times 3\,\text{days}\right)=2640\ \text{units}$

Thus, Standard Quantity after Increase of Capacity = 24.640 units

. F.O.E.F.V = `3.00 (18,000 units – 24,640 units) = ` 13,280 (A)

(e) Fixed Overhead Capacity Variance

= Standard Overhead Rate (Standard Output for Actual Time – Budgeted Output)

= Standard Overhead Rate (Revised Budgeted units – Budgeted units)

= `2.00 $[(20,000 + 20,000 \times \frac{10}{100}) = 20,000\ \text{units}]$

∴ F.O.C.V = `2.00 (22.000 units - 20,000 units) = ` 4,000 (F)

(f) Fixed Overhead Calendar Variance

= Increase or Decrease in production due to more or less working days × Standard Overhead Rate per unit with the increase in capacity

∴ F.O.C.V = 2,640 units × ` 2 = ` 5,280 (F)

Confirmation:

Fixed Overhead Cost Variance = F.O. Expenditure Variance + F.O. Volume Variance

` 5,000 (A) = `1,000 (A) + ` 4,000 (A)

` 5,000 (A) = ` 5.000 (A)

Fixed Overhead Volume Variance

= F.O. Efficiency Variance + F.O. Capacity Variance +F.O. Calendar Variance

`4,000 (A) = `13,280(A) + ` 4,000 (F) + ` 5,280 (F)

` 4,000(A) = ` 13,280 (A) + `9,280 (F)

` 4,000 (A) = ` 4,000(A)

Illustration 4.9

Ankita Ltd. has furnished you the following data:

	Budgeted	Actual (July, 2014)
Number of Working Days	25	27
Production (in units)	20,000	22,000
Fixed Overheads (in `)	30,000	31,000

Budgeted Fixed Overhead Rate is `1.00 per hour. In July, 2014, the actual hours worked were 31,500.

Calculate the following variances: (i) Efficiency Variance; (ii) capacity Variance; (iii) Calendar Variance; (iv) Volume Variance; (v) Expenditure variance; (vi)Total Overheads Variance.

Solution:

Working Notes:

St. Hrs. for Actual Output $= \left(22,000 \times \frac{30,000}{20,000}\right) = 33,000$ hrs

Budgeted Overheads = `30,000

Budgeted Overhead Rate per hour = `1.00

Budgeted Hours $= \frac{30,000}{1.00} = 30,000$

Budgeted Output = 20,000 units

St. Time per unit of Output $= \frac{30,000}{20,000} = 1.5$ hrs

St. Rate per unit of Output $= \frac{1.5 \text{Hours}}{1.0} =$ `1.50

Budgeted Days = 25

Budgeted Hrs. Worked per day $= \frac{30,000}{25} = 1200$ Hrs

Calculation of First Overhead Variances:

(1) Efficiency Variance = St. Rate per hour (St. Hours – Actual Hours)

EV = `1.00 (33,000- 31,500) = `1,500 (F)

(2) Capacity Variance = St. Rate per hour (Actual Hours – Revised Budgeted Hours)

CV = `1.00 (31,500 – 27 ×1.200)= `900 (A)

(3) Calendar Variance $= \frac{\text{Budgeted Overheads}}{\text{Budgeted Working Days}} \times$ (actual No. of Working Days - Budgeted No. of Working Days)

$\therefore \text{CIV} = \frac{30,000}{25}(27 - 25) =$ `2,400 (F)

(4) Volume variance = Standard Rate per unit (Actual Output– Budgeted Output)

VV = `1.50 (22,000 – 20,000) = `3,000

(5) Expenditure Variance = Budgeted Overheads –Actual Overheads

Exp. V = ` 30,000 - `31,000 = ` 1,000 (A)

(6) Total Overhead Variance = (Actual Output x Standard Rate per unit) –Actual Overheads

= (22,000 units x `1.50}–` 31,000

TOV = `33,000 – `31,000 - ` 2,000 (F)

Confirmation:

Total Overhead Variance = Expenditure Variance + Volume Variance

`2,000 (F) = `1,000 (A) + ` 3,000 (F)

`2,000 (F) = `2,000 (F)

Volume Variance = Efficiency Variance + Capacity Variance + Calendar Variance

`3,000 (F) - `1,500 (F) + ` 900 (A) + `2,400 (F)

`3,000 (F) = ` 3,000 (F)

Illustration 4.10

The following information is available from the cost records of a company for January, 2014:

	(`)
Materials Purchased: 20,000 pieces	88,000
Materials Consumed: 19,000 pieces	

Actual Wages Paid: 4,950 Hours	24,750
Factory Overheads Incurred	44,000
Factory Overheads Budgeted	40,000
Units Produced:	1,800
Standard Rates and Prices are:	
Direct Material Rate	`4 per piece
Standard Input	10 pieces per unit
Direct Labour Rate	`4 per hour
Standard Requirement	2.5 hours per unit
Overhead	`8 per labour hour

Required:

(a) Show the Standard Cost Card.

(b) Compute all Material, Labour and Overhead Variances for January, 2014.

Solution:

(a) **Standard Cost Card**

		Per Unit m
Direct Material	— 10 pieces @ ` 4 per piece	40
	— 2.5 hrs @ `4 per hour	10
Direct Labour	— 2.5 hrs @ ` 8 per hour	20
	Total Standard Cost	70

(b) Computation of Variances:

I. Material Variances

(1) Total Material Cost Variance = Standard Cost of Material for Actual Output - Actual Material Cost

$$= (1,800 \times 10 \text{ pieces} \times `4) - \left( `88,000 \times \frac{19,000}{20,000} \right)$$

TMCV = `72,000– ` 83,600 = ` 11600 (A)

(2) Material Price variance = Actual Qty. (St. Price - Actual Price)

$$\text{MPV} = 19,000 \text{ pieces} \left(`4 - \frac{`88,000}{20,000} \right)$$

= 19,000 pieces (`4 – `4.40) = `7,600 (A)

(3) Material Usage Variance = St. Price (St. Qty. – A. Qty.)

MUV = `4.00 (18,000 – 19,000) = ` 4,000 (A)

Confirmation:

TMCV = MPV + MUV

` 11,600 (A) = ` 7,600 (A) + ` 4,000 (A)

` 11,600 (A) = ` 11,600 (A)

II. Labour Variances

(1) Total Labour Cost Variance — St. Cost of Labour for Actual Output - Actual Labour Cost

= (` 1,800 × 2.5 hrs x ` 4) – ` 24,750

LTV = ` 18,000 – ` 24,750 = ` 6,750 (A)

(2) Labour Rate Variance = Actual hrs. (St. Rate per hour - Actual Rate per hour)

$$= 4,950 \text{ hrs.} \left(`4 - \frac{`24,750}{4,950} \right)$$

= 4,950 hrs. (`4 - `5)

LRV = ` 4,950 (A)

(3) Labour Efficiency Variance = St. Rate per hour (St. hrs. - A. hrs.)

= ` 4 [(1800 x 2.5 hrs) - 4,950 hrs.]

=` 4 (4,500 hrs. - 4,950 hrs.)

LEV = ` 1,800 (A)

Confirmation:

TLCV = LRV + LEV

`6,750 (A) = `4,950 (A) + `1,800 (A)

`6,750 (A) = `6,750 (A)

III. Fixed Overhead Variances

(1) Total fixed Overhead Cost variance = Overhead Recovered on Actual Output - Actual Factory Overheads

= (1,800 units ×2.5 hrs ×8) – 44,000

∴ TFOC = ` 36,000 - `44,000 = ` 8,000 (A)

(2) Fixed Overhead Expenditure Variance

- Budgeted Fixed Overheads - Actual Fixed Overheads

∴ F.O. Exp. V. = ` 40,000 - ` 44,000 = `4,000 (A)

(3) Fixed Overhead Efficiency Variance = St. F.O. Rate per hour (St. hrs, for Actual Output - Actual hrs.)

= ` 8 [(2.5 hrs.×1,800)–4,950 hrs.]

F.O. Eff. V. = ` 8 (4,500 hrs. –4,950 hrs.)

= ` 3,600 (A)

(4) Fixed Overhead Capacity Variance = St. F.O. Rate per hour (Actual Capacity hrs. - Budgeted Capacity hrs.)

$$= \text{Rs.}8\left(4,950\text{hr} - \frac{\text{Rs. } 40,000}{8}\right)$$

= ` 8(4,950 hrs. – 5,000 hrs.)

F.O.C.V **= ` 400 (A)**

Confirmation:

TFOCV = F.O. Exp. V. + F.O. Capacity V

` 8,000 = ` 4,000 (A) + ` 3,600 (A) + ` 400 (A)

`8.000(A) = ` 8,000 (A)

4.3.1 Evaluation of cost and sales variances

Sales Variances

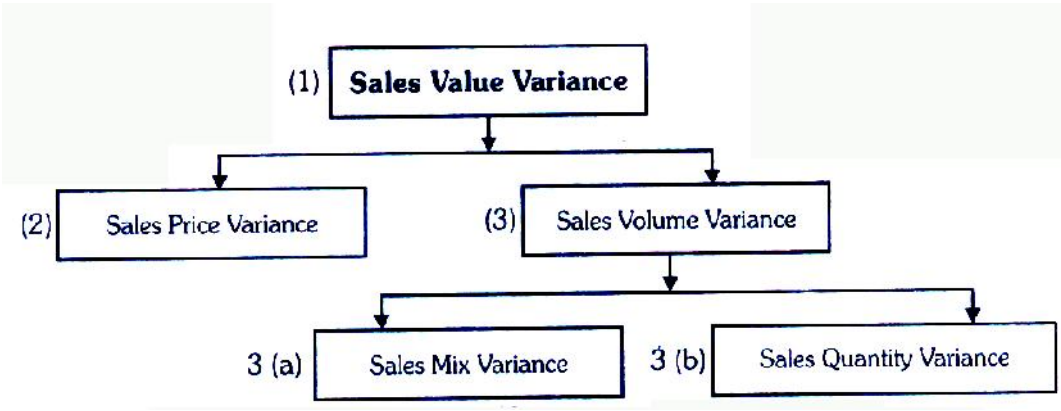
Some companies are interested in calculating only cost variances relating to materials, labour and overheads. These variances are of great significance to the business enterprises. But in order to obtain the full advantages of standard costing system, many companies also calculate safe variances. Sales variances affect a business in terms of changes in revenue.

Sales variances can be calculated by two methods:

(A) The Value or the Turnover Method, (B) The Profit or the Margin Method.

• (A) The Value or the Turnover Method

Under this method, variances are calculated with reference to their effect on sales or sales value.



Classification of Sales Variances Based on Turnover

(1) **Sales Value Variance** (SVV): It shows the difference between the actual sales and the budgeted sales. If the actual sales exceed the budgeted sales the variance is treated as favourable and vice-versa.

Sales Value Variance (SVV) = Actual Value of Sales - Budgeted Value of Sales

or

SVV - (Actual Quantity × Actual Selling Price) –
(St. Quantity × St. Selling Price)

(2) Sales Price Variance (SPV): It is the that part of Sales Value Variance which arises due to the difference between actual price and standard price of sales. If the actual price attained is more than the standard price, the variance shall be favourable and vice-versa. Sales Price Variance {SPV) = Actual Quantity (Actual Selling Price - St. Selling Price)

(3) Sales Volume Variance (S.Vlm. V): It is that part of Sales Value Variance which arises due to the difference between the actual quantity sold and the standard quantity of sales. Sales Volume Variance (S. Vim. V) = St. Selling Price (Actual Quantity of Sales
–St. Quantity of Sales)

Sales Volume Variance can be further divided into:

3 (a) Sales Mix Variance (SMV): It is that part of Sales Volume Variance which arises due to the difference between standard and actual composition of the sales mix. This variance arises only when the business firm deals in more than one product. Sales Mix Variance (SMV) = St. Value of Actual Mix - St. Value of Revised St. Mix

or

SMV = St. Selling Price (Actual Qty. - Revised St. Qty.)

3 (b) Sales Quantity Variance (SQV): It is that part of Sales Volume Variance which is due to the difference between standard value of a actual sales at standard mix and the budgeted sales.

Sales Quantity Variance (SQV) = Revised Standard Sales Value - Budgeted Sales Value

or SQV — Standard Selling Price per unit (Standard Proportion for Actual Sales Quantity - Budgeted Quantity of Sales)

or SQV — St. Selling Price per unit (Revised St. Mix - St. Mix)

Illustration 4.11

The budgeted sales for one month and the actual results achieved are as under:

Product	Budget			Actual		
	Quantity (units)	Rate (`)	Amount (`)	Quantity (units)	Rate (`)	Amount (`)
M	1,000	10.00	10,000	1,200	12.50	15,000
N	700	20.00	14,000	800	15.00	12,000
O	500	30.00	15,000	600	30.00	18,000
P	300	50.00	15,000	400	60.00	24,000
Total	2,500		54,000			69,000

You are required to calculate in respect of each product, the Sales Variances.

Solution:

(1) Sales Value Variance = Actual Value of Sales - Budgeted Value of Sales

∴ SVV = ` 69,000 – ` 54,000 = ` 15,000 (F)

(2) Sales Price Variance = Actual Qty. (Actual Selling Price - St. Selling Price)

M = 1200 (` 12.50 – ` 10.00) = ` 3,000 (F)

N = 800 (` 15.00 – ` 20.00) = ` 4,000 (A)

O = 600 (` 30.00 – ` 30.00) = Nil

P = 400 (` 60.00 –` 50.00) = ` 4000 (F)

∴ Total Sales Price Variance = ` 3.000 (F)

(3) Sales Volume Variance = St. Selling Price (Actual Qty. - St. Qty.)

M = ` 10.00 (1200 - 1000) = ` 2,000 (F)

N = ` 20.00 (800 - 700) = ` 2,000 (F)

O = ` 30.00 (600 - 500) = ` 3,000 (F)

P = ` 50.00 (400 - 300) = ` 5,000 (F)

∴ Total Sales Volume Variance = ` 12.000 (F)

3 (a) Sales Mix Variance = (St. Value of Actual Mix - St. Value of Revised St. Mix)

or SMV = St. Selling Price (Actual Qty. – Revised St. Qty.)

Whereas, Revised St. Qty. = $\frac{\text{Total Actual Mix of Sales}}{\text{Total St. Mix of Sales}} \times \text{St.Qty.}$

Revised St. Qty. for product M = $\frac{3,000}{2,500} \times 1000$ = 1,200 units

Revised St. Qty. for product N = $\frac{3,000}{2,500} \times 700 = 840$ units

Revised St. Qty. for product O = $\frac{3,000}{2,500} \times 500 = 600$ units

Revised St. Qty. for product P = $\frac{3,000}{2,500} \times 300$ = 360 units

Sales Quantity Variance M = ` 10.00 (1200–1200) = Nil

N = ` 20.00 (800 – 840) = ` 800 (A)

O = ` 30.00 (600 – 600) = Nil

P = ` 50.00 (400 – 360) = ` 2,000 (F)

Total Sales Mix Variance = ` 1,200 (F)

3 (b) Sales Quantity Variance - St. Selling Price (Revised St. Qty. - St. Qty.

M = ` 10.00 (1200 – 1000) = ` 2,000 (F)

N = ` 20.00 (840–700) = ` 2,800 (F)

O = ` 30.00 (600 –500) = ` 3.000 (F)

P = ` 50.00 (360 –300) = ` 3,000 (F)

∴ Total Sales Quantity Variance = ` 10.800 (F)

Confirmation:

Sales Value Variance = Sales Price Variance + Sales Volume Variance

` 15,000 (F) = ` 3,000 (F) + ` 12.000 (F)

`15,000 (F) = `15,000 (F)

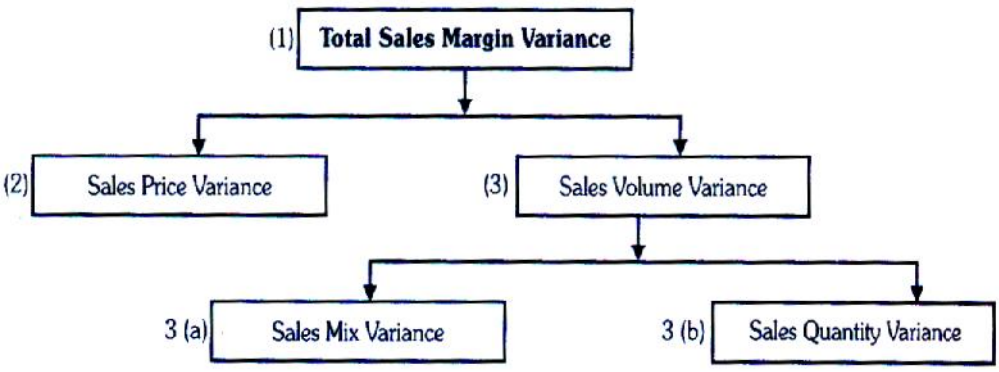
Sales Volume Variance = Sales Mix Variance + Sales Quantity Variance

` 12,000 (F) = ` 1200 (F) + ` 10,800 (F)

` 12,000(F) = ` 12,000(F)

• (B) The Profit or Margin Method

The sales variances based on profit are also known as Sales Margin Variances which indicates the deviation or difference between actual profit and standard or budgeted profit.



Classification of Sales Variances based on Margin

(1) Total Sales Margin Variance: This sales variance reveals the difference between actual profit and standard or budgeted profit.

Total Sales Margin Variance = Actual Profit - Budgeted Profit

or = (Actual Qty. of Sales × Actual Profit per unit)

- (Budgeted Qty. of Sales ×Budgeted Profit per unit)

(2) Sales Price Variance: It is that part of Total Sales Margin Variance per unit which shows the difference between the standard price of the quantity of sales effected and the actual price of those sales.

Sales Price Variance = Actual Qty. of Sales (Actual Profit per unit - Budgeted Profit per unit)

or = (Actual Qty. of Sales × St. Price) - (Actual Qty. of Sales × Actual Price)

(3) Sales Volume Variance: It shows the difference between the actual units sold and the budgeted quantity multiplied by either the standard profit per unit or the standard contribution per unit.

Note: *In Absorption Costing, standard profit per unit is* used, but in *Marginal Costing, standard contribution per unit must be used,*

Sales Volume Variance = St. Profit per unit (Actual Qty. of Sales - St. Qty. of Sales)

or = (St. Profit on Actual Qty. of Sales) - (St. Profit on St. Qty. of Sales)

Sales Volume Variance can be further divided into:

3 (a) Sales Mix Variance: This variance arises only when the firm manufactures and sells more than one type of product. This variance will be due to variation of actual mix and budgeted mix of sales.

Sales Mix Variance - St. Profit per unit (Actual Qty. of Sales - Revised St. Qty. of Sales)

or = Standard Profit - Revised Standard Profit

3 (b) Sales Quantity Variance: It is that part of Sales Volume Variance which arises due to the difference between the standard profit and revised standard profit. Sales Quantity Variance = St. Profit per unit (St. Proportion for Actual Sales - Budgeted Qty. of Sales)

or = Revised St. Profit - Budgeted Profit

or = Budgeted Margin per unit on budgeted Mix × (Total Actual Qty. - Total Budgeted Qty.)

Illustration 4.12

Rama Ltd. is manufacturing and selling three products X, Y and Z. The company has a standard costing system and analysis the variances between the budget and the actuals periodically. The summarised working results for 2013-14 were as follows:

Product	Budget			Actual		
	Selling Price p. u.(`)	Cost per unit (`)	No. of Units Sold	Selling Price p. u.(`)	Cost per unit (`)	No. of Units Sold
X	50.00	16.00	20,000	48.00	15.00	24,000
Y	40.00	12.00	28,000	42.00	12.50	24,000
Z	30.00	9.00	32,000	31.00	10.00	30,000

(a) Calculate variances in profit during the period.

(b). Analyse the variance in profit into: (1) Sales Price Variance; (2) Sales Volume Variance; (3) Total Sales Margin Variance; (4) Sales in Quantity Variance; and (5) Sales Margin Mix Variance.

Solution:

Working Notes:

1 (a). Actual Margin per unit = Actual Sales Price per unit - St. Cost per unit

X = ` (48–16) = `32

Y = ` (42–12) = `30

Z = ` {31 – 9} = ` 22

1 (b). Budgeted Margin per unit - Budgeted Selling Price per unit - St. Cost per unit

X = `(50–16) = `34

Y = ` (40 – 12) =` 28

Z = ` (30 – 9) = ` 21

2 (a). Actual Profit = Actual Quantity of Units Sold x Actual Margin per unit

X = 24,000 units × ` 32 = ` 7,68,000
Y = 24,000 units × ` 30 = ` 7,20,000
Z = 30.000 units × `22 = ` 6.60,000
Total = ` 21.48.000

2 (b). Budgeted Profit = Budgeted Quantity of Units Sold x Budgeted Profit per unit

X = 20,000 units × `34 =` 6,80,000
Y = 28.000 units × ` 28 = ` 7,84,000
Z = 32,000 units × `21 =` 6,72,000
Total = ` 21,36,000

3 (a). Budgeted Margin per unit on Actual Mix

$$= \frac{(34 \times 24,000) + (28 \times 24,000) + (21 \times 30,000)}{(24,000 + 24,000 + 30,000)\ \text{units}}$$

$$= \frac{(8,16,000) + (6,72,000) + (6,30,000)}{78,000\ \text{units}}$$

$$= \frac{21,18,000}{78,000\ \text{units}} = `27.154$$

3 (b). Budgeted Margin per unit on Budgeted Mix

$$= \frac{(34 \times 20,000) + (28 \times 28,000) + (21 \times 32,000)}{(20,000 + 28,000 + 32,000)\ \text{units}}$$

$$= \frac{(6,80,000) + (7,84,000) + (6,72,000)}{80,000\ \text{units}}$$

$$= \frac{21,36,000}{80,000\ \text{units}} = `26.70$$

Calculation of Sales Margin Variances:

(1) Sales Margin Price Variance = Actual Qty. {Actual Margin per unit – Budgeted Margin per unit)

X = 24,000 units (` 32 – ` 34) = ` 48,000 (A)
Y = 24.000 units (`30 – ` 28) = ` 48,000 (F)
Z = 30,000 units (` 22 – `21) = ` 30,000 (F)
Total Sales Margin Price Variance =` 30.000 (F)

(2) Sales Margin Volume Variance = Budgeted Margin per unit (Actual Qty. - Budgeted Qty.)

X = ` 34 {24,000 units – 20,000 units =` 1.36,000 (F)
Y = ` 28 (24,000 units – 28,000 units) = ` 1,12,000 (A)
Z = ` 21 {30,000 units – 32,000 units) = ` 42,000 (A)

∴ Total Sales Margin Volume Variance = ` 18,000 (A)

(3) Total Sales Margin Variance = Actual Profit - Budgeted Profit
= ` 21,48,000 – ` 21,36,000 = `12,000 (F)

(4) Sales Margin Quantity Variance = Budgeted Margin per unit on Budgeted Mix (Total Actual Qty. – Total Budgeted Qty.)
= ` 26,70 (78,000 units - 80,000 units)
Total Sales Margin Qty. Variance = ` 53,400 (A)

(5) Sales Margin Mix Variance = Total Actual Qty. (Budgeted Margin per unit on Actual Mix – Budgeted Margin per unit on Budgeted Mix)

= 78,000 units (` 27.154 – ` 26.70)

∴ . Total Sales Margin Mix Variance = ` 35,412 or ` 35,400

Confirmation:

Total Sales Margin Variance = Sales Margin Price Variance + Sales Margin Volume Variance

` 12,000 (F) = ` 30,000 (F) + ` 18,000 (A)

` 12,000 (F) = ` 12,000 (F)

Sales Margin Volume Variance = Sales Margin Qty. Variance + Sales Margin Mix Variance

`18.000 (A) = ` 53.400 (A) + ` 35,400 (F)

`18,000 (A) = ` 18,000 (A)

• Disposition of Variances

When standard costs are used by a business enterprise only as a statistical data and are not entered in the books of account, the disposition of variances is not needed since no adjustments are required for variances in such a case. But when standard costs are incorporated into accounting system through work-in-progress, finished goods and cost of goods sold accounts, the adjustment and disposition of variances is required. There is no hard and fast rule regarding the disposition of variances nor there is any single way of dealing with them. Hence, the method which will be adopted depends on the accountants attitude and the practice that is followed by the business enterprise. However, the following methods may be usually applied:

(1) Transfer to Costing Profit and Loss Account: According to this method, the unfavourable variances are debited to Costing Profit and Loss Account whereas favourable variances are credited to Costing Profit and Loss Account, at the end of accounting period. Thus, work-in-progress, finished goods, and cost of goods sold accounts are maintained at standard cost. This method has the significance of quick and uniform valuation of stocks and shows the different variances separately to enable the management to pay dual attention quickly and correctly.

(2) Allocation of Variances to Stocks and Cost of Sales: According to this method, cost variances are allocated among finished goods, work-in-progress and cost of sales on the basis of units or value. As a result, the stocks and cost of sales will appear in the books of actual cost.

(3) Transfer of Variances to Reserve Account: The variances, whether favourable or unfavourable are transferred to a Reserve Account to be carried forward to the next accounting period as deferred 'debits' or 'credits'. If variances are favourable, they are shown on liability side of Balance Sheet. On the other hand, if variances are unfavourable, they are shown on asset side of Balance Sheet.

4.4 SUMMARY

- Variances may be classified into two categories, "Favourable and unfavourable, Controllable and uncontrollable variances.
- Variance is the Difference between standard and Actual is known as variance.
- Favourable variance will be designated by (F) and Adverse variance by (A).
- Revision variance represents the difference between the original standard cost nad the revised standard cost.
- Direct material mix variance is that portion of the material usage variance which is due to the difference between standard and actual composition of materials.

4.5 KEY TERMS

- Actual production: is mean actual quantity produced during the actual hours worked.
- Standard Production: It means the quantity which have been produced during actual hours worked.
- Budgeted cost: it means the budgeted quantity to be produced at the standard cost per unit.
- Standard cost: It means the actual quantity produced at the standard cost per unit.
- Material cost variance: Material cost variance is the difference between the standard cost of materials specified for the actual output and actual cost of materials used.

- Material price variance: Material price variance is the portion of the material cost variance which arises due to the difference between the standard price specified and actual price paid.
- Material usage variance: Material usage variance is the difference between the standard quantity specified and the actual quantity used.
- Material mix variance: Material mix variance is that portion of material usage variance which is due to the difference between the standard and actual composition of as mixture.
- Material yield variance: Material yield variance represents the portion of material usage variance which is due to the difference between the standard yield specified and the actual yield obtained.
- Labour cost variance: it is the difference between the standard labour cost and actual labour cost of the product.

4.6 SELF ASSESMENT QUESTIONS

1. What is standard costing? Explain its advantages and disadvantages.
2. What is standard costing? Explain the requisites of standard costing method.
3. Explain the procedure for determining standards.
4. Distinguish between the following:
5. Standard Cost and Estimated Cost, (b) Standard Costing and Budgetary Control.
6. What do you mean by variances? What are its different kinds and explain it?
7. What do you mean by 'Analysis of Variances'? Explain briefly the various types of variances.
8. "Standard Costing is always accompanied by a system of budgeting, but budgetary control may be operated in business where standard costing would be impracticable." Comment.