QUESTION BANK

MBA

SEMESTER 1

Vol. I

FOR PRIVATE CIRCULATION

QUESTION BANK

MANAGEMENT PROCESS & ORGANISATIONAL BEHAVIOUR

MS-101

UNIT - I

I   Test Your Skills:

(a)   Multiple Choice Questions:

1. When we classify managers according to their level in the organization they are described as_____.
   (a)   Functional, staff and line managers
   (b)   Top managers, middle managers and supervisors
   (c)   High level and lower level managers
   (d)   General managers and administrative managers

2. Frederick Taylor and Frank and Lillian Gilbreth were advocates of an approach to management involving the use of scientific method, known as:
   (a)   The quantitative approach.
   (b)   Management science.
   (c)   Scientific management.
   (d)   The contingency approach.

3. Authority, discipline, unity of command, and unity of direction are:
   (a)   Taylor's four principles of management.
   (b)   Principles of the human relations movement.
   (c)   Elements of Weber's ideal bureaucratic structure.
   (d)   Four of Fayol's fourteen principles of management.

4. Some of the other fields of study that affect management theory or practice include:
   (a)   Political science, philosophy, anthropology and sociology
   (b)   Zoology, psychology, sociology and philosophy.
   (c)   Anthropology, astrology, political science and psychology.
   (d)   Political science, sociology, typography and economics.

5. The philosophy of management known as total quality management developed primarily out of the work of:
   (a)   Henri Fayol
   (b)   Frederick Taylor
   (c)   Robert McNamara
   (d)   W. Edwards Deming

6. Possibly the most important pre-20th century influence on management was:
   (a)   Therbligs
   (b)   The industrial revolution.
   (c)   Scientific management.
   (d)   The division of labor.

7. Division of labor, authority hierarchy, formal selection, formal rules and regulations, impersonality, and career orientation are all features of:
   (a)   Weber's ideal type bureaucracy.
   (b)   General administrative theory.
   (c)   Fayol's principles of management.

(d)   Taylor's principles of management.

8.   _____ concluded that managers perform 10 interrelated activities that relate to decision making, using information and interpersonal relationships.
(a)   Mintzberg
(b)   Abraham Maslow
(c)   Robert Owen
(d)   Henri Fayol

9.   ----------- maintains self-developed network of outside contacts and informers who provide favors and information.
(a)   Entrepreneur
(b)   Monitor
(c)   Liaison
(d)   Figurehead

10.   ------------------ roles involve people and other duties that are ceremonial and symbolic in nature.
(a)   Informational.
(b)   Interpersonal.
(c)   Decisional.
(d)   All the given options

11.   Which of the following is NOT an interpersonal role of a manager?
(a)   figurehead
(b)   leader
(c)   disseminator
(d)   liaison

12.   _____involve receiving, collecting, and disseminating information.
(a)   Interpersonal roles
(b)   Informational roles
(c)   Decisional roles
(d)   None of the given

13.   Which of the following is not included in Decisional role of a manager?
(a)   Entrepreneur
(b)   Disturbance handler,
(c)   Collecting
(d)   Negotiator.

14.   Which of the following is include in Informational role of a manager?
(a)   liaison
(b)   disseminating information
(c)   resource allocator
(d)   none of the given

15.   Greeting visitors: signing legal documents is an example of
(a)   figurehead

      (b)   leader
      (c)   Liaison
      (d)   None of the given

16. Performing virtually all activities that involve subordinates is an example of
      (a)   figurehead
      (b)   leader
      (c)   Liaison
      (d)   None of the given

17. Acknowledging mail, doing external board work, performing other activities that
    Involve outsiders all are examples of
      (a)   figurehead
      (b)   leader
      (c)   Liaison
      (d)   None of the given

18. Seeks and receives wide variety of internal and external information to develop
    thorough understanding of organization and environment is a function of
      (a)   Monitor
      (b)   Disseminator
      (c)   Spokesperson
      (d)   None of the given

19. If a manager takes parts in an Union negotiation then he/she is performing a _____
    role.
      (a)   Interpersonal roles
      (b)   Informational roles
      (c)   Decisional roles
      (d)   None of the given

20. If a manager gives information regarding organization policies and actions then he/she
    is performing an _____ role.
      (a)   Interpersonal
      (b)   Informational
      (c)   Decisional
      (d)   None of the given

21. The main influence on the behavioural science theories were:
      (a)   Psychology and sociology.
      (b)   Sociology and bureaucracy.
      (c)   Sociology and science.
      (d)   Bureaucracy and psychology.

22. Consider the following statements
    The terms 'Administration' and 'Management' are synonymous.
      (a)   Administration is a wider term than Management.
      (b)   Management is a wider term than Administration.
      (c)   Management is a narrower term than Administration.

(d)   Administration encompasses activities like the selling out of policies and objectives, designing the organizational structure etc.

23. Management is concerned with those operations leading an organization towards success with is the broader framework set up by Administration.
Select the correct codes:
(a)   1, 2, 5 and 6
(b)   2, 4, 5 and 6
(c)   3, 4, 5 and 6
(d)   2, 3, 4, 5 and 6

24.   Which one of the following is NOT the main concern of 'Scientific Management'?-
(a)   Production
(b)   Efficiency
(c)   Mechanistic Methods
(d)   Rationality

25.   Which one of the following concepts are not associated with Scientific Management?
(a)   Mental Revolution
(b)   Unity of Command
(c)   Time and Motion Study
(d)   Differential Piece rate plan

26.   Which of the following are the principles of 'Scientific Management'?
(a)   Development of a science of work
(b)   Different Piece Rate Plan
(c)   Standardization of tools and equipment's
(d)   Scientific selection of workman
(e)   Co-operation between managers and workers
Select the correct code:
(a)   1, 3, 4 and 5
(b)   1, 4 and 5.
(c)   1, 2, 3, and 4
(d)   l, 2, 3, 4 and 5.

27.   Conceptual skills relate to a manager's ability to
(a)   Take a strategic view of how parts of the organization function
(b)   Solve detailed problems in groups
(c)   Correctly evaluate organizational problems
(d)   Understand and interact effectively with others in the organization

28.   The Hawthorne studies:
(a)   Found that to increase worker efficiency, management must analyze and minimize the motions required to complete a task.
(b)   Found that when workers know they are being watched, their productivity increases.
(c)   Found that a worker is inherently lazy and will use any excuse not to perform their duties.
(d)   Found that workers accept a managerial directive only if it is acceptable in terms of their personal interests.

29. The Behavioral approach to management focused on:
    (a) The worker
    (b) The manager
    (c) The owner
    (d) None of the above.

30. ------------------- is the use of scientific method to define the "one best way" for a job to be done.
    (a) Scientific management
    (b) Bureaucratic management
    (c) Administrative management
    (d) Management

31. Mintzberg identified twelve managerial roles grouped into three classes -- interpersonal, inter-organisational and decisional.
    (a) The statement is true.
    (b) The statement contains one error.
    (c) The statement contains two errors.
    (d) The statement contains three errors.
    (e) The statement contains four errors.

32. In what order do managers typically perform the managerial functions?
    (a) organising, planning, controlling, leading
    (b) organising, leading, planning, controlling
    (c) planning, organising, leading, controlling
    (d) planning, organising, controlling, leading

33. Who of the following is the industrial philanthropist?
    (a) Frederick Taylor
    (b) SeebohmRowntree
    (c) Henry Ford
    (d) Max Weber

34. Which one of the following is not one of Drucker's five guiding principles of management?
    (a) Making people's strengths effective and their weaknesses irrelevant.
    (b) Enhancing the ability of people to contribute.
    (c) To operate the organisation's status system.
    (d) Integrating people in a common venture by thinking through, setting and exemplifying the organisational objectives, values and goals.

35. What are the three interpersonal roles of managers?
    (a) Figurehead, leader and liaison
    (b) Spokesperson, leader, coordinator
    (c) Director, coordinator, disseminator
    (d) Communicator, organiser, spokesperson

36. At what level of an organisation does a corporate manager operate?
    (a) Functional

(b)   Operational
(c)   Middle level
(d)   Top level

37.   What is the guiding principle behind New Public Management?
(a)   Profit maximisation
(b)   Introducing private sector business principles into the public sector
(c)   Replacing public management with private sector management
(d)   Restructuring public organisations

38.   Which one is not a recognised key skill of management?
(a)   Conceptual skills
(b)   Human skills
(c)   Technical skills
(d)   Writing skills

39.   Which of these is not part of the recognised challenges for modern managers?
(a)   Micro-managing the workforce
(b)   Managing communications
(c)   Managing change
(d)   Managing the learning organisation

40.   What is a social enterprise concerned with?
(a)   Profit maximisation
(b)   Maximising market share
(c)   Providing public service
(d)   Running a business to create social benefits

41.   The Hawthorne studies are of utmost significance as they form an honest and concerted attempt to understand:
(a)   The human factor
(b)   Employee attitudes
(c)   The worker's social situations
(d)   All the above

42.   "------------ are social inventions for accomplishing goals through group efforts"
(a)   Management
(b)   Organization
(c)   Leadership
(d)   Behavior

43.   Which of the following is/are the key features of organization?
(a)   Social invention
(b)   Accomplishing goals
(c)   Group efforts
(d)   All these

44.   A study of human behavior in organizational settings is
(a)   Individual behaviour
(b)   Group behaviour

(c) Organizational behaviour
(d) None of these

45. Scientific Management approach is developed b
    (a) Elton Mayo
    (b) Henry Fayol
    (c) F.W. Taylor
    (d) A. Maslow

46. Who proposed "bureaucratic structure" is suitable for all organization
    (a) Elton Mayo
    (b) Henry Fayol
    (c) F.W. Taylor
    (d) Max Weber

47 "Hawthrone experiment" which was a real beginning of applied research in OB was conducted by
    (a) Elton Mayo
    (b) Henry Fayol
    (c) F.W. Taylor
    (d) Max Weber

48. Process or administrative theory of organization is being given by
    (a) Elton Mayo
    (b) Henry Fayol
    (c) F.W. Taylor
    (d) Max Weber

49. Whose concept states that interpersonal and human relations may lead to productivity
    (a) Elton Mayo
    (b) Henry Fayol
    (c) F.W. Taylor
    (d) Max Web er

50. Today's organization are
    (a) Open system
    (b) Closed system
    (c) Open as well as closed
    (d) None of these

51. Which organization theory can be understood by IF and THEN relationship
    (a) System approach
    (b) Contingency approach
    (c) Process approach
    (d) Scientific approach

52. "Management means forecasting, planning, organizing, direction, coordinating and controlling". This statement given by
    (a) Peter F Drucker

(b) Henri Fayol
(c) Parkins
(d) FW Taylor

53. The word_____denotes a function, a task, a discipline.

 (a) Management
 (b) Leadership
 (c) Motivation
 (d) None of the above

54. Which theory assumes that people are naturally lazy and will avoid work and responsibilities if possible?
 (a) Theory X
 (b) Theory Y
 (c) Theory Z
 (d) None of the above

55. Under mechanism of scientific management, scientific task setting includes:
 (a) Time study
 (b) Motion study
 (C) Method study
 (d) All of the above

56. The factors coming under philosophy of scientific management are:
 (a) Co-operation
 (b) Maximum output
 (c) Harmony
 (d) All of the above

57. Who is the father of the three-needs theory?
 (a) Vroom
 (b) McClelland
 (c) Peter Drucker
 (d) None of the above

58. Management is concerned with
 (a) Legislative function
 (b) Administrative function
 (c) Executive function
 (d) all of these

59. Management is pervasive in the sense that
 (a) it fulfills all purposes
 (b) it uses all resources effectively
 (c) it is relevant for all organizations
 (d) all of these

60. According to James Lundy, three types of management are
    (a)   Planning – implementation – control
    (b)   Planning – organization – coordination
    (c)   Planning – resources mobilization – education
    (d)   Planning – implementation – monitoring

Ans. 1(d), 2(c), 3(a), 4(d), 5(d), 6(c), 7(c), 8(d), 9(c), 10(b), 11(b), 12(b), 13(c), 14(d), 15(a), 16(c), 17(b), 18(a), 19(a), 20(c), 21(b), 22(c), 23(b), 24(c), 25(b), 26(a), 27(b), 28(c), 29(a), 30(c), 31(b), 32(a), 33(b), 34(d), 35(b), 36(b),37(a), 38(b), 39(a), 40(a), 41(c), 42(c), 43(b), 44(c), 45(a), 46(d), 47(b), 48(d), 49(a), 50(d), 51(b), 52(b), 53(a), 54(a), 55(d), 56(d), 57(b), 58(c), 59(c), 60(a)

II   Short Answer Type Questions:

(a)   Explain the following:

1   The term management has no universal definition.
2   To perform managerial functions managers must fit in many different roles.
3   Mathematical and statistical solutions are most effective in management decision making.
4   Organization is a system comprised of many sub-systems.
5   Economic objectives of business
6   Management as a process.
7   Effective management
8   Contingency approach of Management
9   Mental revolution on the part of management
10   Decision Theory approach
11   Social system approach of management
12   Administrative management
13   Quantitative approach to management
14   Describe the differences between classical and operant conditioning.
15   What are schedules of reinforcement; which are more effective and why?
16   List some everyday examples of each of the reinforcement schedules.
19   What are the essential skills of managers?
20   List out the Management level and functions.
21   What are the stages in evolution of management thoughts?
22   Mention the characteristics if bureaucratic system.
23   What are the challenges of management?

(b)   Differentiate between the following:

1   Management Vs Administration.
2   Conceptual skills and Technical skills
3   Unity of command Vs Unity of direction
4   Contingency Approach Vs Systems approach
5   Interpersonal and Informational role of manager.
6   Effectiveness Vs Efficiency

7   System approach Vs Contingency approach

III   Long Answer Type Questions:

1   What do you understand by management? Discuss the nature of management.
2   "Management is the art of getting things done". Do you agree with the statement? Give reasons.
3   Explain the concept of management and bring out its importance in present-day context.
4   "Management is regarded as an art by some, science by others, and inexact science by many more.   The truth seems to be somewhere in between". Considering this statement, explain the exact nature of management.
5   What is effective management? How does effectiveness differ from efficiency?
6   Discuss the various characteristics and functions of management.
7   What are the four basic activities that comprise the management process? How are they related to one another?
8   Describe the process of management and explain how it can be used to accomplish results in any organization.
9   Enumerate the managerial skills and state their relative importance about different levels of management in an origination.
10   Discuss Henri Mintzberg's classification of basic roles performed by managers in organizations.
11   Contrast and compare classical, neo classical and modern approach to mgt.?
12   Discuss the contribution of Taylor and Fayol to the field of Management.
13   "Elton Mayo is known as the father of human relations school. In the light of this statement explain how the findings of Hawthorne experiments contribute to the human relation approach.
14   What do you understand by a system? Discuss management as a system bringing out its basic features as such.
15   "Scientific management involves in its essence complete mental revolution on the part of the workers and an equally complete mental revolution on the part of management". Examine this statement.
16   Explain how behavioral scientists modify the basic findings of 'Hawthorne Experiment'.
17   "Economic goals and social obligations of business are always in conflict with each other and cannot be reconciled". Comment.
18   Explain the social responsibilities of business towards its shareholders, customers and community at large.
19   Account for the growing concern among business about their social responsibilities. Do you think legal measures are sufficient to force or induce a company to discharge its social responsibilities?
20   Give reasons, why present-day business managers attach importance to social responsibilities.
21   What is the difference between the contingency and the universal perspective of management?   How is the contingency perspective useful in the practice of management today?
22   What is management called a process?   Briefly explain the component of managerial process.
23   To manage is to forecast and plan to organize, to command, to coordinate and to control". Elaborate this statement.

24 "All organizations need management". Comment on this statements.
25 Write notes on the following:
    (a)   Nature & Significances of management
    (b)   Management as a Profession.
26 What do you mean by 'Levels of Management'? Briefly describe the different levels of management.
27 Discuss Henry Mintzberg's classification of basic roles performed by Managers in Modern Organizations.
28 Write an explanatory note on the skills required by managers.
29 What functions and duties are associated with top & middle management in modern industrial unit? Explain briefly.
30 Who is a manager? What are the qualities of a successful manager?
31 "The job of a supervisor is more difficult than that of higher level managers". Explain what are major functions of supervisor?

UNIT - II

(a)   Multiple Choice Questions:

1 One of the factors which learning organizations possess is a climate of openness and the other factor is
    (a)   Motivation
    (b)   Closeness
    (c)   Trust
    (d)   Delegation

2 _____ plans have clearly defined objectives.
    (a)   Directional
    (b)   Flexible
    (c)   Specific
    (d)   Standing

3 Strategic planning:
    (a)   Addresses the organization's basic mission or business, issuing broad statements of purpose or direction that have a long lead time.
    (b)   Involves managers in each unit of an organization who are responsible for achieving the unit's objectives within a specified period.
    (c)   Looks specifically at resources, finances, and market conditions to determine ways to accomplish the overall plans of the organization.
    (d)   Determines the day-to-day operations within an organization.

4 The planning process can be used to promote_____ in organization
    (a)   Advancement
    (b)   Technologies
    (c)   Innovation

(d)   Discoveries

5   _____ reduces uncertainty
(a)   Negotiating
(b)   Planning
(c)   Organizing
(d)   Leading

6   _____are those plans that are extended beyond three years.
(a)   Short Term Plans
(b)   Long Term Plans
(c)   Specific Plans
(d)   Strategic Plan

7   Identify the best definition of planning.
(a)   Setting an organization's objectives and the means of reaching them.
(b)   An integrated process in which plans are formulated, carried out and controlled.
(c)   The core activity of planners and planning departments.
(d)   Devising ways of achieving the objectives of an organization.

8   Identify three levels of planning.
(a)   Top, middle and bottom
(b)   Headquarters, divisional and local
(c)   Operational, intermediate and strategic
(d)   Strategic, administrative and functional
(e)   None of the above

9   What is the planning horizon?
(a)   The maximum time for which managers can make plans.
(b)   The time period within which uncertainty is very low.
(c)   The time between making a plan and putting it into effect.
(d)   The time ahead for which there is no information.
(e)   The distance ahead for the forecasts on which plans are made.

10   i)   A good objective should clarify the desired result;
        ii)   enable achievement to be measured; and
        iii)   need not specify a time scale.

                Which of these statements is true?
(a)   (i)only
(b)   All of them
(c)   (i) and (ii)
(d)   (i) only.
(e)   (iii) only

11   What is the more formal term for what is known as 'Plan B'?
(a)   A catastrophe plan
(b)   A crisis plan

15

(c) A contingency plan
(d) A calamity plan
(e) A circumstantial plan
(f) A convergence plan

12 Decision-making model consists of four styles: directive, analytic, behavioral and_____.
(a) Conceptual
(b) Intuitive
(c) Group interaction
(d) Laggard

13 _____ is not one of the eight steps in the decision making process.
(a) Identifying the problem
(b) Analyzing alternative solutions
(c) Implementing the decision
(d) Delegating the decision making

14 Brainstorming is used by the management for:
(a) Work allocation on the shop floor.
(b) Generating alternative for problem solving.
(c) The promotion of research and development.
(d) Training employees.

15 The General Manager's meeting was most likely a result of the following management function:
(a) Organizing
(b) Planning
(c) Decision-Making
(d) Controlling

16 A variation of the electronic meeting that links together media from different locations is_____
(a) E-commerce
(b) The Delphi technique
(c) Video conference
(d) E-conference

17 Which type of decision making is carried out by lower level management and deals with specific day-to-day processes?
(a) Programmed decision making
(b) Operational decision making
(c) Administrative decision making
(d) Mid-level decision making

18 A budget is what type of control?
(a) Standard
(b) Process
(c) Division

(d)   Financial

19   A/An_____ is a formal evaluation of an organization's financial statements,
         performed either by an outside accounting firm or by an internal department.
         (a)   Revenue operating budget
         (b)   Incident log
         (c)   Financial audit
         (d)   Balance sheet budget

20   In a PERT network, slack time is_____.
         (a)   The end that represents the completion of a major activity
         (b)   The time or resources required to progress from one event to another
         (c)   The amount of time an individual activity can be delayed without delaying
                 the whole Project
         (d)   The longest or most time-consuming sequence of events and activities

21   _____ involves allocating resources by detailing what activities have to be done,
         the order in which they are to be completed, who is to do each, and when they are to be
         completed.
         (a)   Benchmarking
         (b)   Budgeting
         (c)   Scheduling
         (d)   Competitor intelligence

22   A _____ is a position that has authority and responsibility for achieving the major
         goals of the organization.
         (a)   Line position
         (b)   Staff position
         (c)   Labor position
         (d)   Manager position

23   Deciding where decisions will be made who will do what jobs and tasks and who   will
         work for whom is called _____.
         (a)   Planning
         (b)   Organizing
         (c)   Leading
         (d)   Controlling

24   The exception principles to control means
         (a)   Control over significant deviations
         (b)   Control over all deviations
         (c)   Control over no deviations

25   Control over the activities while they are in process is:
         (a)   Feed forward Control
         (b)   Concurrent control
         (c)   Feedback Control

26   Controls exercised by lower level managers are:
      (a)   Strategic level controls
      (b)   Tactical level controls
      (c)   Operating level controls

27   Principle of preventive control means:
      (a)   Avoid the occurrence of deviations
      (b)   Correct the deviations
      (c)   None of these

28   Modern managers are:
      (a)   action oriented.
      (b)   able to build a sense of shared values.
      (c)   able to manage change efficiently.
      (d)   all the above.

29   Planning, organizing, directing and controlling are the:
      (a)   functions of management.
      (b)   goals of management.
      (c)   results of management.
      (d)   all the above.

30   Coordinating people and human resources to accomplish organizational goals is the process of:
      (a)   planning
      (b)   directing
      (c)   management
      (d)   leadership

31   Which of the following would be included in the "controlling function"?
      (a)   measuring results against corporate objectives
      (b)   explaining routines
      (c)   setting standards
      (d)   giving assignments

32   Specific, short-term statements detailing how to achieve an organization's goals is known as its:
      (a)   vision.
      (b)   mission statement.
      (c)   objectives.
      (d)   operational planning.

33   An outline of the fundamental purpose of an organization is called its:
      (a)   mission statement.
      (b)   objectives.
      (c)   policy.
      (d)   all the above.

34   Strategic planning is done by:
      (a)   top managers of the firm.

(b)   middle managers.
(c)   supervisory managers.
(d)   non-supervisory employees.

35   Mr. X is a branch manager for Microsoft. He is:
(a)   top management.
(b)   middle management.
(c)   supervisory management.
(d)   none of the above.

36   The most effective leader is one who:
(a)   makes managerial decisions without consulting others
(b)   works with managers and employees to make decisions
(c)   has the leadership style most appropriate to the situation and the employee involved?
(d)   none of the above

37   Empowerment is related to:
(a)   planning.
(b)   organizing.
(c)   directing.
(d)   controlling.

38   Technical skills are most important for which of the following:
(a)   first line managers.
(b)   middle managers.
(c)   vice President-Production.
(d)   top managers.

39   Motivation is related to:
(a)   planning.
(b)   controlling.
(c)   leading.
(d)   tactical decisions.

40   ------------ refers to the basic changes in the content and responsibilities of job to satisfy higher motivational needs
(a)   Job enrichment
(b)   Job enlargement
(c)   Work relocation
(d)   Process consultation

41   Plan made in the light of competitors plan is known as
(a)   Policy
(b)   Procedure
(c)   Strategy
(d)   Undercover Plan

42 A written statement of main duties and responsibilities which a particular job entails is called
   (a)   Job evaluation
   (b)   Job analysis
   (c)   Job description
   (d)   None of these

43 The following is (are) the element(s) of control
   (A)   Authority and knowledge
   (B)   Guidance and direction
   (C)   Constraint and restraint
   (D)   All of the above

44 MBO was invented by _____.
   (A)   Peter Drucker
   (B)   Koontz & O 'Donell
   (C)   Henry Fayol

45 Span of management refers to
   (a)   number of managers
   (b)   length of term
   (c)   number of subordinates
   (d)   members in top management

46 "Harmonies of objectives" is a principle of
   (a)   Directing
   (b)   Planning
   (c)   Controlling
   (d)   Organizing

47. Which of the following management functions are closely related?
   (a)   planning and organizing
   (b)   staffing and control
   (c)   planning and control
   (d)   planning and staffing

48. The last function in the sequence,which culminates in the attainment of organization objectives,is:
   (a)   organizing
   (b)   coordinating
   (c)   controlling
   (d)   planning

49. Main functions of administrative management are:
   (a)   planning,organizing ,staffing,directing and controlling
   (b)   planning ,organizing,directing and controlling
   (c)   planning ,organizing,staffing and directing
   (d)   planning,organizing,controlling and representation

50. Guiding and supervising the efforts of subordinates towards the attainment of the organization 's goals describes the function of :
    (a)   planning
    (b)   organizing
    (c)   directing
    (d)   controlling

Ans.   1(c), 2(a), 3(c), 4(c), 5(b), 6(b), 7(a), 8(d), 9(c), 10(c), 11(c), 12(a), 13(d), 14(b), 15(c), 16(c), 17(b), 18(d), 19(c), 20(c), 21(b), 22(a), 23(b), 24(a), 25(b),26(c),27(a), 28(d),29(a), 30(b), 31(a), 32(c), 33(a), 34(a), 35(c), 36(c), 37(c), 38(a), 39(c), 40(a), 41(c), 42(c), 43(a), 44(a), 45 (a), 46(c), 47(c), 48(c), 49 (b), 50(c)

II   Short Answer Type Questions:

(a)   Explain the following:

1.   The dependence and influence between an organization and external environment are reciprocal to a very large extent.
2.   Many conflicts between line and staff managers occur due to identifiable reasons.
3.   Written communication should always be preferred in an official setup.
4.   Indian Ethos in management
5.   Explain the concept of matrix application?
6.   Relationship between planning and control.
7.   Planning as an open system approach
8.   Barriers to effective planning
9.   External and Internal Planning premises
10.   Bounded Rationality
11.   Decision tree
12.   Span of control
13.   Define contingency plan
14.   What are the factors determining the policy making?
15.   What are the types of Decision?
16.   Define the term Planning Premises.
17.   What is functional departmentation?
18.   Explain the term art of delegation.
19.   Forecasting is an indispensable element of planning.
20.   Management by objective is both a technique of planning and motivation.
21.   Decision-making is all pervasive activity.
22.   Strategic decisions have far reaching consequences to the organizations.
23.   Planning and controlling are Siamese twins.
24.   Steps of decision-making process.

(b) **Differentiate between the following:**

1   Strategic and operational plans
2   Policy and Procedure
3   Vision and Mission
4   Representative and Availability Heuristics
5   Pre-Control and Post-Control
6   Long term planning and short term planning
7   Strategic and Tactical Planning
8   Standing Plans and single use plans
9   Write notes on 'any three' of the following :
     (a) MBO
     (b) Management of stress
     (c) Johari Window
     (d) Steps in decision making
     (e) Formal and informal groups
11   List and explain the four ways employees can express job dissatisfaction.
12   Discuss three different criteria for ethical decision making
13.   Identify and describe the different types of communication flows
14.   Explain how Fred Luthans differentiates between successful and effective managers

III   Long Answer Type Questions:

1.   Write a detailed note on various types of values that are important for managers in today's environment.
2.   "Planning is mere ritual in the fast-changing environment." How far do you agree with this statement? Why?
3.   Explain the importance of control in a business enterprise. Discuss briefly the steps in managerial control. What are the requirements of an effective control system?
4.   Sunrise Steel Ltd. has decided to diversify its activities and undertake production of 'mobiles'. The CEO of the company seeks your advice on whether to group the activities by product or by function. What advice will you tender and why?
5.   'Decision making is the essence of managing.' Comment and explain the features of a rational decision.
6.   How far do you agree with the view that there is no direct relationship between planning and control? Also, explain the concept of Management by objective with the help of a suitable example.
7.   Define Controlling. Discuss the steps of a control process. What are the various techniques of controlling?
8.   Explain in detail about the various forecasting methods.
9.   Define policies with its types. Explain the planning premises with types
10.   Explain the relationship of planning and controlling
11.   Planning should be defined as the selection from alternative policies, procedures and program's. Elucidate and indicate the various steps involved in planning?
12.   Define strategic planning & explain the importance of strategic planning in the organization's operations.
13.   "Policies are guide-posts for managerial action". Discuss the statement and give at least two examples form any business management.

14. Explain in detail about the TOWS matrix and SWOT analysis.
15. What are the various stages in the process of rational decision making? Discuss regarding a business decision.
16. How is decision taken in organizations? Explain the process of bounded rationality.
17. Discuss the various factors affecting the decision-making process.
18. Explain the various models of decision making.
19. Explain the various types of problem solving techniques.
20. Explain the importance of control in a business org. discuss the process of control with suitable illustration.
21. Why is control a must in business management? What are the requirements of an effective control system?
22. Why do employees inherently dislike and resist control? Suggest measures to overcome resistance to control.
23. "Planning is meaningless without control and control is aimless without planning". Explain the statement with examples.
24. Discuss the major advantages and disadvantages of Management by Exception.
25. Briefly explain operational research techniques for taking managerial decisions
26. What is OR? Explain its role in decision making
27. Explain the concept of bounded rationality. What factors lead to bounded rationality?
28. "Planning is an intellectual process, the conscious determination of courses of action, the basis of decisions on purposes, facts and estimates." Discuss this statement and identify the steps involved in planning process.
29. Discuss the nature of planning as a rational and as an open system approach. How can planning be considered as pervasive?
30. 'M.B.O is a comprehensive management system that integrates many key managerial activities in a systematic manner and that is consciously directed to achieve the stated objectives". Explain this statement.
31. What do you mean by Management by Objectives (M.B.O)? What is the procedure of M.B.O.?
32. What are the features of M.B.O. and explain how it is different from Management by Exception?
33. A large organization consults you for introducing M.B.O. How will you explain the problems and benefits of M.B.O? What steps would you advise for successful implementation of M.B.O?

UNIT - III

(b)   Multiple Choice Questions:

1   According to Herzberg, which of the following is a maintenance factor?
     (a)   Salary
     (b)   Work itself B
     (c)   Responsibility
     (d)   Recognition

2   The purpose of job enrichment is to
     (a)   Expand the number of tasks an individual can do
     (b)   Increase job efficiency

(c) Increase job effectiveness
(d) Increase job satisfaction of middle management

3 One who tries to bring discipline and order through formal structures, plans and processes and tries to monitor performance against plans is a
(a) Leader
(b) Manager
(c) Co-coordinator
(d) Team-player

4 To preserve their perceptions, people tend to
(a) Resist change violently
(b) Ignore the change process
(c) Create bottlenecks for change agents
(d) Process information selectively

5 The process, which is aimed at seeking change in attitudes, stereotypes and perceptions, that groups hold of each other is called
(a) Organizational development
(b) Inter-group development
(c) T-groups
(d) Team-building

6 _____need involves the desire to affiliate with and be accepted by others.
(a) Esteem
(b) Belongingness
(c) Safety
(d) Self-Actualization

7 Needs that impel creativity and innovation, along with the desire to have a productive impact on our surroundings are_____ needs.
(a) Existence
(b) Relatedness
(c) Growth
(d) None of the Above

8 ERG theory was introduced by_____.
(a) Clayton Alderfer
(b) McClelland
(c) Douglas McGregor
(d) J. Stacey Adams

9 _____ is counter to goal-setting theory.
(a) Expectancy Theory
(b) Reinforcement Theory
(c) ERG Theory
(d) None of given option

10   Surroundings are needs.
      (a)   Existence
      (b)   Relatedness
      (c)   Growth
      (d)   None of the Above

11   Challenging goals usually lead to_____ performance from individuals and
      groups.
      (a)   Higher
      (b)   Lower
      (c)   Excellent
      (d)   None of the Above

12   The theory that an individual tends to act in a certain way, with the expectation that the
      act will be followed by a given outcome and according to the attractiveness of the
      outcome is_____.
      (a)   Equity theory
      (b)   Three-needs theory
      (c)   Motivation-hygiene theory
      (d)   Expectancy theory

13   Which of the following statements would a Theory X manager consider to be true?
      (a)   The average person can learn to accept and even seek responsibility
      (b)   Employees will shirk responsibility
      (c)   Employees will exercise self-direction if they are committed to the objectives
      (d)   Employees view work as being as natural as play

14   Which management theorist is responsible for the motivation-hygiene theory?
      (a)   Abraham Maslow
      (b)   Dale Hawthorne
      (c)   Peter Drucker
      (d)   Frederick Herzberg

15   According to Abraham Maslow, the most elevated type of need is_____.
      (a)   Self-actualization
      (b)   Physiological
      (c)   Esteem
      (d)   Safety

16   Which of the following is not an internal force of change?
      (a)   technology
      (b)   strategy
      (c)   workforce
      (d)   employee attitudes

17   "They are the worst firm I have ever dealt with" is ………components of attitude.
      (a)   Affective component

(b)   Cognitive component
(c)   Intentional component
(d)   None of these

18   "I will never do business with them again" is ………components of attitude.
(a)   Affective component
(b)   Cognitive component
(c)   Intentional component
(d)   None of these

19   Which of the following is a method of measuring attitude?
(a)   Opinion survey
(b)   Interview
(c)   Scaling techniques
(d)   All the above

20   Basis of "Autocratic Model of OB is
(a)   Economic resources
(b)   Power
(c)   Leadership
(d)   Partnership

21   Basis of "Custodial Model of OB is
(a)   Economic resources
(b)   Power
(c)   Leadership
(d)   Partnership

22   "Person-Job fit" means
(a)   Persons physical fitness match with the job
(b)   Persons skills match with the job
(c)   Persons contributions match with the incentives offered by the organization
(d)   Persons education match with the job

23   …………is a person's belief about his chances of successfully accomplishing a specific task
(a)   Self esteem
(b)   Job satisfaction
(c)   Self-efficacy
(d)   Self-appraisal

24   Select the correct hierarchical order of qualities of an individual
(a)   Ability-Skills- Aptitude- Competency
(b)   Aptitude-Ability- Skills- Competency
(c)   Skills- Aptitude- Competency- Ability
(d)   Competency-Ability-Skills- Aptitude

25 In what way does the Whistleblower Protection Act differ from the False Claims Act?
    (a)   Unlike the False Claims Act, the Whistleblower Protection Act extends its protection to corporate employees.
    (b)   Unlike the Whistleblower Protection Act, the False Claims Act safeguards corporate employees from retaliation.
    (c)   Unlike the False Claims Act, the Whistleblower Protection Act safeguards federal employees from retaliation.
    (d)   Unlike the Whistleblower Protection Act, the False Claims Act guarantees the anonymity of the whistle-blower.

26 Z theory is a Japanese approach of motivation developed by
    (a)   McClelland
    (b)   William Ouchi
    (c)   Alderfer
    (d)   Mc Gregor

27 According to ---------- the managers and workers should work together as partners and of equal importance for the organizations success
    (a)   X theory
    (b)   Y theory
    (c)   Z theory
    (d)   2 Factor theory

28. Which one of the following need is not coming under McClelland theory of motivation?
    (a)   Need for power
    (b)   Need for achievement
    (c)   Need for affiliation
    (d)   Need for actualization

29 S-O- B-A Model combines the S-R Model and
    (a)   Stimuli
    (b)   Response
    (c)   Human being
    (d)   Drive

30 Which of the following are terminal values?
    (a)   Accuracy and creativity
    (b)   Excellence and innovation
    (c)   Profitability and hard work
    (d)   Quality and capability

31 Which of the following is an instrumental value?
    (a)   Excellence
    (b)   Innovation
    (c)   Friendliness
    (d)   Profitability

32 'People dislike work and seek to avoid it at all costs' applies to which organisational behaviour theory?
    (a)   Theory Y

(b)   Theory X
(c)   Management by objectives
(d)   Hawthorne effect
(e)   All organisational behaviour theories about the individual in the workplace

33   Which of the following is not one of Drucker's seven tasks for managers?
(a)   Manage by objectives
(b)   Take strategic decisions
(c)   Take operational decisions
(d)   Build integrated teams

34   Who, in this list, has power in the organization?

(a)   Only executives

(b)   Only management level

(c)   Only workers

(d)   Executives, management, and workers

35   Why might empowering the workers be good for the organization?
(a)   Because workers are better trained and therefore more productive.
(b)   Empowered workers work best in a team.
(c)   Managers have more control over telling people exactly what to do.
(d)   Power resides at the level of the person actually doing the job, leading to better decision making and can satisfy customer needs.

36   Why does empowerment not necessarily produce greater freedom for the worker?
(a)   Workers can get promoted but do not necessarily get paid more.
(b)   Employees have increased responsibilities of how to carry out tasks without necessarily being able to set the wider goals of the organization.
(c)   Empowered workers might set harder goals for themselves than management would have done.
(d)   Empowered workers might share their secrets with management leading to greater control over them.

37   Work attitudes can be reflected in an organization through
(a)   Job satisfaction
(b)   Organizational commitment
(c)   Both 'A' and 'B'
(d)   None of the above

38   Which of the following individuals can be considered a whistle-blower?
(a)   Jack, who discovers evidence of malpractice in the organization he works for and chooses to report it
(b)   Alan, who discovers evidence of malpractice in the organization he works for and chooses to ignore it
(c)   Hailey, who discovers and ignores the fact that her company's main competitor is doing something unethical

(d)   Danielle, who discovers and reports the fact that her company's main competitor is doing something unethical

39 If there is evidence that the whistle-blower is motivated by _____, then the legitimacy of the act of whistle-blowing must be questioned.
(a)   his or her value system
(b)   the opportunity for financial gain
(c)   concern for the welfare of consumers
(d)   his or her personal integrity

40 . Which one is not a Need Based Theory of motivation?
(a)   Maslow's Theory
(b)   F. Herzberg's theory
(c)   Alderfer's theory
(d)   Vroom's theory

41   Which one is not a Process Based Theory of motivation?
(a)   Porter Lawler theory
(b)   McClelland's theory
(c)   Stacy Adams theory
(d)   Vroom's theory

42   Who developed Equity theory of motivation?
(a)   Porter Lawler
(b)   McClelland
(c)   Stacy Adams
(d)   Vroom

43 Porter Lawler Model is an extension of
(a)   Maslow's theory
(b)   McClelland's theory
(c)   Stacy Adams theory
(d)   Vroom's theory

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48   Which of the following statements best describes a behaviourist approach to learning?
- (a)   People learn by forming patterns and associations in their mind
- (b)   People learn from experience
- (c)   People learn through punishment and reward.
- (d)   People learn by sharing 'war stories'.

49   People learn and memorize things by contextualizing them in a pattern, or by making associations. Which approach to learning does this best describe?
- (a)   Behaviourist view of learning
- (b)   Experiential learning
- (c)   Gestaltist view of learning
- (d)   Organizational learning

50   A person's _____ comprises internal factors, such as ability, intelligence and personality, and will determine how an individual respond to certain stimuli.
- (a)   Sensory limit
- (b)   Psychological threshold
- (c)   Perceptual set
- (d)   Cognitive set

51   Which of the following will influence an individual's perceptions?
- (a)   Previous experiences.
- (b)   Sensory limitations.
- (c)   Individual needs.
- (d)   All of the above.

52 Which two of the following are terms used by Cook to describe the two kinds of information used in an social encounter?
(a)   Secondary information, Impressionistic information.
(b)   Primary information, Secondary information
(c)   Dynamic information, Static information.

53 Which three of the following does Kelley suggest are the basic criteria that we use when making attributions?
(a)   Consensus, Consistency, Distinctiveness.
(b)   Internal factors, External factors, Conformity
(c)   None of these.

54 The process by which the perception of a person is formulated based on a single favourable or unfavourable trait or impression, where other relevant characteristics of that person are dismissed is called:
(a)   Stereotyping.
(b)   Clouded judgment.
(c)   The angel effect.
(d)   The halo effect.

55 What are the three classes of factors that influence perception?
(a)   factors in the setting, factors in the environment and factors in the motives
(b)   factors in the perceiver, factors in the target and factors in the situation
(c)   factors in the character, factors in knowledge and factors in experience
(d)   factors in the personality, factors in the character and factors in the values
(e)   factors in the senses, factors in the surroundings and factors in the lighting

56 What do we call the process by which individuals organize and interpret their sensory impressions to give meaning to their environment?
(a)   interpretation
(b)   environmental analysis
(c)   social verification
(d)   outlook
(e)   perception

57 Two people see the same thing at the same time yet interpret it differently. Where do the factors that operate to shape their dissimilar perceptions reside?
(a)   the perceivers
(b)   the target
(c)   the timing
(d)   the context
(e)   the situation

58 What is the relationship between what one perceives and objective reality?
(a)   They are the same
(b)   They can be substantially different.
(c)   They should be the same.
(d)   They are rarely if ever the same.
(e)   They cannot be the same.

59   Which of the following is not a factor in the individual perceiver?
      (a)   Attitude
      (b)   motive
      (c)   Expectation
      (d)   Location
      (e)   Perception

60. According to Tolman, reward is not required for learning but is required for
      (a)   extinction.
      (b)   performance.
      (c)   memory.
      (d)   direction.

Ans.   1(a), 2(a), 3(b), 4(a), 5(c), 6(b), 7(c), 8(a), 9(b), 10(c), 11(a), 12(d), 13(b), 14(d), 15(a), 16(a), 17(b), 18(c), 19(d), 20(b), 21(c), 22(b), 23(c), 24(b), 25(c), 26(b), 27(c), 28(d), 29(c), 30(b), 31(d), 32(b), 33(d), 34(b), 35(d), 36(b), 37(b), 38(c), 39(a), 40 (b), 41(c), 42(a), 43 (c), 44(d), 45(c), 46(a), 47(b), 48(c), 49(c), 50(c), 51(c), 52(d), 53(c), 54(a), 55(a), 56(b), 57(e), 58(a), 59(b), 60(b)

II   Short Answer Type Questions:

(a)   Explain the following:

1.   People behave based on what they perceive rather than what is.
2.   Operant conditioning theory is more applicable in organizations.
3.   Rewards are both extrinsic and intrinsic.
4.   Discuss the three key elements of motivation
5.   Why has the study of OB become a standard component of business school programs?
6.   Discuss two ways people learn about organizational behavior.
7.   In reality, workplace learning is a mixture of both cognitive and behavioural learning—discuss.
8   What relevance do operant and classical conditioning have to the explanation of workplace behaviour?
      9.   Why do managers need to have knowledge of behaviour?
      10. Explain the meaning and concept of behaviour.
      11. Explain the importance of personality, needs and situation in determination of   behaviour.
      12. Why do managers need to understand the concept of individual differences?
      13. Briefly explain the meaning of organizational behavior.
      14. What is meant by dealing with changed employee expectations?
      15. Describe the differences between classical and operant conditioning.
      16. To what extent can there be a 'technology of behavior'?
      17. Why is learning theory important to modern economies?

(b)   Differentiate between the following:
   - Classical and social learning theories
   - Job Involvement and Job Satisfaction

- Motivational and Hygiene factors
- Autocratic and Free- rein leadership styles
- Planned and Unplanned Change
- External and Internal Change Agents
- Organization Culture and Climate.

III Long Answer Type Questions:

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1. "OB represents a constant interaction between structure and process variables". Comment.
2. Define Organizational Behavior and explain the need of understanding human behavior in organizations.
3. "Organizational Behavior represents interactions among individuals, groups and the organization.: Elucidate this statement.
4. "OB is relatively a young field of study that borrows many concepts and methods from the behavioral and social sciences," Comment. What advantages and disadvantages can you see in such youth and diversity?
5. "Since Organizational Behavior is common sense; there is no need to study it formally." Comment.
6. Explain the challenges of organizational behaviour in the context of present-day environment.
7. In what areas has psychology contributed to OB?
8. How do individual differences and environmental factors influence human behavior in an organizational setting?
9. Briefly explain techniques that management may use to overcome resistance to change.
10. A large unit manufacturing electrical goods which has been known for its liberal personnel policies and fringe benefits is facing the problem of low productivity and high absenteeism. How should the management improve the organizational climate?
11. Discuss autocratic, custodial, supportive and collegial models of OB. What are the situations under which they can be effective?
12. Define OB as a field of study? What are its main features? How does it differ from OT & behavioural science?
13. What is the concept of rationality and what are the limits on rationality?
14. "There are different causes of stress; some lie within the individual himself and others lie outside him." Explain this statement by bringing out factors responsible for creating stress
15. How does power in organizations tend to remain concentrated in few hands? Discuss with special reference to the organizational factors responsible for allocation of pow
16. According to Vroom, "Motivation is a product of three factors- Valence, Expectancy and instrumentality". Explain. You believe that one of your employee has excellent potential for promotion and want to encourage him to prepare for it. How would you use Vroom's Expectancy model for the purpose?
17. What are determinants of high morale? Suggest some measures which would raise the level of morale in an organization.
18. Discuss the nature and significance of morale. Describe the relationship between morale and productivity.
19. "Despite the existence of plethora of theories of motivation, we still are in search of a suitable theory of motivation". Explain this statement. How does contingency approach to motivation try to bridge this gap?

20. What are the various elements in the Porter- Lawler Model of motivation? What are the implications of these elements in motivating a person?
21. What challenges and opportunities do the managers face in the context of organizational Behaviour.
22. Differentiate between the Maslows Need Hierarchy Theory and ERG Theory of Motivation.
23. Define the term Organizational Behaviour. Discuss its models.
24. Discuss the determinants of behavior. Write a short note on utility of knowledge of behavior to a manager.
25. How does the understanding of human nature facilitate a manager in performance of various roles?
26. Explain the determinants of individual behaviour. What are the common perceptual errors that can affect decision-making by the managers?
27. How do values originate? What is the relationship between values and culture?
28. Bring out the distinction between Maslow and Herzberg theories of motivation. What is the role of money in motivating the managers?
29. "Motivation is the core of management". Comment. What practical suggestion would you offer to the management to motivate its staff in an industrial organization.
30. Discuss the strategies of coping with stress among workers in modern organizations
31. Discuss selective perception and any experience you have with it. How does perception affect the decision-making process?
32. Explain the concept of personality. Discuss the personality traits that affect behaviour.
33. "Perception is a process of input- throughput- output Analysis". Comment. Give some examples of perceptual sets from work settings.
34. Define Perception. Discuss the different factors that affect our perception in understanding human behaviour.

UNIT – IV

Multiple Choice Questions:

1. What best describes the Adult ego state?
   (b) It may be associated with having fun, playing, impulsiveness, rebelliousness, spontaneous behaviour and emotional responses.
   (c) It refers to feelings about right and wrong and how to care for other people
   (d) In this state, we may be objective, rational, reasonable, seeking information and receiving facts.
   (e) None of the above

2. Which of the following are employees with an internal locus of control orientation more likely to display than employees with an external control orientation?
   (a) An increased probability of gaining managerial positions.
   (b) Greater satisfaction with their jobs.
   (c) Greater satisfaction with participatory management.
   (d) All the above.

3   Values are important to organizational behaviour because they:
      Select correct option:
      (a)   Are considered as an integral part of culture
      (b)   Help to understand the attitudes and motivation
      (c)   Form the supporting foundation for the study of ethics
      (d)   Allow the study of alignment of organizational policies

4   Values like working hard, being creative and honest are the means which lead towards
      achieving organizational goals. Which of the following term best describes these
      values?
      Select correct option:
      (a)   Terminal values
      (b)   Instrumental values
      (c)   Theoretical values
      (d)   Social values

5   1st stage of group development is_____.
      (a)   Storming
      (b)   Norming
      (c)   Forming
      (d)   Performing

6   Inputs necessary for the group to operate are_____ inputs.
      (a)   Group Size
      (b)   Work Group
      (c)   Group Task
      (d)   None of the Above

7   A group of employees with expertise in a variety of specialty areas who are brought
      together to work on a project or specific activity is a:
      (a)   Cross functional team
      (b)   Self-managed team
      (c)   Virtual team
      (d)   Problem-solving team

8   _____ synergy is the force that results when the combined gains from group
      interaction (as opposed to individuals operating alone) are greater than   group
      process losses.
      (a)   Positive
      (b)   Negative

9   _____occurs as group members attempt to assess the ground rules that will apply to
      a task and to group interaction.
      (a)   Forming
      (b)   Storming
      (c)   Norming
      (d)   Performing

10   _____ occurs as energy is channeled toward a task and as norms support teamwork.
(a)   Forming
(b)   Storming
(c)   Performing
(d)   Adjourning
(e)   Norming

11   If a solution to a problem is not vital to the functioning of inorganization and management is willing to overlook the causes of the conflict, managers may choose to use which type of conflict resolution?
(a)   Confrontation
(b)   Avoidance
(c)   Dominance
(d)   Compromise

12   _____ focuses on solving conflicts by allowing the desires of the other party to prevail.
(a)   Avoidance
(b)   Accommodation
(c)   Competition
(d)   Compromise
(e)   Collaboration

13   _____ aims to solve conflict issues by having each party give up some desired outcomes in order to get other desired outcomes.
(a)   Avoidance
(b)   Collaboration
(c)   Competition
(d)   Compromise
(e)   Accommodation

14   _____ is the adverse reaction people must excessive pressure placed   on them from extraordinary demands, constraints, or opportunities.
(a)   Stereotyping
(b)   Stress
(c)   A halo effect
(d)   Creativity

15   Zahid is undergoing a great deal of stress at his job. Zahid performs several duties during a day and finds that the accomplishment of one duty directly competes or interferes with the successful accomplishment of another duty. It can be said that Zahid is most probably experiencing:
(a)   Role ambiguity
(b)   Role conflict
(c)   Personal conflict
(d)   Relationship conflict

16   If you support the idea that conflict should be eliminated, you are supporting which of the following views of conflict? Select correct option:
      (a)   The traditional view
      (b)   The human relations view
      (c)   The interactionist view
      (d)   The positivistic view

17   Conflict is a state of
      (a)   Commonness of values and beliefs
      (b)   Opposition of values and beliefs
      (c)   Neutral values and beliefs
      (d)   All the above

18   Conflict can arise in the situation of
      (a)   Competition
      (b)   Cooperation
      (c)   Both
      (d)   Neither a nor b

19   ----------leader is self-confident and can attract followers by his great influence
      (a)   Charismatic
      (b)   Autocratic
      (c)   Laissez-faire
      (d)   Bureaucratic

20   Which of the following is not a contingency theory of leadership?
      (a)   LPC theory
      (b)   Path Goal theory
      (c)   Vroom-Yetton-Jago theory
      (d)   Job centered Leadership

21   --------is an attempt through a formal program to integrate employees' needs and wellbeing with the intention of improved productivity, better involvement and satisfaction
      (a)   Quality of Work life
      (b)   Quality Circle
      (c)   Alternative Work schedule
      (d)   Job Redesign

22   --------------refers to the combination of two or more individuals, groups or organization for a common goal with a minimum common programme
      (a)   Contracting
      (b)   Co-opting
      (c)   Co-alition
      (d)   Competition

23   Which of the following is a positive reaction to the blockage of a desired goal?
      (a)   Regression.
      (b)   Fixation.

(c)   Withdrawal.
(d)   Restructuring.

24   Which of these is not a key feature of a team?
(a)   Mutual independence
(b)   Mutual purpose
(c)   Shared responsibility
(d)   Working in the same department that is called a team

25   What is social loafing?
(a)   A process where individuals in teams work less hard than they would individually.
(b)   A process where individuals work harder when they are in teams.
(c)   When someone hangs around with others and enjoys the camaraderie of being part of a team.
(d)   Team building activities

26   Which of the following is a particular benefit of teamwork to the organization as a whole, rather than the individual?
(a)   Transfer of skills and technical expertise
(b)   Learning skills from others
(c)   Job enrichment
(d)   Increased motivation

27   Tuckman's stages of team formation go in what order?
(a)   Norming, storming, forming, performing, adjourning
(b)   Forming, storming, norming, performing, adjourning
(c)   Founding, storming, norming, performing, adjourning
(d)   Forming, staining, norming, performing, adjourning

28   What is groupthink?
(a)   Negotiation a solution as part of the group
(b)   Learning to compromise to fit within the group
(c)   A meeting where everyone shares their ideas
(d)   Social pressure put on individuals to think in a particular way

29   Types of groups consists
(a)   Primary Group
(b)   Information Group
(c)   Formal Group
(d)   All of these

30   Environmental factors, new senior staff and union pressure can all be examples of what?
(a)   Force-field analysis
(b)   Triggers for change
(c)   Naïve approaches to change
(d)   The organization as an iceberg

31   Anxiety, inertia, cultures, and contractual obligations can all contribute to what?
(a)   Triggers for change
(b)   Resistance to change
(c)   Metaphors for the nature of organization
(d)   Chaos theory

32   Triggers and resistance to change plotted out on a diagram is a technique known as what?
(a)   The emergent approach to change
(b)   Force-field analysis
(c)   Chaos theory
(d)   The naïve approach to change

33   What is the term used to define the number of subordinates directly controlled by a manager?
(a)   Division management
(b)   Departmentation
(c)   Sphere of influence
(d)   Span of management

34   What kind of organizational structure combines a vertical chain of command with horizontal reporting requirements?
(a)   Line Authority
(b)   Matrix
(c)   Functional
(d)   Quality circle

35   Functional managers are responsible
(a)   For a single area of activity
(b)   To the upper level of management and staff
(c)   For complex organizational sub-units
(d)   For obtaining copyrights and patents for newly developed processes and equipment.

36   Which pattern reflects a pure executive form of management?
(a)   Functional
(b)   Line`
(c)   Line and Staff
(d)   Committee

37   Organizational Culture is retained in organizations through
(a)   Stories
(b)   Rituals
(c)   Top Management
(d)   All the above

38   Which is not related to Indian Value System
(a)   Truth
(b)   Loyalty

(c)   Purity of Mind
(d)   Forgiveness

39   The essence of communication is
(a)   Transmitting Information
(b)   Sharing information
(c)   Importing knowledge
(d)   Sharing understanding

40   Which of the following is not an audial media of communication?
(a)   Public Meeting
(b)   Personal Demonstration
(c)   Interviewing
(d)   Broadcasting

41   One of the most helpful mechanisms for refining a spoken or written communication is called the
(a)   Grapevine
(b)   Counseling service
(c)   Five C.s
(d)   Complaint system

42   An organizational design with low departmentalization, wide spans of control, authority centralized in a single person and little formalization are characteristics of _____.
(a)   Simple structure
(b)   Functional structure
(c)   Divisional structure
(d)   None of given option

43   _____ is the form of departmentalization that groups similar jobs and activities into departments.
(a)   A product structure
(b)   A divisional structure
(c)   A matrix structure
(d)   A functional structure

44   Which of the following is the most common type of departmentalization?
(a)   Customer/Market Departmentalization
(b)   Function Departmentalization
(c)   Geography Departmentalization
(d)   Process Departmentalization

45   A manufacturing company has divided its departments into pattern making, fabric cutting, and fabric coloring. What type of departmentalization is this?
(a)   Geography Departmentalization
(b)   Process Departmentalization
(c)   Matrix/Project Departmentalization
(d)   Function Departmentalization

46   ------------is a set of values that states what an organisation stands for
    (a)   Organization behaviour
    (b)   Organizational culture
    (c)   Organizational spirit
    (d)   Organizational effectiveness

47   An extent to which an organisation achieves its predetermined objectives within given resources and without undue strain to its members
    (a)   Organization behaviour
    (b)   Organizational culture
    (c)   Organizational spirit
    (d)   Organizational effectiveness

48   Which one of the following is/are leadership theories?
    (a)   Trait theory
    (b)   Behavior theory
    (c)   Contingency theory
    (d)   All of these

49   Least Preferred Co-worker (LPC) model of leadership was developed by
    (a)   Martin Evans
    (b)   Robert House
    (c)   Fred Fielder
    (d)   Whitton

50   Path-goal model of Leadership was introduced by
    (a)   Martin Evans & Robert House
    (b)   Fred Fielder
    (c)   Whetton
    (d)   Cameron

51   Which of the following is not a contingency theory of leadership
    (a)   LPC theory
    (b)   Path Goal theory
    (c)   Vroom-Yetton-Jago theory
    (d)   Job centered Leadership

52   ------------- is small groups of workers who meet regularly with their supervisor to solve Work related problem
    (a)   Quality of Work life
    (b)   Quality Circle
    (c)   Alternative Work schedule
    (d)   Job Redesign

53   The concept of Work- Week is related with
    (a)   Quality of Work life
    (b)   Quality Circle
    (c)   Alternative Work schedule

(d)   Job Redesign

54   When a group gives some of its leadership positions to the members of other group, it is
        (a)   Contracting
        (b)   Co-opting
        (c)   Co-alition
        (d)   Competition

55   --------------refers to the combination of two or more individuals, groups or organisation
      for a common goal with a minimum common programme
        (a)   Contracting
        (b)   Co-opting
        (c)   Co-alition
        (d)   Competition

56   Which of the following is the most democratic form of organization?
        (a)   Line
        (b)   Line & Staff
        (c)   Functional
        (d)   Committee

57   Line functions are concerned with those activities which are connected with the discharge
      of:
        (a)   direct responsibility for accomplishing the subsidiary objectives of the
                organization
        (b)   direct responsibility for accomplishing the main objectives of the organization
        (c)   direct responsibility for accomplishing both main and subsidiary objectives of
                the organization

58   _____ is the result of human limitation to the span of management.

        (a)   Delegation
        (b)   Satisfaction
        (c)   Motivation
        (d)   Development

. 59   Which of the following apply to the process culture?
        (a)   Rapid feedback and high risk
        (b)   Slow feedback and low risk
        (c)   Rapid feedback and low risk
        (d)   Slow feedback and high risk
        (e)   None of the above

. 60   Which of the following are issues for managing culture in an international arena?
        (a)   Human resource management
        (b)   Communication
        (c)   Negotiation
        (d)   Evaluating success
        (e)   All of the above

Ans. 1(d), 2(c), 3(a), 4(b), 5(c), 6(b), 7(a), 8(a), 9(a), 10(c), 11(b), 12(a), 13(d), 14(b), 15(a), 16(a), 17(b), 18(c), 19(a), 20(d), 21(a), 22(c), 23(d), 24(d), 25(a), 26(a), 27(b), 28(d), 29(d), 30(b), 31(b), 32(b), 33(d), 34(b), 35(a), 36(a), 37(d), 38(d), 39(d), 40(b), 41(c), 42(a), 43(d), 44(b), 45(b), 46(b), 47(d), 48(d), 49(c), 50(a), 51(d), 52(b), 53(c), 54(b), 55(c), 56(b), 57(b), 58(a), 59(a), 60(e).

Short Answer Type Questions:

(a)   Explain the following:

1.   Power and politics in organisation?
2.   Types of Informal groups.
3.   Levels of conflicts in an organization.
4.   Values are stronger than attitudes.
5.   Transactional Analysis
6.   Stages of group development
7.   How does the knowledge of perception improve managers" ability to understand human nature and improve the quality of managerial decisions?
8.   Write a short note on attributions.
9.   How does manager realize efficiency and productivity in an organization?
10.   Write an example of psychological withdrawal.
11.   Write an example of physical withdrawal
12.   How do group norms and statuses affect individual behaviour?
13.   Give an example of at least one positive and at least one negative behaviour in an organization?
14.   What do you understand to be the relationship between formal and informal organization?
15.   Discuss the ways in which variation in organization structure depends on contingent factors like technology and environment.
16.   Why do organizations need a structure?
17.   How does an awareness of other industrial cultures enrich our understanding of the culture concept?
18.   An effective manager can change organization culture.
19.   Virtual Organization
20.   Boundaryless organizations
21.   Management by exception
22.   A group is like a stage where every member performs different roles.
23.   Negotiation is a third-party conflict resolution technique.
24.   Organisational culture and climate.
25.   Characteristics of effective communication.
26.   All conflicts are bad.
27.   Grapevine communication is beneficial to organisations.
28.   Happy workers are always productive
29.   Hersey and Blanchard Theory of Leadership

(b)   Differentiate between the following:

1.   Groups and Teams

2. Groupthink and Group shift
3. Organisational culture and Climate
4. Project organsiation and Matrix organization
5. Authority and Responsibility
6. Centralization and Decentralization
7. Formal and Informal Communication
8. Informal Vs Formal Organizations
9. Delegation Vs decentralization

III Long Answer Type Questions:

1. "Most behaviours are learned; some from the experience of self and some from the experience of others ". Discuss the statement and explain it with the help of various theories of learning.
2. What is the concept of reinforcement in learning? How does it help in shaping behaviour of people in a desirable way?
3. Both too low and too high levels of conflicts have serious effects on organisational performance. Comment.
4. "High cohesiveness in group leads to higher group productivity" do you agree or disagree? Explain your position.
5. "Do you agree that high degree of cohesiveness in groups leads to higher productivity?" Comment. Also, state as to how high degree of cohesiveness can be achieved.
6. Discuss how stress and job performance are related? Discuss five major sources of stress in your life during last three years. What steps did you take to overcome them?
7. What is the difference between functional and dysfunctional conflict? Under what circumstances might conflict be beneficial to a group?
8. Briefly discuss the major theoretical explanations for group's formation. Which explanation do you think is most relevant to the study of organizational behaviour? Give reasons
9. What is the difference between a group & a team? What are the different types of work teams?
10. Explain the concept of Transactional Analysis. How does TA help predict behaviour of people?
11. How would you define conflict? Distinguish between functional & dysfunctional conflicts by giving suitable examples?
12. What are some of the major sources of interpersonal conflict? Which do you think is most relevant in today's organizations?
13. Briefly discuss the strategies for the resolution of interpersonal conflicts
14. Explain the circumstances in which "repression" and "sharpening into conflict" approaches should be used for handling conflicts
15. Discuss in detail the stages of team development
16. Briefly describe the conflict handling techniques used widely in organizations.
17. Explain the barriers of change. What are the ways of overcoming these barriers?
18. What are the design choices available to a diversifying organization, and what are the advantages and disadvantages of each?
19. 'If organizational change is to be real change, it has to happen at the level of culture.' Discuss.
20. Why is it important to try to classify organization cultures, and what are the Limits of classification?
21. How are organization cultures rooted in the symbolic aspects of everyday

Life?

22. What is the relationship between organization culture and other key organizational concepts: structure, leadership, change, innovation?

23. Define the network approach to departmentalization. Also, enumerate its merits and demerits?

24. "Just as authority is the key to the managerial job, delegation of authority is the key to organisation" Discuss with special reference to the fundamental principles of delegation?

25. Describe in detail about Project Organisation.

26. State and explain the common causes of conflict between line and staff managers in an organization.

27. What do you understand by matrix origination? Under what circumstances is it most useful? Differentiate it from project organization.

28. Many executive wants to delegate their function but do not know just how to do it? Suggest some guidelines to help such executives in deciding what to delegate and what not to delegate?

29. Explain span of management. Do you agree with the view that the principle of "Unity of command" is not of much relevance these days?

30. "Centralization is not necessarily bad, nor is decentralization necessarily good". Elucidate the statement.

31. "The combining of functional and project or product patterns of departmentation in the same organization is matrix organization". Comment. Illustrate by means of a suitable diagram. Mention the types of organizations in which matrix organization is normally used.

32. "A camel is a horse invented by a committee". Discuss. Why are committees criticized for their functioning? Identify the activities that can be undertaken most effectively by a committee organization.

33. Explain Graicuna's theory of Span of Control with suitable example.

34. "Communication is sharing of understanding". Discuss the merits and demerits of oral and written communication.

35. "The existence of variety of communication media does not itself guarantee the success of communication". Comment.

36. "A good leader is one who understands his subordinates, their need and their sources of satisfaction". Comment on this statement and highlight the traits of effective leaders.

37. (a) Briefly identify the major styles from Blake and Mouton's Managerial Grid.
(b) Mention some of the needed skills for leaders / managers to be effective.

38. A good leader is one who understands his subordinates, their need and their sources of satisfaction". Comment on this statement and highlight the traits of effective leaders.

39. "Leaders make a real difference in an organization's performance" build an argument in support and against of this statement.

40. "Models like Blake & Mouton's Managerial Grid has been useful for highlighting multiple dimensions of leadership". Comment. Normally leaders see themselves on as 9.9 leader. Can a leader shift to any backup style in case of need?

41. Explain roles played by visionary and charismatic leaders. Give a brief of two Business/Political leaders who exhibit these traits.

QUESTION BANK

DECISION SCIENCES

MS-103

UNIT - I

I   Test Your Skills:

Multiple Choice Questions:

1   Which of the following is not a requirement of the binomial distribution?
       (a)   The trials must be independent
       (b)   The probability of a success changes from one trial to the next
       (c)   The sample size must be fixed
       (d)   Only two outcomes are possible

2   Which of the following statements regarding probability is always correct?
       (a)   A probability can range from 0 to 1.
       (b)   A probability close to 0 means the event is not likely to happen.
       (c)   A probability close to 1 means the event is likely to happen.
       (d)   All of the above are correct.

3   The mean of a discrete probability distribution is also called the
       (a)   Variance.
       (b)   Expected value.
       (c)   Standard deviation.
       (d)   Median.

4   If A and B are independent events, then $P(A$ and $B))$ equals
       (a) $P(A) + P(B|A)$.
       (b) $P(A) \times P(B)$.
       (c) $P(A) + P(B)$.
       (d) $P(A|B) + P(B|A)$.

5   If the probability of an event is 0.3, that means
       (a)   The event has a 70% chance of not occurring.
       (b)   The complement of the event has a 30% chance of occurring.
       (c)   The event has a 30% chance of not occurring.
       (d)   The complement of the event has a 70% chance of not occurring.

6   The normal probability distribution is
       (a)   A bell-shaped distribution.
       (b)   A continuous distribution.
       (c)   Symmetric.
       (d)   All of the above

7   A normal probability distribution
       (a)   Has at least two peaks.
       (b)   Is asymptotic.
       (c)   Increases as X increases.

(d)   Is discrete

8.   Events are independent if
        (a)   By virtue of one event occurring another cannot
        (b)   The probability of their occurrence is greater than 1
        (c)   We can count the possible outcomes.
        (d)   The probability of one event happening does not affect the probability of another event happening.
        (e)   None of the above

9.   The Special Rule of Addition is used to combine
        (a)   Independent events
        (b)   Mutually exclusive events
        (c)   Events that total more than one
        (d)   Events based on subjective probabilities
        (e)   Found by using joint probabilities

10.   We use the General Rule of Multiplication to combine
        (a)   Events that are not independent.
        (b)   Mutually exclusive events
        (c)   Events that total more than 1.00.
        (d)   Events based on subjective probabilities
        (e)   Found by using joint probabilities.

11.   When we find the probability of an event happening by subtracting the probability of the event not happening from 1, we are using
        (a)   Subjective probability
        (b)   The complement rule.
        (c)   The general rule of addition
        (d)   The special rule of multiplication
        (e)   Joint probability

12.   When we determine the number of combinations
        (a)   We are really computing a probability.
        (b)   The order of the outcomes is not important
        (c)   The order of the outcomes is important.
        (d)   We multiple the likelihood of two independent trials.
        (e)   None of the above

13.   Bayes' Theorem
        (a)   Is an example of subjective probability
        (b)   Can assume of value less than 0.
        (c)   Is used to revise a probability based on new or additional information.
        (d)   Is found by applying the complement rule
        (e)   None of the above.

14.   The difference between a permutation and a combination is
        (a)   In a permutation order is important and in a combination, it is not.
        (b)   In a permutation order is not important and in a combination, it is important.
        (c)   A combination is based on the classical definition of probability.

(d) A permutation is based on the classical definition of probability.
(e) None of the above

15. The difference between a random variable and a probability distribution is
    (a) A random variable does not include the probability of an event.
    (b) A random variable can only assume whole numbers.
    (c) A probability distribution can only assume whole numbers.
    (d) None of the above

16. Which of the following is not a requirement of a binomial distribution?
    (a) A constant probability of success.
    (b) Only two possible outcomes
    (c) A fixed number of trails
    (d) Equally likely outcomes

17. The mean and the variance are equal in
    (a) All probability distributions
    (b) The binomial distribution
    (c) The Poisson distribution
    (d) The hypergeometric distribution

18. In which of the following distributions is the probability of a success usually small?
    (a) Binomial
    (b) Poisson
    (c) Hypergeometric
    (d) All distribution

19. Which of the following is not a requirement of a probability distribution?
    (a) Equally likely probability of a success.
    (b) Sum of the possible outcomes is 1.00
    (c) The outcomes are mutually exclusive.
    (d) The probability of each outcome is between 0 and 1.

20. If $P(A) = 0.6$, $P(B) = 0.4$, $P(A$ and $B) = 0.0$, what can be said about events A and B?
    (a) They are independent.
    (b) They are mutually exclusive.
    (c) They are posterior probabilities.
    (d) None of the above
    (e) All of the above

21. The probability of event A occurring is 0.3, while the probability that event B occurs is 0.8. The probability that event A and event B occur simultaneously is 0.2. If it is known that event A occurred, what is the probability that event B occurred also?
    (a) 0.67
    (b) 0.25
    (c) 0.16
    (d) 0.90
    (e) none of the above

22.	At a university with 1,000 business majors, there are 200 business students who are enrolled in an introductory statistics course. Of these 200, 50 are also enrolled in an introductory accounting course. There are an additional 250 business students who are enrolled in accounting but are not enrolled in statistics. If a business student is selected at random, what is the probability that the student is not enrolled in accounting?
(a)	0.20
(b)	0.25
(c)	0.30
(d)	0.50
(e)	none of the above

23.	At a university with 1,000 business majors, there are 200 business students who are enrolled in an introductory statistics course. Of these 200, 50 are also enrolled in an introductory accounting course. There are an additional 250 business students who are enrolled in accounting but are not enrolled in statistics. Are the events being enrolled in accounting and being enrolled in statistics mutually exclusive?
(a)	yes
(b)	no
(c)	cannot be determined without more information
(d)	all of the above
(e)	none of the above

24.	A production process is known to produce a particular item in such a way that 3% of these are defective. If three items are randomly selected as they come off the production line, what is the probability that all three are defective (assuming that they are all independent)?
(a)	0.09
(b)	0.027
(c)	0.00027
(d)	0.000027
(e)	none of the above

25.	A company is considering producing some new products. Based on past records, management believes that there is a 60% chance that the first product will be successful, and a 40% chance that the second product will be successful. As these products are completely different, it may be assumed that the success of one is totally independent of the success of the other. If two products are introduced to the market, what is the probability that both are successful?
(a)	0.12
(b)	0.60
(c)	0.36
(d)	0.24
(e)	none of the above

26.	A company is considering producing some new products. Based on past records, management believes that there is a 70% chance that each of these will be successful, and a 30% chance of failure. Market research may be used to revise these probabilities. In the past, the successful products were predicted to be successful based on market research 90% of the time. However, for products that failed, the market research

predicted these would be successes 20% of the time. If market research is performed for a new product, what is the probability that the results indicate a successful market for the product and the product actually is successful?

(a)   0.90
(b)   0.54
(c)   0.60
(d)   0.63
(e)   none of the above

27   Given that one car has passed through an intersection, the time we will have to wait until the next car passes through can be described by the

(a)   Normal distribution.
(b)   Uniform distribution.
(c)   Weibul distribution.
(d)   Poisson distribution.
(e)   none of the above

28   A normal random variable (X) has a mean of 70 and a standard deviation of 8. What is the probability that X is greater than 94?

(a)   0
(b)   0.3400
(c)   0.1350
(d)   0.0013
(e)   none of the above

29.   The time required to complete a project is normally distributed with a mean of 60 weeks and a standard deviation of 5 weeks. What is the probability that the project will require from 55 to 65 weeks to complete?

(a)   0.42067
(b)   0.34134
(c)   0.84134
(d)   0.50000
(e)   none of the above

30   The weight of US Postal Service packages is normally distributed with a mean of 2 oz. and a standard deviation of .5 oz. If I choose two letters from my mail carrier's bag, what is the probability that they will both weigh less than 1 oz.?

(a)   .0005
(b)   .0228
(c)   .0456
(d)   .4772

31.   Objective probability can be set using the _____ or logical method.

(a)   subjective
(b)   classical
(c)   theoretical
(d)   original
(e)   neoclassical

32 If two events (A,B) are mutually exclusive, the probability of event A or event B
occurring is given by _____.
   (a)   P(A or B)= P(A)*P(B)
   (b)   P(A or B)= P(A)*P(B) - P(A|B)
   (c)   P(A or B) = P(A) + P(B)
   (d)   P(A or B)= P(A)/P(B)
   (e)   P(A or B)= P(A)*P(B) + P(B)

33.   If two events (A,B) are not mutually exclusive, the probability of event A or event B
occurring is given by _____.
   (a)   P(A or B)= P(A)*P(B) - P(A|B)
   (b)   P(A or B) = P(A) + P(B) - P(A and B)
   (c)   P(A or B) = P(A) + P(B) - P(A|B)
   (d)   P(A or B) = P(A) - P(B)
   (e)   P(A or B) = P(A) - P(B) + P(A|B)

34.   In a normal distribution, approximately _____% of the data lie within 1 standard
deviation of the mean, while 99.7% lie within _____ standard deviations of the mean.
   (a)   95, 3
   (b)   99.7, 2
   (c)   68, 1
   (d)   94.5, 2
   (e)   68, 3

35.   If two events (A,B) are independent, their joint probability is given by _____.
   (a)   P(AB) = P(A)*P(B)
   (b)   P(AB) = P(A)*P(B) - P(A or B)
   (c)   P(AB) = P(A)*P(B) + P(A or B)
   (d)   P(AB) = P(A) + P(B)
   (e)   P(AB) = P(A)/P(B)

36.   If two events (A,B) are dependent, the conditional probability of p(A|B) is given by
_____.
   (a)   P(A|B)= P(A)*P(B)
   (b)   P(A|B) = P(AB)/P(B)
   (c)   P(A|B) = P(A)/P(B)
   (d)   P(A|B) = P(B/A)
   (e)   P(A|B) = P(A)+P(B)/P(A and B)

37.   If two events (A,B) are independent, then the conditional probability of P(A|B) is
given by _____.
   (a)   P(A)
   (b)   P(A|B)
   (c)   P(A|B)*P(B)
   (d)   P(A|B)+P(B)
   (e)   P(A) + P(B)

38. The exponential distribution, also known as the _____, is used in dealing with queuing problems.
    (a)   Poisson
    (b)   negative exponential distribution
    (c)   binomial
    (d)   gamma
    (e)   beta

39. The parameter of the Poisson distribution is _____.
    (a) π
    (b) μ
    (c) λ
    (d) ξ
    (e) ψ

40. The two general types of random variables are _____ and _____.
    (a)   objective, subjective
    (b)   qualitative, quantitative
    (c)   binomial, poisson
    (d)   discrete, continuous
    (e)   deterministic, certain

41. What is probability of drawing two clubs from a well shuffled pack of 52 cards?
    (a)   13/51
    (b)   1/17
    (c)   1/26
    (d)   13/17

42. When two coins are tossed simultaneously, what are the chances of getting at least one tail?
    (a)   ¾
    (b)   1/5
    (c)   4/5
    (d)   1/4

43. In a drawer there are 4 white socks, 3 blue socks and 5 grey socks. Two socks are picked randomly. What is the possibility that both the socks are of same color?
    (a)   5/14
    (b)   5/8
    (c)   3/8
    (d)   5/16

44. A box has 5 black and 3 green shirts. One shirt is picked randomly and put in another box. The second box has 3 black and 5 green shirts. Now a shirt is picked from second box. What is the probability of it being a black shirt?
- (a) 4/9
- (b) 29/72
- (c) 8/72
- (d) 3/16

45. On rolling a dice 2 times, the sum of 2 numbers that appear on the uppermost face is 8. What is the probability that the first throw of dice yields 4?
- (a) 2/36
- (b) 1/36
- (c) 1/6
- (d) 1/5

46. A box has 6 black, 4 red, 2 white and 3 blue shirts. What is probability of picking at least 1 red shirt in 4 shirts that are randomly picked?
- (a) 18/455
- (b) 7/15
- (c) 7/435
- (d) 7/2730

47.   If P(A) = 0.6, P(B) = 0.4, P(A and B) = 0.0 , what can be said about events A and B?
- (a) They are independent.
- (b) They are mutually exclusive.
- (c) They are posterior probabilities.
- (d) None of the above

48.   The difference between a permutation and a combination is
- (a) In a permutation order is important and in a combination, it is not.
- (b) In a permutation order is not important and in a combination, it is important.
- (c) A combination is based on the classical definition of probability.
- (d) A permutation is based on the classical definition of probability.

49.   We use the General Rule of Multiplication to combine
- (a) Events that are not independent.
- (b) Mutually exclusive events
- (c) Events that total more than 1.00.
- (d) Events based on subjective probabilities

50. Two dice are tossed simultaneously. Find the probability that the total is a prime number.
- (a) 7/9
- (b) 5/12
- (c) 1/6
- (d) 5/9

Ans. (1)(b), (2)(d), (3)(b), (4)(b), (5)(d), (6)(d), (7)(b), (8)(d), (9)(b), (10)(a), (11)(b), (12)(b), (13)(c), (14)(a), (15)(a), (16)(d), (17)(c), (18)(b), (19)(a), (20) (b), (21)(a), (22)(e), (23)(a), (24)(d), (25)(d), (26)(d), (27)(e), (28)(d), (29)(c), (30)(a), 31(b), (32)(c), (33)(b), (34)(e), (35)(a), (36)b), (37)(a),(38)(b),(39)(c),(40)(d), 41(b), 42(a), 43(b), 44(b), 45(b),   46(a), 47(b), 48(a), 49(a), 50(d)

II   Short Answer Type Questions:

1   Write short note on addition theorem of probability.
2   Write short note on odds in favour and odds against.
3   Write short note on Poisson distribution.
4   Write short note on normal distribution.
5   Describe conditional probability.
6   Explain mutually exclusive and exhaustive events.
7   Explain independent and dependent events.
8   State Bayes theorem.
9   Discuss applications of probability theory in business decision making.
10   Write short note on Binomial distribution.
11   Write short note on mutually exclusive event with example.
12   Write short note on Application of Probability in business Decision making.
13   Describe Addition theorem with exception.
14   Discuss properties of Binomial Distribution.
15   Discuss properties of Poission Distribution.

III   Long Answer Type Questions:

1   State and prove bayes' theorem.

2   If A and B are mutually exclusive events, prove that $P\left(A/\overline{B}\right) = \dfrac{P(A)}{1 - P(B)}$

3   A ball is drawn from an urn containing four balls numbered 1,2,3,4. Let E = {1,2}, F = {1,3}, G = {1,4}. If each ball is equally likely to be drawn, prove that the vents E,F,G are pairwise independent but they are not jointly independent.
4   Discuss properties of Normal Distribution.
5   Elaborate various approaches of probability theory.

IV   Practical Questions:

1   The odds that A speaks the truth are 3:2 and the odds that B speaks the truth are 5:3. In what percentage of cases are they likely to contradict each other on an identical point?
Ans :   47.5

2   Three groups of workers contain 3 men and 1 woman, 2 men and 2 women & 1 man & 3 women respectively. One worker is selected at random from each group. What is the probability that the group selected consists of 1 man and 2 women?
Ans :- 13/32

3   A can hit a target three times in 5 shots; B two times in 5 shots; C three times in 4 shots. They fire a volley. What is the probability that 2 shots hit?
Ans.- 45/100

4   The traffic light at a certain road crossing is set in the following fashion. It starts green at 06:00 and continuous to be green till 06:02 and again turns green at 06;06 and continuous green till 06:08.   This cycle is repeated throughout the day.   What percentage of the time during any given hour, traffic light will be green? If your arrival time at this crossing is random and uniform over the internal 16:55 to 17:05. What is the probability that you will have to stop at this light?
Ans.-100/3

5   Find the probability that
   i.   Leap year has 53 Sundays
   ii.   A non leap year has 53 Sundays
   iii. A leap year has 53 Sundays or 53 Monday
   iv.   A non leap year has 53 Sundays or Mondays.
   v.   A year chosen at random has 53 Sundays
   vi.   A year chosen at random has 53 Sundays or Mondays.
   Ans.   (i) 2/7, (ii) 1/7,   (iii) 3/7,   (iv) 2/7,   (v) 5/28,   (vi) 9/28

6   A pack of cards has one card missing.   Two cards are drawn and are found to be spade What is the probability that the missing card is not a spade
   Ans.   39/50

7   Suppose that airplane engines operates independently in flight & fail with probability $q = 1/5$. Assuming that a plane makes a safe flight if at least one-half of its engines run, determine whether a 4-engine plane or a 2-engine plane has the highest probability for a successful flight.
   Ans.   4-engine plane (608/625) 2-engine plane(24/25)

8   A man takes a step forward with probability 0.4 and backward with probability 0.6. Find the probability that at the end of eleven steps he is one step away from the starting point.
   Ans. $(462)(6/25)^5$

9   An anti-aircraft gun can take maximum of four shots at an enemy plane moving away from it. The probability of hitting the plane at the first, second, third & fourth shot is 0.4, 0.3, 0.2 and 0.1 respectively. What is the probability that the plane gets hit?
   Ans.   0.6976

10   A draws a card from a pack of n cards marked 1,2,……..n. The card is replaced in the pack and B draws a card. Find the probability that B draws (i) the same card as A, (ii) a higher card than A.
   Ans.   (i) 1/n,   (ii) (n-1)/2n

11   One bag contains five white & four black balls. Another bag contains seven white & nine black balls. A ball is transferred from the 1st bag to 2nd& then a ball is drawn from the second. Find the probability that the ball is white.

Ans. 15/17

12 A, B& C in order draw from a pack of cards replacing there after each draw. If the Ist man to draw a heart wins, what are their respective chances?
Ans. 768.75

13 A piece of equipment will function only when all three parts A,B,C are working. The Probability of part A failing during one year is 1/6, that of B failing is (1/20) and that of C failing is 1/10, what is the probability that the equipment will fail before the end of year?
Ans. 0.199

14 A has 3 shares in a lottery containing 3 prizes & 9 blanks; B has 2 shares in a lottery, Containing 2 prizes & 6 blanks. Compare their chances of winning.
Ans. A- 0.6182, B- 0.4643

15 A & B play 12 games of chess of which 6 are won by A, 4 by B & 2 end in a tie. They agree to play 3 more games. Find the probability that (i) A wins all the three games, (ii) two games end in a tie, (iii) A & B win alternatively 4 (iv) B wins atleast one game.
Ans. (i) 1/8, (ii) 5/72, (iii) 5/36, (iv) 19/27

16 Explain what is wrong with the following statement:
"Four persons are asked the same question by an interviewer. If each has, independently, probability 1/6 of answering correctly, the probability that at least one answers correctly is 4x1/6"

17 Prove that the variance of binomial distribution cannot exceed n/4.

18 If x is a Poisson variable such that $P (x = 2) = 9P(x = 4) + 90P(x = 6)$. Find mean and variance of X.
Ans. +1

19 A car hire firm has two cars, which it hires out day by day. The number of demands for a car on each day is distributed as Poisson distribution with mean 1.5. Calculated the proportion of days on which neither car is nor the proportion of days on which some demand is refused
Ans. 81.4 days, 69.8 days

20 How many tosses of a coin are needed so that the probability of getting at least one head is 0.875?
Ans. n=3

21 Two computers A & B are to be marketed. A salesman who is assigned for the job of finding customer for them has 60% & 40% chances respectively of succeeding for computers A and B. The two computers can be sold independently. Given that he was able to sell at least one computer, what is the probability that computer A has been sold?
Ans. 0.7895

22   Among the examinees in an examination 30%, 35% & 45% failed in statistics, in
        Mathematics & in at least one of the subject respectively. An examinee is selected at
        random. Find the probability that(i)He failed in mathematics only (ii) he passed in
        statistics if it is known that he failed in mathematics.
        Ans.   (i) 0.15,   (ii) 3/7

23   A box of 100 gaskets contains 10 gaskets with type A defects. 5 gaskets with type B
        defects & 2 gaskets with both types of defects. Find the probability that
         (a) a gasket to be drawn has a type B defect under the condition that it has a type A
             defect &
         (b) a gasket to be drawn has no type B defect under the condition that it has no type A
             defect.
        Ans.   (i) 0.2,   (ii) 29/30

24   A company has four-production section, S_1 S_2 S_3 & S_4 that contribute 30%, 20%, 28%
        & 22% respectively of the total output. It was observed that these sections respectively
        produced 1%, 2%, 3% & 4% defective units. If a unit is selected at random and found
        to be defective, what is the probability that the unit so selected has come from either
        section S_1 or section S_4?
        Ans.   0.488

25   A doctor has taken a vaccine from either storage unit P (which contains 30 current and
        10 outdated vaccines), or from unit Q (which contains 20 current and 20 outdated
        vaccines) or from unit R (which contains 10 current and 30 outdated vaccines), but she
        is twice as likely to have taken it from unit P as from unit Q and twice as likely to have
        taken it from unit Q as from unit R.
        (i)   What is the probability that the vaccine selected is an outdated one?
        (ii)   If the vaccine selected is outdated, what is the probability that it came from unit
                  P?
        Ans.   (i) 0.39285,   (ii) 0.3636

26   The incomes of a group of 5000 persons were found to be normally distributed with
        mean Rs. 900 & S.D Rs. 75. What was the highest income among the poorest 200?
        Ans.   768.75

27   A distribution is known to be normal. The quartiles are 8.64 & 14.32. Calculate the
        mean & standard deviation.
        Ans.   mean= 11.48, standard deviation = 4.21

28   In a certain examination, the percentages of passes and distinction were 46 & 9
        respectively. Assuming the marks to be distributed normally, determine the average
        marks obtained by the candidates, the minimum pass and distribution marks being 40
        &75 respectively. Also, determine, what should have been the minimum qualifying
        marks of admission to a re-examination of the failed candidates, had it been desired that
        the 25% of them should be given another opportunity of being examined.
        Ans.   30.2 or 30

29   A wholesale distributor of a fertilizer products find that the annual demand for one type
        of fertilizer is normally distributed with a mean of 120 tonnes& standard deviation of

16 tonnes. If he orders only once a year, what quantity should be ordered to ensure that there is only a 5% chance of running short.

Ans. 146.32

30   The marks of the students are normally distributed and 20% of the students get less than 20 marks and 70% of the students get less than 50 mark. Find the mean and standard deviation of marks.

Ans.   mean= 38.48 , standard deviation = 21.89 or 22

31   In an examination, it is laid down that a student passes if he attains 30% or more marks. He is placed in the 1st, 2nd or 3rd division according as he obtains 60% or more marks between 45% & 60%; between 30% & 45% respectively. Further he is awarded a distinction if he secures 80% or more marks. It is noticed from the result that 10% of the students failed in the examination & 5% of them obtained distinction. Calculate the % of students placed in 2nd division.

Ans.   33.89 or 34%

32   A company uses a "selling aptitude test" in the selection of salesmen. Past experience has shown that only 70% of all persons applying for a sales position achieved a classification "dissatisfactory" in actual selling, whereas remainder was classified as "satisfactory", 85% has scored a passing grade on the aptitude test. Only 25% of these qualified unsatisfactory, had passed the test on the aptitude test. Only 25% of those qualified unsatisfactory, had passed the test on the basis of this information. What is the probability that a candidate would be a satisfactory salesman given that he passed the aptitude test?

Ans. 0.888

33   The following data relate to advertising expenditure in (in lakhs of rupees) and their corresponding sales (in crores of rupees):

Advertising expenditure: 10   12   15   23   20
Sales: 14   17   23   25   21

Estimate (i) The sales corresponding to advertising expenditure of rupees 30 lakhs
          (ii) The advertising expenditure for a sales target of rupees 35 crores.

Ans.   (i)33.33 and (ii) 37.09

34   In a normal distribution 31% of the items are under 45 and 8% are over 64. Find the mean and standard deviation of the distribution.

Ans. Mean= 49.97 and Standard Deviation=9.94

35   An insurance company insured 2000 scooter drivers; 4000 car drivers and 6000truck drivers. The probability of an accident involving a scooter driver, car driver and truck driver respectively is 0.01, 0.03 and 0.15. One of the insured driver meets an accident. What is the probability that the driver happens to be a scooter driver.

Ans. 0.019

36   Suppose an airplane engine will fail, when in flight, with probability 1-p independently from engine to engine. Suppose that airplane will make a successful flight if atleast 50 percent of the engines remain operative. For what value of p is a four-engine airplane preferable to a two-engine airplane?

Ans. p >2/3

37   An experiment succeeds twice as often as it fails. If the experiments is performed six times, find the probability of getting atleast four successes.
Ans. probability of getting at least four success = 1.34

38.   A firm manufactures two product A and B on which the profit earn per unit are Rs 3 and Rs 4 resp. each product is processed on two machines M1 and M2. Product A requires 1 minute on processing on M1 and 2 minutes on M2, while B requires 1 minute on M1 and M2 both. Machine M1 is not available for more than 15/2 hours and M2 is available for 10 hrs. Find the no. of A and B to be manufactured to get max. profit.
Ans.   Units of product A= 0, Units of product B=7.5

39   It is known whether a coin is fair or unfair. If the coin is fair, the probability of a tail is 0.5 but if the coin is unfair the probability of a tail is .10. A prior probability given of a fair coin is 0.80 and that of unfair coin 0.20. The coin is tossed once and tail is the result.
   1)   What is the probability that the coin is fair?
   2)   What is the probability that coin is unfair?

   Ans: 1) The probability that the coin is fair if tail is the result = 0.95
       2) $P\left(\frac{B}{E}\right) = 0.048$

40   A car hiring firm has two cars which it hires out daily . The number of demand for a Car on each day is distributed as Possion distribution with mean 1.5. Calculate the number of day out of 100 days on which (i) nethier car is used and (ii)some demand is refused.   (Given $e^{-1.5} = 0.2231$).   **Ans: 0.2231, 0.1912**

41   A bag contains 5 white and 3 red balls and four balls are successively drawn out and not replaced. What is the chance that (i) white and red balls appear alternatively and (ii) red and white balls appear alternatively? **Ans:$\frac{1}{14}, \frac{1}{14}$**

42.   In a single case with two dice, find the chances of throwing doublets.
   Ans. $\frac{1}{6}$]

43   In a country, for its oil Industry, the product wise market structure indicates that 15% of the market is captured by branded products and 85% of the market is captured by unbranded products? If 50 oil customers are randomly selected: -
   (i) What is the probability that exactly six customers will purchase branded oil?
   (ii) What is the probability that exactly five or less customer will purchase branded oil?
   (iii) What is the probability that more than seven customers will purchase branded oil?
     Ans: (i) 0.1419, (ii) 0.2193, (iii) 0.4813.

44.   A problem of statistics is given to two students A and B whose chances of solving it independently are 1/2 and 1/3 respectively. What is the probability that : (i) The

60

problem is solved (ii) only one of them solves the problem (iii) Exactly one of them solved the problem?

[**Ans.** (i) $\frac{2}{3}$, (ii) $\frac{1}{2}$, (iii) $\frac{1}{2}$]

45. A coin is tossed six times. What is the probability of obtaining four or more heads?

[**Ans.** $\frac{11}{32}$]

46. Three cards are drawn at random from a pack of 52 cards. Find the probability that they are a king, a queen and a knave.

[**Ans.** $\frac{16}{5525}$]

47. A construction company is bidding for two contact A and B. the probability that the company will get contact A is 3/5. The probability that the company will get contact B is 1/3 and the probability that the company will get both the contacts 1/8. What is the probability that the company will get contact A or B.

[**Ans.** $\frac{97}{120}$]

48. A coin is tossed 5 times. What is the probability of getting (i) all heads (ii) 3 heads and 2 tails, (iii) at least two heads?

[**Ans.** (i) $\frac{1}{32}$, (ii) $\frac{5}{16}$, (iii) $\frac{13}{16}$]

49. Consider another example where a pack contains 4 blue, 2 red and 3 black pens. If a pen is drawn at random from the pack, replaced and the process repeated 2 more times, What is the probability of drawing 2 blue pens and 1 black pen?

[**Ans. 16/243**]

50. The blood groups of 200 people is distributed as follows: 50 have type A blood, 65 have B blood type, 70 have O blood type and 15 have type AB blood. If a person from this group is selected at random, what is the probability that this person has O blood type?

[**Ans. 16/243**]

51 In a school examination, 2 students out of 5 students failed Chemistry.

(a) If 6 students are chosen at random, find the probability that not more than 2 students failed Chemistry.
(b) If there are 200 Form 4 students in that school, find the mean and standard deviation of the number of students who failed Chemistry.

[**Ans. .5443, 6.93**]

52 5% of the supply of mangoes received by a supermarket are rotten.

(a) If a sample of 12 mangoes is chosen at random, find the probability that at least two mangoes are rotten.
(b) Find the minimum number of mangoes that have to be chosen so that the probability of obtaining at least one rotten mango is greater than 0.85.

[**Ans. .118, 37**]

UNIT - II

I   Test Your Skills:

Multiple Choice Questions:

1   A problem has 3 decision variables and problem 5 constraints. How many slack variables are there?
(a)   3
(b)   5
(c)   8

2   How many of the following points satisfy the inequality $2x - 3y > -5$?
(1, 1), (-1, 1), (1, -1), (-1, -1), (-2, 1), (2, -1), (-1, 2) and (-2, -1)
(a)   3
(b)   4
(c)   7
(d)   6
(e)   5

3   How many points with integer coordinates lie in the feasible region defined by $3x + 4y \leq 12$, $x \geq 0$ and $y \geq 1$?
(a)   6
(b)   5
(c)   7
(d)   8
(e)   4

4   Find, if possible, the minimum value of the objective function $3x - 4y$ subject to the constraints $-2x + y \leq 12$, $x - y \leq 2$, $x \geq 0$ and $y \geq 0$
(a)   8
(b)   -36
(c)   No solution
(d)   0
(e)   -8

5   What can you say about the solution of the linear programming problem specified in above question 4 , if the objective function is to be maximized instead of minimized?
(a)   Unique solution at (0,0)
(b)   Unique solution at(0,12)
(c)   Unique solution at(2,0)
(d)   No solution
(e)   Infinitely many solutions

6   What can you say about the linear programming problem specified in above question 4, if the second constraint is changed to $3x - 4y \leq 24$ and the problem is one of maximization?
(a)   Unique solution at (0,0)
(b)   Infinitely many solutions

(c)   Unique solution at (8,0)
(d)   Unique solution at (0,6)
(e)   No solution

7   Leo has $12.50 to spend on his weekly supply of sweets, crisps and apples. A bag of crisps costs $0.65, a bag of sweets costs $0.85, and one apple costs $0.50. The total number of packets of crisps, sweets and apples consumed in a week must be at least seven, and he eats at least twice as many packets of sweets as crisps. His new healthy diet also means that the total number of packets of sweets and crisps must not exceed one-third of the number of apples. If s, c and a, denote the number of packets of sweets, packets of crisps, and apples respectively, which one of the following represents one of the constraints defining the feasible region?
(a) $s \leq c - a$
(b) $3c + 3s \leq a$
(c) $s \geq 0.5c$
(d) $0.65s + 0.85c + 0.5a \geq 12.5$
(e) $a + c + s > 7$

8   All linear programming problems may be solved using graphical method.
(a)   True
(b)   False

9   Divisibility assumption in linear programming implies
(a)   resources can be divided among products.
(b)   products can be divided among customers.
(c)   decision variables may take on integer values.
(d)   decision variables may take on fractional values.

10   Assumptions of linear programming include
(a)   linearity
(b)   additivity
(c)   divisibility
(d)   certainty
(e)   all of the above

11.   How many of the following points satisfy the inequality $2x - 3y > -5$?
(1, 1), (-1, 1), (1, -1), (-1, -1), (-2, 1), (2, -1), (-1, 2) and (-2, -1)
(a)   4
(b)   6
(c)   3
(d)   7
(e)   5

12.   The point $(x, 3)$ satisfies the inequality, $-5x - 2y \leq 13$. Find the smallest possible value of x.
(a)   -3.8
(b)   0
(c)   3.8
(d)   1.4
(e)   -1.4

13. The following five inequalities define a feasible region. Which one of these could be removed from the list without changing the region?
    (a) $x \geq 0$
    (b) $y \geq 0$
    (c) $-x + y \leq 10$
    (d) $x + y \leq 20$
    (e) $x - 2y \geq -8$

14. How many points with integer coordinates lie in the feasible region defined by $3x + 4y \leq 12$, $x \geq 0$ and $y \geq 1$?
    (a)   7
    (b)   4
    (c)   5
    (d)   8
    (e)   6

15. Find, if possible, the minimum value of the objective function $3x - 4y$ subject to the constraints $-2x + y \leq 12$, $x - y \leq 2$, $x \geq 0$ and $y \geq 0$.
    (a)   No solution
    (b)   0
    (c)   8
    (d)   -8
    (e)   -36

16. What can you say about the solution of the linear programming problem specified in question 5, if the objective function is to be maximised instead of minimized?
    (a)   Unique solution at (0, 0)
    (b)   Unique solution at (0, 12)
    (c)   No solution
    (d)   Infinitely many solutions
    (e)   Unique solution at (2, 0)

17. What can you say about the solution of the linear programming problem specified in question 5, if the second constraint is changed to $x + y \leq 2$ and the problem is one of minimization?
    (a)   Unique solution at (0, 12)
    (b)   Unique solution at (0, 2)
    (c)   No solution
    (d)   Unique solution at (2, 0)
    (e)   Infinitely many solutions

18. What can you say about the linear programming problem specified in question 5, if the second constraint is changed to $3x - 4y \leq 24$ and the problem is one of maximization?
    (a)   Unique solution at (0, 0)
    (b)   Unique solution at (8, 0)
    (c)   No solution
    (d)   Unique solution at (0, 6)
    (e)   Infinitely many solutions

19. Leo has $12.50 to spend on his weekly supply of sweets, crisps and apples. A bag of crisps costs $0.65, a bag of sweets costs $0.85, and one apple costs $0.50. The total number of packets of crisps, sweets and apples consumed in a week must be at least seven, and he eats at least twice as many packets of sweets as crisps. His new healthy diet also means that the total number of packets of sweets and crisps must not exceed one-third of the number of apples. If s, c and a, denote the number of packets of sweets, packets of crisps, and apples respectively, which one of the following represents one of the constraints defining the feasible region?
   (a) $3c + 3s \leq a$
   (b) $s \geq 0.5c$
   (c) $0.65s + 0.85c + 0.5a \geq 12.5$
   (d) $s \leq c - a$
   (e) $a + c + s > 7$

20. Which one of the following represents one of the constraints in question 9?
   (a) $17s + 10a + 13c \leq 250$
   (b) $c \leq 2s$
   (c) $a + c + s \leq 7$
   (d) $3s - 3c + a \geq 0$
   (e) $3c + 3s + a \leq 0$

21. Which of the following is an essential condition in a situation for linear programming to be useful?
   (a)   Nonlinear constraints
   (b)   Bottlenecks in the objective function
   (c)   Homogeneity
   (d)   Uncertainty
   (e)   Competing objectives

22. Which of the following is not an essential condition in a situation for linear programming to be useful?
   (a)   An explicit objective function
   (b)   Uncertainty
   (c)   Linearity
   (d)   Limited resources
   (e)   Divisibility

23. Which of the following is a common application of linear programming in operations management?
   (a)   Cycle counting analysis
   (b)   Cost of quality studies
   (c)   Cost allocation studies
   (d)   Plant location studies
   (e)   Product design decisions

24. There are other related mathematical programming techniques that can be used instead of linear programming if the problem has a unique characteristic. If the problem has multiple objectives we should use which of the following methodologies?

(a)   Goal programming
(b)   Orthogonal programming
(c)   Integer programming
(d)   Multiplex programming
(e)   Dynamic programming

25.   There are other related mathematical programming techniques that can be used instead of linear programming if the problem has a unique characteristic. If the problem is best solved in stages or time frames we should use which of the following methodologies?
(a)   Goal programming
(b)   Temporal programming
(c)   Integer programming
(d)   Genetic programming
(e)   Dynamic programming

26.   There are other related mathematical programming techniques that can be used instead of linear programming if the problem has a unique characteristic. If the problem prevents divisibility of products or resources we should use which of the following methodologies?
(a)   Goal programming
(b)   Temporal programming
(c)   Integer programming
(d)   Genetic programming
(e)   Dynamic programming

27.   A company wants to determine how many units of each of two products, A and B, they should produce. The profit on product A is $50 and the profit on product B is $45. Applying linear programming to this problem, which of the following is the objective function if the firm wants to make as much money as possible?
(a)   Minimize $Z = 50 A + 45 B$
(b)   Maximize $Z = 50 A + 45 B$
(c)   Maximize $Z = A + B$
(d)   Minimize $Z = A + B$
(e)   Maximize $Z = A/45B + B/50A$

28.   An agribusiness company mixes and sells chicken feed to farmers. The costs of the chicken feed ingredients vary throughout the chicken feeding season but the selling price of chicken feed is independent of the ingredients. On August 1, management needs to know how many units of each of three grains (Q, R, and S) should be included in their chicken feed in order to produce the product most economically. The cost of each grain is, for a unit of Q, $30; for a unit of R, $37; and for a unit of S, $78. Applying linear programming to this problem, which of the following is the objective function?
(a)   Minimize $Z = 30 Q + 37 R + 78 S$
(b)   Maximize $Z = 30 Q + 37 R + 78 S$
(c)   Minimize $Z = (Q \times R \times S)/3$
(d)   Minimize $Z = Q + R + S$
(e)   Maximize $Z = Q + R + S$

29.   Apply linear programming to this problem. A firm wants to determine how many units of each of two products (products D and E) they should produce to make the most

money. The profit in the manufacture of a unit of product D is $100 and the profit in the manufacture of a unit of product E is $87. The firm is limited by its total available labour hours and total available machine hours. The total labour hours per week are 4,000. Product D takes 5 hours per unit of labour and product E takes 7 hours per unit. The total machine hours are 5,000 per week. Product D takes 9 hours per unit of machine time and product E takes 3 hours per unit. Which of the following is one of the constraints for this linear program?
(a)   5 D + 7 E =< 5,000
(b)   9 D + 3 E => 4,000
(c)   5 D + 7 E = 4,000
(d)   5 D + 9 E =< 5,000
(e)   9 D + 3 E =< 5,000

30.   Apply linear programming to this problem. A firm wants to determine how many units of each of two products (products X and Y) they should produce in order to make the most money. The profit from making a unit of product X is $190 and the profit from making a unit of product Y is $112. The firm has a limited number of labor hours and machine hours to apply to these products. The total labor hours per week are 3,000. Product X takes 2 hours of labor per unit and Product Y takes 6 hours of labor per unit. The total machine hours available are 750 per week. Product X takes 1 machine hour per unit and Product Y takes 5 machine hours per unit. Which of the following is one of the constraints for this linear program?
(a)   1 X + 5 Y =< 750
(b)   2 X + 6 Y => 750
(c)   2 X + 5 Y = 3,000
(d)   1 X + 3 Y =< 3,000
(e)   2 X + 6 Y =>3,000

31   What is the objective function in linear programming problems?
(a)   A constraint for available resource
(b)   An objective for research and development of a company
(c)   A linear function in an optimization problem
(d)   A set of non-negativity conditions

32   Which statement characterizes standard form of a linear programming problem?
(a)   Constraints are given by inequalities of any type
(b)   Constraints are given by a set of linear equations
(c)   Constraints are given only by inequalities of >= type
(d)   Constraints are given only by inequalities of <= type

33   Maximize z = 2 x + 7 y subject to

3 x - 2 y <= 1
- x + 3 y >= -1
for non-negative x and y. Which of the following points are feasible: A(0,0), B(1,1), C(2,2)?
(a)   A, B, and C
(b)   A and B
(c)   A and C
(d)   B and C

34   Consider the constraint
$5x + 3y - 4z \le 7$
Find the value of the slack variable s associated to this constraint for the point
A(1,2,3).
(a)   s = 8
(b)   s = 6
(c)   s = 0
(d)   s = -1

35   Maximize $z = 3x$ for $0 \le x \le 5$. Find an optimal solution of the problem.
(a)   x = 0
(b)   x = 1
(c)   x = 3
(d)   x = 5

A company manufactures two products X and Y. Each product has to be processed
in three departments: welding, assembly and painting. Each unit of X spends 2 hours
in The welding department, 3 hours in assembly and 1 hour in painting. The
corresponding times for a unit of Y are 3, 2 and 1 hours respectively. The
employee hours available in a month   are 1,500 for the welding department, 1,500 in
assembly and 550 in painting. The contribution to profits are £100 for product X and
£120 for product Y.

36   What is the objective function (Z) to be maximised in this linear programming
problem (where Z is total profit in £s)?

(a)   Z = 1500X + 1500Y
(b)   Z = 120X + 100Y
(c)   Z = 2X + 3Y
(d)   Z = 100X + 120Y

38 Total profits are maximised when the objective function (as a straight line on a graph)
is:
(a)   Nearest to the origin and tangent to the 'feasible region'
(b)   Furthest from the origin and tangent to the 'feasible region'
(c)   Furthest from the origin irrespective of the 'feasible region'
(d)   Nearest to the origin irrespective of the 'feasible region'

33 What is the equation of the labour constraint line for the welding department in
this linear   programme?
(a)   3X + 2Y = 550 hours
(b)   2X + 3Y = 1,500 hours
(c)   2X + 3Y = 550 hours
(d)   3X + 2Y = 1,500 hours

39   What is the equation of the labour constraint line for the assembly department in this
linear programme?
(a)   1X + 1Y = 550 hours
(b)   1X + 1Y = 1,500 hours

(c) $3X + 2Y = 1{,}500$ hours
(d) $2X + 2Y = 1{,}500$ hours

40   What is the solution to this linear programming problem in terms of the respective quantities of X and Y to be produced if profits are to be maximised?
      (a) $X = 150$, $Y = 400$
      (b) $X = 0$, $Y = 500$
      (c) $X = 550$, $Y = 0$
      (d) $X = 400$, $Y = 150$

41   Which of the following pairs is the solution to the LP problem: ?

$$\max x_1 + x_2 \text{ subject to } \begin{cases} x_1 + 2x_2 \le 7 \\ 3x_1 + x_2 \le 6 \end{cases}, x_1\, x_2 \ge 0 \quad ?$$

      (a) $(x1, x2) = (0, 7/2)$
      (b) $(x1, x2) = (2, 3)$
      (c) $(x1, x2) = (2, 0)$
      (d) $(x1, x2) = (1, 3)$

42.   Which of the following pairs is the solution to the LP problem: ?

$$\min u_1 + 2u_2 \text{ subject to } \begin{cases} 3u_1 + u_2 \ge 7 \\ u_1 + 4u_2 \ge 6 \end{cases}, u_1\, u_2 \ge 0 \quad ?$$

      (a) $(u1, u2) = (1, 4)$
      (b) $(u1, u2) = (2, 1)$
      (c) $(u1, u2) = (6, 0)$
      (d) $(u1, u2) = (0, 7)$

43.   If problems (P) and (Q) are dual of each other, what are a, b, and c?

$$(P) \max 2x_1 + ax_2 \text{ subject to } \begin{cases} 2x_1 + x_2 \le 3 \\ bx_1 + 2x_2 \le c \end{cases}, x_1\, x_2 \ge 0$$

$$(Q) \min 3u_1 + 4u_2 \text{ subject to } \begin{cases} 2u_1 + 4u_2 \ge 2 \\ u_1 + 2u_2 \ge 5 \end{cases}, u_1\, u_2 \ge 0$$

      (a) $(a, b, c) = (5, 5, 4)$
      (b) $(a, b, c) = (4, 4, 5)$
      (c) $(a, b, c) = (5, 4, 4)$
      (d) $(a, b, c) = (4, 5, 4)$

44.   Which of the following LP problems has an optimal solution? Note: in all cases $x1 > 0$, $x2 > 0$.

      (a) $\max 2x_1 + x_2 \text{ subject to } x_1 - x_2 \le 2$

      (b) $\max 2x_1 + x_2 \text{ subject to } \begin{cases} x_1 - 3x_2 \ge 1 \\ x_1 - 2x_2 \ge -2 \end{cases}$

      (c) $\min -2x_1 + x_2 \text{ subject to } x_2 \le 2$

      (d) $\min 2x_1 + x_2 \text{ subject to } \begin{cases} x_1 + x_2 \ge 5 \\ 2x_1 + x_2 \ge 7 \end{cases}$

45. Which of the following statements about an LP problem and its dual is false?
   (a)   The dual problem might have an optimal solution, even though the primal has no (bounded) optimum
   (b)   If the primal and the dual both have optimal solutions, the criterion function for both problems are equal at the optimum
   (c)   If the primal has an optimal solution, so has the dual
   (d)   If one of the variables in the primal has unrestricted sign, the corresponding constraint in the dual is satisfied with equality

46. Which of the following triples $(x1, x2, x3)$ is the solution to the LP problem: ?

$$\max 2x_1 + 3x_2 + 2x_3 \quad \text{subject to} \quad \begin{cases} x_1 + 4x_2 \qquad \le 4 \\ x_1 - x_2 + 3x_3 \le 5 \end{cases}, \quad x_1, x_2, x_3 \ge 0 \quad ?$$

   (a)   (4, 0, 1/2)
   (b)   (1, 0, 1)
   (c)   (4, 0, 1/3)
   (d)   (0, 1, 2)

47. The solution to the dual of:

$$\max \ x_1 + 2x_2 \quad \text{subject to} \quad \begin{cases} x_1 + x_2 \le 4 \\ -x_1 + x_2 \le 1, \quad x_1, x_2 \ge 0 \\ 2x_1 - x_2 \le 3 \end{cases}$$

   is $(u1, u2, u3)$ equal to:
   (a)   (3/2, 1/2, 0)
   (b)   (2, 1, 1)
   (c)   (2, 1, 2)
   (d)   (0, 1/2, 3/2)

48. Which of the following quadruples $(x1, x2, x3, x4)$ is the solution to the LP problem:

$$\max \ x_1 - \frac{1}{2}x_2 + \frac{3}{2}x_3 - 3x_4 \quad \text{subject to} \quad \begin{cases} x_1 + x_2 + x_3 + x_4 \le 1 \\ x_1 - x_2 + 2x_3 - x_4 \le 2 \\ \qquad x_1, x_2, x_3, x_4 \ge 0 \end{cases} ?$$

   (a)   (0, 1/2, 1/4, 1/4)
   (b)   (0, 0, 1, 0)
   (c)   (1/4, 1/4, 1/4, 1/4)
   (d)   (0, 1, 0, 0)

49. Consider the two LP problems:

(P) max $5x_1 - 2x_2 + x_3$ subject to $\begin{cases} 3x_1 - 2x_2 + 4x_3 \le 44 \\ 2x_1 - 4x_2 + 5x_3 \le 23 \\ -x_1 + 2x_2 + x_3 \le -10 \\ x_1, x_2, x_3 \ge 0 \end{cases}$

(D) min $44u_1 + 23u_2 - 10u_3$ subject to $\begin{cases} 3u_1 + 2u_2 - u_3 \ge 5 \\ -2u_1 - 4u_2 + 2u_3 \ge -2 \\ 4u_1 + 5u_2 + u_3 \ge 1 \\ u_1, u_2, u_3 \ge 0 \end{cases}$

(D) has the optimal solution $(u_1^*, u_2^*, u_3^*) = (2, 0, 1)$. Then the solution to (P) is $(x_1^*, x_2^*, x_3^*) =$

(a) (17, 7/2, 0)
(b) (0, 0, 0)
(c) (4, 0, 4)
(d) (7/2, 0, 17)

50. Consider the LP problem:

min $pu_1 + u_2$ subject to $\begin{cases} 3u_1 + u_2 \ge 3 \\ u_1 + 2u_2 \ge 4, \ u_1, u_2 \ge 0 \\ u_1 + 6u_2 \ge 6 \end{cases}$

For which values of p is there no solution to this problem?
(a) $p = 0$
(b) $p > 0$
(c) $p = 2$
(d) $p < 0$

51. LPP stands for
(a) Long Programming Problem
(b) Linear Programming Problem
(c) Linear Progress Programming

52. Following is a method of solving LPP
(a) Vogel Approximation Method
(b) Maximun Method
(c) Simplex Method

53. Can we change real life situations in LPP and solve?
(a) Yes
(b) No
(c) Can't Say

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54. Which of the following statement/s is/are true?
   (a) Operational Research (OR) is simply applying scientific methods to management problems.
   (b) OR is an essential component of computer oriented Decision Support Systems.
   (c) In all OR applications, optimum solutions can be obtained.
   (d) Simulation is not a technique of OR.
   (e) Mathematical Modeling is one of the techniques of OR.

55. Consider the following minimization problem:-
   Minimize $Z == 3X1 + 2 X2$
   Subject to the following constraints. Which of the constraints is/are the redundant?
   (a) $2 X1 + 3 X2 \geq 6$.
   (b) $X2 \leq 4$.
   (c) $X1 + X2 \geq 1$.
   (d) $X1 \leq 4$.
   (e) $X1 , X2 \geq 0$.

56 The following shaded diagram ABCDE gives the feasible region for a maximization linear programming problem. The objective function is shown by the broken line, and the diagram is drawn to scale.
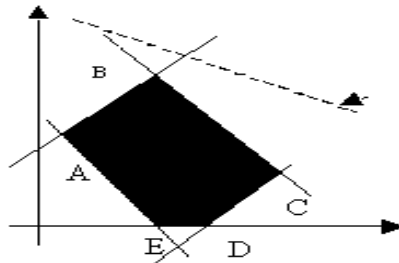
   Which of the following is/are the point/s corresponding to the optimal solution?
   (a) A.   (b) B.   (c) C.
   (d) D.   (e) E.

57. Three products P1, P2, P3 are produced by a company and the following constraint corresponds to a particular resource R where X1, X2, X3 are the number of units produced:-
   $2 X1 + 3 X2 + 5 X3 \leq 90$

   Which of the following statements is/are true with respect to the above constraint?
   (a) 2 units of resource R will be required to produce one unit of product P1.
   (b) A minimum of 90 units is available from resource R.
   (c) 3 units of resource R will be produced when one unit of P2 is produced.
   (d) There is a limit to the number of units to be produced from product P3.

(e)   There is no limit to the number of units to be produced from P2.

58.   Suppose that, in a simplex tableau, one of the technical coefficients of the constraints along the pivot column is negative. This implies that:
(a)   adding one unit of the variable corresponding to that column to the production mix would result in a possible increase in the quantity of the corresponding row variable in the product mix.
(b)   adding one unit of the variable corresponding to that column to the production mix would result in a decrease in the quantity of the row variable in the product mix.
(c)   the basic variable corresponding to that row will not leave the solution in this iteration.
(d)   the basic variable corresponding to that row will leave the solution in this iteration.
(e)   the solution is infeasible.

59.   How does one determine the variable that should not be in the next basic simplex solution of a maximization problem?
(a)   By choosing the variable with the largest negative value in the objective function row.
(b)   By choosing the variable with the smallest negative value in the objective function row.
(c)   By choosing the basic variable which yields the minimum positive ratio of the r.h.s. values with the corresponding values in the pivot column.
(d)   By choosing the basic variable which yields the maximum positive ratio of the r.h.s. values with the corresponding values in the pivot column.
(e)   It can be chosen arbitrarily without considering the ratios.

60   The dual variable represents
(a)   the marginal value of the constraint
(b)   the right-hand-side value of the constraint
(c)   the artificial variable
(d)   the technical coefficient of the constraint

Ans.   (1)(b), (2)(e), (3)(a), (4)(c), (5)(c), (6)(b), (7)(b),(8)(b), 9(c),10(a), (11)(e), (12)(a), (13)(c), (14)(e), (15)(a), (16)(e), (17)(b), (18)(e), (19)(a), (20)(a), (21)(c), (22)(b), (23)(d), (24)(a), (25)(e), (26)(c), (27)(b), (28)(a), (29)(e), (30)(a),(31)(c), (32)(b), (33)(b), (34)(a), (35)(d), (36)(d), (37)(c), (38)(b), (39)(c), (40)(a), (41)(d), (42)(b), (43)(c), (44)(d), (45)(a), (46)(c), (47)(a), (48)(d), (49)(a), (50)(d), (51)(b), (52)(c), (53)(b), (54)(a),(c), (e), (55)(c), (56)(b), (57)(b), (58)(c), (59)(c), (60)(a).

II   Short Answer Type Questions:

1   Different Phases of operations research
2   Explain the Duality in linear programming.
3   Define Sensitivity analysis.
4   Define Infeasibility in L.P.P
5   Explain the term Degeneracy
6   Define Unbounded solution of a LPP.
7   Explain the term Multiple solutions of a LPP.
8   Define the term Economic interpretation of duality
9   Explain the Basic feasible solution
10   Define the Surplus in duality.
11   Explain the concept of duality
12   Define Sensitivity Analysis.
13   Elaborate Shadow prices.
14   What is Travelling salesmen problem.
15   Explain Transportation problem.
16   Define Assignment problem
17   Elaborate the Initial Basic Feasible Solution
18   Define Product Mix Problems
19   Write short note on LP Model
20   Define Slack & Surplus Variables

III   Long Answer Type Questions:

1   What is a linear programming problem? Discuss the scope and role of linear programming in solving management problem?
2   What is operations research? How it is used in managerial decision making.
3   Explain different phases of operations research.
4   Describe the general rules for writing the dual from a primal.
5   Describe the steps involved in the process of decision making.
6   Explain the transportation method of solving a transportation problem. Also give its schematic.
7   What is unbalanced assignment problem/How is the Hungarian Assignment Method applied in respect of such a problem?
8   How would you deal with assignment problems where (a) some assignments are prohibited? (b) the objective function is of maximization type
9   Discuss the similarities in the solution procedures for transportation and assignment models
10   Differentiate between MODI and stepping stone method in transportation problem
11   Discuss various methods for determining Basic feasible solution in the transportation problem.
12   Discuss the basic mathematical model for writing Transportation & Assignment Problem.

IV   Practical Questions:

1   Express the following LP model in standard form:-
     Max. Z = 2X1+3X2+5X3
     subject to,
      X1+X2-X3 >= -5
     -6X1+7X2-9X3 <= 4
     X1+X2+4X3 = 10
     X1, X2 >= 0
     X3 unrestricted
     Solve the following questions graphically:

2   Find the maximum value of Z = 2x + 3y subject to
     $2x + y \leq 15$
     $x + 3y \leq 20$
     $x \geq 0, y \geq 0$
     Ans.   z=25,x=5,y=5

3   Find the minimum value of Z= 4x + 5y subject to
     $x + 2y \geq 10$
     $2x + 3y \geq 18$
     $x \geq 0, y \geq 0$
     Ans.   z=30,x=0,y=6

4   Find the maximum value of p = 6x + y subject to
     $3x + y \leq 15$
     $x + y \leq 10$
     $2x \leq y$
     $x \geq 0, y \geq 0$
     Ans.-p=24,x=3,y=6

5   Find the minimum value of c = 2x + 3y subject to
     $x + 4y \geq 12$
     $2x + y \geq 10$
     $y \leq 2x$
     $x \geq 0, y \geq 0$
     Ans.   c=14, x=4, y=2

6   Convert the following primal to dual:
     Max Z= X1+2 X 2+ X 3
     subject to,
     2 X 1+ X 2 – X 3 <= 2
     -2 X 1 + X 2 –5 X 3 >= -6
     4 X 1 + X 2 + X 3 <= 6
     X 1, X 2, X 3 >=0

7   In addition to the best selection of novels in South Park Mall, O'Hagan Booksellers also specializes in fantasy novels and art books. The manager at O'Hagan Booksellers, S. Shady, is considering a sales promotion of a new collection of fantasy novels and art books, and he plans to price the books so low as to actually take a loss: O'Hagan will lose $3 on every fantasy novel and $2 on every art book sold in the promotion. Since the store will only offer the art books to those who purchase two or more fantasy novels, the store will sell at least twice as many fantasy novels as art books, and also plans to

sell at least 210 items in all. On the other hand, the store can spare up to 900 units of display space for the sale. S. Shady calculates that fantasy novels each require 3 units of display space, while art books require 2 units. Given these constraints, how many fantasy novels and art books should O'Hagan Booksellers order to lose the least amount of money in the sales promotion?

Ans.   **140 fantasy novels and 70 art books**

8   O'Hagan Bookworm Booksellers buys books from two publishers. Duffin House offers a package of 5 mysteries and 5 romance novels for $50, and Gorman Press offers a package of 5 mysteries and 10 romance novels for $150. O'Hagan wants to buy at least 2,500 mysteries and 3,500 romance novels, and he has promised Gorman (who has influence on the Senate Textbook Committee) that at least 25% of the total number of packages he purchases will come from Gorman Press. How many packages should O'Hagan order from each publisher in order to minimize his cost and satisfy Gorman? What will the novels cost him?

Ans.   **min c= 50x + 150y**
          s.t   5x - 5y >= 2500
                    5x + 10y >=3500
                         x,y>=0
420 packages from duffin publishers and 140 from Gorman, for a total cost of $42000

9   The Sue All Law Firm handles two types of lawsuits: medical malpractice suits against unscrupulous heart surgeons for performing unnecessary surgery, and suits against hard-working math professors for failing students who do not deserve to pass. Math professor lawsuits each require 6 person-months of preparation and the hiring of 5 expert witnesses, whereas medical lawsuits each require 10 person-months of preparation and the hiring of 3 expert witnesses. The firm has a total of 30 person-months to work with and feels that it cannot afford to hire more than 15 expert witnesses. It makes an average profit of $1 million per math professor sued and $5 million per heart surgeon sued. How many of each type of lawsuit should it initiate in order to maximize its expected profits?

Ans.   **graphically, initiate 3 medical malpractices suits and no math professor suits for a profit of $15 million**

Solve the following question by simplex method:

10   Find the maximum value of $p = x + 2y + 3z$ subject to:
        $7x + z \leq 6$
        $x + 2y \leq 20$
        $3y + 4z \leq 30$
        $x \geq 0, y \geq 0, z \geq 0$
        Ans.   p=22, x=0, y=2, z=6

11   Find the maximum value of $p = 2x - 3y + 5z$ subject to:
        $2x + y \leq 16$
        $y + z \leq 10$
        $x + y + z \leq 20$
        $x \geq 0, y \geq 0, z \geq 0$

Ans.   p=66, x=8, y=0,z=10

12   Find the minimum value of $c = x + 2y + 3z$ subject to:
$x + y + z \geq 500$
$x + 2y + 3z \geq 700$,
$-y + 3z \leq 0$
$x \geq 0, y \geq 0, z \geq 0$
Ans.   c=700,x=300,y=200

13   Find the minimum value of $c = 50x + 150y + 100z$ subject to:
$5x + 5y + 5z \geq 2{,}500$
$5x + 10y + 15z \geq 3{,}500$
$3x - y + 3z \leq 0$
$x \geq 0, y \geq 0, z \geq 0$
Ans :   c=62500, x=125, y=375

14   Senator Porkbarrel overdraws his accounts at the following banks: the Congressional Integrity Bank, Citizens' Trust, and "Checks R Us." There are no penalties for these withdrawals since the overdrafts are subsidized by the taxpayer. The Senate Ethics Committee tends to let slide irregular banking activities of this sort, provided they are not flagrant. At the moment (due to Congress' preoccupation with impeachment hearings) a total overdraft of up to $10,000 will be overlooked. Porkbarrel's underlying sense of guilt makes him feel funny about writing overdrafts for banks whose names include expressions like "integrity" and "citizens' trust." The effect of this is that his bad check writing for the first two banks combined amounts to no more than one-quarter of the total. On the other hand, the financial officers at Integrity Bank are eager to please Senator Porkbarrel due to his influential position on the Senate Banking Committee, so they would like him to overdraw his account by as much as possible. Find the amount he should draw from each bank in order to avoid investigation by the Ethics Committee and overdraw his account at Integrity by as much as his sense of guilt will allow
Ans. $2500 from congressional integrity bank, $0 from citizen's trust, $7500 from checks R US

15   Your software company has launched the latest version of its web browser, "Java Cruise 4.0." As sales manager, you are planning to promote Java Cruise 4.0 by sending sales forces to software conventions running concurrently in Saint Louis and Detroit. You have 6 representatives available at each of your Little Rock, Ark. and Urbana, Ill. branches, and you would like to send at least 5 to the Saint Louis convention and at least 4 to the Detroit convention. The Saint Louis convention will last for three days, while the Detroit convention will last for two days. Air fares (per person) and hotel accommodation costs (per person) are shown in the following figure.
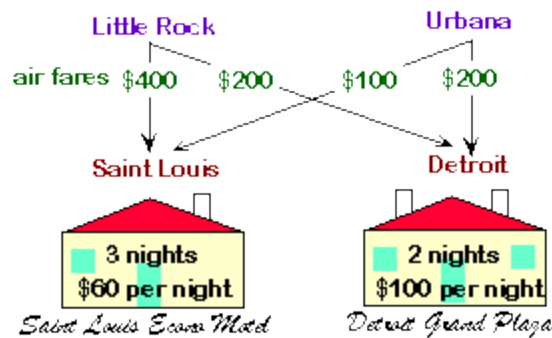
How many representatives should you send from each branch to each convention in order to minimize the total (air travel and accommodation) cost? What will the total cost amount to?

Ans. x = 0, y = 4, z = 5, w = 0; C = 3,000

Thus, you should send 4 representatives from Little Rock to Detroit, and 5 from Urbana to St. Louis, for a total cost of $3,000.

Solve the problem by dual simplex method (20-25)

16   Maximize $p = 2x + 3y + z$ subject to

$x + y + z \leq 40$

$2x + y - z \geq 10$

$- y + z \geq 10$

$x \geq 0, y \geq 0, z \geq 0$

Ans.   x=10, y=10. z=20, p=70

17   Maximize $z = 5x_1 + 3x_2$

$3x_1 + 5x_2 <= 15$

$5x_1 + 2x_2 <= 10$

Ans.   x₁ = 20/19, x₂= 49/19 and z= 235/19

18   Minimize $z= 4x_1 + 3x_2$

$x_1 + 2x_2 >= 8$

$3x_1 + 2x_2 >= 12$

Ans.   x₁ = 2, x₂= 3 and z= 17

19   Minimize $z= -3x_1 + 2x_2$

$x_1 - 4x_2 <= -14$

$-3x_1 + 2x_2 <= 6$

Ans.   unbounded solution

20   A person requires 10,12, and 12 units of chemicals A,B and C respectively for his garden. A liquid product contains 3,2, and 1 units of A,B and C chemicals respectively per jar. A dry product contains1,2 and 4 units of A,B and C per cartoon. How many of each should he purchase in order to minimize the cost and meet the requirement? Solve graphically.

Ans.   Optimal solution is

No. of Jars = 4

No. of Cartons = 2

With minimum cost = Rs. 400

21   Use penalty (or Big M) method to maximize:-

Max: $x_1 + 2x_2 + 3x_3 - x_4$

Subject to the constraints:

$$x_1 + 2x_2 + 3x_3 = 15$$
$$2x_1 + x_2 + 5x_3 = 20$$
$$x_1 + 2x_2 + x_3 + x_4 = 10$$
$$x_1, x_2, x_3, x_4 \geq 0$$

Ans. $x_1 = 5/2$, $x_2 = x_3 = 35/14$, $x_4 = 0$

22   Use the graphical method top solve the following linear programming problem

Maximize $z = 7x_1 + 3x_2$

Subject to the constraints,

$$x_1 + 2x_2 \geq 3 \qquad ...(1)$$
$$x_1 + x_2 \leq 4 \qquad ...(2)$$
$$0 \leq x_1 \leq \frac{5}{2}$$
$$0 \leq x_2 \leq \frac{3}{2}$$
$$x_1 \geq 0, x_2 \geq 0$$

Ans. $z = 22$

$x_1 = 2.5$

$x_2 = 1.5$

23   Use the penalty (Big-M) method to minimize

Min. $z = 5x_1 + 3x_2$

Subject to constraints,

$2x_1 + 4x_2 \leq 12$

$2x_1 + 2x_2 = 10$

$5x_1 + 2x_2 \geq 10$

$x_1 \geq 0, x_2 \geq 0$

Ans. $x_1 = 4, x_2 = 1$ and $z = 23$

24   Given the primal problem

Max. $z = 6x_1 + 8x_2$

Subject to constraints,

$30x_1 + 20x_2 \leq 300$

$5x_1 + 10x_2 \leq 110$

$x_1 \geq 0, x_2 \geq 0$

Write its dual problem and obtain its optimum solution.

Ans. Z* = 96, y₁ = 1/10, y₂ = 3/5

25   Consider the following linear programming problem:
Max. $z = 3x_1 + 5x_2$
Subject to constraints,
$3x_1 + 2x_2 \leq 18$
$x_1 + 2x_2 \leq 4$
$x_2 \leq 6$
$X_1 \geq 0$, $X_2 \geq 0$

Obtain an optimal solution of this problem. Suppose variable x_6 is added to the above given linear programming problem. Obtain an optimal solution to the resulting linear programming problem given that the coefficients of x_6 in the constraints of the problem are 1,1 and 1 and its coefficient in the objective function is 2.
Ans. Z = 12, x₁ = 4, x₂ = 0, x₆ = 0

26   Find solution to LPP

$$\max x_1 + x_2 \text{ subject to } \begin{cases} x_1 + 2x_2 \leq 7 \\ 3x_1 + x_2 \leq 6 \end{cases}, x_1 \, x_2 \geq 0 \; ?$$

Ans.(x₁, x₂) = (1, 3)

27   Find solution to the LP problem:

$$\min u_1 + 2u_2 \text{ subject to } \begin{cases} 3u_1 + u_2 \geq 7 \\ u_1 + 4u_2 \geq 6 \end{cases}, u_1 \, u_2 \geq 0$$

Ans . (u₁, u₂) = (2, 1)

28   Find solution to the LP problem:
Min:

$$44u_1 + 23u_2 - 10u_3 \text{ subject to } \begin{cases} 3u_1 + 2u_2 - u_3 \geq 5 \\ -2u_1 - 4u_2 + 2u_3 \geq -2 \\ 4u_1 + 5u_2 + u_3 \geq 1 \\ u_1, u_2, u_3 \geq 0 \end{cases}$$

29.   Solve the following L.P.P. Using simplex method:
Maximize $Z = x_1 - x_2 + 3x_3$
Subject to:
$$x_1 + x_2 + x_3 \leq 10$$
$$2x_1 - x_3 \leq 2$$
$$2x_1 - 2x_2 + 3x_3 \leq 0$$
$$x_1, x_2, and \; x_3 \geq 0$$

Ans: $x_1 = 0; x_2 = 6; x_3 = 3$

30   Food X contains 6 units of vitamin A per gram and 7 units of vitamin b per gram and costs paise per gram. Food y contains 8 units of vitamin A per gram and 12 units of

vitamin B per gram and costs 20 paise per gram. The daily minimum requirement of vitamin A and vitamin b is 100 units and 120 units respectively. Fins the minimum cost of product mix using the simplex method.

Ans:15 gram and 5/4 grams

31.   A company makes two products (X and Y) using two machines (A and B). Each unit of X   that is produced requires 50 minutes processing time on machine A and 30 minutes processing time on machine B. Each unit of Y that is produced requires 24 minutes processing time on machine A and 33 minutes processing time on machine B.At the start of the current week there are 30 units of X and 90 units of Y in stock. Available processing time on machine A is forecast to be 40 hours and on machine B is forecast to be 35 hours.

The demand for X in the current week is forecast to be 75 units and for Y is forecast to be 95 units. Company policy is to maximise the combined sum of the units of X and the units of Y in stock at the end of the week.
a)   Formulate the problem of deciding how much of each product to make in the current week as a linear program.
b)   Solve this linear program graphically.

Ans:x=45 and y=6.25

32.   Solve min $4a + 5b + 6c$
Subjectto $a + b >= 11$
            $a - b <= 5$
            $c - a - b = 0$
            $7a >= 35 - 12b$
        $a >= 0$ $b >= 0$ $c >= 0$
Ans: a = 8 and b = 3

33.   Solve the following linear program: $\max 5x_1 + 6x_2$
subject to
$x_1 + x_2 <= 10$
$x_1 - x_2 >= 3$
$5x_1 + 4x_2 <= 35$
$x_1 >= 0, x_2 >= 0$

Ans:$x_2 = (20/9) = 2.222$ and
$x_1 = 3 + x_2 = (47/9) = 5.222$

34   Solve the following LPP graphically

MINIMIZE: $4 X1 + 6 X2$

$3 X1 + 4 X2 \le 24$
$5 X1 + 6 X2 \le 40$
$6 X1 + 8 X2 = 48$

X1, X2 ≥ 0

Ans (8,0), 32

35   Solve the following LPP by simplex method

MAX `Z = ` `2` `X_1 + ` `3` `X_2 + ` `4` `X_3`

Subject to constraints

`3` `X_1 + ` `4` `X_2 + ` `1` `X_3` = `108`

`0` `X_1 + ` `2` `X_2 + ` `3` `X_3` = `72`

`5` `X_1 + ` `6` `X_2 + ` `0` `X_3` = `160`

and `X_1,X_2,X_3 >= 0`

Ans: X1=0, X2=126/5, X3=36/5, Z=522/5

36   Use the Simplex method to solve the following LP problem

Maximize $Z = 3x_1 + 5x_2 + 4x_3$

Subject to the constraints

$2x_1 + 3x_2 \leq 8$

$2x_2 + 5x_3 \leq 10$

$3x_1 + 2x_2 + 4x_3 \leq 15$

And $x_1, x_2, x_3 \geq 0$.

Ans: X1=89/41,   x2=50/41,   x3=62/41   Z=765/41.

37   Solve the LPP using Simplex Method: -
   Minimize Z = 6x + 4y
   Subject to constraints
   - x + y ≤ 1
   x + y ≥ 3
   And x, y ≥ 0
Ans: UNBOUNDED SOLUTION.

38   Solve the following LPP

Maximize   Z = 8X1 – 4X2

Subject to   4X1 + 5X2 ≤ 20

                  -X1 + 3 X2 ≥ -23

            X1 ≥ 0, X2 unrestricted in sign.

Ans: 1688/17

39 Solve and comment on the nature of solution of the following LPP

Maximize   Z = 6X1 + 4X2

Subject to   2X1 + 3X2 ≤ 30

                  3X1 + 2X2 ≤ 24

                  X1 + X2 ≥ 3

Ans: X1 = 12/5 , X2 = 42/5 and Max Z =48., Alternative optima exists.

40. Solve the following LPP

Maximize   Z = 3X1 + 9X2

Subject to   X1 + 4X2 ≤ 8

X1 + 2X2 ≤ 4

And   X1 , X2 ≥ 0.

Ans: X1 = 0, X2 = 2 and Max Z = 18.

41   A firm owns facilities at six places. If it has manufacturing plants at places A, B and C with daily production of 50,40 and 60 units resp. At point D, E and F, it has three warehouses with daily demands of 20, 95 and 35 units resp. Per unit shipping costs are given in the following labels. If the firm wants to minimize its total transportation cost, how should it route its products:

		Warehouse		
		D	E	F
	A	6	4	1
Plant	B	3	8	7
	C	4	4	2

Ans: 555

42   Obtain an initial basic feasible solution to the following transportation problem using north-west corner rule and then optimize the problem:

	D	E	F	G	Available
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Supply	200	225	275	250	

Ans: X_{11} = 200 , X_{12}= 50, X_{22} = 175, X_{23} = 125, X_{33} = 150 , X_{34} = 250

Total cost = 12200

43   Use VAM to obtain an initial basic feasible solution of the TP and then optimize the problem:

	D	E	F	G	Available
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Demand	200	225	275	250	

Ans: X_{11} = 200 , X_{12}= 50, X_{22} = 175, X_{24}= 125, X_{33} = 275 X_{34} = 125

Total cost = 12075

44   Find the optimal solution to TP by MODI method:

	D_1	D_2	D_3	D_4	Supply
S_1	19	30	50	10	7

S₂	70	30	40	60	9
S₃	40	8	70	20	18
Demand	5	8	7	14	34

Ans: 743

45   A production supervisor is considering how he should assign the four jobs that are to be performed, to four of the workers under him. He wants to assign the jobs to the workers such that the aggregate time to perform the job is the least. Based on previous experience, he has the information on the living taken by the four workers in performing these jobs as given below:

Time taken by workers on various jobs (in minutes)				
Worker	Job			
	A	B	C	D
1	45	40	51	67
2	57	42	63	55
3	49	52	48	64
4	41	45	60	55

Ans: (a)=41, (b)=40 ,(c)=48 , (d)=55
      Total = 184

46   Using the following cost matrix, determine
     (a) Optimal job assignment
     (b) The cost of assignment.

Mechanist	Job				
	1	2	3	4	5
A	10	3	3	2	8
B	9	7	8	2	7
C	7	5	6	2	4
D	3	5	8	2	4
E	9	10	9	6	10

Ans: (a) A-2 , B-4, C-5, D-1, E-3
      (b) 3+2+4+3+9 = 21

47   You are given the information about the cost of performing different jobs by different persons. The job person marking abdicate that the individual involved cannot perform the particular job. Using this information state
(i)   the optimal assignment jobs and
(ii) the cost of such assignment.

	Job				
	J₁	J₂	J₃	J₄	J₅
P₁	27	18	X	20	21
P₂	31	24	21	12	17
P₃	20	17	20	X	16
P₄	22	28	20	16	27

Ans: (a) P₁-J₂ ,P₂-J₄ , P₃-J₅ , P₄-J₂₃
      (b) 18+12+16+20 = 66

84

48 Solve the following assignment job and obtain the minimum cost at which all the jobs can be performed:

Worker	Job (cost in 00 Rs.)				
	1	2	3	4	5
A	25	18	32	20	21
B	34	25	21	12	17
C	20	17	20	32	16
D	20	28	20	16	27

Ans: 66

49 A company plans to assign 5 salesmen to 5 districts in which it operates. Estimates of sales revenue in thousands of rupees for each salesman in different districts are given the following data. In your opinion, what should be the placement of the sales if the objective is to maximize the expected sales revenue?

Salesman	Districts				
	D_1	D_2	D_3	D_4	D_5
S_1	40	46	48	36	48
S_2	48	32	36	29	44
S_3	49	35	41	38	45
S_4	30	46	49	44	44
S_5	37	41	48	43	47

Ans: 231

50 A department head has four subordinates and four tasks to be performed. The subordinates differ in efficiency and the tasks differ in their intrinsic differently the estimate of the time each of them take to perform each task is given in matrix below:

Tasks	Men			
	E	F	G	H
A	18	26	17	11
B	13	28	14	26
C	38	19	18	15
D	19	26	24	10

How should the tasks be allocated one to a man, so as to minimize the total man-hours?
Ans: 41

51 Use VAM to obtain an initial basic feasible solution of the TP and then optimize the problem:

Origin	Destination				
	1	2	3	4	Supply
1	20	22	17	4	120

2	24	37	9	7	70
3	32	37	20	15	50
Demand	60	40	30	110	240

Total cost = 3520

52   Use VAM to obtain an initial basic feasible solution of the TP and then optimize the problem:

	1	2	3	4	Supply
1	10	2	20	11	15
2	12	7	9	20	25
3	4	14	16	18	10
Demand	5	15	15	15	=50

Ans: x12=15, x14=0, x23=15, x24=10, x31=5, x34=5

Cost = 475

34 A company has 4 machines available for assignment to 4 tasks. Any machine can be assigned to any task, and each task requires processing by one machine. The time required to set up each machine for the processing of each task is given in the table below.

	TIME (Hours)			
	Task 1	Task 2	Task 3	Task 4
Machine 1	13	4	7	6
Machine 2	1	11	5	4
Machine 3	6	7	2	8
Machine 4	1	3	5	9

The company wants to minimize the total setup time needed for the processing of all four tasks.

Ans: 11 hours

54   Four persons A,B,C and D are to be assigned four jobs I, II, III and IV. The cost matrix is given as under, find the proper assignment.

Man/ Jobs	A	B	C	D
I	8	10	17	9
II	3	8	5	6
III	10	12	11	9

Ans: I → B; II → C: III → D and IV → A.

55   There are five machines and five jobs are to be assigned and the associated cost matrix is as follows. Find the proper assignment.

| | | Machines | | | |
	I	II	III	IV	V
A	6	12	3	11	15
B	4	2	7	1	10
C	8	11	10	7	11
D	16	19	12	23	21
E	9	5	7	6	10

Jobs (label for rows A–E)

Ans: A → I, B → IV, C → V, D → III and E → II. Total Time = 35

56   Solve the following transportation problem for least cost using the North West corner rule to find the initial basic feasible solution

| | Destinations | | | | |
Origins	D1	D2	D3	D4	Availability
O1	1	2	4	4	6
O2	4	3	2	0	8
O3	0	2	2	1	10
Requirements	4	6	8	6	Total=24

Ans: z = 28

57   There are five jobs to be done on the five machines. The matrix given below shows the time taken by jth job on the jthmachine;j=1,2and i= 1,2--------5.Assign 5 jobs to the five machines in such a way that the total time taken to complete job is minimum.

| | Jobs | | | | |
Machines	1	2	3	4	5
I	9	3	4	2	10
II	12	10	8	11	9
III	11	2	9	0	8
IV	8	0	10	2	1
V	7	5	6	2	9

Ans: Minimum cost to complete= Rs.19

58   In a town there are only two discount stores ABC and XYZ. Both stores run annual pre Diwali sales. Sales are advertised through local newspapers with the aid of an advertising firm.ABC store constructed the following pay-off in units of Rs.1,00,000.Find the optimal strategies for both stores and the value of the game

	Store XYZ

Store ABC	B1	B2	B3
A1	1	-2	1
A2	-1	3	2
A3	-1	-2	3

59   Solve the game:

Firm B				
Firm A	**No**	**Moderate**	**Much**	**Min.**
No	5	0	-10	-10
Moderate	10	6	2	2
Much	20	15	10	10
Max.	20	15	10	10

60   Solve the following Assignment Problem

Professor	Lpp	Queueing	Dynamic prog	Regression
A	2	10	9	7
B	15	4	14	8
C	13	14	16	11
D	4	15	13	9

61   Solve the following assignment problem for minimization.

	W	X	Y	Z
A	10	12	18	11
B	11	13	12	11
C	14	15	16	12
D	13	11	10	9
D	13	11	10	9

Ans: 45

62   Solve the following transportation problem

To/from	D1	D2	D3	Total
01	10	12	5	80
02	12	11	5	80
03	14	12	10	40
Demand	50	50	100	200

Ans:1600

63.   A company has three plants and four warehouses. The supply and demand in the units and the corresponding transportation costs are given in the table below:

Data of transportation costs

Ware houses ⟶ Plant ▼	1	2	3	4	Supply
A	6	11	5	6	100

B	7	9	8	6	250
C	5	3	6	8	200
Demand	250	100	150	50	

Answer the following questions (33-35) and justify your responses:

Is the solution degenerate ?
Is the optimal solution unique? If it is not, then show the alternate optimal solution.
If the cost of the rout C4 is reduced from 8 to 7 per unit, will it affect the optimal solution.

64.   A solicitor's firm appoints typists on an hourly piece-rate basisfor their daily work. There are five typists and their charges and the rate at which they finish the typing are different. We cannot assign more than one job to one typist. Moreover, the typist has to be paid for one complete hour even if the work gets completed in a fraction of an hour. If the data is as given in table below, find the least cost allocation(s).

Data on typist rate and job content

Typist	Rate/hour(Rs)	No. of Pages typed per hour	Job	Number of pages
A	5	12	P	199
B	6	14	Q	175
C	3	8	R	145
D	4	10	S	298
E	4	11	T	178

65.   Consider the following payoff matrix

	S1	S2	S3	S4
Strategy Event →				
N1	100	-80	110	120
N2	180	120	100	-60
N3	-150	-120	-110	-110
N4	-100	80	120	80

Select strategy using a) Maxi Max b)Maximin c)Laplace d) Hurwitz(0.6).
Ans:-180, -110, -220/4,84.

66   Solve the following game

	B1	B2	B3	B4
A1	100	90	110	80
A2	80	90	110	100
A3	110	110	80	50
A4	90	80	110	100

| A5 | 100 | 90 | 80 | 100 |

Ans: V=650/7

Strategy (B1, B2, B3, B4) = (3/14, 3/7, 1/7, 3/14)

Strategy (A1, A2, A3, A4, A5) = (0, 3/7, 1/7, 0, 3/7)

67   Solve the following assignment problem using Hungarian assignment method

10	12	16	12	8
15	17	18	12	0
14	11	10	8	16
15	11	18	10	9

68.   Solve the following linear program: max $5x_1 + 6x_2$
subject to
$x_1 + x_2 <= 10$
$x_1 - x_2 >= 3$
$5x_1 + 4x_2 <= 35$
$x_1 >= 0, x_2 >= 0$

Ans:$x_2 = (20/9) = 2.222$ and
$x_1 = 3 + x_2 = (47/9) = 5.222$

69.   Determine an basic feasible solution & optimal solution to the following transportation problem:

	D$_1$	D$_2$	D$_3$	D$_4$	**Availability**
O$_1$	6	4	1	5	14
O$_2$	8	9	2	7	16
O$_3$	4	3	6	2	5
Requirement	6	10	15	4	

Ans: 860

UNIT III

Test Your Skills

Multiple Choice Questions:

1   The study of game theory is not as applicable to firms that are perfect competitors because:
        (a)   They cannot afford to hire strategists.
        (b)   The firms in perfect competition are too interdependent
        (c)   Perfect competitors can sell all that they produce at the market price
        (d)   They have to be concerned that the strategy that they would opt for would generate a reaction by their competitors.

2   Game theory is about:
        (a)   Market structure in the entertainment industry
        (b)   Strategic interaction among players in the same market
        (c)   Abstractions with no application in the real world
        (d)   An unnecessary exercise since all industries reach equilibrium solely the supply and demand analysis

3   The appropriate decision criterion is dependent on
        (a)   The risk personality of the decision maker.
        (b)   The philosophy of the decision maker.
        (c)   All of the above.
        (d)   None of the above.

4   Decision criteria
        (a)   Are the choices faced by the decision maker.
        (b)   Are the problems faced by the decision maker.
        (c)   Are the ways to evaluate the choices faced by the decision maker.
        (d)   Must be unique for a problem

5   The term opportunity loss is most closely related to
        (a)   Maximin regret.
        (b)   Maximax regret.
        (c)   Minimax regret.
        (d)   Minimin regret

6   Cost of uncertainty is equal to-
        (a)   EOL.
        (b)   EPPI.
        (c)   EVPI.
        (d)   Minimin regret

7   Criterion based on pessimistic approach of decision maker is
        (a)   Miximin.

  (b) Maximax.
  (c) Hurwicz.
  (d) Laplace.

8 A common assumption about the players in a game is that
  (a) X neither player knows the payoff matrix.
  (b) X the players have different information about the payoff matrix.
  (c) X only one of the players pursues a rational strategy.
  (d) the specific identity of the players is irrelevant to the play of the game.

9. In a zero-sum game,
  (a) what one player wins, the other loses.
  (b) the sum of each player's winnings if the game is played many times must be
      zero.
  (c) the game is fair—each person has an equal chance of winning.
  (d) long-run profits must be zero.

10 Which of the following is (are) types of decision-making environments?
  (a) Decision making under uncertainty
  (b) Decision making under certainty
  (c) Decision making under risk
  (d) None of the above
  (e) All of the above

11 The fourth step in the decision theory process is to _____.
  (a) Identify possible outcomes
  (b) Define the problem at hand
  (c) List all possible alternatives
  (d) Select the decision theory model
  (e) List the payoffs

12 A good decision always implies that we
  (a) Will obtain the best final results.
  (b) Have used appropriate quantitative analysis.
  (c) Have considered all alternatives.
  (d) Have based the decision on all available appropriate information.
  (e) Have followed a logical process.

13 All of the following are steps in the decision-making process EXCEPT:
  (a) Define the problem
  (b) List alternatives
  (c) Identify possible outcomes
  (d) List payoffs
  (e) Compute the posterior probabilities

14 The equally likely decision criterion is also known as
  (a) Bayes'.
  (b) Laplace.
  (c) minimax.
  (d) Hurwicz.

(e)   none of the above

15   Any problem that can be represented in a decision table can also be graphically
       illustrated in a:
       (a)   Utility curve.
       (b)   Bayes' diagram.
       (c)   Decision tree.
       (d)   Hurwicz diagram.
       (e)   None of the above

16   The graph that plots the utility value versus monetary value is called:
       (a)   Trade-off graph.
       (b)   Decision tree graph.
       (c)   Laplace curve.
       (d)   Benefit curve.
       (e)   Utility curve.

17   One of the advantages of Bayes' Theorem is that
       (a)   It incorporates both initial estimates of probabilities and the information about
               the accuracy of the information source.
       (b)   It allows the decision maker to know with certainty all probability values of
               major outcomes.
       (c)   It is the optimal method for decision making under risk.
       (d)   It replaces EMV analysis.
       (e)   None of the above

18   Opportunity loss refers to
       (a)   The expected value of a bad decision.
       (b)   The expected loss from a bad decision.
       (c)   The difference between the actual payoff and the optimal payoff.
       (d)   The regret from not having made a decision.
       (e)   None of the above

19   The criteria of Expected Monetary Value is used for making decisions under
       (a)   Certainty
       (b)   Uncertainty
       (c)   Risk
       (d)   All of the above
       (e)   None of the above

20   The maximin criteria is a(n) _____ criteria.
       (a)   Optimistic
       (b)   Neutral
       (c)   Pessimistic
       (d)   Can be any one of the above depending on the problem
       (e)   None of the above

21   Which of the following might be viewed as an "optimistic" decision criterion?
       (a)   Hurwicz criterion
       (b)   Maximin

(c)   Maximax
(d)   Minimax
(e)   None of the above

22   The minimum EOL will always result in the same decision as:
(a)   Minimax
(b)   Maximin
(c)   Maximum EMV
(d)   Maximax
(e)   None of the above

23   If we can obtain reasonable estimates of the probabilities of the states of nature, we are making decisions under _____.
(a)   Certainty
(b)   Uncertainty
(c)   Risk
(d)   Doubt
(e)   Hesitation

24   The _____ criterion is used to find the alternative that maximizes the maximum payoff or consequence for every alternative.
(a)   Maximin
(b)   Maximax
(c)   Minimax
(d)   Criterion of realism
(e)   Minimin

25   If we know which states of nature will occur, we are making decisions under _____.
(a)   certainty
(b)   uncertainty
(c)   risk
(d)   evidence
(e)   optimism

26   EVPI places an upper bound on _____.
(a)   the value of a payoff obtained by choosing a particular alternative
(b)   what to pay for information
(c)   the value of the outcome obtained under perfect information
(d)   the expected loss out of all possible outcomes
(e)   weighted sum of possible payoffs

27   _____ investigates how our decision might change given a change in the problem data.
(a)   Sensitivity analysis
(b)   Marginal analysis
(c)   Optimal analysis
(d)   Expected opportunity loss
(e)   Change analysis

28   A(n) _____ is a decision maker who gets more utility from a greater risk and higher potential payoff.
      (a)   Risk avoider
      (b)   Risk seeker
      (c)   Indifferent person
      (d)   Greedy person
      (e)   Utility seeker

29   The _____ decision criterion attempts to compromise between optimistic and pessimistic.
      (a)   Laplace
      (b)   Equally Likely
      (c)   Hurwicz
      (d)   Maximin
      (e)   Thompson

30   In the context of Bayes' Theorem, the revised probabilities are called _____ probabilities.
      (a)   Estimated
      (b)   Increment
      (c)   A priori
      (d)   Posterior
      (e)   Alternate

31   The _____ decision criterion is relatively conservative.
      (a)   Maximin
      (b)   Maximax
      (c)   Minimax
      (d)   EMV
      (e)   EOL

32   A decision model is

      (a)   An essence of reality
      (b)   An approximation
      (c)   An idealization
      (d)   All of the above.

33.   A pessimistic decision making criterion is
      (a)   maximax.
      (b)   equally likely.
      (c)   maximin.
      (d)   decision making under certainty.

34.   In decision making under _____, there are several possible outcomes for each alternative, and the decision maker knows the probability of occurrence of each outcome.
      (a)   risk
      (b)   utility

(c)   certainty
(d)   probability

35.   An analytic and systematic approach to the study of decision making is referred to as
(a)   decision making under risk.
(b)   decision making under uncertainty.
(c)   decision theory.
(d)   decision analysis.

36.   Expected monetary value (EMV) is
(a)   the average or expected monetary outcome of a decision if it can be repeated a large number of times.
(b)   the average or expected value of the decision, if you know what would happen ahead of time.
(c)   the average or expected value of information if it were completely accurate.
(d)   the amount you would lose by not picking the best alternative.

37.   The game of "rock, scissors, paper" can be described as a game with
(a)   One pure strategy Nash equilibrium.
(b)   One Nash equilibrium that is not subgame perfect.
(c)   Only a mixed strategy equilibrium.
(d)   None of the above.

38.   A game can be
(a)   Pure Strategy
(b)   Mixed Strategy
(c)   2x2
(d)   Allof the above.

39.   A game can be solved with
(a)   Algebric Method
(b)   Simplex Method
(c)   Graphical Method
(d)   All of the above

40.   A pure strategy game is where_____ exist
(a)   Saddle point
(b)   Dominance Point
(c)   Intersection Point
(d)   All of the above

41.   The concept of utility is used to
(a)   Measure the utility of money
(b)   Take into account aversion of risk
(c)   Both a and b
(d)   none of the above

42.   Which of the following criterion is not used for decision making under uncertainity?
(a)   maximin

(b)   maximax

(c)   minimax

(d)   minimize expected loss

43.   The decision-making criterion that should be used to achieve maximum long-term payoff is
(a)   EOL
(b)   EMV
(c)   Hurwicz
(d)   Maximax

44   While using Hurwiez criterion, the coefficient of realism (a)
(a)   Represents the degree of optimism
(b)   Represents the degree of pessimisms
(c)   Is the probability of state of nature
(d)   none of the above

45   Game theory models are classified by the
(a)   no of players
(b)   Sum of all payoffs
(c)   Number of strategies
(d)   all of the above

46   Linear programming method should be used to determine value of the game when size pf payoff matrix is
(a)   2*2
(b)   3*4
(c)   M*2
(d)   2*n

47   A saddle point exists when
(a)   Maximin value= maximax value
(b)   Minimax value= minimum value
(c)   Minimax value = minimin value
(d)   none of the above

48   The slack for an activity is equal to
(a)   LF - LS
(b)   EF - ES
(c)   LS - ES
(d)   none of the above

49.   Decision theory is concerned with
(a)   methods of arriving at an optimal decision
(b)   Selecting optimal decision in sequential manner
(c)   Analysis of information that is available
(d)   All of the above

50   Two persons zero –sum game means that the
      (a)   Sum of losses to one player is equal to the sum of gains to other
      (b)   Sum of losses to one player is not equal to the sum of gains to other
      (c)   Both a and b
      (d)   none of the above

Ans.   (1)(c), (2)(b), (3)(b), (4)(c), (5)(a), (6)(c), (7)(a),8(d),9(a), (10)(e), (11)(e), (12)(e), (13)(e), (14)(b), (15)(c), (16)(e), (17)(a), (18)(c), (19)(d), (20)(c), (21)(c), (22)(c), (23)(c), (24)(b), (25)(a), (26)(b), (27)(a), (28)(b), (29)(c), (30)(d), (31)(c), 32(c), 33(c), 34(a), 35(c), 36(a), 37(c), 38(d), 39(d), 40(a), 41(c), 42(d), 43(b), 44(a), 45(d), 46(b), 47(c), 48(C), 49 (d), 50(a)

IV   Short Answer Type Questions:

1   Decision making under uncertainty.
2   Decision tree.
3   Limitations of game theory.
4   Transshipment problem.
5   Decision under uncertainty.
6   Decision under risk.
7   Decision Tree Analysis.
8   Game theory.
9   EMV & EVPI.
10   Laplace Decision Criterion & State of Nature.
11   Maximin and Minimax decision rule.
12   Pay off matrix & Saddle Point.
13   Principle of Dominance.
14   Explain types of decision making environments.
15   Explain the difference between expected opportunity loss and expected value of perfect information.
16   What are the assumptions made in the theory of games?
17   Explain the followings: two –person zero-sum game, principles of dominance, pure strategy in game theory
18   Explain "expected value of perfect information" with examples.

V   Long Answer Type Questions:

1   Describe the steps involved in the process of decision making.
2   Explain game theory and the underlying assumptions therein. Discuss the relevance of game theory in modern day businesses.
3   Explain the application of decision tree in business decision making.
4   What is game theory? Explain Zero Sum Two Person Game with suitable example.
5   What is saddle point? Describe the method of calculating saddle point.
6   Explain the graphical method of solving 2xn or mx2 games.
7   Define the term Value of game. Explain the criterion for minimax and maximin of optimality.
8   Explain the statistical decision theory. Discuss its scope, utility and limitations.

9   Explain the steps involved in formulating decision tree.
10   "Decision criteria under situations of uncertainty are governed by the attitude of decision maker." Explain.
11.   Given the complete set of outcomes in a certain situation, how is the EMV determined for a specific course of action? Explain in your own words.
12   Describe a business situation where a decision –maker faces a decision under uncertainity and where a decision based on maximizing the expected monetary value cannot be made. How do you think the decision maker should make the required decision?
13.   Indicate the difference between decision-making under risk and uncertainty, in statistical decision theory.
14.   Describe the maximin principle of game theory. What do you understand by pure strategies,and 'saddle point'.
15.   State the major limitations of game theory.

VI   Practical Questions:

1   The following matrix gives the payoff of different strategies S_1, S_2, S_3 against conditions (events) N_1, N_2, N_3 and N_4.

	N_1	N_2	N_3	N_4
S_1	4000	-100	600	18000
S_2	20000	5000	400	0
S_3	20000	15000	-2000	1000

Indicate the decision taken under the following approaches –
(a) Pessimistic
(b) Optimistic
(c) Regret
(d) Equal Probability.

Ans: (a) S_2
          (b) S_2 or S_3
          (c) S_1
          (d) S_3

2   Solve the game whose pay off is given by –

          Player B

$$\begin{array}{c} \\ A_1 \\ A_2 \\ A_3 \end{array} \begin{array}{ccc} B_1 & B_2 & B_3 \\ \begin{bmatrix} 1 & 3 & 1 \\ 0 & -4 & -3 \\ 1 & 5 & -1 \end{bmatrix} \end{array}$$

Ans: Saddle points exist. Player A A_1 strategy and Player B B_2 Strategy value of the game=3

3   Solve the following 2 × 2 game graphically:

Player B

$$\begin{array}{cccc} \mathbf{B_1} & \mathbf{B_2} & \mathbf{B_3} & \mathbf{B_4} \end{array}$$

Player A $\begin{bmatrix} 2 & 1 & 0 & -2 \\ 1 & 0 & 3 & 2 \end{bmatrix}$

Ans: (a)(0,4/5,0,1/5)

(b)(0,2/5,0,3/5)   V=2/5

4   Solve the following game:

Player B

$$\begin{array}{cccc} \text{I} & \text{II} & \text{III} & \text{IV} \end{array}$$

Player A $\begin{array}{c} \text{I} \\ \text{II} \\ \text{III} \\ \text{IV} \end{array} \begin{bmatrix} 3 & 2 & 4 & 0 \\ 3 & 4 & 2 & 4 \\ 4 & 2 & 4 & 0 \\ 0 & 4 & 0 & 8 \end{bmatrix}$

Ans: (a)(0, 0, 2/3, 1/3)

(b)(0, 0, 2/3, 1/3)   V=8/3

5   A newspaper boy has the following probability of selling a magazines:

No. of copies sold	Probability
10	0.10
11	0.15
12	0.20
13	0.25
14	0.30

Cost of a copy is 30 paise and sale price is 50 paise. He cannot return unsold copies. How many copies should he order?

Ans: 222.5

6   Consider a "modified" form of "matching biased coins" game problem. The matching player is paid Rs.8.00 if two coins turn both heads and Rs.1.00 if the coins turn both tails. The non-matching player is paid Rs. 2.00 when the two coins do not match. Give the choice of being the matching or non-matching player, which one would you choose and what would be your strategy

Ans: matching player =4/15

Non-matching player = 11/15   V=1/15

7   The manager of a flower shop promises its customers delivery within four hours on all flower orders. All flowers are purchased on the previous day and delivered to parker by 8:00 A.M next morning .The daily demand for roses is as follows:

Dozen of roses	70	80	90	100
Probability	0.1	0.2	0.4	0.3

The manager purchases roses for Rs.10 per dozen and sells them for Rs. 30.All unsold roses are donated to local hospital. How many dozen of roses parker should order each evening in order to maximize its profit? What is optimum expected profit?

8   In a town there are only two discount stores ABC and XYZ. Both stores run annual pre Diwali sales. Sales are advertised through local newspapers with the aid of an

advertising firm. ABC store constructed the following pay-off in units of Rs.1,00,000.Find the optimal strategies for both stores and the value of the game

Store ABC	Store XYZ		
	B1	B2	B3
A1	1	-2	1
A2	-1	3	2
A3	-1	-2	3

9　　　Solve the game:

	Firm B			
Firm A	No	Moderate	Much	Min.
No	5	0	-10	-10
Moderate	10	6	2	2
Much	20	15	10	10
Max.	20	15	10	10

10.　　Given is the payoff matrix.

Conditional gains (in cents) to union (costs to company)

Union strategies	Company's strategies			
	C_1	C_2	C_3	C_4
U_1	20	15	12	35
U_2	25	14	8	10
U_3	40	2	19	5
U_4	-5	4	11	0

Determine the optimum strategies for the union as well as for the company. What is the
expected gain to the Union of the above game?

Ans: The expected gain to the Union of the game = 13.05

11. In a small town there are two stores, ABC and XYZ, which handle sundry goods. The total number of customers is equally divided between the two, as the price and quality of goods sold are equal. Both stores have equally good reputation in the community and can render equally good customer service. Assume that the gain of customer by ABC is loss to XYZ and vice versa. Both stores plan to run annual pre-Diwali sale during the first week of November. Sales are advertized through local newspaper, radio and television media. With the aid of the advertising firm, store ABC has constructed the game matrix as given in table below:

Strategy of ABC	Strategy of XYZ		
	Newspaper	Radio	Television
Newspaper	30	40	-80
Radio	0	15	-20
Television	90	20	50

The figures in the matrix represent a gain or loss of customers. Determine the optional strategies and the worth of such strategies for both ABC and XYZ.

Ans: ABC:$\frac{1}{5},\frac{4}{5}$, XYZ:13/15,2/15

12. A large restaurant purchases cakes daily from a local bakery. The cakes costs Rs 10 each and is sold at Rs. 15 each. If cakes are not sold on the same day, they are sold in another outlet for Rs.8. The relative frequency distribution for the restaurant sales is given in the table below:

Frequency distribution of cakes sales

Daily Sales (dozens)	Relative frequency
30	0.01
31	0.09
32	0.16
33	0.25
34	0.30
35	0.11
36	0.08

Ans: EMV*=163.84,EVPI=3.11

13. A solicitor's firm appoints typists on an hourly piece-rate basisfor their daily work. There are five typists and their charges and the rate at which they finish the typing are different. We cannot assign more than one job to one typist. Moreover, the typist has to be paid for one complete hour even if the work gets completed in a fraction of an hour. If the data is as given in table below, find the least cost allocation(s).

Data on typist rate and job content

Typist	Rate/hour(Rs)	No. of Pages typed per hour	Job	Number of pages
A	5	12	P	199
B	6	14	Q	175
C	3	8	R	145
D	4	10	S	298
E	4	11	T	178

14. Consider the following payoff matrix

	S1	S2	S3	S4
Strategy Event →				
N1	100	-80	110	120
N2	180	120	100	-60
N3	-150	-120	-110	-110
N4	-100	80	120	80

Select strategy using a) Maxi Max b)Maximin c)Laplace d) Hurwitz(0.6).
Ans:-180, -110, -220/4,84.

15 Solve the following game

	B1	B2	B3	B4
A1	100	90	110	80

A2	80	90	110	100
A3	110	110	80	50
A4	90	80	110	100
A5	100	90	80	100

Ans: V=650/7
Strategy (B1, B2, B3, B4) = (3/14, 3/7, 1/7, 3/14)
Strategy (A1, A2, A3, A4, A5) = (0, 3/7, 1/7, 0, 3/7)

16   Jenny Lind is a writer of novels. A movie company and a TV network both want
exclusive rights to one of her more popular works. If she signs with the network, she
will receive a single lump sum, but if she signs with the movie company, the amount she
will receive depends on the market response to her movie. What should she do?
   Movie company Payouts
   Small box office - $200,000
   Medium box office - $1,000,000
   Large box office - $3,000,000
TV Network Payout
   Flat rate - $900,000
Probabilities
   P(Small Box Office) = 0.3
   P(Medium Box Office) = 0.6
   P(Large Box Office) = 0.1

Ans. Jenny should select the movie contract. EV$_{movie}$=$960,000

17. Solve the game

Player A	Player B	
	B1	B2
A1	25	5
A2	10	15

Ans. Value of game (V)=13.

18. Solve the game

Player A	Player B		
	B1	B2	B3
A1	1	3	11
A2	8	5	2

Ans. Value of game (V)=49/11.

19.   The ABC company is faced with four decision alternatives relating to investments in a

capital expansion programme. Since these investments are made in future, the company foresees different market conditions as expressed in the form of states nature. The following table summarises the decision alternatives, the various states of nature and rate of return associated with each state of nature:

Decision	States of nature		
	Q1	Q2	Q3
D1	17	15	8
D2	18	16	9
D3	21	14	9
D4	19	12	10

If the company has no information regarding the probability of occurance of the three states of nature, give the recommended decision for the decision criterion listed below:
(i) Maximax Criterion (ii) Maximin Criterion (iii) Regret Criterion (iv) laplace Criterion (v) Hurwicz Criterion(coefficient 0.75)

20. A person has two independent investments A and B available to him, but he can undertake only one investment at a time due to certain constraint. He can choose A first and then stop, or if A is successful then B or vice versa. The probability of success of A is 0.6 while for B is 0.4 Both investments require a initial capital outlay of Rs 10000 and both return nothing if venture is unsuccessful. Successful completion of A will return Rs 20000 (Over cost) and successful completion of B will return Rs 24000 (Over Cost) . Draw decision tree and determine best strategy.

   Ans. EMV 10160

21. Mr XX has an after-tax annual of Rs 90,000 and is considering to buy accident insurance for his car. The probability of accident during the year is 0.1 (assume that at most one accident will occur), in which case the damage to the car will be Rs 11,600. With a utility function of U(x)= Square root of x, what is the insurance premium he will be willing to pay.
   Ans- Rs. 1196

22. A manager must choose between two investments A and B that are calculated to yield net profits of Rs 1200 and Rs 1600 respectively with probabilities subjectively estimated at 0.75 and 0.60. Assume, the manager's utility function reveals that utilities for Rs 1200 and Rs 1600 are 45 and 50 utils, respectively. What is the best choice on the basis of the expected utility value (EUV)?
   Ans – EUV(A) -33.75 and EUV(B)-30

23.   Examine the principle of dominance in game theory and solve the following game:

Player A	B1	B2	Player B B3
A1	1	7	2
A2	6	2	7
A3	5	2	6

Ans – Player A (2/5,3/5,0), Player B(1/2,1/2,0) and V=4

24. Player A is paid Rs 8 if two coins turn heads at the same time and Rs 10 if two coins turn tails at the same time. Player B is paid Rs 3 when the two coins do not match. Given the choice of being A or B, which one would you choose and what would be your strategy?
   Ans – For player A: (4/15, 11/15)
   For player B: (4/15, 11/15)
   Expected value of game = 1/15

25. Obtain the optimal strategies for both players and value of the game for two person zero-sum game whose payoff matrix is given as follows:

Player A	Player B B1	B2
A1	-6	7
A2	4	-5
A3	-1	-2
A4	-2	5
A5	7	-6

Ans –
Player A: (0,0,0,13/20,7/20)
Player B: (11/20,9/20,)
V= 23/20

UNIT IV

**I   Test Your Skills:**

Multiple Choice Questions:

1   Arcs in a project network indicate
    (a)   Completion times.
    (b)   Precedence relationships.
    (c)   Activities
    (d)   The critical path.

2   The critical path
    (a)   Is any path that goes from the starting node to the completion node
    (b)   Is a combination of all paths
    (c)   Is the shortest path.
    (d)   Is the longest path

3   Activities following a node
    (a)   Can begin as soon as any activity preceding the node has been completed.
    (b)   Have an earliest start time equal to the largest of the earliest finish times for all activities entering the node.
    (c)   Have a latest start time equal to the largest of the earliest finish times for all activities entering the node.
    (d)   None of the alternatives is correct

4   Activities with zero slack
    (a)   Can be delayed.
    (b)   Must be completed first.
    (c)   Lie on a critical path.
    (d)   Have no predecessors.

5   Which of the following is always true about a critical activity:
    (a) $LS = EF$.
    (b) $LF = LS$.
    (c) $ES = LS$.
    (d) $EF = ES$.

6   The distribution that is used to represent path times is the
    (a)   Bivariate.
    (b)   Beta.
    (c)   Normal.
    (d)   Poisson.

7   The standard deviation of a path is computed as:
    (a)   The sum of the standard deviations of all activities, on the path.
    (b)   The square root of the sum of the standard deviations of all activities on the path.

(c)   The sum of the variances of all activities on the path.
(d)   The square root of the sum of the variances of all activities on the path.
(e)   None of these.

8.   The parts of a network that represent the origins are
      (a)   the axes
      (b)   the flow
      (c)   the nodes
      (d)   the arrows

9.   The critical path
      (a)   is any path that goes from the starting node to the completion node.
      (b)   is a combination of all paths.
      (c)   is the shortest path.
      (d)   is the longest path.

10   When activity times are uncertain,
      (a)   assume they are normally distributed.
      (b)   calculate the expected time, using $(a + 4m + b)/6$.
      (c)   Use the most likely time.
      (d)   calculate the expected time, using $(a + m + b)/3$.

11   The critical path is the _____ path through the network.
      (a)   longest
      (b)   shortest
      (c)   straightest
      (d)   none of the above

12   In a CPM/PERT network the critical path is the
      (a)   lowest path through the network
      (b)   highest path through the network
      (c)   shortest path through the network
      (d)   longest path through the network

13   Consider the following project planning schedule. (Dummy activities are represented as broken arrows and not numbered.)

Activity	A	B	C	D	E	F
Predecessors	-	A	A	B	B, C	D, E

Which of the following is/are correct network representation/s of the project planning schedule?

(a)
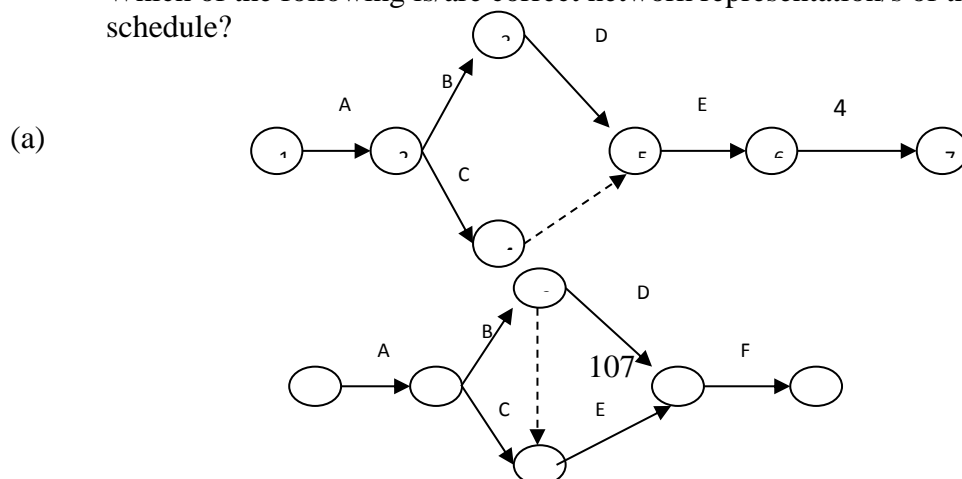
(b)

(c)

(d)
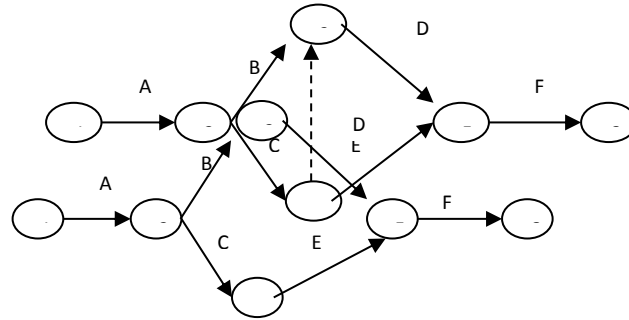
(e)
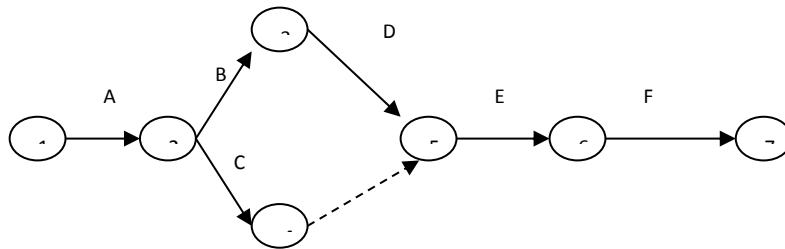
14   The cable miles and the possible linkages of a certain communication network
system are given in the following diagram.
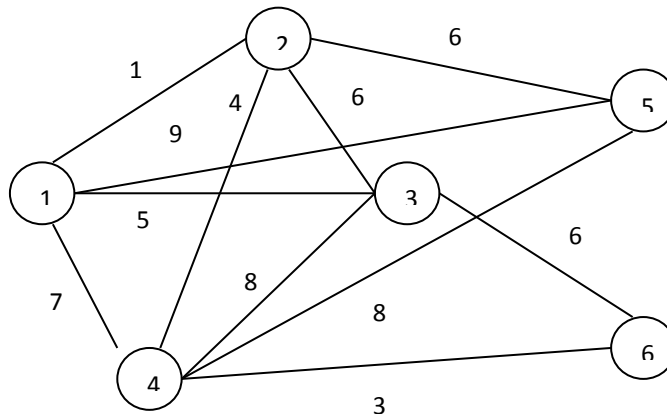
(a) $C_2=\{1,2\}$, $\overline{C}_2=\{2,4,5,6\}$.

(b) $C_2=\{1,2\}$, $\overline{C}_2=\{3,4,5,6\}$.

(c) $C_2=\{1,4\}$, $\overline{C}_2=\{2,3,5,6\}$.

Which of the following represents a method of readjusting a PERT network to achieve
better project results?
(a)   Shifting resources from the critical path/s to non-critical paths.
(b)   Reassessing the optimistic, pessimistic, and most likely times for all activities.
(c)   Modify the precedence relationships so that series-connected activities can be
performed at the same time.
(d)   Adjustment can be made in an ad hock manner.
(e)   Shifting resources from the non-critical paths to critical path/s.

15   In a PERT network, the earliest (activity) start time is the
       (a)   Earliest time that an activity can be finished without delaying the entire project.
       (b)   Latest time that an activity can be started without delaying the entire project.
       (c)   Earliest time that an activity can start without violation of precedence requirements.
       (d)   Latest time that an activity can be finished without delaying the entire project.
       (e)   None of the above

  16   Which of the following, if any, may not be one of the questions answered by PERT or PERT/Cost?
       (a)   When will the entire project be completed?
       (b)   Are there enough resources available to complete the project on time?
       (c)   What is the probability that the project will be completed by a specific date?
       (d)   What are the critical activities in the project?
       (e)   none of the above

17   PERT
       (a)   Assumes we do not know ahead of time what activities must be completed.
       (b)   Allows computation of the program's evaluation.
       (c)   Is a network technique that uses three time estimates for each activity in a project.
       (d)   Is a deterministic network technique that allows for project crashing.
       (e)   None of the above

18   Time an activity would take assuming very unfavorable conditions is represented by the
       (a)   Optimistic time (a).
       (b)   Most likely time (m).
       (c)   Deterministic time (d).
       (d)   Pessimistic time (b).
       (e)   None of the above

19   The expected time in PERT is
       (a)   A weighted average of the most optimistic time, most pessimistic time, and four times the most likely time.
       (b)   The modal time of a beta distribution.
       (c)   A simple average of the most optimistic, most likely, and most pessimistic times.
       (d)   The square root of the sum of the variances of the activities on the critical path.
       (e)   None of the above

20   Given the following activities optimistic, most likely, and pessimistic time estimates of 6, 10, 14 days, respectively, compute the PERT time for this activity.
       (a)   5
       (b)   10
       (c)   7
       (d)   12
       (e)   none of the above

21   Consider a project that has an expected completion time of 60 weeks and a standard deviation of five weeks. What is the probability that the project is finished in 70 weeks or less (round to two decimals)?
    (a)   0.98
    (b)   0.48
    (c)   0.50
    (d)   0.02
    (e)   none of the above

22   How long could activity E be delayed without delaying the completion of the project described in the following table?

Activity	Immediate Predecessor	Time	ES	EF	LS	LF
A	-	4	0	4	6	10
B	-	5	0	5	0	5
C	A	3	4	7	10	13
D	B	8	5	13	5	13
E	B	3	5	8	14	17
F	C, D	2	13	15	15	17
G	C, D	6	13	19	13	19
H	E, F	2	15	17	17	19

    (a)   3
    (b)   9
    (c)   14
    (d)   17
    (e)   none of the above

23   Which of the following is one of the assumptions of PERT?
    (a)   Total project completion time follows a normal probability distribution.
    (b)   Activity times are dependent and correlated.
    (c)   Project completion time follows a skewed chi-square distribution.
    (d)   Activity times are known with certainty.
    (e)   All of the above are assumptions of PERT.

24   The first step in planning and scheduling a project is to
    (a)   Assign time and cost estimates to each activity.
    (b)   Develop the work breakdown structure.
    (c)   Compute the longest time through the network.
    (d)   Use pert or cpm to help.
    (e)   None of the above.

25   A(n) _____ is a point in time that marks the beginning or end of an activity.
    (a)   Event
    (b)   Optimistic time
    (c)   Forward time or backward time
    (d)   Slack
    (e)   Free time

26   _____ is the time an activity can be delayed without affecting the start time of any other activity.
(a)   Early start time
(b)   Latest start time
(c)   Most optimistic time
(d)   Free slack
(e)   Most likely time

27   The process of reducing total time that it takes to complete a project by employing additional resources is called _____.
(a)   Crashing
(b)   Time reduction
(c)   Expediting
(d)   Speeding
(e)   Eliminating

28   Queuing Theory is also called as
(a)   Fashion models
(b)   Waiting Line Models
(c)   Customer Care Services

29   FIFO stands for
(a)   First In fast Out
(b)   First In First Out
(c)   Fast In First Out

30   Mean Arrival rate in queuing theory is denoted by
(a)   Roh
(b)   Meu
(c)   Lamda

Answer Q31-33 on the basis of the following question

Consider the following activities (times in weeks):

Act.	IP	Mean	CT	C/W
A	–	2	2	N/A
B	A	4	3	$800
C	A	3	2	$700
D	B,C	5	3	$750
E	A	2	1	$400
F	E	3	3	N/A
G	D,F	5	4	$1 000

IP = Immediate predecessor.
CT = Min. completion time with max crash.
C/W = Cost/week to reduce completion time.

111

31   Latest start time of activity D is
      (a)   3
      (b)   4
      (c)   8
      (d)   6

32   If the manager does not want to start activity A immediately, how long could he wait
      before starting this activity and still meet a deadline of 20 weeks?
      (a)   4 weeks
      (b)   3 weeks
      (c)   1 week
      (d)   2 weeks

33   Which of the following is the strategy to reduce the project to 12 weeks at a minimum
      cost?
      (a)   Impossible to reduce completion time to 12 weeks.
      (b)   Crash D by 2, Crash B by 1, Crash G by 1, Increased cost = $3 300.
      (c)   Crash D by 3, Crash B by 1, Increased cost = $3 050.
      (d)   Crash G by 4, Increased cost = $1 000.

34   The latest finish time for an activity:
      (a)   equals the min. of EST + t for all immediate successors.
      (b)   equals the max. of LFT - t for all immediate predecessors.
      (c)   equals the max. of EST + t for all immediate predecessors.
      (d)   equals the min. of LFT - t for all immediate successors.

35   Which of the following statements is true?
      (a)   The standard deviation of a project completion time is the sum of the standard
             deviations for the critical path activities.
      (b)   The critical path is the path with the largest probability of being completed on
             time.
      (c)   Three time estimates are necessary so that we can estimate the parameters of the
             Beta distribution.
      (d)   The variance of the time taken to complete an activity is equal to (b - a)/6.

36   An expected project completion time follows a normal distribution with a mean of 21
      days and a standard deviation of 4 days. What is the probability that the project will be
      completed in a time between 22 to 25 days inclusive?
      (a)   0.7734
      (b)   0.8413
      (c)   0.2426
      (d)   0.0819

37   Which of the following statements is true?
      (a)   Dummy activities do not require any resources.
      (b)   The EFT for an activity is equal to the EST minus the slack for that activity.
      (c)   For the beta distribution, m will always be exactly in the middle of a and b.
      (d)   When considering the possible crashing of a project, the normal time equals the
             length of the shortest path prior to any crashes.

38

```
Act.    IP
 A      —
 B      —
 C      A,B
 D      A,C
```

Based on the list of activities above which of the following can be said?
(a)   Activity C can begin as soon as activity A is complete.
(b)   Activity C can begin as soon as activity B is complete.
(c)   Activity D can begin as soon as both activities A and C are complete.
(d)   Activity D can begin as soon as both activities A and B are complete.

39   Which of the following can shorten the duration of an activity or project?
(a)   Overtime
(b)   Subcontracting
(c)   All answers are correct.
(d)   Hiring extra labour

40   The critical path in a network of activities:
(a)   will be the path with the most number of activities.
(b)   cannot be delayed or else the entire project will be delayed.
(c)   will always have all activities with positive slack.
(d)   must have at least three activities.

41   Queuing Theory is also called as
(a)   Fashion models
(b)   Waiting Line Models
(c)   Customer Care Services

42   FIFO stands for
(a)   First In fast Out
(b)   First In First Out
(c)   Fast In First Out

43   Mean Arrival rate in queuing theory is denoted by
(a)   Roh
(b)   Meu
(c)   Lamda

44   Mean Service rate in Queuing Theory is denoted by
(a)   Lamda
(b)   Meu
(c)   Roh

45   Traffic Intensity in queuing theory is denoted by
(a)   Roh
(b)   Lamda
(c)   Meu

46   The main factor/s affecting the length of a queue is/are:
      (a)   Service time.
      (b)   Number of administrators.

47   Which of the following statements is/are true regarding the queuing systems?
      (a)   In general, the cost of waiting decreases with increased service.
      (b)   In general, the cost of providing service increases with increased service.
      (c)   Main objective of the analysis of waiting line is to minimize the cost of
             operating service facilities to service customers.
      (d)   The calling population is considered to be infinite if the average length of
             service time for the next customer is independent of the service time for the
             preceding customer.
      (e)   Without the assumption that the mean service rate is greater than the mean
             arrival rate, infinitely long queues would form over time.

48   Which of the following is/are not /an assumption/s of the multi-channel queuing
      model with Poisson arrivals and exponential service times?
      (a)   Queue discipline is first come, first served.
      (b)   The calling population is infinite.
      (c)   There is more than one channel.
      (d)   The mean arrival rate is less than the mean service rate for each channel.
      (e)   The calling population is finite.

49   Given the following table that presents the solution for a queuing problem with a
      constant service rate, the probability that the server is idle is

M/D/1	
Mean Arrival Rate:	5 occurrences per minute
Constant Service Rate:	7 occurrences per minute
Solution:	
Mean Number of Units in the System:	1.607
Mean Number of Units in the Queue:	0.893
Mean Time in the System:	0.321 minutes
Mean Time In the Queue:	0.179 minutes
Service Facility Utilization Factor:	0.714

      (a)   0.217
      (b)   0.643
      (c)   0.286
      (d)   0.714
      (e)   none of the above

50   Which of the following is not one of the assumptions of an M/M/1 model?
      (a)   Arrivals are independent of preceding arrivals but the arrival rate does not
             change over time.
      (b)   Arrivals are served on a last-in, first-served basis.
      (c)   Service times follow the negative exponential probability distribution.
      (d)   Arrivals follow the Poisson distribution and come from an infinite population.

(e)   none of the above

51.   Simulation should not be applied in all cases because it
      (a)   Requires considerable talent for model building & extensive computer
            programming efforts
      (b)   Consumes much computer time
      (c)   Provides at best approximate solution to problem
      (d)   All of the above

52.   Simulation is defined as
      (a)   A technique that uses computers
      (b)   An approach for reproducing the processes by which events by chance &
            changes are created in a computer
      (c)   A procedure for testing & experimenting on models to answer what if ___,
            then so & so ___ types of questions
      (d)   All of the above

53.   The general purpose system simulation language
      (a)   Requires programme writing
      (b)   Does not require programme writing
      (c)   Requires predefined coding forms
      (d)   Needs a set of equations to describe a system

54.   Special simulation languages are useful because they
      (a)   Reduce programme preparation time & cost
      (b)   Have the capability to generate random variables
      (c)   Require no prior programming knowledge
      (d)   All of the above

55.   Few causes of simulation analysis failure are
      (a)   Inadequate level of user participation
      (b)   Inappropriate levels of detail
      (c)   Incomplete mix of essential skills
      (d)   All of the above

56.   To make simulation more popular, we need to avoid
      (a)   Large cost over runs
      (b)   Prolonged delays
      (c)   User dissatisfaction with simulation results
      (d)   All of the above

57.   The important step required for simulation approach in solving a problem is to
      (a)   Test & validate the model
      (b)   Design the experiment
      (c)   Conduct the experiment
      (d)   All of the above

58.   A calling population is considered to be infinite when
      (a)   All customers arrive at once
      (b)   Arrivals are independent of each other

(c)   Arrivals are dependent upon each other

(d)   All of the above

59.   The cost of providing service in a queuing system decreases with

     (a)   Decreased average waiting time in the queue

     (b)   Decreased arrival rate

     (c)   Increased arrival rate

     (d)   None of the above

60.   Service mechanism in a queuing system is characterized by

     (a)   Server's behavior

     (b)   Customer's behavior

     (c)   Customers in the system

     (d)   All of the above

Ans.   (1)(b), (2)(d), (3)(b), (4)(c), (5)(a), (6)(c), (7)(b), (8)(c), (9)(d), (10)(b), (11)(a), (12)(d), (13)(b), (14)(e), (15)(c), (16)(b), (17)(c), (18)(d), (19)(e), (20)(b), (21)(a), (22)(b), (23)(a), (24)(a), (25)(a), (26)(d), (27)(a), (28)(b), (29)(b), (30)(c),(31)(d), (32)(a), (33)(b), (34)(d), (35)(c), (36)(c), (37)(a), (38)(c), (39)(c), (40)(b)(41)(b), (42)(a), (43)(c), (44)(b), (45)(a), (46)(a), (47)(e), (48)(c), (49)(a), (50)(b), (51)(d), (52)(d), (53)(b), (54)(d), (55)(d),(56)(d), (57)(d), (58) (b),(59)(d),(60)(a).

.II   Short Answer Type Questions

    Write Short Note on (1-5):

1   PERT

2   CPM

3   Total float, free float and Independent float.

4   Cost analysis

5   Resource allocation

6   Queuing Model.

7   Differentiate between PERT and CPM.

8   Write the assumption of M/M/1/∞/FIFO.

7   What do you mean by a dummy activity? Why it is used in networking?

8   Assumptions behind Queuing theory.

9   What is simulation technique?

10   Explain Simulation Modelling.

11   Distinguish between mathematical model and simulation models.

12.   What are the major limitations of the PERT model?

13   How does PERT technique help a business manager in decision-making?

14   Discuss the various steps involved in the applications of CPM?

15   State the circumstances where CPM is a better technique of project management than PERT.

16   How does PERT provide for uncertainty in activity time estimates? What is the rationale for using beta probability distribution?

III Long Answer Type Questions:

1 What is a Queuing problem? Discuss some of the basic components in a waiting line. (ii) Explain the characteristics of a Queuing system.
2 Discuss the costs associated with queuing system. Also explain the concept of optimum servicing rate and optimum cost.
3 What is the difference between PERT and CPM? Define the terms: Slack, Total float, free float and independent float.
4 What is the difference between the slack, surplus and artificial variables? How do they differ in their structure and utility?
5 What do you mean by a dummy activity? Why it is used in networking?
6 "Simmulation is the process of carry out sampling experiment on the model of system then the system itself." Discuss
7 What are simulation and Monte Carlo simulation used in operations research?
8 What do you mean by network analysis? What is its significance?
9 Discuss in detail M/M/1/∞/FIFO model.
10 How does PERT technique help a business manager in decision making?
11 Explain the reasons for incorporating dummy activities in a network diagram. In what way do these differ from the normal activities?
12 What is float? What are the different types of floats? Also explain their uses in network.
13. Explain the significance of "working out of float" in the network of project activities.
14 Explain the following terms in PERT: three time estimates, expected time . and activity variance.
15. Explain {(M/M/1): (N/FCFS)} system and solve it under steady state conditions.
16. Show that the average number of units in a (M/M/1) queuing system is equal to p/ (1-p)

IV Practical Questions:

1 Construct a network for the project whose activities and their precedence relationships are as given in the following table:

Activity	A	B	C	D	E	F	G	H	I
Immediate predecessor	-	A	A	-	D	B,C,E	F	D	G,H

2 For the following data, draw the network diagram, and then crash the activities to find the time-cost trade-off points that the company should want to consider. Start with the plan that has the longest duration.

Activity	Preceding Activity	Time(weeks)		Cost ($000s)	
		Normal Program Program	Crash Program	Normal Program Program	Crash Program
A	-	2	2	5	5
B	A	5	3	11	21

C	A	2	1	7	16
D	B, C	4	2	8	22
E	B	3	2	9	18
F	D, E	3	3	9	9

Ans. The plan with the longest duration takes 14 weeks at a cost of $49,000. The one with the shortest duration takes 10 weeks at a cost of $82,000

3   Draw the network diagram for the following problem and indicate a sequence of plans that the company should want to consider in making a time-cost tradeoff. The company is not interested in reducing the project duration below 29 days. Start with the plan that has the longest duration.

Activity	Preceding Activity	Time(days)		Cost ($)	
		Regular Program Program	**Crash Program**	**Regular Program Program**	**Crash Program**
A	-	10	9	5,000	5,200
B	-	14	11	3,500	3,950
C	A	8	7	4,000	4,100
D	A	7	2	2,100	3,600
E	B	5	3	2,500	3,000
F	B	10	7	2,250	3,750
G	C	9	9	5,000	5,000
H	D, E	11	9	3,850	5,250
I	G, H	5	3	2,375	3,575

Ans: Beginning plan takes 35 days at a cost of $30,575. Completing the project in 29 days increases the project cost to $32,975

4   Information on the activities required for a project is as follows:

Activity	A	B	C	D	E	F	G	H	I	J	K
Immediate predecessor	1-2	1-3	1-4	2-5	3-5	3-6	3-7	4-6	5-7	6-8	7-
Duration (Days)	2	7	8	3	6	10	4	6	2	5	6

Draw the network and find the critical path.

Ans: 1-2-5-7-8

5   A project consists of eight activities with the following relevant information:

		Estimation duration (days)		
Activity	Immediate predecessor	Optimistic	Most likely	pessimistic
A	-	1	1	7
B	-	1	4	7
C	-	2	2	8
D	A	1	1	1

E	B	2	5	14
F	C	2	5	8
G	D,E	3	6	15
H	F,G	1	2	3

(i) Draw the PERT and find out the expected project completion time.
(ii) What duration will have 95% confidence for project completion?
(iii) If the average duration for activity F increases to 14 days, what will be its effect on the expected project completion time which will have 95% confidence?
(for standard normal $z = 10645$ area under the standard normal curve from 0 to z is 0.45)

Ans: **(i) 1-3-5-6-7, (ii) 24 days, (iii) 24.23**

6 Tasks A, B, C, H, I constitute a project. The precedence relationships are A < D; A<E, B < F; D < F, C < G, C < H; F < I, G < I
Draw a network to represent the project and find the minimum time of completion of the project when time, in days, of each task is as follows:
Task A B C D E F G H I
Time 8 10 8 10 16 17 18 14 9
Also identify the critical path.

Ans: 1-2-4-5-6 ,time is 44 days

7 A project consists of a series of tasks labeled *A, B. H, I* with the following constraints A< D,E; B, D<F: C<G; B<H; F, G<I. (W<X, Y means X, and Y can't start until W is completed.) You are required to construct a network using this notation. Also find the minimum time of completion of the project when the time of completion of each task is given as follows.
Task A B C D E F G H I
Time (days) 23 8 20 16 24 18 19 4 10

Ans: critical path, 1-2-3-5-7 with the total project duration (the least possible time to complete the entire project as 67 days

8 A project schedule has the following characteristics:

Activity	Time (weeks)	Activity	Times (weeks)
1-2	4	5-6	4
1-3	1	5-7	8
2-4	1	6-8	1
3-4	1	7-8	2
3-5	6	8-10	5
4-9	5	9-10	7

(a) Construct the network.
(b)Compute E and L for each event, and

(c) Find the critical path.

Ans: Path 1-3-5-7-8-10 with project duration of 22 weeks is the critical path

9   Table below shows jobs, their normal time and cost and crash time and cost estimates for a project

Job	Normal time(days)	Cost(Rs.)	Crash time(days)	Cost(Rs.)
1-2	6	1,400	4	1,900
1-3	8	2,000	5	2,800
2-3	4	1,100	2	1,500
2-4	3	800	2	1,400
3-4	Dummy	—	—	—
3-5	6	900	3	1,600
4-6	10	2,500	6	3,500
5-6	3	500	2	800

		9,200		

Indirect cost for the project is Rs. 300 per day.
(a) Draw the network of the project.
(b)What is the normal duration and cost of the project ?
Ans.   20 days, Rs. 15,200

(c) If all activities are crashed, what will be the minimum project duration and corresponding cost?
Ans: 12 days, Rs. 16,534.34

(d) Find the optimal duration & minimum project cost.
Ans: 17 days ;Rs. 15,000.

10   A small project is having seven activities. The relevant data about these activities is given below:

Activity	Dependence	Normal duration	Crash duration	Normal Cost	Crash Cost
A	-	7	5	500	900
B	A	4	2	400	600
C	A	5	5	500	500
D	A	6	4	800	1000
E	B,C	7	4	700	100
F	C,D	5	2	800	1400
G	E,F	6	4	800	1600

(a)Draw the network.
(b) Find out the normal duration and the minimum duration. (Q15)

Ans: **25 days, 18 days**

(c) What is the percentage increase in cost to complete the project in 21 days? (Q15)
Ans: 15.5%

11   The following time-cost table (time in weeks, cost in rupees) applies to a project. Use it to arrive at the network associated with completing the project in minimum time at minimum cost.

Activity	Normal		Crash	
	Time (weeks)	Cost (Rs.)	Time (weeks)	Cost (Rs.)
1-2	2	800	1	1,400
1-3	5	1,000	2	2,000
1-4	5	1,000	3	1,800
2-4	1	500	1	500
2-5	5	1,500	3	2,100
3-4	4	2,000	3	3,000
3-5	6	1,200	4	1,600
4-5	3	900	2	1,600

Ans.   **Crash activity 1-3 by 3 weeks, 4-5 by 1 week and 3-4 by 1 week, giving an optimal 7-weeks duration project at a cost of Rs. 11,800**

12   If in a particular single-server system, the arruivalrate , $\lambda=5$ per hour and service rate , $\mu=8$ per hour, assume the conditions for use of the single channel queuing model, find out:
a) The probability that the server is idle.
b) The probability that there are at least two customers in the system.
c) Expected time that a customer is in the queue.

    Ans: (a) 15/24
               (b) $(5/8)^3$
               (c) 12.5 min

13   Customers arrive at the first class ticket counter of a theatre at a rate of 12 per hour. There is one clerk serving the customer at a rate of 30 per hour. assuming the conditions for use of the single-channel queuing model, evaluate:
(a)   the probability that there is no customer at the counter(i.e the system is idle)
(b)   the probability that there are more than 20 customers at the counter
(c)   the probability that there is no customer waiting to be served.
(d)   the probability that the customer is being served and nobody is waiting.

    Ans: (a)   0.6
               (b)   0.064
               (c)   0.84
               (d)   0.24

14   A bank has one drive-in counter. it is estimated that cars arrive according to passion distribution at the rate of 2 every 5 min and that there is enough space to accommodate a line of 10 cars. Other arriving cars can wait outside this space, if necessary .it takes

1.5 min on an average to serve a customer, but the service time actually varies according to an exponential distribution. Your are requested to find:

(a)   The probability of time, the facility remains idle.
(b)   The expected number of customers waiting but currently not being served at a particular point of time.
(c)   The expected time a customer spends in the system
(d)   The probability that the waiting line will exceed the capacity of the space leading to the drive-in counter.

Ans: (a)   40%
            (b)   0.9
            (c)   3.75 min
            (d)   0.0036

15   A Child care shop dealing with children's requirements has one cashier who handles all customers' payments. The cashier takes on an average 4 minutes per customer. Customers come to cashier's area in a random manner but on an average of 10 people per hour. The management received a large number of customer's complaints and decided to investigate the following questions:

(a)   What is the average length of the waiting line to be expected under the existing condition?
(b)   What portion of his time is the cashier expected to be idle?
(c)   What is the average length of time that a customer would be expected to wait to pay for his purchase?
(d)   If it was decided that a customer would not tolerate a wait of more than 12 minutes, what is the probability that a customer would have to wait at least that length of time?

Ans: (a)   4/3
            (b)   33.33%
            (c)   8 minutes
            (d)   0.245

16   A Social Project manager is faced with a project with the following activities:

Activity-id	Activity - Description	Duration
1-2	Social Work Team to live in Village	5 Weeks
1-3	Social Research Team to do survey	12 Weeks
3-4	Analyse results of survey	5 Weeks
2-4	Establish Mother & Child Health Program	14 Weeks
3-5	Establish Rural Credit Programme	15 Weeks
4-5	Carry out Immunisation of Under Fives	4 Weeks

Draw the arrow diagram, using the helpful numbering of the activities

17   For the network given below, compute E and L for each event & determine
       the total, free,independent and interfering floats and identify the critical
       path.

The following table gives the activities in a construction project and the time duration of
eachactivity:

Activity	Preceding activity	Normal Time (Days)
A	-	16
B	-	20
C	A	8
D	A	10
E	B, C	6
F	D, E	12

Required:
(i)Draw the activity network of the project.
(ii)   Find critical path.
(iii) Find the total float and free-float for each activity. (6 Marks) Nov/07 **[Ans.:** (ii) A-C-
E-F = 42 days.(iii) Total Float A-0, B-4, C-0, D-4, E-0, F-0; Free Float A-0, B-4, C-0, D-4,
E-0, F-0**]**

18   Tasks A, B, C,….., H, I constitute a project. The precedence relationships
                areA<D; A<E; B<F; D<F; C<G; C<H; F<I; G<I
       Draw a network to represent the project and find the minimum time of completion of
the project when time, in
       days, of each task is as follows:

Task:	A	B	C	D	E	F	G	H	I
Time:	8	10	8	10	16	17	18	14	9

Also identify the critical path.
[Ans.: Critical path is 1-2-4-5-6 with 44
days**]**

19   A repair man fixes broken televisions. The repair time is exponentially distributed
       with a mean of 30 minutes. Broken televisions arrive at his repair shop according to a
       Poisson stream, on average 10 broken televisions per day (8 hours).
       (i)   What is the fraction of time that the repair man has no work to do?
       (ii)   How many televisions are, on average, at his repair shop?
       (iii)   What is the mean throughput time (waiting time plus repair time) of a
       television?
       Ans: (i) 3/8
                (ii) 5/3
                (iii) 80 minutes

20   A small project is composed of 7 activities whose estimates are given below in the
       table ; activities being identified by their beginning (i) and ending (j)node numbers.

Activity	Estimated duration in weeks		
(i-- j)	Optimistic t_o	Most likely t_m	Pessimistic t_p
1-2	1	1	7
1-3	1	4	7
1-4	2	2	8
2-5	1	1	1
3-5	2	5	14
4-6	2	5	8
6-6	3	6	15

(i) Draw the project network and identify all the paths.
(ii) Find expected duration and variance for each activity
(iii) What is the expected project length?
(iv) Calculate the variance and standard deviation of critical path.

Ans(iv) variance=9
Standard deviation=3

21   A self-service store employs one cashier at its counter. Nine customers arrive every five minutes, while the cashier can serve ten customers in five minutes. Assuming poisson distribution for the arrival rate and exponential distribution for service time, find the following:
(i).   The average number of customers in the system.
(ii).   The average number of customers in the queue or the average queue length.
(iii). The average time a customer spends in the system.
(iv).   The average time a customer waits before being served.

Ans:9, 8.1, 5min, 4.5 min

22   The precedence relations and relations and other information of a project are given in table below. Draw a network to represent the project and find the minimum time of completion of the project , when time in days for each task is given:
Data related to various tasks

Task	A	B	C	D	E	F	G	H	i
Time(days)	8	10	8	10	16	17	18	14	9
Predecessor	-	-	-	A	A	B, D	C	C	F, G

Ans: 44days

23   Develop a network based on the following information;
               Activity   Immediate predecessors

               A   -

               B   -

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C	A
D	B
E	C,D
F	D
G	E

24   A project consists of seven activities for which relevant data are given below: (i) Draw the network (ii) Name and highlight the critical path.

Activity	Preceding Activity	Activity Duration
A	-	4
B	-	7
C	-	6
D	A,B	5
E	A,B	7
F	C,D,E	6
G	C,D,E	5

Ans: **B-E-F, 20 days**

25   An airport has a single runway. Airplanes have been found to arrive at the rate of 15 per hour. It is estimated that each landing takes 3 minutes. Assuming a Poisson process for arrivals and an exponential distribution for landing times, use an M/M/1 model to determine the following performance measures.
(i). Runway utilization
(ii).Expected number of airplanes waiting to land.
(iii).   Expected waiting time.
(iv).   Probability that the waiting will be more than 5 mins? 10 mins? No waiting?
(v).Expected number of landings in a 20 minute period.

Ans: 3/4, 2.25, 9mins, 0.4944 & 0.3259, 5.

26   Consider the following activities:

Activity	Time (weeks)		
	Optimistic	Pessimistic	Most likely
10-20	10	20	12
20-30	8	12	10
30-40	6	6	6
40-50	10	20	14
50-60	0	0	0

40-60	15	25	18
60-70	10	10	10

a) Draw the network diagram.
b) Find the probability that the project will be completed in the most likely time duration

27. The utility data for a network are given below. Determine the total, free, independent andinterfering floats and identify the critical path.

Activity:	0-1	1-2	1-3	2-4	2-5	3-4	3-6	4-7	5-7	6-7
Duration:	2	8	10	6	3	3	7	5	2	8

[Ans.: Critical Path is 0-1-3-6-7 with27

28. The following table gives the activities in a construction project and the time duration of eachactivity:

Activity	Preceding activity	Normal Time (Days)
A	-	16
B	-	20
C	A	8
D	A	10
E	B, C	6
F	D, E	12

Required:

   (i) Draw the activity network of the project.
   (ii) Find critical path.
(iii) Find the total float and free-float for each activity. (6 Marks) Nov/07 **[Ans.:** (ii) A-C-E-F = 42 days.(iii) Total Float A-0, B-4, C-0, D-4, E-0, F-0; Free Float A-0, B-4, C-0, D-4, E-0, F-0**]**

29. Given is the following information regarding a project:

Activity	A		B	C	D	E	F	G	H	I	J	K	L
Dependence		-	-	-	AB	B	B	FC	B	EH	EH	CDFJ	K
Duration (days)		3	4	2	5	1	3	6	4	4	2	1	5

Draw the Network Diagram and identify the Critical Path and Project Duration. (Nov/94)
Find the three types of float (viz. Total, Free and Independent) for each activity.
[Ans.: B-H-J-K-L = 16 days**]**

30. Suppose a queueing system has two servers, exponential interarrival times with mean of 1 hour, and exponential service times with mean of 1 hour per customer. Suppose a customer has just arrived at 12.00 noon.

i.   What is the probability that the next arrival will come before 1.00 pm (between 1.00 pm and 2.00 pm, after 2.00 pm)? (Answer: 0.6321, 0.2325, 0.1353, resp.)

ii.   Suppose no customer arrives before 1.00 pm. What is the probability that the next arrival will come between 1.00 pm and 2.00 pm? (Answer: 0.6321)

iii.   What is the probability that the number of arrivals between 1.00 pm and 2.00 pm will be zero (one, more than one)? (Answer: 0.3679, 0.3679, 0.2642, resp.)

iv.   Suppose that both servers are serving customers at 1.00 pm. What is the probability that neither customer will have service completed before 1.01 pm (before 1.10 pm, before 2 pm)?

(**Answer**: 0.9672, 0.7165, 0.1353, resp.)

31.   A research and development department is developing a new power supply for a console television set. It has broken the job down into the following

Job	Description	Immediate Predecessors	Time (days)
A	Determine output voltage		5
B	Determine whether to use solid state rectifiers	A	7
C	Choose rectifier	B	2
D	Choose filters	B	3
E	Choose transformer	C	1
F	Choose chassis	D	2
G	Choose rectifier mounting	C	1
H	Layout chassis	E,F	3
I	Build and test	G,H	10

a) Determine the network diagram of activities involved in the project and indicate the critical path
b) What is the minimum completion time for the project?

Ans – A-B-D-F-H-I; 30 days

32   A barber with a one man shop takes exactly 25 minutes to complete one hair cut. If customers arrive at poison fashion at an average rate of one every 40 minutes, how long on an average must a customer wait for service.
Ans – 45.5 minutes

33   In a car manufacturing plant, a loading crane takes exactly 10 minutes to load a car into a wagon and again comes back to the position to load another car. If the arrival of cars is in a poisson stream at an average rate is one after every 20 minutes, calculate the average waiting time of a car in the queue.

Ans – 5 minutes

34   A small project involves 7 activities and their time estimates are listed in the following table. Activities are identified by their beginning (i) and ending (j) node numbers.

Activity	Estimated duration (weeks)		
(i-j)	Optimistic	Most likely	Pessimistic
1-2	1	1	7
1-3	1	4	7
1-4	2	2	8
2-5	1	1	1
3-5	2	5	14
4-6	2	5	8
5-6	3	6	15

a) find the expected project length
b) find variance of the project length

Ans – 17 weeks and 9 weeks

35   At what average rate must a clerk at a super market work in order to ensure a probability of 0.90 so that the customer will not have to wait longer than 12 minutes? It is assumed that there is only one counter at which customers arrive in a poison fashion at an average rate of 15 per hour. The length of service by the clerk has an exponential distribution.

   Ans- 2.48 minutes per service

QUESTION BANK

MANAGERIAL ECONOMICS

MS-105

UNIT - I

I   Multiple Choice Questions:

1   All economic questions arise because we
   (a)   Want more than we can get.
   (b)   Want more than we need.
   (c)   Have an abundance of resources.
   (d)   Have limited wants that need to be satisfied.

2   Economic profit is the difference between total revenue and
   (a)   Interest costs of production.
   (b)   Opportunity costs of production**.**
   (c)   Implicit costs of production.
   (d)   Explicit costs of production.

3   Scarcity is
   (a)   Our inability to satisfy all our wants
   (b)   A situation that exists during economic recessions but not during economic booms
   (c)   When a child wants a $1.00 can of soda and two 50¢ packs of gum and has $2.00 in her pocket.
   (d)   An economic problem only for poor people

4   Economics is best defined as
   (a)   How people make money and profits in the stock market.
   (b)   Making choices from an unlimited supply of goods and services.
   (c)   Making choices with unlimited wants but facing a scarcity of resources.
   (d)   Controlling a budget for a household.

5   Economics is
   (a)   A physical science
   (b)   The study of scarcity and choices
   (c)   The study of normative questions
   (d)   The easiest course at your university.

6   The study of the choices made by individuals is part of the definition of
   (a)   Microeconomics.
   (b)   Positive economics.

(c)   Macroeconomics.

(d)   Normative economics.

7   The first big economic questions concerns all of the following except

(a)   What goods and services are produced?

(b)   How are goods and services produced?

(c)   For whom are goods and services produced?

(d)   What determines the standard of living?

8   In Baumol's theory of the firm, the firms are:

(a)   Solely motivated to increase sales revenue

(b)   Solely motivated to increase the market share

(c)   Aiming at maximizing sales subject to minimum acceptable profit.

9   According to profit maximization theory of the firm, management

(a)   Decides output level which maximizes revenue

(b)   Output level which minimizes cost

(c)   Output level which maximizes difference between the two

10   According to O. Williomson's theory of the firm, the firm:

(a)   Reports its actual total profits

(b)   Reports actual profits net of perks

(c)   Reports actual profits net of perks and staff expenditure

11   Indifference curves that are convex to the origin reflect:

(a)   An increasing marginal rate of substitution

(b)   A decreasing marginal rate of substitution

(c)   A constant marginal rate of substitution

(d)   A marginal rate of substitution that first decreases, then increases

12   The need for study for economics arises because

(a)   The resources are scarce

(b)   The resources have alternative uses

(c)   Human wants are unlimited

(d)   Wants are of varying degree of importance

(e)   All of the above

13   All the economies in the world today are

(a)   Market economies

(b)   Command economies

(c)   Mixed economies

(d)   Socialist economies

(e)   Traditional economies

14. The production possibility curve illustrates the basic principle that
    (a)   an economy will automatically seek that level of output at which all of its resources are employed
    (b)   An economy's capacity to produce increases in proportion to its population size
    (c)   If all resources of an economy are in use, more of one good can be produced only if less of another good is produced
    (d)   If all resources of an economy are in use, more of one good can be produced only if more of another good is produced
    (e)   An economy's capacity to produce increases in proportion to its senior citizen population size.

15 Assume that Kelly's various possible activities are mutually exclusive. The opportunity cost from choosing one activity equals the
    (a)   Summed value of all her alternative activities.
    (b)   Summed value of all her alternative activities minus the value of the chosen activity.
    (c)   Value of the next most valuable alternative activity.
    (d)   Value of the next most valuable alternative activity minus the value of the chosen activity.
    (e)   Summed value of all her alternative activities minus the value of the next most valuable alternative activity.

16 Along a society's production possibilities frontier,
    (a)   The level of technology is changing
    (b)   More of one good can be produced without giving up some of the other good
    (c)   Resources are not being fully utilized
    (d)   Available resources are being used efficiently
    (e)   There is productive inefficiency in the economy

17 At saturation point, the consumer's marginal utility is
    (a)   Maximum
    (b)   Minimum
    (c)   Positive
    (d)   Negative
    (e)   Zero

18. Why is water, which is so essential for life is so cheap, while diamond, which is not so essential to life, so expensive
    (a)   TU received from water is much less than TU received from diamonds
    (b)   Diamond is necessity for rich people
    (c)   Water is an inferior good
    (d)   MU from last unit of water is very low as compared to that of diamond
    (e)   None of the above

19. MRSXY measures –
    (a) The amount of Y, a consumer is willing to give up to obtain one additional unit of X. Such that he is on the same level of satisfaction
    (b) The amount of X, a consumer is willing to give up to obtain one additional unit of Y. such that he is on the same level of satisfaction
    (c) Slope of the indifference curve
    (d) Both (a) and (c) above
    (e) Both (b) and (c) above

20. Short run, refers to a period
    (a) of 1 year
    (b) of less than 1 year
    (c) of less than 3 years
    (d) of less than 3 months
    (e) when at least one input is fixed

21. Suppose the marginal utility to Nagesh of product A is derived by the function, MUA = 10 – X, where X is the number of units of A produced. For B, MUB = 21 –2y where Y is the number of units B produced. Assume that price of A = price of B = RS. 1. How much A and B would Nagesh buy if he had Rs. 7 to spend.
    (a) A one unit and B 6units.
    (b) A 6 units and B one unit.
    (c) A ten units and B one unit.
    (d) A three units and B three units
    (e) A 10 units and b 21 units

22. The difference between the total utility derived from the consumption of a certain amount of a given good and the amount of money actually paid for it is called
    (a) Marginal utility
    (b) Average utility
    (c) Consumer surplus
    (d) Producer surplus
    (e) Opportunity cost

23. If the consumer is to maximize the utility it is necessary and sufficient that
    (a) That the bundle of goods he purchases is some where on the budget constraint
    (b) That he purchases as many goods as possible
    (c) That marginal utilities of all the consumed goods per Rs.1 of income are equal to each other
    (d) That no inferior goods are purchased
    (e) None of the above

24. If a consumer is to maximize utility it is necessary and sufficient:
    (a) That the bundle of goods he purchases is somewhere on the budget constraint
    (b) That he purchases as many as he can
    (c) No inferior goods are purchased
    (d) The ratio of marginal utilities will be equal to the ratio of prices and which will be equal to marginal rate of substitution
    (e) There are no necessary and sufficient conditions

25. For a consumer in equilibrium, Marginal Rate of Substitution of X for Y (MRSxy) is 3. If price of the good X (Px) is Rs.75, price of good Y (Py) is
    (a) Rs. 15
    (b) Rs. 25
    (c) Rs.75
    (d) Rs.125
    (e) Rs.150

26. Marginal utility of good X is 300 utils and its price is Rs.12. If price of good Y is Rs.30, the marginalutility of good Y at equilibrium is
    (a) 350 utils
    (b) 700 utils
    (c) 750 utils
    (d) 550 utils
    (e) 600 utils

27. 'Utility' is expressed as
    (a) The power of commodity to satisfy wants
    (b) The quality of the commodity.
    (c) The quantity of a commodity
    (d) The desire for a commodity
    (e) The durability of a commodity

28 A curve drawn indicating the slope of the total utility curve closely resembles the
    (a) Demand curve
    (b) Supply curve
    (c) Average utility curve
    (e) Marginal revenue curve
    (f) Indifference curve

29 What does the law of diminishing marginal utility mean?
    (a) Total utility decreases with more consumption
    (b) The price producers charge will inevitably fall with more units
    (c) The extra costs of producing will rise
    (d) The extra satisfaction from consuming units will eventually fall

30   When the law of diminishing marginal utility holds for all products and all consumers, an income-constrained consumer will maximize utility when the ratio of marginal utilities of all products is equal to their price ratios. Which of the following is an implication of this being true for all consumers?
      (a)   Consumers will buy each product until its marginal utility is zero.
      (b)   Consumers will buy less of any product whose price rises and more of any product whose price falls.
      (c)   All goods will be inferior goods.
      (d)   All goods will be Giffen goods.
      (e)   All goods will have a positive substitution effect.

31.   The paradox of value was resolved by which of the following insights?
      (a)   Market value depends on the total utility arising from the consumption of a product.
      (b)   Market value depends on the average utility of a product.
      (c)   Market value is unrelated to utility.
      (d)   Market value depends only on the marginal utility of a product.
      (e)   Total utility depends on the market value of a product.

32.   As long as the principle of diminishing marginal utility is operating, any increased consumption of a good
      (a)   Lowers total utility.
      (b)   Produces negative total utility.
      (c)   Lowers marginal utility and, therefore, total utility.
      (d)   Lowers marginal utility, but may raise total utility.

33.   Among all the combinations of goods attainable by a consumer, the one that maximizes total utility is the one that
      (a)   Maximizes the marginal utilities per dollar of each good.
      (b)   Maximizes the marginal utilities per pound (or other physical unit) of each good.
      (c)   Equates the marginal utilities per dollar of each good.
      (d)   Equates the marginal utilities per pound (or other physical unit) of each good.

34.   Cardinal utility theory assumes that consumers can
      (a)   Rank baskets of goods as to their preference.
      (b)   Determine the number of utils that can be derived from consuming all goods.
      (c)   Determine the marginal rate of substitution between goods.
      (d)   Avoid the law of diminishing marginal utility.
      (e)   All of the above.

35.   The budget allocation rule states that
      (a)   The marginal utility of x equals the marginal utility of y at maximum utility.
      (b)   The marginal utility of x divided by its price be equal to marginal utility of all other goods divided by their prices.

(c)   The marginal utility of x equals the marginal rate of substitution of x for y.
(d)   The ratio of prices of x to y be greater than the ratio of marginal utility of x to the marginal utility of y.
(e)   None of the above.

36.   In spending all his or her income, the consumer chooses the market basket that maximizes his or her utility.
        Which of the following statements will be correct?
        1. The marginal utility is the same for each commodity.
        2. The marginal utility per dollar spent is the same for each commodity.
        3. The marginal utility of each commodity is proportional to its price.
        (a)   1 only.
        (b)   2 only.
        (c)   1 and 2 only.
        (d)   2 and 3 only.
        (e)   1, 2, and 3

37.   If you measure right shoe on the X axis and the left shoe on the Y axis, the shape of the indifference curve will be
        (a)   L – shaped
        (b)   U shaped
        (c)   Convex
        (d)   Concave
        (e)   Straight line downward sloping

38.   Suppose that by some miracle the number of hours in the day increased from 24 Hours to 30 hours (with luck this would happen shortly exam week). How would this affect the budget constraint?
        (a)   Shift right ward and remain parallel to the old one
        (b)   Shift right ward without parallel to the old one
        (c)   Moves in anti-clock wise and without parallel to old one
        (d)   All of the above
        (e)   None of the above

39.   The budget line of a given consumer shifted outward. This means
        (a)   The indifference curve tangent to a new budget line lies every where above the previous indifference curve
        (b)   The consumer's real income has increased
        (c)   A consumer is better off
        (d)   All of the above
        (e)   None of the above

40.   Any two points on a given indifference curve represent.

(a) Two ways of consuming the same amount of each good contained in the consumption basket.

(b) Combinations of goods a consumer can purchase which give him the same total amount of utility

(c) The optimal points of consumption

(d) The consumer's lack of preference among the goods he purchases

(e) Violation of non-satiety condition

41. A consumer cannot go beyond the price line, because
(a) He has no sufficient income
(b) He has no taste for other combination of commodities
(c) He is restricted to certain custom of the society
(d) He has no information about the availability of other combinations
The price of the commodity decreases.

42. Production possibility curves are concave (bowed outward) because
(a) Opportunity costs are always positive.
(b) Resources are not equally well suited to the production of all goods and services.
(c) The problem of scarcity is ever-present.
(d) Producing more of one good always entails producing less of another.

43. To move to a point above PPC the economy should
(a) Raise Wage
(b) engage in research and development
(c) Increase efficiency

44. The production possibility curve exhibits increasing marginal opportunity cost at all points
(a) Always
(b) Never
(c) Sometimes

45. The production possibilities frontier is
(a) Downward sloping and reflects tradeoffs in choices.
(b) Downward sloping and reflects unlimited choices.
(c) Upward sloping and reflects tradeoffs in choices.
(d) Upward sloping and reflects unlimited choices.

46. A production possibilities frontier does NOT illustrate
(a) Attainable and unattainable points.
(b) The exchange of one good or service for another.
(c) The limits on production imposed by our limited resources and technology.
(d) Opportunity cost.

47. Any production point outside the production possibilities frontier
    (a)   is attainable only if prices fall.
    (b)   is associated with unused resources.
    (c)   is attainable only if prices rise.
    (d)   is unattainable.

48 Which of the following statements regarding the production possibilities frontier is true?
    (a)   Points on the frontier are less efficient than points inside the frontier.
    (b)   Points inside the frontier are attainable.
    (c)   Points outside the frontier are attainable.
    (d)   None of the above because all of the above statements are false.

49. Scarcity is represented on the production possibilities frontier by
    (a)   The fact that there are only two goods in the diagram.
    (b)   Technological progress.
    (c)   The amount of the good on the horizontal axis forgone.
    (d)   The fact there are attainable and unattainable points.

50 A point inside a production possibilities frontier
    (a)   Could indicate that resources are misallocated.
    (b)   implies that too much labor and not enough capital is being used.
    (c)   is more efficient than a point on the production possibilities frontier.
    (d)   reflects the fact that more technology needs to be developed to fully employ all resources

51 Mohan's production possibilities frontier has good *A* on the horizontal axis and good *B* on the vertical axis. If Mohan is producing at a point *inside* his frontier, then he
    (a)   Can increase production of both goods with no increase in resources.
    (b)   Values good *A* more than good *B*.
    (c)   Values good *B* more than good *A*.
    (d)   Is fully using all his resources

52 Which of the following is right statement-
    (a)   Demand is inelastic if $e = 0$ or < 1 – quantity is relatively unresponsive
    (b)   Demand is elastic if $e > 1$ -- quantity is relatively responsive
    (c)   Demand has unitary elasticity if $e = 1$
    (d)   All above

53 Managerial Economics applies the theories of ----------- to resolve the issues of the organization in decision making.
    (a)   Micro Economics
    (b)   Macro Economics
    (c)   Development Economics

54 _____Analysis is important as it is applied to day to day dilemma and
   concerns.
   (a)   Development Economics
   (b)   Macro Economics
   (c)   Micro Economics

55 Before fixing the --------------of the products managers applies the pricing theories, cost
   and revenue theories of micro economics.
   (a)   Cost
   (b)   Price
   (c)   Profit

56 If a manager wants to increase the price of the product due to increase in cost of
   production, he will analyze the------------- of demand for that product
   (a)   Price elasticity
   (b)   Price rigidity

57 Decisions regarding production and supply of the product in the market depend upon
   the knowledge of--
   (a)   availability of fixed and variable factors of production
   (b)   state of technology to be used
   (c)   availability of raw-material
   (d)   All above

58 Microeconomics deals with ---------- equilibrium analysis which is useful for the
   manager in deciding equilibrium for his organization.
   (a)   Cost
   (b)   Market
   (c)   Partial

59 If a firm succeeds in setting a higher---------------, more firms would be attracted enter
   the market.
   (a)   Cost
   (b)   Profit
   (c)   Price

60 Determination of price and output is possible with the acquaintance of--------------
   structures.
   (a)   Cost
   (b)   Market
   (c)   Profit

Ans. (1)(A), (2)(B), (3)(A), (4)(C), (5)(B), (6)(A), (7)(D), (8)(C), (9)(C), (10)(C) (11)(B) (12)(E), (13)(C) ,14(C),15(C) (16)(D),(17)(E), (18)(C), (19)(A), (20)(D), (21)(B), (22)(C), (23)(C), (24)(D), (25)(B), (26)(C), (27)(A), (28)(A), (29)(D), (30)(B), (31)(D), (32)(D), (33)(C), (34)(B), (35)(B), (36)(D) ,(37)(A), (38)(A), (39)(D), (40)(B), (41)(A) (42)(D), (43)(C), (44)(A), (45)(A), (46)(A) ,(47)(B), (48)(B), (49)(A), (50)(A), (51)(A) (52)(D), (53)(A), (54)(C), (55)(B), (56)(A), (57)(D), (58)(C), (59)(C), (60)(B).

II   Short Answer Type Questions:

1   What is micro economics?
2   What is macro economics?
3   What is the difference between macro economic and micro economics?
4   Differentiate between normative and positive approach.
5   Write short note on
   (a)   Opportunity cost
   (b)   Risk and uncertainty
   (c)   Equi- marginal rule
6   Briefly explain the incremental cost concept.
7   Limitation of managerial economics
8   How are the two, operation research and managerial economics related.
9   Write a short note on scope of managerial economics
10   What do you mean by contribution analysis?
11   M C Curve is a competitive firm's supply curve. Explain.
12   Macro economics is useful in business decision making. Discuss.
13   "Managerial economics is applied microeconomics". Elucidate.
14   What is micro economics? In what way is microeconomics applicable to business decision – making.
15   Define the concept of opportunity cost. What are its implications in business decisions?
16   What is an indifference curve? What are the properties of indifference curves? What role does it play in consumer analysis?
17   Is managerial economics prescriptive in nature?
18   Explain how Managerial economics is different from Micro Economics.
19   Write short notes on Incremental concept.
20   What do you mean by the term monotonic preference?
21   What do you mean by budget line? What are the reasons of change in budget line?
22   Explain the relationship between total utility and marginal utility with the help of schedule.
23   State the factors of rightward shift of demand curve. Explain any one
24   With the help of numerical example measure price elasticity of demand in the following conditions by total expenditure method :
       (i) Demand falls when price is constant.
       (ii) Price falls while demand is constant.
25   Comment on the statement "Price elasticity of demand is generally negative."
26   Managerial economics is applied micro-economics.

27   Differentiate between a shift in supply curve and a movement along the supply curve.
28   How a market price is different from equilibrium price.
29   Why the marginal rate of technical substitution is likely to diminish as more and more labour is substituted for capital?
30.   How does the study of managerial economics help a business manager in decision making?
31.   Distinguish between cardinal and ordinal measurement of utility.
32.   What is price affect? How does a change in the price of a commodity affect the equilibrium of the consumer?
33.   Derive individual demand curve from indifference curve analysis.
34.   What are the conditions of consumer's equilibrium according to utility analysis?.
35.   Discuss the importance of managerial decision making.

III   Long Answer Type Questions:

1   Critically evaluate how far the statement given below is a correct description of the subject-matter of managerial economics:
     "The objective of managerial economics is to provide framework for analyzing business decisions. Instead of presenting detailed list of rules for specific decision making…managerial economics addresses the larger economic forces that shape day to day decision making."

2   Managerial economics attempts to integrate economic theory with business practice for facilitating decision-making and forward planning by management. Explain and Comment.

3   "Managerial economics is prescriptive rather than descriptive in character." Discuss.

4   "Managerial economics is predominantly micro economic theory." Discuss and point out the contribution of statistics to managerial economics.

5   What do you understand by opportunity cost? Give suitable examples to illustrate the use of this concept in the context of managerial decisions relating to (a) production,(b) finance, and (c) marketing. Can opportunity costs ever be zero?

6   Distinguish between incremental concept and marginal concept? What is the role of marginal analysis in managerial economics? When can the decision by an entrepreneur be considered valid according to incremental principle?

7   Show that the principle of 'Equi-marginalism' is an extension of the condition of equilibrium of a consumer.

8   "Among the multiplicity of objectives that a modern firm has profit maximization continues to be the most important." Comment.

9   "In normal and formal economic theory, we often assume profit maximization. In reality, the firms do not maximize profit; in fact, they cannot". Comment

10   Write a short essay on Adam Smith's contribution to economics

11   Write a short essay on the principle of comparative advantage

12   Why do firms continue to operate when they are making losses?

13   Explain the functions and responsibilities of a managerial economist. How can he best serve the management?

14   What role does the managerial economist play in Managerial decision-making?

15   Explain the various decision areas of managerial economics.

16   How does the study of managerial economics help a business manager in decision-making? Explain your answer with the help of suitable examples.

17   Compare the features of the model given by Williamson with that given by Marris for managerial objectives.

18   How do the following two managerial theories of a firm compare with the traditional profit maximizing theory of a firm:
(i) Baumol's sales maximization hypothesis,
(ii) Marris's balanced rate of growth theory of the firm.

19   What is meant by model building? How can it be helpful in analysis of managerial economic problems? Also discuss the various types of model used in managerial economics?

20   "Managerial economics bridges the gap between abstract theory & business practice. It uses tools of economics analysis in classifying problem, in organizing & evaluating information and in comparing alternative courses of action." Outline the nature & scope of managerial economics in the light of this statement.

21   While economics is the main subject under managerial economics which other discipline are useful in the study of managerial economics. Explain the relationship of managerial economics with other discipline

22   Using the tools of indifference analysis and appropriate diagrams, how will a consumer respond to a fall in the price of a normal good? Would the outcome differ if we considered an inferior good?

23   "While Economics is the main subject studied under managerial economics, which other disciplines are useful in the study of managerial economics." Explain the relationship of managerial economics with other disciplines.

24   Managerial economics integrates economic theory and business practice to facilitate decision making by business firms." Explain.

25   "Managerial economics bridges the gap between economic theory and business practice." Explain with example.

26   What is an indifference curve? How is it different from indifference map?

27   Show that price effect is the sum of substitution effect and income effect, using Hicksian and Slutsky approaches. Under what conditions will the law of demand not apply? Draw diagrams explaining the cases of inferior and Giffen goods.

28   'Managerial economics bridges the gap between abstract theory and business practice. It uses tools of economic analysis in classifying problems, in organizing and evaluating information and in comparing alternative courses of action.' Outline the nature and scope of managerial economics in the light of this statement.

29   Compare Cardinal and Ordinal Approaches to consumer behavior. Which of the two approaches enables us to bifurcate price effect and how.

30   Explain cardinal and ordinal approaches of utility measurement for deriving consumer's equilibrium.

31   Explain cardinal and ordinal approaches of utility measurement for deriving consumer's equilibrium.

32   What changes will take place in total utility when – (a) Marginal utility curve remains above X–axis (b) Marginal utility curve touches X–axis (c) Marginal utility curve lies below X–axis.

33   With the help of diagrams, explain the effect of following changes on the demand of a commodity. (a) A fall in the income of its buyer. (b) A rise in price of complementary good.

34   The demand for electricity is not falling inspite of regular hike in the price of electricity. What will be the elasticity of demand for electricity. Explain giving suitable reason in support of your answer ?

35   Explain the importance of demand forecasting in business decision making. Also explain with the help of an example 'fitting the straight line" trend method of forecasting.

36   Managerial Economics is the application of Economics in analyzing business decisions". Explain and comment.

37   Distinguish between income and substitution effects of a price change.   Discuss Hicksian method of separating income and substitution effect.

38   When we move on a straight line demand curve sharing a negative shape from Y axis to X axis, elasticity of demand changes from infinity to zero. Explain.

39   The owner of a small retail store does her own accounting work. How would you measure the opportunity cost of her work?

40   Managerial Economics uses economic concepts and quantitative methods to solve managerial problems. Explain illustratively.

41   Identify the most important determinants of demand function that a firm faces for the commodity it sells.

42   Agricultural commodities are known to have a price inelastic demand and are considered to be necessities. Use the information to explain why the income of farmers fall:
       (i) after a good harvest
       (ii) in relation to the incomes from other sectors of economy

43.   Explain the nature and scope of Managerial Economics in the context of business decisions.

44.   Explain the law of Demand? What are the causes of its operation? Explain its exceptions.

45.   Define 'Income elasticity of demand & explain it in case of normal goods & inferior goods.

UNIT - II

I   Multiple Choice Questions:

1   In general, the law of demand asserts that a negative relationship exists between
     (a)   Only the list price and the quantity demanded.
     (b)   The total monetary and non-monetary price and the quantity demanded.
     (c)   Only the final price paid and quantity demanded.
     (d)   Only the non-monetary price and quantity demanded.

2   Which one of the following pairs of products are best described as complements?
     (a)   Decaffeinated coffee and regular coffee
     (b)   Laundry detergent liquid and laundry detergent powder
     (c)   Cola and beer
     (d)   Shoes and cars
     (e)   Tennis racquets and tennis balls [These products go together.]

3   Consumer incomes increase. Which one of the following is most likely in the market for automobiles?
     (a)   Price rises, quantity falls.
     (b)   Both price and quantity fall.
     (c)   Both price and quantity rise. [Increase in demand for a normal good.]
     (d)   Price falls, quantity rises.

4   For the law of demand, the assumption of ceteris paribus means that all variables are held constant except:
     (a)   Consumer tastes and preferences.
     (b)   Consumer income.
     (c)   Prices of related goods.
     (d)   Own price and quantity demanded. [By definition.]
     (e)   The number of consumers in the market.

5   The slope of the demand curve for butter shows that an increase in the price of butter leads to
     (a)   A decline in the amount of butter available
     (b)   An increase in demand for margarine
     (c)   An expected decline in the price of butter
     (d)   A decline in the price of margarine

6   A consumer buys a bundle of two goods, A and B. MU/P for A is 40/1. The marginal utility of B is 20. The price of B must therefore be
     (a)   5
     (b)   0.5
     (c)   2
     (d)   None of the above

7   A consumer buys a bundle with two goods, X and Y. MU/P for X is 4, MU/P for Y is 3. What should the consumer do to optimise his decision with the same amount of money?

(a)   Increase X

(b)   Increase Y

(c)   Increase Y and lower X

(d)   Increase X and lower Y

8   Assume the demand curve for compact discs slopes downwards, and the supply curve slopes upwards. If the price of CD players decreases, then:

(a)   The equilibrium price of compact discs will fall

(b)   The equilibrium price of compact discs will rise

(c)   The equilibrium price of compact discs will stay the same

(d)   None of the above are correct

9   The value of price elasticity of demand:

(a)   Depends on the units that are used to measure quantities

(b)   Has the same value as the slope of the demand curve

(c)   Depends on the units that are used to measure prices

(d)   Does not depend on the units in which quantity and price are measured.

10   If a 5% increase in income leads to a 12% increase in the quantity demanded of mobile phones, *ceteris paribus*, the value of the income elasticity of demand for mobile phones is:

(a)   2.4 and mobile phones are a normal good

(b)   0.42 and mobile phones are a normal good

(c)   2.4 and mobile phones are an inferior good

(d)   0.42 and mobile phones are an inferior good

11   Test marketing results may not be correct because

(a)   Price elasticity for the product is high

(b)   The usual events during the test period are not under control

(c)   The test market chosen is not the representative of the market where the product is to be introduced.

12   If the increase in all factors leads to a less than proportionate increase in output, then the returns to scale are

(a)   Decreasing

(b)   Increasing

13   The law of constant returns to scale is depicted by the marginal output curve which is

_____.

(a)   Upward sloping

(b)   Downward sloping

(c)   Horizontal

14   In the 3rd stage of operation of the law of variable proportions, the marginal
        product becomes _____.
        (a)   Negative
        (b)   Positive
        (c)   Zero

15.   If the price of gasoline goes up and Dan now buys fewer candy bars because he has to
        spend   more   on   gas,   this   would   best   be   explained   by   the
        (a)   substitution effect
        (b)   income effect
        (c)   highly elastic demand for gasoline
        (d)   any of the above are possible explanations

16.   Which of the following would increase the likelihood that consumers might purchase a
        product?
        (a)   Lower Product Price
        (b)   Improved Quality
        (c)   Successful advertising
        (d)   All of the above are correct.

17.   Along any straight-line, negatively sloped demand curve,
        (a)   The price elasticity and slope vary.
        (b)   The price elasticity varies, but the slope remains the same.
        (c)   The slope varies, but the price elasticity remains the same.
        (d)   The price elasticity and slope remain the same.
        (e)   None of the above are necessarily true.

18.   Price elasticity at a given price is *not* affected by
        (a)   The price of complements.
        (b)   The price of substitutes.
        (c)   The consumer's income.
        (d)   A change in tastes.
        (e)   A change in supply.

19.   The arc elasticity formula is used to estimate elasticity when
        (a)   The product is thought to be inelastic.
        (b)   The product is thought to be elastic.
        (c)   The demand function is known.
        (d)   There are two observations of price and quantity.
        (e)   None of the above.

20. The price elasticity of demand is the same thing as the negative of the
    (a) Slope.
    (b) Reciprocal of slope.
    (c) The first derivative of the demand function.
    (d) Reciprocal of slope times the ratio of price to quantity.
    (e) All of the above.

21. An elasticity coefficient of -1 means that
    (a) The demand curve is perfectly inelastic.
    (b) The demand curve is perfectly elastic.
    (c) The relative changes in price and quantity are equal.
    (d) Expenditures on the good would increase if prices were reduced.
    (e) Expenditures on the good would decrease if prices

22. When AP = MP
    (a) AP is minimum
    (b) AP is maximum
    (c) MP is minimum
    (d) MP is maximum
    (e) TP is maximum

23. When TP is maximum
    (a) AP is zero
    (b) MP is maximum
    (c) MP is zero
    (d) AP is minimum
    (e) None of the above

24. Production in short run should take place in stage
    (a) I
    (b) II
    (c) III
    (d) IV
    (e) None of the above

25. As a firm moves down an isoquant, the MRTSLK
    (a) Increases
    (b) Decreases
    (c) Remains constant
    (d) At first increases and then decreases
    (e) At first decreases and then increases

26. With a given supply curve, a decrease in demand causes
    (a) An overall decrease in price but an increase in equilibrium quantity
    (b) An overall increase in price but a decrease in equilibrium quantity
    (c) An overall decrease in price and a decrease in equilibrium quantity
    (d) No change in overall price but a reduction in equilibrium quantity
    (e) An overall decrease in price and no change in equilibrium quantity

27. Mr. Reddy owner of coal mine, employes 20 miners who produce 20 tons of coal per
    week. He hires a new miner and production increases to 22 tons per week. He hires a
    second and production increases to 25 tons. Hoping to increase productivity to 29 tons
    per week, Mr.Reddy hires a third miner, but after a week production only increases to
    27 tons. Thus the law of _____ set in.
    (a) Diminishing marginal utility
    (b) Increasing marginal utility
    (c) Diminishing returns
    (d) Increasing returns
    (e) Economies of scale

28. If the slope of the isoquant is positive, it must be the case that
    (a) The firm is operating in the uneconomic region of production
    (b) The marginal product of both inputs is negative
    (c) The marginal product of one input is negative
    (d) The firm is not operating in the uneconomic region of production
    (e) Both (a) and (c) above

29. When an economy is operating maximum efficiency, the production of more of
    commodity A will entail the production of less of commodity B because:
    (a) Of the law of increasing real costs
    (b) Material wants are insatiable
    (c) The structure of demand is fixed at any point in time
    (d) Resources are limited
    (e) Resources are specialized and only imperfectly shiftable

30. A price that is said to be too high for equilibrium means that
    (a) No producer can cover his cost of production at that price
    (b) Quantity supplied exceeds quantity demanded at that price
    (c) Producers are leaving the industry
    (d) Consumers are all willing to buy all the units produced at that price
    (e) Quantity demanded exceeds quantity supplied at that price

31. If a change in all inputs leads to a proportional change in the output, it is a case of
    (a) Increasing returns to scale
    (b) Constant returns to scale

(c)   Diminishing returns to scale

(d)   Variable returns to scale

(e)   Inefficient returns to scale

32.   Average productivity of labor (AP_L) for a firm is 15 when labor employed is 100 units. When laboremployed increased to 101 units, AP_L decreases to 14 units. Marginal productivity of 101th unit of labor is

(a)   –1 unit

(b)   –100 units

(c)   1 unit

(d)   86 units

(e)   - 86 units

33.   What does the law of diminishing returns state?

(a)   Output falls over time

(b)   Total output falls as more units of the variable factor are added

(c)   The extra output from additional units of a variable factor will eventually fall

(d)   The profits of a business will eventually fall

34.   The Production function of a manufacturing unit, using only labor (L) as inputs in the productionprocess, is estimated to be $Q = 100\,L^2 - L^3$. The labor input at which the firm can maximize average productivity of labor is

(a)   25.0 units

(b)   37.5 units

(c)   50.0 units

(d)   62.5 units

(e)   75.0 units

35.   Isoquants are convex to the origin. This is possible because

(a) Money outlay of the entrepreneur is constant

(b) Marginal rate of technical substitution between labor (L) and capital (K) is decreasing

(c) It is not possible to have infinite number of combinations of two outputs

(d) Both (a) and (b) above

(e) (a), (b) and (c) above.

36.   When a proportional change in input combination caused the same proportionate change in output, the returns to scale is said to exhibit

(a)   Increasing returns

(b)   Decreasing returns

(c)   Constant returns

(d)   Negative returns

(e)   Law of variable proportion.

37. The marginal rate of technical substitution is
    (a) The rate at which a producer is able to exchange, without affecting the quantity of output produced, a little bit of one input for a little bit of another input.
    (b) The rate at which a producer is able to exchange, without affecting the total cost of inputs, a little bit of one input for a little bit of another input.
    (c) The rate at which a producer is able to exchange, without affecting the total inputs used, a little bit of one output for a little bit of another output.
    (d) A measure of the ease or difficulty with which a producer can substitute one technique of production for another.

38. In the presence of a diminishing marginal rate of technical substitution between labor and capital, output can be kept unchanged only if
    (a) Equal successive sacrifices of capital go hand in hand with ever smaller increases of labor.
    (b) Equal successive sacrifices of capital go hand in hand with ever smaller sacrifices of labor.
    (c) Equal successive increases in labor go hand in hand with ever smaller increases in capital.
    (d) Equal successive increases in labor go hand in hand with ever smaller sacrifices of capital.

39. If the capital-labor ratio changes from 100 to 150, while the marginal rate of technical substitution between capital and labor changes from 50 to 100, the elasticity of input substitution
    (a) Cannot be calculated.
    (b) Remains unchanged.
    (c) Equals 2.
    (d) Equals 0.5.

40. If a simultaneous and equal percentage decrease in the use of all physical inputs leads to a larger percentage decrease in physical output, a firm's production function is said to exhibit
    (a) Decreasing returns to scale.
    (b) Constant returns to scale.
    (c) Increasing returns to scale.
    (d) Diseconomies of scale.

41. If a firm triples all inputs, and output triples as well, the firm is subject to
    (a) Constant returns to scale.
    (b) Increasing returns to scale.
    (c) Economies of scale.
    (d) Both (b) and (c).

42. For a given short-run production function,
    (a) Technology is assumed to change as capital stock changes.
    (b) Technology is assumed to change as the labor input changes.
    (c) Technology is considered to be constant for a given production function relationship.
    (d) Technology is assumed to change positively until diminishing returns set in and then it changes in the other direction.

43. Which is a true statement?
    (a) Decreasing returns to scale and diminishing returns to production are two ways of stating the same thing.
    (b) Increasing returns to scale is a short-run concept, and diminishing returns to production is a long-run concept.
    (c) Constant returns to scale are a short-run concept, and decreasing returns to scale is a long-run concept.
    (d) All the above are true.
    (e) None of the above is true.

44. An isocost line identifies
    (a) the least costly combination of inputs needed to produce a given level of output.
    (b) the relative prices of inputs.
    (c) the technological relationships among inputs.
    (d) the rate at which one input can be substituted for another in the production process.

45. The expansion path identifies
    (a) the least costly combination of inputs required to produce various levels of output.
    (b) the firm's demand curves for the inputs.
    (c) the various combinations of inputs that can be used to produce a given level of output.
    (d) the least-cost combination of outputs.

46. A tangency point between an isoquant and an isocost line identifies
    (a) the least costly combination of inputs required to produce various levels of outputs.
    (b) the various levels of output that can be produced using a given level of inputs.
    (c) the various combinations of inputs that can be used to produce a given level of output.
    (d) the least costly combination of inputs required to produce a given level of output.

47. A society that is producing on its production possibilities frontier is
    (a) Fully utilizing all of its productive resources.

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(b)   Not being technologically efficient.

(c)   Not utilizing all of its resources.

(d)   Producing too much output.

48   If a country decreases current consumption to increase the amount of capital goods it produces today, then it

(a)   Must not have private ownership of property and will have to follow planning authorities decisions today and in the future.

(b)   Must be producing along the production possibilities frontier today and will see a shift outward of the frontier in the future if produces more capital goods.

(c)   Must be using resources inefficiently today, but will be more efficient in the future.

(d)   Must be producing outside the production possibilities frontier and will continue to do in the future.

49.   A tradeoff is

(a)   A constraint that requires giving up one thing to get another.

(b)   Represented by a point outside a PPF.

(c)   A transaction at a price either above or below the equilibrium price.

(d)   Represented by a point inside a PPF.

50   If additional units of a good could be produced at a constant opportunity cost, the production possibilities frontier would be

(a)   Bowed outward.

(b)   Positively sloped.

(c)   Bowed inward.

(d)   a straight line.

51   Opportunity cost is represented on the production possibilities frontier by

(a)   The amount of good Y forgone when more of good X is produced.

(b)   Efficient and inefficient points.

(c)   Technological progress.

(d)   Attainable and unattainable points.

52   Economic growth is the result of all of the following EXCEPT

(a)   Investment in human capital.

(b)   Technological change.

(c)   Opportunity cost.

(d)   Capital accumulation.

53 The term "market" refers to
   (a)   Trading arrangements that have been approved by the government.
   (b)   Locations where buyers and sellers physically meet.
   (c)   Any arrangement that enables buyers and sellers to get information and trade
           with One another.
   (e)   Physical structures only.

54 Individual economic decisions are coordinated by
   (a)   Government through adjustments in sales taxes.
   (b)   Markets through adjustments in sales levels.
   (c)   Government through adjustments in income taxes.
   (d)   Markets through adjustments in prices.

55 Economic growth comes from _____.
   (a)   Producing more goods than people want to consume
   (b)   Capital accumulation and the avoidance of opportunity cost
   (c)   People willing to increase their skills in which case, economic growth is free
   (d)   Capital accumulation and technological advance

56 Market equilibrium refers to a situation in which market price
   (a)   is high enough to allow firms to earn a fair profit
   (b)   is low enough for consumers to buy all that they want
   (c)   is at a level where there is neither a shortage nor a surplus
   (d)   is just above the intersection of the market supply and demand curves

57 The average fixed cost (AFC) curve -------------as additional units are produced, and
   continue to decline.
   (a)   shifts upwards
   (b)   declines
   (c)   remains same

58 The average variable cost (AVC) curve ---------- (but not as steep as the marginal cost),
   and then goes up.
   (a)   shifts upwards
   (b)   goes down
   (c)   remains same

59 The average total cost (ATC) curve initially --------------as fixed costs are spread over
   a larger number of units, but then goes up as marginal costs increase due to the law of
   diminishing returns.
   (a)   shifts upwards
   (b)   declines
   (c)   remains same

60   AC is greater than AVC by the amount of ------.
        (a)   AFC
        (b)   MC
        (c)   TC

Ans.   (1)(b), (2)(e), (3)(c), (4)(d), (5)(b), (6)(b), (7)(d), (8)(b), (9)(d), (10)(a), (11)(c), (12)(a), (13)(c), (14)(a) (15)(b), (16)(d), (17)(b), (18)(e), (19)(d), (20)(d), (21)(c) (22)(b), (23)(c), (24)(b), (25)(b), (26)(c), (27)(c), (28)(e), (29)(d), (30)(d), (31)(b), (32)(e), (33)(a), (34)(d), (35)(d), (36)(c), (37)(a), (38)(c), (39)(e), (40)(b), (41)(a), (42)(d) (43)(e), (44)(b), (45)(a), (46)(d) (47)(a), (48)(b), (49)(a), (50)(d), (51)(a), (52)(d) (53)(c), (54)(d), (55)(d), (56)(c) (57)(b), (58)(b), (59)(b), (60)(a).

II   Short Answer Type Questions:

1   What is the 'diamond-water' paradox?
2   Explain Income consumption curve.
3   Distinguish between inferior goods and Giffen good case.
4   Define marginal rate of substitution.
5   Differentiate short-run demand and long-run demand.
6   Distinguish between Durable goods' demand and Non-durable goods demand.
7   What is meant by derived demand?
8   Why demand curve slopes downward to the right. Explain.
9   What do you understand by elasticity of demand?
10   Elasticity of demand is important to decision making by business firms. Elucidate.
11   Explain diffusion indices.
12   Isoquants are convex to the origin. Elaborate.
13   Explain Delphi method of forecasting.
14   What is the purpose of demand forecasting? Describe the uses and limitations of trend methods of forecasting demand.
15   Define and distinguish between:
        (a)   Arc elasticity and point elasticity
        (b)   Price elasticity and cross – elasticity
        (c)   Income elasticity and price elasticity1
16   What are economies of scope?
17   Define production function.
18   State the law of returns to variable factor.
19   State with example the law of diminishing returns.
20   Distinguish between Returns to scale and returns to a factor
21   Distinguish between Internal and external economies
22   Distinguish between Diminishing returns to a variable factor and diminishing returns to scale.
23   Write short note on Total product, marginal product and average product.

24   Write short note on concept of productivity.

25   Explain the concept of 'technically efficient region of production' or 'economic region on an iso-quant map.

26   Explain how the elasticity of demand varies from infinity at the price axis to zero at the quantity axis.

27   Explain the properties of isoquants. Discuss their role in reaching optimum combination of factors.

28   Explain the importance of Elasticity of demand in decision making by business firms.

29   Equilibrium of firm using Isocost and Isoquant curve

30   What is elasticity of demand? Discuss the relationship between price elasticity of demand and marginal revenue of firm? Breakeven point

32   Equilibrium of firm using Isocost and Isoquant curve

33   Suppose that the price of labor (P_L) is \$10 and the price of capital (P_K) is \$20. What

is   the equation of the isocost line corresponding to a total cost of \$100?

(a) $P_L + 20P_K$

(b) $100 = 10L + 20K$

(c) $100 = 30(L+K)$

(d) $100 + 30 (P_L + P_K)$

(e) none of the above

34   A firm's short-run average cost curve is U-shaped. Explain which of these conclusions can be reached regarding the firm's returns to scale?

(a)   The firm experiences increasing returns to scale.

(b)   The firm experiences increasing, constant, and decreasing returns in that order.

(c)   The firm experiences first decreasing, then increasing returns to scale.

35   When are the LAC and LMC curves consistent with a production function?

II   **Long Answer Type / Practical Questions:**

1   Explain the concept of utility. Illustrate graphically the relationship between the total utility, marginal utility and average utility.

2   State and explain the law of diminishing marginal utility. Bring out clearly the relationship between MU and price.

3   Distinguish between cardinal and ordinal measurement of utility.

4   What is a budget line? Discuss its properties and show that a budget line is tangent to one and only one indifference curve.

5   What is consumer equilibrium? Explain consumer's equilibrium with the help of indifference curve analysis?

6   What is price effect? How does a change in the price of a commodity affect the equilibrium of the consumer?

7   What is a Giffen Good? Derive the demand curve from the price consumption curve in case of a Giffen good.

8   Explain the substitution and income effects of price rise for an inferior good using indifference curve techniques.

9   Explain Giffen paradox. Does it result from income effect or substitution effect or both? How does break up of price effect into income and substituent effect help in resolving this paradox?

10   What is a demand function? State and graphically explain the relationship between different determinants of demand and the quantity demanded.

11   State and explain the law of demand. State its assumptions and exceptions. Whether this law holds goods for inferior goods?

12   Why does demand curve slope downward from left to right? Under what circumstances, it will slope upward?

13   (a) When does a consumer buy a smaller quantity of the commodity at the same price?
        (b) When does a consumer buy more commodities at a particular price?

14   Explain the relationship between price and cross elasticity of demand.

15   Define the concept of elasticity (price elasticity) of demand.

16   Explain different types of elasticity of demand with the help of diagrams. What signs do their coefficient have?

17   Explain the outlay method to determine price elasticity of demand.

18   Why would demand for natural gas be more 'inelastic in' short run than in the long run?

19   What is demand forecasting? Discuss the various steps involved in demand forecasting.

20   Explain the various methods of demand forecasting. Point out their merits and demerits.

21   State importance of price elasticity of demand to production managers, marketing managers, personnel managers & policy makers. Why do business firm charge higher price for goods with low demand elasticity.

22   What is the objective of demand forecasting? Explain the various methods of demand forecasting pointing out their merits & demerits.

23   State in brief the cardinal approach to the determination of consumer's equilibrium. Also derive demand curve from the consumer equilibrium.

24   What is demand forecasting? Evaluate any two survey methods and any two statistical methods of demand forecasting.

25   Distinguish between individual and market demand for a product. Market demand is the main concern of business managers. Why should business managers then study individual demand curve?

26   Discuss the various economies of scale? How do they influence the size of the   firm?

27   Distinguish 'returns to a variable input' from 'returns to scale'.

28   Explain how average and marginal product functions may be derived graphically from a total product function.

29   Identify the boundaries of stages of production and indicate their managerial significance.

30   Explain how production decision making differs in long and short run time frames.

31   Explain how returns to scale can be indicated in a production function. What is the managerial significance of returns to scale.

32   Distinguish economies and diseconomies of scale and suggest possible causes of each.

33   What do you mean by an iso-product curve? How is it different from indifference curve? What does the slope of an iso-product curve indicate?

34   What do you mean by the term economies of scale? Why do these economies turn into diseconomies? Discuss their nature and effect on the pricing of a firm?

35   Discuss the various methods for the estimation of cost function.

36   Discuss the law of returns to scale. Illustrate different types of returns to scale with the help of iso-quants.

37   Show with the help of table the changes in the total product, marginal product and average product, as we apply more and more units of variable factor on some fixed factors.

38   Explain the concept and managerial uses of production function. What are the various types of production function?

39   Explain the properties, importance & limitations of Cobb Douglas production functions. Show that it exhibits increasing, constant & diminishing returns to scale if $\alpha + \beta > 1 = 1$ and < 1 responsibility.

40   Define optimum input-combination. What are the criteria for least –cost combination of inputs? Explain graphically.

41   Explain the need and objectives of demand forecasting. Critically evaluate the various methods of demand forecasting?

42   Distinguish between short-term and long–term production function. Discuss the properties, managerial uses and limitations of Cobb Douglas production function?

43   What is production function? Discuss law of variable proportions and explain which stage of production as per law is economically viable?

44   What is law of demand? Explain the determination of equilibrium price and quantity using the concept of demand and supply curves?

45   What is elasticity of demand? Discuss the relationship between price elasticity of demand and marginal revenue of firm?

UNIT – III

I   Test Your Skills:

Multiple Choice Questions:

1   Under monopoly the demand curve slopes
        (a)   Downward
        (b)   Upward

2   Under the imperfect market, the market in which few firms exist is called as
        (a)   Oligopoly
        (b)   Monopoly
        (c)   Monopolistic competition

3   Under monopoly entry of new firms is
        (a)   Prohibited
        (b)   Limited

4   The demand curve (A.R.) of a firm under perfect competition is
        (a)   Perfectly elastic
        (b)   Perfectly inelastic

5   Firms in perfect competition face a:
        (a)   Perfectly elastic demand curve
        (b)   Perfectly inelastic demand curve
        (c)   Perfectly elastic supply curve
        (d)   Perfectly inelastic supply curve

6   A profit maximizing firm in perfect competition produces where:
        (a)   In perfect competition
        (b)   Oligopoly
        (c)   Monopoly
        (d)   Monopolistic competition

7   The Kinked Demand Curve theory assumes
        (a)   In Game Theory
        (b)   A model of Game Theory of oligopoly is known as the

8   Marginal cost curve cuts the average cost curve
        (a)   At the left of its lowest point
        (b)   At its lowest point
        (c)   At the right of its lowest point.

9   The U-shapedness of the long run curve average cost curve reflects
        (a)   The law of variable proportions
        (b)   The technological changes
        (c)   The law of returns to scale
        (d)   None of these

10   If the price is less than the average costs but higher than the average variable costs:
        (a)   The firm is making a loss and will shutdown in the short term
        (b)   The firm is making a profit
        (c)   The firm is making a loss but will continue to produce in the short term
        (d)   The firm is making a loss and is making a negative contribution to fixed costs

11   If firms earn normal profits
    (a)   They will aim to leave the industry
    (b)   Other firms will join the industry
    (c)   The revenue equals total costs
    (d)   No profit is made in accounting terms

12   In the long term a firm will produce provided the revenue covers:
    (a)   Fixed costs
    (b)   Variable costs
    (c)   Total costs

13   The goal of a pure market economy is to best meet the desires of
    (a)   Consumers
    (b)   Companies
    (c)   Workers
    (d)   The government

14   In a pure market economy, which of the following is a function of the price?
I. provide information to sellers and buyers , II. provide incentives to sellers and buyers

    (a)   I only
    (b)   II only
    (c)   Both I and II
    (d)   Neither I nor II

15   In a market system, sellers act in _____ interest , but this leads to behaviors in_____ interest.
    (a)   Self; self
    (b)   Self; society's
    (c)   Society's; society's
    (d)   Society's; self

16   Which of the following is a characteristic of pure monopoly?
    (a)   One seller of the product
    (b)   Low barriers to entry
    (c)   Close substitute products
    (d)   Perfect information

17   In pure monopoly, what is the relation between the price and the marginal revenue?
      (a)   The price is greater than the marginal revenue
      (b)   The price is less than the marginal revenue
      (c)   There is no relation
      (d)   They are equal

18   A firm emerges as a leader in oligopoly market due to all the following reasons except
      (a)   market share
      (b)   Presence in all segment
      (c)   Indeterminate demand curve
      (d)   Pioneer in particular product category

19   The portion above the kink on demand curve of an oligopolist is –
      (a)   Less elastic
      (b)   More elastic
      (c)   Infinitely elastic
      (d)   Perfectly elastic

20   Sweezy model fails to explain-
      (a)   The effect of discovery that the firm's belief about demand curve is incorrect
      (b)   Indeterminate demand curve & price rigidity
      (c)   Non-price competition
      (d)   Interdependent decision making

21   Two firms in Cournot model together will supply only to _____ of the total market.
      (a)   1/3
      (b)   2/3
      (c)   ¼
      (d)   ¾

22   In a centralized cartel price is determined by------
      (a)   Association
      (b)   Firm
      (c)   Government

23   The difference between positive economics and normative economics is
      (a)   Positive economics describe the positive effects of economies decisions while normative economies describe both positive and negative of economic decision
      (b)   Positive economics describes the facts of an economy while normative economies involves value judgments

(c)   Normative economics describes the facts of an economy while positive economics deals with value judgments

(d)   Positive economics describes the demand supply theories and normative economics describes total world economy as a whole

(e)   Normative economics describes the demand supply theories of individual markets while positive economics describes the total world economy as a whole.

24   GDP at factor cost exceeds GDP at market price
(a)   When the net factor income from abroad is negative
(b)   When the net factor income from abroad is positive
(c)   When depreciation of fixed capital exceeds gross investment
(d)   When direct taxes exceed indirect taxes
(e)   When subsidies exceed indirect taxes.

25   Which of the following is not true if the central bank imposes a reserve ratio of 100%?
(a)   The banking system can no longer affect the supply of money in the economy
(b)   Change in the foreign exchange reserves will result in an equal change in the money supply
(c)   The lending capacity of banks would narrow down to zero
(d)   A rupee deposited in a bank reduces the money supply in the economy by one rupee
(e)   Money supply in the economy will be equivalent to the high-powered money.

26   Which of the following is not a stock variable?
(a)   Foreign exchange reserves
(b)   Public debt
(c)   Wealth of a country
(d)   Inflation
(e)   Money supply.

27   Omar has just completed his graduation in commerce. He is looking for a suitable job, but the only job that he can find is that of a cook in a restaurant. This situation can be described as
(a)   Frictional unemployment
(b)   Structural unemployment
(c)   Cyclical unemployment
(d)   Natural unemployment
(e)   Disguised unemployment.

28   In the Balance of Payments statement, expenditure incurred by a foreign government for the maintenance of their embassy in India is recorded as a credit item under which of the following heads?
      (a)   Transfers
      (b)   Investment income
      (c)   Government not included elsewhere (G.n.i.e.)
      (d)   Miscellaneous
      (e)   Rupee debt service.

29.   Disposable Income is equal to:
      (a)   National Income Minus Taxes
      (b)   Real GDP
      (c)   National Income Minus Taxes
      (d)   National Income Minus Taxes Plus Transfers

30   Assume that Potential Real GDP equals $10,000. National Income is therefore $10,000. Of this, consumers will pay $2,000 in taxes, save $1,000, and spend $7,000 on consumer goods. Business Investment spending is $2000. In order to avoid recessions and inflation (to have equilibrium), the government should have a:
      (a)   Balanced budget
      (b)   Budget deficit of $1000
      (c)   Budget surplus of $1000
      (d)   Budget deficit of $2000

31   According to Keynes, when the Great Depression started, the government should have:
      (a)   Done nothing
      (b)   Decreased the money supply
      (c)   Had a large increase in government spending
      (d)   Enacted high tariffs, such as the Smoot-Hawley Tariff

32   If the government lowers taxes by $10 billion, the Real GDP will rise by
      (a)   More than $10 billion
      (b)   Less than $10 billion
      (c)   Exactly $10 billion

33   Which of the following is an automatic stabilizer?
      (a)   Unemployment benefits
      (b)   Spending on education
      (c)   Defense spending

(d)   Net interest

34   Autonomous investment is that investment which is-
(a)   Induced by demand
(b)   Made irrespective of demand or savings
(c)   Equal to savings
(d)   Equal to demand

35   In a two sector economy circular flow of income takes place between ---------- &----------
(a)   Firms, households
(b)   Firms, Banks
(c)   Firms, Government
(d)   Firms, foreign sector

36   In a two sector economy National income is measured as-
(a) $Y=C+I+X-M$
(b) $Y= C+I+G+T$
(c) $C+I+G-X+M$
(d) $C+I+T+X-M$

37   Personal disposable income is gross income of households---------payments of taxes.
(a)   After
(b)   Before

38   Value added by a firm is equal to
(a)   Firm's revenue – Costs of intermediate goods
(b)   Cost of producing a good – Costs of raw materials
(c)   Wages + Interest payments + Indirect taxes – Profits
(d)   Price of the goods sold – Costs of intermediate goods + Profits

39   Which of the following is not correct?
(a)   NNP + Indirect taxes = National Income
(b)   GNP = NNP + Depreciation
(c)   Saving + Taxes = Investment + Government spending
(d)   Personal income = Disposable income + Personal taxes

40   Total market value of all the final goods and services produced in a given period by factors of production located within a country is
(a)   Gross National Product at market prices
(b)   Gross Domestic Product at market prices
(c)   Net National Product at market prices
(d)   Gross National Product at factor cost

41   The net factor income earned within the domestic territory of a country must be equal to
(a)   Net Domestic Product at factor cost
(b)   Net Domestic Product at market price
(c)   Net National product at factor cost
(d)   Net National Product at market price
(e)   Personal income.

42   The difference between personal disposable income and personal income is
(a)   Residential investment
(b)   Indirect taxes
(c)   Subsidies
(d)   Transfer payments
(e)   Personal taxes.

43   In competitive market there is------------ between its product and that of every other firm in the market.
(a)   no difference
(b)   difference

44   In perfect competition, firms sell homogeneous products and it is --------- for a firm to enter the market.
(a)   difficult
(b)   easy

45   The gap between average total cost and average variable cost ---------------with the increase in the level of output but they never meet
(a)   narrows down
(b)   widens

46   The average fixed cost (AFC) curve declines as additional units are produced, and continue to----------
(a)   decline

(b)   rise

47   A monopolist can either produce the------------ but may charge different prices; or may charge the same price but supply different quantities in different markets.
(a)   same quantity
(b)   different quantity

48   Demand for normal goods and demand for inferior goods have -----------covariance.
(a)   negative
(b)   positive

49   Non-price competition typically involves -----------------expenditures
(a)   promotional
(b)   production
(c)   Overhead

50   Non-price competition is usually more profitable than selling for a ------, as it avoids the risk of a price war.
(a)   lower price
(b)   higher price

51   Society's productive resources are fully--------- when they are used to produce the level of output which renders long-run average cost minimum.
(a)   utilized
(b)   wasted

52   Every firm in an oligopoly market is faced with a -------------- Demand Curve
(a)   downward sloping
(b)   Kinked

53   Which cost must be considered during decision making.
(a)   Opportunity Cost
(b)   Explicit Cost
(c)   Operating Leverage Cost
(d)   All of the above

54   Average Total Cost refers to
(a)   Total Cost/Quantity
(b)   Total Cost X Quantity

(c)   Total Cost + Quantity

(d)   Total Cost - Quantity

55   Products are not differentiated under which market structure?

(a)   Perfect Competition

(b)   Monopoly Competition

(c)   Monopolistic Competition

(d)   All of the above

56   A firm in monopolistic competition increases its expenditure on marketing its product.
        What will it not be able to achieve as a result.

(a)   a higher long-run profit

(b)   a higher selling price

(c)   a more differentiated product

(d)   a more inelastic demand

57   A market structure in which a small number of firm face competition from potential
        entrants. What does this describe.

(a)   monopolistic competition

(b)   a perfect market

(c)   a monopoly

(d)   perfect oligopoly

58   A common assumption about the players in a game is that

(a)   neither player knows the payoff matrix.

(b)   the players have different information about the payoff matrix.

(c)   only one of the players pursues a rational strategy.

(d)   the specific identity of the players is irrelevant to the play of the game.

59   In a zero-sum game,

(a)   what one player wins, the other loses.

(b)   the sum of each player's winnings if the game is played many times must be
        zero.

(c)   the game is fair—each person has an equal chance of winning.

(d)   long-run profits must be zero.

60   The Prisoners' Dilemma is not a constant sum game because

(a)   some outcomes are better than others for both players.

(b)   the prisoners' sentences are necessarily non-zero.

(c)   the game does not have a Nash equilibrium.

(d)   the sum of the prisoners' sentences in non-zero.

Ans.   (1)(a), (2)(a), (3)(a), (4)(a), (5)(a), (6)(c), (7)(a), (8)(c), (9)(d), (10)(a) , (11)(b), (12)(a) (13)(c), (14)(c), (15)(b), (16)(a), (17)(c), (18)(b), (19)(a), (20)(a), (21)(c), (22)(b), (23)(a), (24)(b), (25)(a) (26)(b), (27)(e), (28)(c), (29)(d), (30)(b), (31)(e), (32)(d), (33)(c), (34)(c), (35)(a), (36)(a), (37)(b), (38)(a), (39)(a), (40)(a), (41)(a), (42)(a), (43)(a), (44)(a), (45)(e),(46)(a), (47)(b), (48)(a), (49)(a), (50)(a), (51)(a), (52)(a), (53)(b), (54)(a), (55)(a), (56)(a), (57)(b), (58)(d), (59)(a), (60)(a).

II   Short Answer Type Questions:

1   What do you mean by monopoly?
2   Write short note on price leadership?
3   Explain oligopoly.
4   What is pay-off matrix.
5   Discuss the objective of profit maximization.
6   Define perfect competition.
7   What are the features of a monopolistic competitive firm.
8   Differentiate between monopoly and oligopoly.
9   Explain the role of product differentiation in an oligopolistically competitive market.
10   How can entry be blocked in case of monopoly market.
11   Discus the various methods of pricing of products in terms of objectives & costs.
12   'A firm is price taker and not a price maker in a perfectly competitive market'. Discuss.
13   In Nash Equilibrium, each firm adopts the best strategy. Explain.
14   The profit maximizing price will never be set where demand is inelastic. Explain.
15   Mark up pricing is compatible with marginality rule of pricing. Discuss.
16   What is short run cost analysis?
17   Explain the reasons for increasing returns to a factor taking place in a production function.
18   The U shape of an average cost curve will be less pronounced the longer the period to which the curve relates. Explain.
19   What do you understand by Learning curve?
20   MC curve is a competitive firm's supply curve. Explain with the help of a diagram.
21   In Nash equilibrium, each firm adopts the best strategy. Is it true? Explain.
22   Explain why there is an absence of price competition in the oligopolistic markets.
23   How Marginal cost can rise in a range of output even when average cost falls.
24   Write note on Prisoners' dilemma.
25   Explain in brief non- price competition.
26   Write short note on price taker firm in competitive markets.
27   Isoquants are Convex to the origin. Explain.

28 How is MC Curve competitive firm's supply curve? Explain in brief.
29 In Nash equilibrium each firm adopts the best strategy. Comment.
30 Explain in brief the concept of Expansion Path.
31 Write short note on Non Price Competition.
32 Prisoner's dilemma and Nash equilibrium
33 Explain in words why a profit-maximizing firm will not choose to produce at a quantity where marginal cost exceeds marginal revenue.
34. How does the average cost curve help to show whether a firm is making profits or losses?
35 When a monopolist identifies its profit-maximizing quantity of output, how does it decide what price to charge?

III   **Long Answer Type / Practical Questions:**

1   Why long run average cost curve is likely to be L-shaped?
2   Identify the short and long run managerial decisions which must be made in regard to the firm's costs.
3   Explain the behavioral relationships among TVC, AVC and MC and assess the managerial significance of each.
4   Explain why the TC and TVC curves seem to converge towards their upper ends.
5   For output less than long run optimum level it is more economical to under use a slightly lager plant operating at less than its minimum cost output. Conversely, at outputs beyond the optimum level, it is more economical to oversee slightly smaller plant? Explain this proposition showing the relationship between short run & long run average cost curve.
6.   'The LAC curve can be thought of as consisting of points from each of a number of short run average cost curves'. Explain in what sense any point on the LAC curve is also on some short run average cost curve, but not necessarily with minimum point.
7   When MC changes AC changes (a) at the same rate (b) at a higher rate (c) at a lower rate? Illustrate your answer through a diagram.
8   What is meant by 'break even' analysis? What purpose does it serve in business decisions?
9   Define optimum input combination. What are the criteria for the 'least cost combination of inputs? Explain graphically. 1   Is perfect competition a possible market situation in any of the economies of the world? Give reasons in support of your answer.
10 Discuss price determination in an industry under perfect competition.
11 What do you mean by monopolistic competition? Is product differentiation an outcome of monopolistic competition or vice-versa? Discuss the behaviour of the firm under monopolistic competition?
12 Explain clearly some of the forms of what is called 'non-price competition.'

13   How is equilibrium of a firm determined under oligopoly if each firm takes independent action?

14   Discuss the meaning and main features of monopolistic market situation.

15   Discuss the uses and limitations of marginal cost pricing.

16   Explain Nash equilibrium. How is it different from dominant strategy equilibrium.

17   Discuss in detail the Prisoner's Dilemma.

18   Compare the features of the model given by Williamson with that given by Marris for managerial objectives.

19   How is the behaviour of a profit maximizing firm different from that of a revenue maximizing firm?

20   "Among the multiplicity of objectives that a modern firm has profit maximization continues to be the most important."Comment.

21   Do you agree with the view that separation of ownership and management introduces a change in decision making process? Explain why.

22   Discuss the behavioural theories of the firm.

23   How are the revenue curves of a firm under monopoly different from the revenue curves of the firm under perfect competition? How does the monopolist determine his price and output in the short period?

24   Will a monopolist firm continue to produce in the short run, even if it incurs losses?

25   What is price discrimination? How does a discriminating monopolist allocate his output and charge different prices in different markets to maximize his profits?

26   How is equilibrium in the short run attained in case of a monopolistically competitive market? Explain.

27   What do you understand by prisoner's dilemma? Why do oligopolistic firms find themselves in prisoner's dilemma?

28   Explain Baumol's sales maximization model using suitable diagram and compare it with profit maximization objective of the firm.

29   Prices tend to be rigid in an oligopoly market despite fluctuations in demand & cost. Explain price rigidity using kinked demand curve under what condition would an ologopolist charge a price different from one that occurs at the kink?

30   Show graphically how a profit maximizing discriminating monopolist will distribute his output in two markets and charge different prices under third degree price discrimination. Also discuss the equilibrium of the monopolist under dumping, if the foreign market in which he operates is perfectly competitive while in domestic market he faces a downward sloping demand curve.

31   Distinguish between skimming price & penetration pricing policy. Which of these policies relevant in pricing a new product under different competitive conditions in the market?

32   Explain and illustrate the price leadership of a low cost firm. Why do the high cost firms accept a price lower than their profit maximizing price?

33   What is a cartel? Explain price determination under the cartel system, with the help of a diagram.

34   Why are cost curves U-shaped under traditional theory of costs, while these may take saucer or other shapes under modern theory of costs.

35   Explain the features of oligopoly. Critically examine Sweezy's kinked demand curve
      model.

36   Graphically, explain the expansion path of a firm.

37   How do the economies of scale influence the long run average cost of a firm? Under
      what conditions the LAC will be L- shaped curve?

38

X-input (units)	Y-input (units)	Output (units)
2	0	0
2	1	10
2	2	30
2	3	60
2	4	80
2	5	95
2	6	105
2	7	112
2	8	115

      Price of X-input is Rs. 100 per unit. Price of Y-input is Rs. 200 per unit. Estimate the
      firm's average cost and marginal cost at different levels of output.

39   Prices tend to be rigid under oligopoly. Explain,   under what conditions would an
      oligopolistic firm charge a price different from one that occurs at the kink?

40   "For output less than long run optimum level, it is more economical to underuse a
      slightly larger plant operating at less than its minimum cost output. Conversely, at
      outputs beyond the optimum level, it is more economical to over use slightly smaller
      plant. Explain the proposition showing the relationship between short term and long
      term average cost curves.

41   Explain the importance of product differentiation and selling cost under monopolistic
      competition?

42.   What is monopoly market structure? Explain the concept and types of price
      discrimination in a monopoly market.

43   What is non price competition? Explain the issue of price stickiness in oligopoly
      market using kinked demand curve.

44   If the firms in a monopolistically competitive market are earning economic profits or
      losses in the short run, would you expect them to continue doing so in the long run?
      Why?

45.   Is a monopolistically competitive firm productively efficient? Is it allocatively
      efficient? Why or why not?

UNIT – IV

I   Test Your Skills:

Multiple Choice Questions:

1   Built in inflation might start due to
(a)   Persistent demand pulls inflation
(b)   Unemployment
(c)   Selective credit control
(d)   None of the above

2   Autonomous investments is that which is
(a)   Induced by demand
(b)   Made irrespective of demand or savings
(c)   Equal to saving
(d)   Equal to demand

3   Per capita income of a country is
(a)   Total income
(b)   The average income of the people
(c)   Disposable income
(d)   Personal income

4   According to the multiplier model, the best way to reduce inflation is to
(a)   Increase aggregate demand by cutting government spending or raising taxes.
(b)   Increase aggregate demand by raising government spending or cutting taxes.
(c)   Decrease aggregate demand by cutting government spending or raising taxes.
(d)   Decrease aggregate demand by raising government spending or cutting taxes.

5   The difference between positive economics and normative economics is
(a)   Positive economics describe the positive effects of economies decisions while normative economies describe both positive and negative of economic decision
(b)   Positive economics describes the facts of an economy while normative economies involves value judgments
(c)   Normative economics describes the facts of an economy while positive economics deals with value judgments
(d)   Positive economics describes the demand supply theories and normative economics describes total world economy as a whole
(e)   Normative economics describes the demand supply theories of individual markets while positive economics describes the total world economy as a whole.

6   GDP at factor cost exceeds GDP at market price
    (a)   When the net factor income from abroad is negative
    (b)   When the net factor income from abroad is positive
    (c)   When depreciation of fixed capital exceeds gross investment
    (d)   When direct taxes exceed indirect taxes
    (e)   When subsidies exceed indirect taxes.

7   Which of the following is not true if the central bank imposes a reserve ratio of
    100%?
    (a)   The banking system can no longer affect the supply of money in the economy
    (b)   Change in the foreign exchange reserves will result in an equal change in the
          money supply
    (c)   The lending capacity of banks would narrow down to zero
    (d)   A rupee deposited in a bank reduces the money supply in the economy by one
          rupee
    (e)   Money supply in the economy will be equivalent to the high-powered money.

8   Which of the following is not a stock variable?
    (a)   Foreign exchange reserves
    (b)   Public debt
    (c)   Wealth of a country
    (d)   Inflation
    (e)   Money supply.

9   Omar has just completed his graduation in commerce. He is looking for a suitable job,
    but the only job that he can find is that of a cook in a restaurant. This situation can be
    described as
    (a)   Frictional unemployment
    (b)   Structural unemployment
    (c)   Cyclical unemployment
    (d)   Natural unemployment
    (e)   Disguised unemployment.

10.   In the Balance of Payments statement, expenditure incurred by a foreign government
    for the maintenance of their embassy in India is recorded as a credit item under which
    of the following heads?
    (a)   Transfers
    (b)   Investment income
    (c)   Government not included elsewhere (G.n.i.e.)
    (d)   Miscellaneous
    (e)   Rupee debt service.

11. Disposable Income is equal to:
    (a) National Income Minus Taxes
    (b) Real GDP
    (c) National Income Minus Taxes
    (d) National Income Minus Taxes Plus Transfers

12. Assume that Potential Real GDP equals $10,000. National Income is therefore $10,000. Of this, consumers will pay $2,000 in taxes, save $1,000, and spend $7,000 on consumer goods. Business Investment spending is $2000. In order to avoid recessions and inflation (to have equilibrium), the government should have a:
    (a) Balanced budget
    (b) Budget deficit of $1000
    (c) Budget surplus of $1000
    (d) Budget deficit of $2000

13. According to Keynes, when the Great Depression started, the government should have:
    (a) Done nothing
    (b) Decreased the money supply
    (c) Had a large increase in government spending
    (d) Enacted high tariffs, such as the Smoot-Hawley Tariff

14. If the government lowers taxes by $10 billion, the Real GDP will rise by
    (a) More than $10 billion
    (b) Less than $10 billion
    (c) Exactly $10 billion

15. Which of the following is an automatic stabilizer?
    (a) Unemployment benefits
    (b) Spending on education
    (c) Defense spending
    (d) Net interest

16. Autonomous investment is that investment which is-
    (a) Induced by demand
    (b) Made irrespective of demand or savings
    (c) Equal to savings
    (d) Equal to demand

17. In a two sector economy circular flow of income takes place between ---------- &----------

(a) Firms, households
(b) Firms, Banks
(c) Firms, Government
(d) Firms, foreign sector

18. In a two sector economy National income is measured as-
(a) Y=C+I+X-M
(b) Y= C+I+G+T
(c) C+I+G-X+M
(d) C+I+T+X-M

19. Personal disposable income is gross income of households---------payments of taxes.
(a) After
(b) Before

20. Value added by a firm is equal to
(a) Firm's revenue – Costs of intermediate goods
(b) Cost of producing a good – Costs of raw materials
(c) Wages + Interest payments + Indirect taxes – Profits
(d) Price of the goods sold – Costs of intermediate goods + Profits

21. Which of the following is not correct?
(a) NNP + Indirect taxes = National Income
(b) GNP = NNP + Depreciation
(c) Saving + Taxes = Investment + Government spending
(d) Personal income = Disposable income + Personal taxes

22. Total market value of all the final goods and services produced in a given period by factors of production located within a country is
(a) Gross National Product at market prices
(b) Gross Domestic Product at market prices
(c) Net National Product at market prices
(d) Gross National Product at factor cost

23 The net factor income earned within the domestic territory of a country must be equal to
(a) Net Domestic Product at factor cost
(b) Net Domestic Product at market price

(c)   Net National product at factor cost

(d)   Net National Product at market price

(e)   Personal income.

24   The difference between personal disposable income and personal income is

(a)   Residential investment

(b)   Indirect taxes

(c)   Subsidies

(d)   Transfer payments

(e)   Personal taxes.

25   Which of the following is/are included in the aggregate demand of an economy?

(a)   Consumption demand

(b)   Investment demand

(c)   Net exports

(d)   Both (a) and (b) above

(e)   (a), (b) and (c) above.

26   Consumption demand does not depend upon the level of

(a)   Income

(b)   Propensity to consume

(c)   Propensity to save

(d)   Wealth

(e)   Marginal efficiency of investment.

27.   Inflation is a persistent increase in the general price level or persistent ------in the real income of people

(a)   Increase

(b)   Decrease

(c)   Both

28   Which of the following groups is most hurt by unexpected inflation?

(a)   workers with cost of living adjustments in their labor contracts

(b)   homeowners

(c)   people with large debts to pay for their homes and cars

(d)   people with large retirement savings held in savings accounts

29   If the nominal interest rate is 5% and the inflation rate is 2%, the real interest rate is:

(a)   2

(b)   3%

(c)   5%

(d)   2 ½%

30   For which of the following reasons might inflation cause Real GDP to grow slower
      than it otherwise would?
      (a)   Inflation makes everyone poorer
      (b)   Inflation reduces the value of consumer debt
      (c)   Inflation increases business investment spending
      (d)   Inflation decreases savings in financial form

31   Direct selling of Government securities by central bank to general public is known as-
      (a)   Open market operations
      (b)   Selective credit control
      (c)   Rationing of credit

32.   Inflation reaching double or triple digit is called-
      (a)   Galloping inflation
      (b)   Creeping inflation
      (c)   Running inflation
      (d)   Deflation

33   Inflation is sustained increase in general--------------
      (a)   Price level
      (b)   Money supply
      (c)   Investment
      (d)   Unemployment

34   Which of the following is responsible for formulating & implementing monetary
      policy in India?
      (a)   Central Government
      (b)   State Government
      (c)   Reserve Bank of India

35   Expansionary monetary policy
      (a)   tends to lead to an appreciation of a nation's currency.
      (b)   usually has no effect on a currency's exchange value.
      (c)   tends to lead to a depreciation of the currencies of other nations.
      (d)   tends to lead to a depreciation of a nation's currency.

36.   If the number of people classified as unemployed is 20,000 and the number of people classified as employed is 230,000, what is the unemployment rate?
   (a)   8%
   (b)   8.7%
   (c)   9.2%
   (d)   11.5%

37.   It is often true that as the economy begins to recover from a recession the unemployment rate rises. Which of the following statements would be the best explanation for this?
   (a)   The unemployment rate would rise because as the economy initially recovers from   a recession the demand for goods and services falls, so the demand for workers falls.
   (b)   As the economy begins to recover from a recession, workers who were previously discouraged about their chances of finding a job begin to look for work   again.
   (c)   The unemployment rate seems to rise as the economy begins to recover from a recession because of errors in the way the data are collected.
   (d)   As the economy initially recovers from a recession, firms do not immediately increase the number of workers they hire. Firms wait to hire more individuals until they are convinced that the recovery is strong.

38.   If an individual who cannot find a job because his or her job skills have become obsolete this is an example of
   (a)   frictional unemployment.
   (b)   structural unemployment.
   (c)   cyclical unemployment.
   (d)   seasonal unemployment.

39.   The natural rate of unemployment is generally thought of as the
   (a)   ratio of the frictional unemployment rate to the cyclical unemployment rate.
   (b)   sum of structural unemployment and cyclical unemployment.
   (c)   sum of frictional unemployment and cyclical unemployment.
   (d)   sum of frictional unemployment and structural unemployment.

40.   Firms react to unplanned increases in inventories by
   (a)   reducing output.
   (b)   increasing output.
   (c)   increasing planned investment.
   (d)   increasing consumption.

41. Effective demand determines the level of ----------- in the economy.
    (a) employment
    (b) income
    (c) both

42. When effective demand increases, employment also increases, and a decline in effective demand ------------the level of employment
    (a) decreases
    (b) increases

43. The importance of the principle of effective demand lies in pointing out the cause and remedy of-----------------------------.
    (a) inflation
    (b) unemployment

44. When income increases ---------------- also increases but less than proportionately
    (a) consumption
    (b) unemployment
    (c) inflation

45. If the appropriate investment is not forthcoming to fill the gap between income and consumption, it leads to a deficiency of effective demand resulting in------------------.
    (a) consumption
    (b) unemployment
    (c) inflation

46. In a wealthy community the gap between income and consumption is very large because the marginal propensity to consume is -----------
    (a) low
    (b) high

47. A closed economy is ----------------- by foreign influences
    (a) affected
    (b) unaffected

48. -----------------are the potential diversions from the income stream which tend to weaken the multiplier effect of new investment.
    (a) Investments
    (b) Leakages

49. The introduction of the foreign sector in to the circular flow of income model transforms the model from a----------------------------
    (a)   closed economy to an open economy
    (b)   an open economy to closed economy

50. In the five sectors circular flow of income model the state of------------ occurs where the total leakages balance to the total injections that occur in the economy.
    (a)   equilibrium
    (b)   disequilibrium

51. What does the term Gross investment mean while denoting a nation's economy?
    (a)   Gross investment= Net investment + Depreciation
    (b)   Gross investment= Net investment - Depreciation
    (c)   Gross investment= Depreciation - Net investment
    (d)   None of the above

52 What does the term free-market denote in terms of economy?
    (a)   Minimal government intervention in trade and minimum regulations
    (b)   Maximum government intervention in trade and maximum regulations
    (c)   Means of production owned by the state
    (d)   None of the above

53   The difference between the Gross value added and Net value added is:
    (a)   Investment
    (b)   Value added
    (c)   Production flow
    (d)   Depreciation

54   The concept of Goods and Services Tax (GST) is originated in………..
    (a)   USA
    (b)   Canada
    (c)   Britain
    (d)   Germany

55   Which of the following tax will be abolished by the GST?
    (a)   Income Tax
    (b)   Corporation tax
    (c)   Service Tax
    (d)   Wealth Tax

56   If 'Tata Company' imports a product from abroad, then which tax will be levied on it?
      (a)   VAT
      (b)   Custom duty
      (c)   Income tax
      (d)   Corporation tax

57   What kind of tax system is found in India?
      (a)   Progressive
      (b)   Degressive
      (c)   Proportional
      (d)   None of the following

58   The theory according to which the difference between expected appreciation and
      foreign   interest must be equal to domestic interest rate is called
      (a)   interest rate parity theorem
      (b)   appreciation parity theorem
      (c)   domestic parity theorem
      (d)   foreign interest parity theorem

59   The theory which considers the change in exchange rate with the fluctuations in
        inflation rates is classified as
      (a)   liquidated power parity
      (b)   purchasing power parity
      (c)   selling power parity
      (d)   volatile power parity

60   Which statement is true?
      (a)   National Expenditure = National income + National savings
      (b)   National Expenditure = National income
      (c)   National Expenditure = National income + Taxes
      (d)   National Expenditure = National income - Taxes

Ans. (1)(a), (2)(b), (3)(b), (4)(c) (5)(b), (6)(e), (7)(c), (8)(d), (9)(b), (10)(e), (11)(d),
         (12)(c), (13)(c), (14)(a), (15)(a), (16)(b), (17)(a), (18)(a), (19)(a), (20)(a), (21)(a),
         (22)(a), (23)(a), (24)(e), (25)(e), (26)(e) (27)(a), (28)(a), (29)(d), (30)(d), (31)(a),
         (32)(a), (33)(e), (34)(c), (35)(d), (36)(a), (37)(b), (38)(b), (39)(d), (40)(a), (41)(c),
         (42)(a), (43)(b), (44)(a), (45)(b), (46)(a), (47)(b), (48)(b), (49)(a), (50)(a), (51)(a),
         (52)(a), (53)(d),(54)(b), (55)(c), (56)(b), (57)(b), (58)(a), (59)(b), (60)(b).

II   Short Answer Type Questions:

1   Distinguish between Consumer Price Index and Wholesale Price Index. Explain how CPI and WPI are computed in India?

2   Distinguish between national income at current prices and national income at constant prices?

3   How is GDP computed using income method?

4   What is circular flow of Income.

5   What is autonomous and induced investment?

6   Explain the importance of Macro Economics.

7   Explain the balance sheet of a commercial bank.

8   What is effective demand? Explain the factors determining the effective demand.

9   What do you understand by economic growth? Explain the difference between economic growth and economic development?

10   Explain in brief, the determinants of economic development.

11   Explain the following terms in brief:

         (a)   Gross Domestic Product

         (b)   Currency Convertibility

         (c)   Causes and Effects of Inflation

         (d)   GNP Deflator

12   Unlike economic growth, economic development involves slow and gradual socio-economic changes. Is it true? Elucidate.

13   Write short note on Importance of Macro Economics.

14   Explain in brief different methods to Measure national Income.

15   What is the impact of increase in taxes on the MPC

16   What is hyper inflation ?what does it reflect?

17   Explain the concept of aggregate demand and aggregate supply in an economy

18   Explain the difference between a stock and a flow.

19   What is inflation and how does it affect the macro economy?

20   How demonetization of currency notes of Rs. 500 and 1000 in India shall affect its economy in short run and long run?

21   How demonetization of currency notes of Rs. 500 and 1000 in India shall affect its economy in short run and long run?

22   How demonetization of currency notes of Rs. 500 and 1000 in India shall affect its economy in short run and long run?

23   Describe the four major sectors in an economy according to the macroeconomic point of view?

24   What does the consumer price index measure?

25   Why the national income is measured at factor prices and not at market prices?

26   What are the principal difference between government purchases of goods & service and transfer payments?

III   Long Answer Type Questions:

1   What is the difference between GDP and NNP? How are the trends in GDP useful in understanding business environment? Explain.

2   Explain the concept and trends of Inflation in India? Why inflation is bad? What are the differences in wholesale Price Index Number and Consumer Price Index Number?

3   Analyze the emerging business environment and comment on the liberalization process underway in our economy.

4   Explain how demand factors causes demand pulls inflation. What are the major weaknesses of the demand pull theory of inflation?

5   In what way does inflation contribute to economic growth? What kind of inflation affects economic growth adversely?

6   No method of national income accounting is perfect. Critically evaluate the different methods national income accounting in the context of this statement.

7   Inflation is a necessary evil. Comment. If zero inflation is bad, why would a government try to control inflation?

8   What is meant by three identities of national output, national income & national expenditure? Explain with the help of a suitable equation.

9   Explain the scope and significance of macro economics.

10   What do you understand by economic growth? Explain the difference between economic growth and economic development. Explain the various determinants of economic development.

11   Explain various recent developments that has happened in Indian Economy.

12   Consider an economy with the following components of aggregate expenditure:
Consumption function: $C = 20 + 0.8Y$
Investment function: $I = 30$
Government expenditures: $G = 8$
Export function: $X = 4$
Import function: $M = 2 + 0.2Y$
There are no taxes so $YD = Y$
a. What is the marginal propensity to consume in this economy?
b. What is the equation of the aggregate expenditure function in this economy?

13   Consider an economy that is in above full-employment equilibrium due to an increase in AD. Prices of productive resources have not changed. With the help of a graph, discuss how the economy returns to full-employment equilibrium with not government intervention.

14   Give the verbal definition of GDP including all major elements of it, and derive the general mathematical formula from this definition.

15   Why are money prices used in calculating GDP?

16   If the only source of "shocks" in the economy is fluctuating autonomous money demand, should the RBI stick to money or interest rate targets to best stabilize GDP?

17   What do you understand by Inflation? Give the causes of Inflation.

18   Discuss in brief the impact of inflation on different sectors of the economy.

19   Give the remedial measures of controlling inflationary situation in the economy.

20   What are the different types of inflation?

21   "The effects of inflation are economically unsound, politically dangerous, socially Disastrous and morally indefensible", comment.

22   "Along with GDP growthstructural changes also take place in the economy to measure progress and quality of life." Explain

23   The growth of population is another factor which determines the rate of economic growth; Do you agree?

24   Explain how is 'Capital formation' the very core of economic development.

25   What is the difference between GDP & GNP? Which one is the better measure of income? Why?

26   A farmer grows a bushel of wheat & sells it to a miller for Rs. 1.00. The miller turns
the   wheat into flour & then sells the flour to a baker for RS. 3.00. The baker uses the flour
to   make bread & sells the bread to households for RS. 6.00. The households eat the
bread.   What is the value added in each stages of production? What is GDP?

27   Explain how the current rate of inflation depends on current money supply as well as
on   expected growth of money supply.

28   Write a note on the determinants of economic development.

29   What precautions should be taken while estimating national income by Value added method and Expenditure method?

30.   How does the quantity produced and price charged by a monopolist compare to that of a perfectly competitive firm?

31   Why will losses for firms in a perfectly competitive industry tend to vanish in the long run?

32   What is non-price competition? Explain price and output determination under non price competition.

33   A monopoly firm cannot determine price and quantity sold both simultaneously at the same time. Explain.

34   Write notes on (any three):-
      (a)   Under-utilized capacity under monopolistic competition in the long run
      (b)   Break-even point
      (c)   Third degree price discrimination
      (d)   Price-rigidity under oligopolistic market
      (e)   Effect of product differentiation on prices

35   What is the distinguishing characteristic of oligopoly in relation to the other forms of market organizations? What is its significance? Mention two sectors of Indian Economy where oligopoly is most prevalent.

QUESTION BANK

ACCOUNTING FOR MANAGEMENT

MS-107

QUESTION BANK
ACCOUNTING FOR MANAGEMENT – MS 107
MBA - I

UNIT - I

I   Test Your Skills:

Multiple Choice Questions:

1   Which primary financial statement shows a business enterprise's resources, obligations, and equities?
(a)   Statement of cash flows
(b)   Balance sheet
(c)   Income statement
(d)   Statement of retained earnings

2   In which form of business are the owners of the business called stockholders?
(a)   Proprietorship
(b)   Partnership
(c)   Corporation
(d)   Agency

3   Which of the following is NOT normally considered to be an asset?
(a)   Retained earnings
(b)   Cash
(c)   Buildings
(d)   Accounts receivable

4   When owners invest money in their business, the effect on the accounting equation is that the investment
(a)   Increases assets and decreases owners' equity
(b)   Increases liabilities and decreases assets
(c)   Decreases assets and decreases owners' equity
(d)   Increases assets and increases owners' equity

5   Which of the following accounts would normally have a credit balance?
(a)   Assets
(b)   Expenses
(c)   Liabilities
(d)   None of the above

6   When transactions are posted from the book of original entry, they are posted to the
(a)   General journal
(b)   General ledger
(c)   Work sheets

(d) Trial Balance

7   The term "compound entry" means that the journal entry has
     (a)   More than two accounts involved in the entry
     (b)   A debit amount greater than the credit amount
     (c)   A credit amount greater than the debit amount
     (d)   Only one debit, but two credits

8   No matter the type of adjusting entry, which of the following accounts would not be
     affected by an adjusting entry?
     (a)   Cash
     (b)   Unearned revenue
     (c)   Rent expense
     (d)   Prepaid insurance

9   A revenue that is collected before it has been earned is called
     (a)   Accrued revenue
     (b)   Unrecorded revenue
     (c)   Deferred revenue
     (d)   Unearned

10   The entry required to record a sales return by a customer would consist of
     (a)   Only a debit to Sales Revenue and a credit to Accounts Receivable
     (b)   Only a debit to Sales Returns and Allowances and a credit to Accounts
            Receivable
     (c)   Debit to Sales Returns and Allowances and a credit to Inventory
     (d)   Debits to Sales Returns and Allowances and Cost of Goods Sold and credits to
     (e)   Accounts Receivable and Inventory

11   Which of the following statements about differences between financial and managerial
     accounting is incorrect?

     (a)   Managerial accounting information is prepared primarily for external parties
            such as stockholders and creditors; financial accounting is directed at internal
            users.
     (b)   Financial accounting is aggregated; managerial accounting is focused on
            products and departments.
     (c)   Managerial accounting pertains to both past and future items; financial
            accounting focuses primarily on past transactions and events.
     (d)   Financial accounting is based on generally accepted accounting practices;
            managerial accounting faces no similar constraining factors.

12. Which of the following functions is managerial accounting intended to facilitate?
     (a)   Planning
     (b)   Decision making
     (c)   Control

(d)   All of these

13.   Cost accounting information can be used for:
        (a)   Budget control and evaluation.
        (b)   Determining standard costs and variances.
        (c)   Pricing and inventory valuation decisions.
        (d)   All of these

14.   Which one of the following is the main aim of accounting?
        (a)   To maintain ledger accounts for every asset and liability
        (b)   To provide financial information to users of such information
        (c)   To produce a trial balance
        (d)   To record every financial transaction individually

15.   Which is the third stage of accounting process?
        (a)   Recording
        (b)   Classifying
        (c)   Summarizing
        (d)   Summarizing and classifying

16   What type of expenditure is shown as asset in balance sheer?
        (a)   Capital expenditure
        (b)   Revenue expenditure
        (c)   Deferred revenue expenditure
        (d)   Capitalized expenditure

17.   Which of the following equations properly represents a derivation of the fundamental accounting equation?
        (a)   Assets + liabilities = owner's equity.
        (b)   Assets = owner's equity.
        (c)   Cash = assets.
        (d)   Assets - liabilities = owner's equity.

18.   Financial accounting is primarily concerned with:
        (a)   Recording of financial information relating to activities of the owners of the business enterprise
        (b)   Providing financial information to assist the management in decision making.
        (c)   Reporting financial information for external users of accounting reports
        (d)   Interpretation of financial statements

19.   Which of the following is not the objective of accounting:
        (a)   To maintain records of business
        (b)   To ascertain profit or loss of the business
        (c)   To depict capital, liabilities and assets of the business.
        (d)   To provide information about the personal assets and personal liabilities of the owners of the business.

20. When capital expenditure is recorded as revenue expenditure or revenue expenditure is recorded as capital expenditure, this is called.
    (a) Compensating error
    (b) Errors of omission
    (c) Errors of principle
    (d) Errors of commission

21. Which one of the following statements is true of the historical cost convention?
    (a) It fails to take account of changing price levels over time
    (b) It records only past transactions
    (c) It values all assets at their cost to the business, without any adjustment for depreciation
    (d) It has been replaced in accounting records by a system of current cost accounting

22. Which accounting concept or convention which, in times of rising prices, tends to understate asset values and overstate profits?
    (a) The going concern concept
    (b) The prudence concept
    (c) The realisation concept
    (d) The historical cost convention

23. Which of the following best describes a trial balance?
    (a) Shows all the entries in the books
    (b) Shows the financial position of a business
    (c) It is a special account
    (d) It is a list of balances on the books

24. Which accounting concept should be considered if the owner of a business takes goods from inventory for his own personal use?
    (a) The prudence concept
    (b) The capitalisation concept
    (c) The money measurement concept
    (d) The separate entity concept

25. Assets are usually valued under which basis?
    (a) Replacement cost
    (b) Historical cost
    (c) Net realisable value

26. What is trial balance?
    (a) An account
    (b) A complete account
    (c) List of balances of ledger account
    (d) Part of final a/c

27. Which accounting concept requires that foreseen losses should be anticipated and taken into account immediately?
    (a)   The consistency concept
    (b)   The accruals concept
    (c)   The prudence concept
    (d)   The going concern concept

28. A sale should be recognized when the goods or services have been provided and the invoice sent out, rather than when the sale is agreed. Which accounting concept does this illustrate?
    (a)   The realisation concept
    (b)   The consistency concept
    (c)   The going concern concept
    (d)   The materiality concept

29. Errors are corrected via the Journal because:
    (a)   It is much easier to do
    (b)   It saves entering them in the ledger
    (c)   It provides a good record explaining the double entry records
    (d)   It saves the bookkeeper's time

30. Which of these errors would be disclosed by the trial balance?
    (a)   A purchase of Rs. 250 was omitted entirely from the books
    (b)   Cheque Rs. 95 from C Smith entered in Smith's account as Rs. 59
    (c)   Credit sales of Rs. 300 entered in both double entry accounts as Rs. 30
    (d)   Selling expenses had been debited to Sales Account

31. If a trial balance totals do not agree, the difference must be entered in:
    (a)   A Suspense Account
    (b)   A Nominal Account
    (c)   The Profit and Loss Account
    (d)   The Capital Account

32. Which error can be detected by trial balance?
    (a)   Errors of principle
    (b)   Error in balancing ledger account
    (c)   Compensating error
    (d)   All

33. In the trial balance the balance on the Provision for Depreciation Account is:
    (a)   Not shown, as it is part of depreciation
    (b)   Shown as a credit item
    (c)   Sometimes shown as a credit, sometimes as a debit
    (d)   Shown as a debit item

34. AS-1 requires that significant accounting policies:
    (a)   Should be disclosed at one place.

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(b)   Need not be disclosed at one place.
(c)   May be disclosed selectively at the discretion of the management
(d)   Should not form of published accounts

35.   The principle which holds that all the expenses incurred in earning revenue should be identified with the revenue recognized and reported for the same period is the
(a)   Revenue principle
(b)   Liability principle
(c)   Time- period principle
(d)   Matching principle

36.   ICAI stands for:
(a)   Institute of Company Accountants of India
(b)   Institute of Certified Accountants of India
(c)   Institute of Chartered Accountants of India
(d)   None of the above

37.   NACAS stands for:
(a)   National Advisory Committee on Accounting Standards
(b)   National Accounting Council on Accounting Standards
(c)   National Accounting Committee on Accounting Standards
(d)   None of the above

38.   IASB stands for:
(a)   Indian Accounting Standard Board
(b)   Indian Accounting Standard Bulletin
(c)   International Accounting Standard Bulletin
(d)   International Accounting Standard Board

39.   The Journal is:
(a)   A supplement to the Cash Book
(b)   Part of the double entry system
(c)   Not part of the double entry system
(d)   Used when other journals have been mislaid

40.   Outstanding salary is.
(a)   Personal account
(b)   Income and expenditure account
(c)   Debtors account
(d)   Assets account

41.   The principle of segregating capital expenditure from revenue expenditure is based
    on
(a)   Going Concern Concept
(b)   Dual aspect Concept
(c)   Cost Concept
(d)   Accounting period Concept

42. Which of the following states that Insignificant events need not be recorded:
    (a) Going Concern Concept
    (b) Convention of Conservatism
    (c) Cost Concept
    (d) Convention of Materiality

43. Assets are held for the purpose of
    (a) Earning revenue
    (b) Resale
    (c) Conversion into cash

44. Goodwill is a
    (a) Current asset
    (b) Tangible asset
    (c) Intangible asset
    (d) Liability

45. Depreciation is provided on
    (a) Current assets
    (b) Fixed assets
    (c) Outward charges
    (d) Intangible assets

46. The amount of depreciation charged on machinery will be debited to
    (a) Machinery a/c
    (b) Depreciation a/c
    (c) Cash a/c
    (d) None of the above.

47. Which of the following books should be used to record purchase of furniture on credit?
    (a) Journal Proper
    (b) Cash Book
    (c) Purchases Book
    (d) None of the above

48. Expenditure which results in acquisition of a permanent asset is……..
    (a) Revenue Expenditure
    (b) Deferred Revenue Expenditure
    (c) Capital Expenditure

49. Errors of carry forward from one year to another year affect:
    (a) Personal account
    (b) Real account

(c)   Nominal account

(d)   Both personal & Real accounts

50.   The manufacturing account is prepared
    (a)   To ascertain the profit or loss on the goods purchased
    (b)   To ascertain the cost of manufactured goods
    (c)   To show the sale proceeds from the goods produced during the year
    (d)   None of the above.

51   Accounting provides information on
    (a)   Cost and income for managers
    (b)   Company's tax liability for a particular year.
    (c)   Financial conditions of an institution
    (d)   All of the above.

52. The long-term assets that have no physical existence but are rights that have value is known as
    (a)   Current assets
    (b)   Fixed assets
    (c)   Intangible assets
    (d)   Investments

53. The assets that can be converted into cash within a short period (i.e. 1 year or less) are known as
    (a)   Current assets
    (b)   Fixed assets
    (c)   Intangible assets
    (d)   Investments

54.   Patents, Copyrights and Trademarks are:
    (a)   Current assets
    (b)   Fixed assets
    (c)   Intangible assets
    (d)   Investments

55.   The liabilities that are payable in more than a year and are not be liquidated from current assets
    (a)   Current liabilities
    (b)   Fixed liabilities
    (c)   Contingent liabilities
    (d)   All of the above

56. The debts, which are to be repaid within a short period (year or less) are known as
    (a) Current liabilities
    (b) Fixed liabilities
    (c) Contingent liabilities
    (d) All of the above

57. The sales income (Credit and Cash) of a business during a given period is called
    (a) Transactions
    (b) Sales returns
    (c) Turnover
    (d) Purchase returns

58. Any written evidence in support of a business transaction is called
    (a) Journal
    (b) Ledger
    (c) Ledger posting
    (d) Voucher

59. The accounts that records expenses, gains and losses are
    (a) Personal accounts
    (b) Real accounts
    (c) Nominal accounts
    (d) None of the above

60. Real accounts record:
    (a) Dealings with creditors or debtors
    (b) Dealings in commodities
    (c) Gains and losses
    (d) All of the above

Ans. (1)(a), (2)(c), (3)(a), (4)(d), (5)(c), (6)(b), (7)(a), (8)(a), (9)(d), (10)(b), (11)(b), (12)(d), (13)(d), (14)(b), (15)(c), (16)(a), (17)(d), (18)(c), (19)(d), (20)(c) (21)(a), (22)(d), (23)(d), (24)(d), (25)(b), (26)(c), (27)(c), (28)(a), (29)(c), (30)(b), (31)(a), (32)(b), (33)(b), (34)(a), (35)(d), (36)(c), (37)(a), (38)(d) (39)(b), (40)(a), (41)(d), (42)(d),(43)(a), (44)(c), (45)(b), (46)(b), (47)(a), (48)(c), (49)(d), (50)(b), 51(d), 52(c), 53(a), 54(c), 55(b), 56(a), 57(c), 58(d), 59(c), 60(b).

II Short Answer Type Questions:

1   What is accounting?
2   What is the role of accounting in business?
3   Differentiate concept and convention.

4   Write short note on:
   (a)   Money measurement concept
   (b)   Dual aspect concept
   (c)   Periodic matching of cost and revenue concept
   (d)   Business entity concept
5   What do you mean by fiduciary accounting?
6   What are the types of account?
7   What are the rules of debit and credit?
8   What is Contra entry?
9   What do you mean by LLP?
10   What do you mean by LLC?
11   What do you mean by IFRS?
12   What is Ind AS?
13   State with reasons which of the following items should be taken as of a capital and which of revenue nature:
   (a)   Rs 2,000 spent on dismantling, removing and reinstalling plant and   machinery to a more convenient site. (Revenue expenditure)
   (b)   Rs 600 paid for removal of the stock to a new site (Revenue expenditure)
   (c)   Rs 1,000 paid for the erection of new machine (Capital expenditure)
   (d)   Rs 2,000 paid on repairing of the new factory (Capital expenditure)
14   What is the objective of preparing a Trial balance?
15   What do you mean by deferred revenue expenditure?
16   What is the classification of assets?
17   Give Performa of Manufacturing Account.
18   What is the difference between manufacturing business and service business?
19   Describe the difference between accounts receivable and debtor.
20   What are secret reserves in a company?
21   What do you mean by contingent liability?
22   What is the difference between debit note and credit note?
23.   What do you mean by corporate social responsibility?
24.   What should be number of independent directors in a public limited company?
25.   What do you mean by authorized capital?
26.   What is the difference between provision and reserve?
27.   Name the annexure in the annual report of a company.
28.   Differentiate between Fundamental Accounting Assumptions and Accounting Policies.
29.   Comment on following:
   (a) Business entity concept
   (b) Convention of conservatism
   (c) Nature of capital expenditure
   (d) Rationale of depreciation
   (e) Valuation of closing stock
   (f) Accounting cycle
30.   Who are the users of accounting information?
31.   What do you mean by accounting equation?
32.   What do you mean by errors of principle?
33.   Differentiate between Trial Balance and Balance Sheet.
34.   What are the parts of Final Accounts?

35. What is a journal proper? What entries are recorded in it?
36. In case of disagreement of the Trial Balance, in what order you would follow the procedure to locate the errors?
37. What do you mean by cost of goods sold?
38. What is the purpose of preparing Trading Account?
39. What are accounting standards?
40. What do you mean by provision?
41. State the persons who should be interested in accounting information.
42. Why is accounting regarded as an aid to Management?
43. Explain 'Net Worth' and 'Working Capital'.
44. Explain the concepts of 'Merchandise Cost', Gross Profit and Net Income.
45. Explain the Imprest System of Petty Cash Book.

III   Long Answer Type Questions:

1   Define Accounting. Explain the role of Accountants in its present-day economy.
2   According to the principles of 'Double entry system', 'every debit has a corresponding credit' Explain clearly. Discuss the merits of double entry system.
3   What do you mean by LLP? Describe the process of LLP in India.
4   What is the role of IFRS in smoothening accounting process globally?
5   What are the accounting concepts and conventions? Name them and explain any four accounting concepts in detail?
6   Explain the imprest system of petty cash book with the help of a relevant example.
7   what is the difference between capital and revenue? Enumerate the importance of in accounting? Give certain examples illustrating how a certain example illustrating how a certain expenditure can be regarded as capital expenditure as well as a revenue expenditure under different circumstances.
8   What is trial balance? "Trial balance only checks arithmetical accuracy of the accounts" Explain.
9   What do you understand by the terms 'Grouping' and 'Marshelling', used in connection with the balance sheet? Illustrate the different forms of Marshelling.
10   (a)   Distinguish between Trial balance and Balance sheet
       (b)   Outstanding income and Accrued Income
11   What is depreciation? Why is it required? Explain the difference between straight line method and written down value method of depreciation. Which of these two methods will you prefer and why?
12   Explain the need and significance of depreciation? What factors should be considered for determining amount of depreciation?
13   A bank manager has to sanction a long-term loan. Suggest him/her which type of assets and liabilities he/she should opt for the long-term solvency and which one for the short-term liquidity of the borrower.
14   "Property, plant and equipment are shown at historical costs, whereas for financial assets recoverable value and current market value are more important." Why is it so? Explain
15   What do you understand by the terms 'Grouping' and 'Marshelling', used in connection with the balance sheet? Illustrate the different forms of Marshelling.
       (a)   Distinguish between Trial balance and Balance sheet

(b)   Outstanding income and Accrued Income

16   Enumerate the contents of corporate annual report.

17.   Explain the provision of the companies Act regarding payment of managerial remuneration to different categories of managerial personnel.

18.   Explain the concept of corporate governance. State the matters which are covered under corporate governance as per the directives of SEBI.

19.   Differentiate between Cash and Mercantile systems of accounting.

20.   Highlight the changes made in the Schedule VI of Companies Act, 1956.

21.   Discuss the nature and scope of accounting. Why is it called language of business?

22   Accounting is a language of expressing financial activities of business". Explain this statement to indicate the importance of Accounting

23.   "If Trial balance is agreed, it is not a guarantee of correctness of accounting records, but if it is not agreed, it means certainly there are some errors in accounting records" do you agree with this statement, if yes, why?

24.   'If the various items of receipts and payments are not differentiated properly, it will show incorrect income and financial position of the business." In the light of this statement describe the importance of distinction between capital and revenue items.

25.   The concept of consistency status a consistent method should be used for treating the various items of expenditures of business. If this concept is violated, how it is affecting the income of the business.

26.   Differentiate between "Financial Accounting" and "Cost Accounting".

27.   Define Depreciation, Depletion and Amortization. Why depreciation is provided for?

28.   What do you mean by the suspense account? Why is it opened?

29.   State the factors that you will take into consideration in allocating the expenditure as Capital and Revenue

30.   What are closing entries? Give the closing entries which are to be passed at the end of the accounting period.

31.   Discuss briefly he relationship of accounting with other subjects.

32.   "Limitations of financial accounting have made the management to reduce the importance of cost accounting." Comment.

33.   Explain the different types of Goods Journals with suitable examples.

34.   What do you understand by sub-division of Journal.

35.   What is depreciation? Discuss the merits and demerits of Sinking Fund Method of depreciation.

36.   Explain the circumstances under which different methods of depreciation can be employed.

37.   What do you understand by the term 'Liabilities of a business'? How they can be classified? Explain with suitable example.

IV   Practical Questions:

1   From the following transactions relating to Mr. Anil Kumar. Show the effect on his assets, liabilities and capital by using the accounting equation:

S.No.	Particulars	Amount
1.	Started business with cash	1,0000
2.	Purchased goods on credit	8,000

3.	Plant purchased for cash	2,000
4.	Sold goods costing	1,000
5.	Sold goods costing for cash	2,000
6.	Drew for personal use	500
7.	Paid for salaries	300
8.	Sold goods on credit to Mahindra costing Rs800 for	1500
9.	Received cash from Mahendra	700

2   Shubham commenced business as on January 01, 2001. Given below are his transactions for the month of Jan. 2001. Journalize and post them in the ledger them.

Date	Particulars	Amount(Rs.)
Jan. 1	Business commenced with a capital	20,000
Jan. 2	Bank account opened by depositing cash	10,000
Jan. 3	Goods purchased from R on credit	5,000
Jan. 5	Goods sold to RP on credit	4,000
Jan. 7	Goods purchased from RM on credit	6,000
Jan. 8	Wages paid to employees	200
Jan. 9	Goods sold to M on credit	5,000
Jan.10	Debt paid for the months of January to March 2001	3,000
Jan.10	Cheque received from RP	4,000
Jan.12	Paid for office expenses	1,000
Jan.12	Sold Goods to Jagdish on cash	2,000
Jan.13	Cheque issued in favor of RM	6,000
Jan.15	Cash withdrawn for personal use	2,000

3   From the following transaction of M/S read and write, write up the journal in proper form:

1998	Particulars	Amount(Rs.)
Jan 1	Assets: cash in hand Rs. 2,000, cash at bank Rs. 68,000, stock of goods Rs. 4,0000, Machinery Rs. 1,00000, Furniture Rs. 1,0000, M/S Surya Bros. owe Rs. 15,000, M/s Balu Bros. owe Rs. 25,000. Liabilities: Loan Rs. 5,0000, Sum owing to Jain Ltd. Rs. 2,0000	
Jan 2	Bought goods on credit from Samuel & Co.	10,000
Jan3	Sold goods for cash to Dhiraj& Co.	4,000
Jan 4	Sold goods to Surya Bros on Credit	1,0000
Jan 5	Received from Surya Bros. in full settlement of amount due on Jan 1	14500
Jan 6	Payment made to Jain Bros Ltd. By cheque	9750

		They allowed discount Rs. 250	
	Jan 9	Old furniture sold for cash	1,000
	Jan 10	Bought sold for cash	7500
	Jan 11	Balu Bros. pay by cheque; Cheque deposited in Bank	25,000
	Jan 11	Paid carriage on these goods	1,000
	Jan 13	Bought goods of Jain Bros. Ltd.	1,0000
	Jan 13	Paid carriage on these goods	500
	Jan 16	Received cheque from Surya Bros., cheque deposited in bank Discount allowed to them 500	9500
	Jan 17	Paid cheque to Jain Bros Ltd	1,0000
	Jan 18	Bank intimates that cheque of Surya Bros has been returned unpaid	
	Jan 19	Sold goods for cash to Kay Bros.	6,000
	Jan 21	Cash deposited in bank	5,000
	Jan 24	Paid municipal taxes in Delhi	1,000
	Jan 25	Borrowed from Maheshwari Investment Co. Ltd for constructing own premises. Money deposited with bank for the time being	1,0000
	Jan 26	Old newspaper sold	200
	Jan 28	Paid for advertisement	1,000
	Jan 31	Paid rent by cheque Paid rent for the month Drew out of bank for private use Surya Bros. becomes insolvent, a dividend of 50 p. in a rupee is received an old amount, written off as bad debts in 1996 is recovered.	1500 3,000 2500

4   A merchant, which balancing his books of account, finds that the trial balance show excess credit of Rs. 1,700. Being required to prepare the final accounts, he places the difference to a newly opened suspense account which he carries forward. In the next account year, the following errors are discovered.

(i)   Goods bought from Narayan amounting to Rs. 5,000 has been posted to the credit of Narayan as Rs. 5,500.

(ii)   A discounted bill receivable for Rs. 20,000 was returned by the bank, as having been dishonoured. The amount of the bill was credited to bank and debited to bills receivable account.

(iii)   An item of Rs. 1,000 entered in the sales return book was posted to the debit of Pandey who had returned the goods.

(iv) Sundry items of furniture sold for Rs. 26,000 had been entered in the sales book. Ignore deprecation and profit or loss on the sale.

(v) Discount amounting to Rs. 200 from a creditor had been duly entered in the creditor's account, but not posted to discount account.

Draft journal entries necessary for rectifying the above-mentioned error Rs. Prepare the suspense account and show the ultimate effect of the errors on the last year's profit by preparing profit and loss adjustment account

5   State with reasons which of the following items should be taken as of a Capital and Which of a revenue nature:

   (i)   Rs. 2,000 spent on dismantling, removing and reinstalling plant and machinery to a more convenient site.

   (ii)   Rs. 600 paid for removal of stick to a new site.

   (iii)   Rs. 1000 paid for erection of a new machine.

   (iv)   Rs. 2,000 paid on repairing of the new factory.

   (v)   A car engine rings and pistons were changed at a cost of Rs. 3,000. This resulted in improvement of petrol consumption to 30 kms per litre. It had fallen from 15 kms to 8 kms.

   (vi)   A building constructed in 1960 was written down by 1990 to Rs. 5,000. It was demolished and a new building was constructed at a cost of Rs. 3 lakhs including Rs. 10,000 for demolishing the old building.

6.   Suresh bought a plant on 1-1-85 for a sum of Rs. 1,00,000 having a useful life of 5 years. It is estimated that the plant will have a scrap value of Rs. 16,000 at the end of its useful life. Suresh decides to charge depreciation according to depreciation fund method. The depreciation fund investment are expected to earn interest @ 5% p.a. sinking fund table shows that Re. 0.180975 if invested yearly at 5% p.a produces Re. produces Rs. 1 at the end of 5 years. The investments are sold at the end of 5th year for a sum of Rs. 65,000. A new plant is purchased for Rs. 1,20,000 on 1-1-1990. The scrap of the old plant realizes Rs. 17,000. You are required to prepare a necessary account in the books of Suresh.

Ans.   Profit on sale of investment A\c- Rs.478 and total of Plant A\C- Rs.100478

7   On 1st April 1998 a new plant was purchased for Rs. 40,000 and a further sum of Rs. 2,000 was spent on its installation.

On 1st October 1990 another plant was acquired for Rs. 25,000. Due to an accident on 3rd January 1991 the first plant was destroyed and sold for Rs. 1,000 only. On 21st January 1992 a second-hand plant was purchased for Rs. 30,000 and further sum of Rs. 5,000 was spent for bringing the same to use on and from 15th March 1992.

Depreciation has been provided at 10 per cent on straight line basis. It was a practice to provide depreciation for full year on all acquisition made at any time during any year and to ignore depreciation on any item sold or disposed of during the year. None of the assets were insured. The accounts are closed annually to 31st March.

It is now decided to follow the rate of 15 percent on diminishing balance method with retrospective effect in respect of the existing items of plant and to make the necessary adjustment entry on 1st April 1992.

Show the journal entries to be passed for the purpose and the Plant Account and the Depreciation provision Account for all the years.

Ans. Loss on sale of investment A\c- Rs.32600 and total of Plant A\C- Rs.60000

8   Giri Raj Enterprises purchased some second-hand machinery on 1st April 1987 for Rs. 3,70,000 and installed at a cost Rs. 3,0000. On 1st October 1998, it purchased another machine for Rs. 1,00,000 and on 1st October 1989, it sold off the first machine purchased in 1987, for Rs. 28,0000.

On the same date it purchased a machinery for Rs. 25,0000. On 1st October 1990, the second machinery purchased for Rs. 1,00000 was sold off Rs. 2,0000.

In the beginning depreciation was provided on machinery at the rate of 10% p.a. on the original cost each year on 31st March. From the year 1988-89, however, the trader changed the method of providing depreciation and adopted the written down value method, the rate of depreciation being 15% p.a.

Give the Machinery Account for the period 1987 to 1991.

Ans. Loss on sale of machineries - Rs.3050, 52728.12 and total of Plant A\C- Rs.309875

9   A firm purchased on 1st January 2004 certain Machinery for Rs. 58,200 and spent Rs. 1,800 on its erection. On July 2004, additional machinery costing Rs. 20,000 was purchased. On 1st January 2004 having become obsolete was auctioned for Rs. 28,600 and on the same date fresh machinery was purchased at a cost of Rs. 40,000.

Depreciation was provided for annually on 31 December at the rate of 10 percent on written down value. In 2007, however the firm changed this method of providing depreciation on the original cost of the machinery.

Give the Machinery Account as it would stand at the end of each year from 2004 to 2007.

10   From the following trial balance of Shri Dinesh, prepare trading and profit and loss account for the year ended on October 31, 1998 and a balance sheet as on the date.

Trial Balance as on October 31, 1998

Particulars	Debit (Rs.)	Credit (Rs.)
Machinery	90,000.00	
Buildings	40,000.00	
Stock (1-11-1997)	20,200.00	
Purchases	1,10,800.00	
Wages and Salaries	17,000.00	
Carriage Outward	3,000.00	
Sundry Debtors	35,000.00	
General Expenses	9,100.00	

Rent	1,700.00	
Bad Debts	650.00	
Income Tax	300.00	
Legal Charges	400.00	
Pre-paid Rent	200.00	
Loan to Manish	17,000.00	
Drawings	4,300.00	
Cash in Hand	1,350.00	
Cash at Bank	9,750.00	
Dinesh's Capital		1,15,200.00
Sundry Creditors		45,000.00
Bills Payable		4,000.00
Returns Outwards		1,500.00
Interest and Commission		900.00
Outstanding Expenses		1,150.00
Sales		1,90,500.00
Reserve for Bad and Doubtful Debts		2,500.00
Total	**3,60,750.00**	**3,60,750.00**

Adjustments:

Following are the adjustments which should be taken into consideration.

1. Stock on October 31, 1998 was valued at Rs. 20,900 and market price was Rs. 24,000.
2. Depreciate machinery at 10% and building at 5%.
3. The reserve for bad and doubtful debts is to be maintained at Rs. 1,000.
4. Provide for reserve for discount on sundry creditors at 2%.
5. Calculate interest on capital at 5% per year. No interest is chargeable on drawings

11 From the following figures extracted from the books of Shri Govind, you are required to prepare a Trading and Profit & Loss Account for the year ended 31st March, 1998 and a balance sheet as on that date after making the necessary adjustments:

Particulars	Amount	Particulars	Amount
Shri Govind's Capital	228,000	Stock 1-4-97	38500
Shri Govind's Drawings	13200	Wages	35200
Plant and Machinery	99,000	Sundry Creditor	44,000
Freehold Property	66,000	Postage and Telegram	1540
Purchases	11,0000	Insurance	1760
Returns Outwards	1100	Gas and Fuel	2970

Salaries	13200	Bad Debts	660
Office Expenses	2750	Office Rent	2860
Office Furniture	5500	Freight	9900
Discount A/C (Dr.)	1320	Loose Tools	2200
Sundry Debtor	29260	Factory Lighting	1100
Loan to Shri Krishna @ 10% p.a balance on 1-4-97	44,000	Provision for D/D	880
		Interest on loan to Shri Krishna	1100
Cash at Bank	29260	Cash on Hand	2640
Bills Payable	5500	Sales	231440

Adjustments:

- Stock on 31st March 1998 was valued at Rs. 72600.
- A new machine was installed during the year costing Rs. 15400, but it was not recorded in the books as no payment was made for it. Wages Rs. 1100 paid for its erection have been debited to wages account.
- Depreciate:
  Plant and Machinery by 33 1/3%
  Furniture by 10%
  Freehold Property by 5%

Loose tools were valued at Rs. 1760 on 31.3.1998.

Of the Sundry Debtors Rs. 600 are bad and should be written off.

Maintain a provision of 5% on Sundry Debtors for doubtful debts.

The manager is entitled to a commission of 10% of the net profits after charging such commission.

**Ans.   Gross Profit- Rs.108750, Net Profit- Rs.40800, Balance Sheet-
Rs. 3425380**

12   The following Trial Balance was extracted from the books of Mr. A as on 30th September 2008.

Trial Balance as on September 30, 2008

Particulars	*Debit (Rs.)*	*Credit (Rs.)*

Capital Account		1,00000
Plant and Machinery	78000	
Furniture	2000	
Sales		127000
Purchases	60000	
Returns	1000	750
Opening Stock	30000	
Discount	425	800
Sundry Debtors	45000	
Sundry Creditors		25000
Salaries	7550	
Manufacturing Wages	10000	
Carriage outward	1200	
Provision for bad debts		525
Rent, rates and taxes	10000	
Advertisement	2000	
Cash	6900	
	254075	**254075**

Prepare:

(i) Trading and profit and loss account for the year ended 30th September 2008
(ii) Balance sheet as on that date after taking into account the following adjustments:

1. Closing stock was valued at Rs. 34,220.
2. Provision for bad debts is to be kept at Rs 500
3. Allow interest on capital at 10% per annum
4. Furniture was sold and the same was disposed of Rs. 760 in exchange of new furniture costing Rs. 1680. The net invoice of Rs. 920 was passed through purchase register. (No depreciation need to be charged on old and new furniture)
5. Depreciate plant and machinery by 10% per annum.
6. The proprietor Mr. A has taken goods worth of Rs 5000 for personal use and distributed goods worth Rs. 1000 as samples.

13 The accountants of M/s Kasturi Agencies extracted the following Trial Balance as on March 21, 2005.

Particulars	Dr. Rs.	Cr. Rs.
Capital		1,00,000
Drawings		18,000

Buildings	15,000	
Furniture & Fittings	7,500	
Motor Van	25,000	
Loan from Hari @ 12% Interest	15,000	
Interest paid on above	450	
Sales		1,00,000
Purchases	75,000	
Stock as at 01.04.04	25,000	
Stock as at 31. 03.05		32,000
Establishment Expenses	15,000	
Freight Inward	2,000	
Freight Outward		1,000
Commission received		7,500
Sundry Debtors	28,100	
Bank Balance	20,500	
Sundry Creditors		10,000
	2,28,550	2,68,500

The Accountant located following errors but is unable to proceed any further:

(a) A totaling error in bank column of payment side of cash book whereby the column was under-totaled by Rs. 500.

(b) Interest on loan paid for the quarter ending December 31, 2004 Rs. 450 was omitted to be posted in the ledger. There was no further payment of interest.

You are required to set right the Trial Balance and to prepare the Trading and Profit and Loss Account for the year ended March 31, 2005 and the Balance Sheet as at that date carrying out the following:

(i) Depreciation is to be provided on the assets as follows:
Buildings   2.5% p.a.
Furniture & Fittings   10% p.a.
Motor Van   25% p.a.

(ii) Balance of interest due on the loan is also to be provided for.

14   The profit and loss account of Z Ltd is given below. Determine net profit for managerial remuneration and calculate managerial remuneration in each of the following cases:

(a) When there is no managing director or whole-time director of the company.

(b) When there is one managing director,

(c) When there is one whole time director and one managing director.

Particulars	Amount	Particulars	Amount
Salaries and wages	16,500	Gross Profit	4,65,000
Repairs	6,000	Subsidies from Government	9,000
Miscellaneous expenses	4,500	Profit on sale of fixed assets	51,000
Loss on sale of Investment	3,000	(Cost Rs. 90,000 and WDV Rs.	
Donation to charitable fund	7,500	45,000 sold for 96,000	
Interest	7,500		
Depreciation (including development rebate 4500)	30,000		
Debenture trustee remuneration	1,500		
Provision for tax	1,50,000		
Proposed dividend	1,50,000		
Provision for dividend tax	25,500		
Scientific research (new installation)	28,500		
Director's fee	10,000		
Net profit after appropriations	84,500		
	5,25,000		5,25,000

Ans.(a) Rs. 13,200 is to be paid to other director.

(b) Rs. 22,000 to be paid to MD, and Rs. 4,400 to other directors.

(c) Rs. 22,000 each to be paid to MD and whole time director and Rs. 4,400 to other directors.

15   The following is the schedule of balance as on 31.3. 2008 extracted from the books of Shri Gavashker, who carries on business under the name and style of Messrs Gavasker Viswanath& Co. at Bombay.

Particulars	Dr. Amount (Rs.)	Cr. Amount (Rs.)
Cash in hand	1,400	
Cash at bank	2,600	
Sundry debtors	86,000	
Stock as on 1.4.2007	62,000	
Furniture and fixtures	21,000	
Office equipment	16,000	
Buildings	60,000	
Motor car	20,000	
Sundry creditors		43,000
Loan from Vishwanath		30,000
Reserve for bad debts		3,000
Purchases	1,40,000	
Purchase returns		2,600

Sales		2,30,000
Sales returns	4,200	
Salaries	11,000	
Rent for godown	5,500	
Interest on loan from Vishwanath	2,700	
Rates and taxes	2,100	
Discount allowed to debtors	2,400	
Discount received from creditors		1,600
Freight on purchases	1,200	
Carriage outwards	2,000	
Drawings	12,000	
Printing and stationary	1,800	
Electric charges	2,200	
Insurance premium	5,500	
General office expenses	3,000	
Bad debts	2,000	
Bank charges	1,600	
Motor car expenses	1,600	
Capital accounts		1,62,000
	4,72,200	**4,72,200**

Prepare Trading and Profit and Loss Account for the year ended 31st March 2008 and the balance sheet at that date making provision for the following:

1. Depreciate:
   (a) Buildings used for business by 5%.
   (b) Furniture and fixtures by 10%, one steel table purchased during the year for Rs. 1,400 was sold for the same price but the sale proceeds were wrongly credited to sales account.
   (c) Office equipment by 15% purchases of a typewriter during the year of Rs. 4,000 has been wrongly debited to purchases.
   (d) Motor car by 20%.
2. Value of stock at the close of the year was Rs. 44,000.
3. One month's rent for godown is outstanding.
4. One month's salary is outstanding.
5. Interest on loan from Vishwanath is payable at 12% p.a. This loan was taken on 1.5.2007.
6. Reserve for bad debts is to be maintained at 5% of sundry debtors.
7. Insurance premium includes Rs. 4,000 paid towards proprietor's Life Insurance Policy and the balance of the insurance charges cover the period from 1.4.2007 to 30.6.2008.
8. Half of the buildings are used for residential purpose of Shri Gavasker.

16. The cost of machinery in use with a firm on 1st April, 1997 was Rs. 6,25,000 against which

the depreciation provision stood at Rs. 2,62,500 on that date; the firm provided depreciation

at 10% of the diminishing value. On 31st December, 1997, two machines costing Rs. 15,000

and Rs. 12,000 respectively, both purchased on 1 October, 1994, had to be discarded because of damage and had to be replaced by two machines costing Rs. 50,000 and Rs. 37,500respectively. One of the discarded machines was sold for Rs. 20,000, against the other it was expected that Rs. 7,500 would be realizable. Show the relevant accounts in the ledger of the firm for the year ended 31st March, 1998.

Ans: Balance of Machinery Account Rs. 6,85,500, Balance of Machinery Disposal Account 7,500.

17.   H Enterprises purchased on 1/4/95 certain machinery for Rs. 72,800 and paid Rs. 2,200 on its installation. On 1-10-95, machinery for Rs. 25,000 was acquired. On 1/4/96, the first machinery was sold at Rs. 50,000 and on the same date a fresh machinery was purchased at a cost of Rs. 45,000. Depreciation was annually provided on 31st March at 10% p.a. on written down value. On 1/4/97, however, the firm decided to change method of providing depreciation and adopted the method of providing depreciation @ 10% p.a. on the original cost with retrospective effect. Ascertain the value of machinery as on 31/3/98.

Ans: Balance of Machinery Account Rs. 54,750,

18.   Mr. A, a shopkeeper, had prepared the following trial balance from his ledger as on 31st March 2010:

Particulars	Dr. (Rs.)	Cr. (Rs.)
Purchases	310000	
Sales		415000
Stock of goods as on 1st April 2009	50000	
Cash in hand	2100	
Cash at bank	12000	
Mr. A's Capital		288600
Drawing	4000	
Rates and Taxes	5000	
Salaries	32000	

Postage	11500	
Salesmen's commission	35000	
Insurance	9000	
Advertising	17000	
Furniture and Fixtures	22000	
Printing and stationery	3000	
Motor car	48000	
Bad debts	2000	
Cash discounts	4000	
General expenses	14000	
Carriage inwards	10000	
Carriage outwards	22000	
Wages	20000	
Outstanding liability for expenses	11000	
Sundry creditors		40000
Sundry debtors	100000	
	743600	743600

Additional Information:

(i)   Cost of goods in stock as on 31st March 2010: Rs. 145000.
(ii)   Mr. A had withdrawn goods worth Rs. 5000 during the year.
(iii)   Printing and stationery expenses of Rs. 11000 relating to the 2008-2009 accounting year had not been provided in that year, but were paid in this year by debiting outstanding liabilities.
(iv)   Purchases include purchase of furniture worth Rs. 10,000.
(v)   Debtors include Rs. 5000 bad debts.
(vi)   Creditors include a balance of Rs. 4,000 to the credit of LM corporation in respect of which it has been decided and settled with the party to pay only to pay Rs. 1000.
(vii)   Sales include goods worth Rs. 15000 sold out to SM & Co. on approval and remaining unsold as on 31st March 2010. The cost of the goods was Rs. 10000.
(viii) Provision for bad debts is to be created at 5% of sundry debtors.
(ix)   Depreciate furniture and fittings by 10% and the motor car by 20%.
(x)   Salesmen are entitled to a commission of 10% on total sales.

Prepare trading and profit and loss accounts for the year ended on 31st March 2010 and the balance sheet as on that date.

19. Following balances appeared in the ledger book as on December 31, 2001:

Opening Stock	21,500
Purchases	1,20,000
Closing Stock	17,500
Sales	1,70,000
Returns Inward	5,000
Returns Outward	8,000
Freight	300
Capital	1,25,000
Rent	12,000
Discount (Cr.)	5,000
Carriage	2,000
Debtors	35,000
Creditors	28,000
Cash in Hand	4,000
Cash at Bank (Cr.)	9,000
Loan (Cr.)	18,000
Interest on Loan	1,800
Goodwill	8,000
Furniture	12,000
Bad Debts	4,000
Bad Debts Recovered	500
Wages	7,000
Salaries	17,000

Samples distributed	5,000		
Land & Building	1,00,000		

Prepare Trial Balance and Final Accounts.

(Ans. Total of Balance Sheet: 1,76,500)

20. Prepare Trading and Profit and Loss account and balance sheet as on March 31, 2012 from the following details:

Purchases	1,50,000	Sales	2,25,000
Opening stock	25,000	Rent received	2,000
Carriage inward	2,500	Creditors	20,000
Salaries	12,000	Provision for bad and doubtful debts (1-4-2011)	500
Carriage outward	4,000	Capital	1,17,500
Administrative expenses	12,500	Sales tax collected	20,000
Debtors	25,000		
Bad debts	2,000		
Returns inward	5,000		
Land and building	1,20,000		
Cash in hand	2,000		
Cash at bank	7,000		
Sales tax paid	18,000		
	3,85,000		3,85,000

1. Closing stock on March 31, 2012 amounted to Rs. 20,000.
2. Further, bad debts amounted to Rs. 5,000. Provide 5% for bad and doubtful debts and create provision @2% for discount on creditors and debtors.
3. One third portion of the building was let out, one third was used for residential purposes, and one third was used for business operations.
4. Charge depreciation on land and building @ 5% p.a.

(Ans. Total of Balance Sheet: 1,61,620)

21   Journalize the following transaction in the books of M/s Sharma & Sons:
1. Started business with a capital of Rs. 10,00,000
2. Deposited in bank Rs. 3,00,000
3. Purchased goods for cash Rs. 80,000
4. Drawn from bank Rs. 50,000
5. Gold goods for Rs. 50,000
6. Purchased goods from Ram Rs. 30,000
7. Sold goods to Mohan Rs. 4000
8. Paid rent Rs. 10,000
9. Withdrawn cash Rs. 20,000 for personal use.
10. Paid to Ram Rs. 29,800 in full settlement

22 Following Trial Balance is taken from the books of Delhi Trades as on 31.03.2015

Particulars	Dr. (Rs.)	Cr. (Rs.)
Capital	-	8,00,000
Building	4,50,000	-
Stock (01.04.2014)	32,000	-
Purchases & Stocks	3,80,000	6,50,000
Wages	25,000	-
Carriage	5,000	-
Salaries	45,000	-
Plant & Machinery	2,50,000	-
Furniture	70,000	
Returns	8,000	10,000
Discounts	3,000	2,000
Office Expenses	20,000	-
Sundry Expenses	8,000	
Rent	30,000	
Cash in Hand	32,000	
Cash at Bank	50,000	

Bad Debts	4,000	
Debtors/ Creditors	60,000	50,000
B/R & B/P	15,000	5,000
Drawings	30,000	
	15,17,000	15,17,000

Additional information:
1. Stock on 31.03.2015 Rs. 55,000
2. Prepaid Rent Rs. 6,000
3. Outstanding wages and salaries Rs. 5,000 and Rs. 1,50,000 respectively.
4. Provide for depreciation: Building 5%, Machinery 10%, Furniture 20%
5. Provide for bad debts 5% on Debtors.

Prepare final accounts from the above information.

Ans. Gross Profit: Rs 2,60,000, Net Profit Rs 78,500, Balance Sheet Total: Rs 9,23,500

23. Prepare Trial Balance from the following details extracted from the books of a firm as on 31.03.2015

Capital Rs. 3,50,000, Drawing Rs. 25,000, Plant & Machinery Rs. 1,50,000, Debtors Rs. 90,000, creditors Rs. 40,000, Returns inwards Rs 10,000, Returns outwards Rs. 12,000, Discount allowed Rs. 5,000, Discount Received Rs. 4,000, Commission Paid Rs. 8,000, Interest Paid Rs. 22,000, Furniture Rs. 34,000, Provision for bad debts Rs. 12,000, Wages Rs. 48,000, Salaries Rs. 60,000, Advertisement Rs. 15000, Taxes Paid Rs. 12,000, Purchases Rs. 2,40,000, Sales Rs. 4,80,000, Stock (1.4.14) 50,000, Carriage Rs. 12,000. Land & Building Rs 3,00,000, Cash in hand Rs. 12,000, Cash at bank Rs. 25,000, Bank Loan Rs. 2,20,000.
Stock at the end was Rs. 46,000

Ans. Total of Trial Balance: Rs. 11,18,000

24   Following trial balance is prepared by an inexperienced person as on 31.12.2014:

Particulars	Dr. (Rs.)	Cr. (Rs.)
Capital	-	7,670
Cash in Hand	-	30
Purchases	8,990	-
Sales	-	11,000

Cash at bank	885	-
Furniture	225	-
Freehold Premises	1,500	-
Lighting	65	-
Bills Receivables	-	825
Returns inwards	-	30
Salaries	1,075	-
Creditors	-	1.890
Debtors	5,700	-
Stock (1.1.14)	3,000	-
Printing	225	-
Bills Payable	1,875	-
Rent & Rates	190	-
Discount Received	445	-
Discount Allowed	-	200

You are required to prepare a correct trial balance.
Ans. Total of correct Trial Balance: 22,940

25 Following is the trial balance of M/s Ram Chand & Sons as on 31.03.2015

Particulars	Dr. (Rs.)	Cr. (Rs.)
Buildings	3,60,000	-
Machinery	2,80,000	-
Furniture	1,20,000	-
Stock (1.4.14)	60,000	-
Purchases & Sales	5,80,000	9,20,000
Capital		6,30,000
Wages	90,000	-

Returns	30,000	25,000
Salaries	80,000	-
Advertisement	30,000	-
Postage	9,000	-
Rent	1,36,000	-
Discounts	4,000	10,000
Carriage Inwards	7,000	-
Carriage Outwards	3,000	
Cash in Hand	20,000	-
Debtors/ Creditors	1,90,000	1,10,000
Bad debts	6,000	-
Drawings	30,000	-
Cash at Bank	2,20,000	-
8% Bank Loan (1.10.14)	-	5,60,000

Adjustments:
1. Closing Stock-Rs. 92,000
2. Outstanding on 31.03.15
   Wages- Rs. 10,000
   Salaries- Rs. 20,000
3. Prepaid Rent on 31.03.15 was Rs. 60,000
4. Provide for depreciation
   Machinery 10%
   Furniture 20%
5. Provide for bad debts 5% on debtors
   Ans. Gross Profit Rs. 2,60,000, Net Loss Rs. 41,900, Total of Balance Sheet Rs. 12,80,000

26. From the following ledger balances of Mr. X, prepare P&L, Trading A/c for the year ended 31 March 2014, and balance sheet :

Particulars	Rupees	Particulars	Rupees
Trade Expense	800	Purchase	82000
Freight & duty	2000	Stock (1/4/2013)	15000
Carriage O/W	500	Plant & Machinery	20000
Sundry Debtors	20600	Plant Mach. Addition on (1/10/2013)	5000

Furniture & Fixtures	5000	Drawing	6000
Return Inward	2000	Capital	80000
Printing Stationary	400	Provision for doubtful debt	800
Rent, Rate Tax	4600	Rent for premises sublet	1600
Sundry Creditors	10000	Insurance charges	700
Sales	120000	Salary Wages	21300
Return O/W	1000	Cash in hand	6200
Postage & Telegram	800	Cash at bank	20500

Adjustments:
1. Stock on 31st March 2013 was 14000.
2. Write off Rs 600 as bad debts
3. Provision for doubtful Debts is to be maintained at 5%
4. Provision for depreciation on furniture and fixtures at 5% pa and on P&M at 20% pa
5. Insurance prepaid was Rs 100
6. A fire occurred in godown and stock of value of Rs 5000 was destroyed. It was insured and the insurance company admitted full claim.

(Ans. GP 39,000; NP 6,050; B/S Total 90,050)

27.   Record the following transactions in the Journal of the Delhi Traders.

2016 Jan	Transactions	Amount (Rs.)
1	Started business with cash	10,000
2	Deposited into bank	9,000
3	Purchased machinery from Jawahar and gave him a cheque for the amount	5,000
15	Paid installation charges of machinery	100
20	Purchased goods from Naveen and allowed 10% trade discount	2,000 (List Price)
23	Interest received from Mr. Raman	500
25	Sold goods to Naresh and allowed him 5% trade discount	1000(List Price)
28	Received a cheque from Naresh in full settlement	930
29	Sent cheque to Naveen in full settlement	1750

31	Paid wages	350

28. Prepare the Three column cash book from the following transactions of BL enterprises for

the month of March 2016 and bring down the balance at the end of the month:

2016 March	Transactions	Amount (Rs.)
1	Cash in hand Cash at bank	2,500 10,000
2	Paid into bank	1,000
5	Bought furniture and issued cheque	2,000
8	Purchased goods for cash	500
12	Received cash from Mohan and allowed him discount Rs.20	980
16	Paid to Amarnath by cheque and discount received Rs.50	1,450
19	Paid into bank	400
23	Withdrawn from bank for personal use	600
24	Received cheque from Patel and allowed him discount Rs. 20	1430
28	Withdrawn cash from bank for office use	2000

29. On 1st January 2012, a machinery was purchased by X for Rs. 50,000. On 1st July 2013 additions were made to the extent of Rs. 10,000. On 1st April 2014, further additions were made to the extent of Rs. 6,400.
On 30th June 2015 machinery the original value of which was Rs. 8,000 on 1st January 2012, was sold for Rs. 6,000. X closes his books on 31st December each year.
Show the Machinery a/c for the years from 2004 to 2008 in the books of X if depreciation is charged @10% p.a. by the following:
   I.   Original Cost Method or SLM method,
   II. Diminishing Balance Method or WDV method

30.   Raja Ram has removed his works to a more suitable site:
   (a)   A sum of Rs. 47,500 was spent on dismantling, removing and reinstalling plant, machinery and fixtures.
   (b)   The removal of stock from old works to new works costed Rs. 5,000

(c) Plant & Machinery which stood in books at Rs. 7,50,000 included a Machine at a book value of Rs. 15,000. This being obsolete was sold off for Rs. 5,000, and was replaced by a new machine which costs Rs. 24,000.

(d) The Furniture & Fixtures appeared in the books at Rs. 75,000. Of these some portion of the Book value of Rs. 15,000 was discarded and sold off Rs. 16,000, and new furniture of the value of Rs. 12,000 was acquired.

(e) A sum of Rs. 11,000 was spent on painting the new factory.

State which item of Expenditure is chargeable to revenue and which to capital.

UNIT - II

Multiple Choice Questions:

1   The following should be excluded from the cost accounts:
    (a)   Cash discount
    (b)   Trade discount
    (c)   Quantity discount

2   Charging to a cost centre those overheads that result only from the existence of that cost centre is known:
    (a)   Allocation
    (b)   Apportionment
    (c)   Absorption
    (d)   Allotment

3   Gross works cost stands for
    (a)   Works cost as adjusted by stocks of work-in-progress
    (b)   Works cost before adjusting stocks of work-in-progress
    (c)   Works cost before adjusting stocks of finished goods.

4   Cash received on contract is credited to
    (a)   Work-in-progress account
    (b)   Contract account
    (c)   Contractee's account

5   Abnormal loss is charged to
    (a)   Process account
    (b)   Costing profit and loss account
    (c)   Normal loss account

6   Conversion cost is the sum total of
    (a)   Direct material cost and direct wages cost

(b)   Direct wages, direct expenses and factory overheads

(c)   Indirect wages and factory overheads

7   Material abstract is

(a)   A request from the production department for issue of materials.

(b)   A list of materials required for a specific job

(c)   An analytical statement of materials issued to different job

8   With every increase in the size of the batch

(a)   Setting-up cost per unit decreases

(b)   Setting-up cost per unit increases

(c)   Setting-up cost per unit remains constant

9   Operating costing is suitable for a company manufacturing product

(a)   Possessing distinct characteristics

(b)   Possessing some common and some individual characteristics

(c)   Involving a single operation

10   LIFO method of pricing material issues is suitable for

(a)   Bulky material

(b)   Perishable material

(c)   Bulky and non-perishable materials

11.   The combination of direct material and direct labor is

(a)   Total production Cost

(b)   Prime Cost

(c)   Conversion Cost

(d)   Total manufacturing Cost

12.   The cost expended in the past that cannot be retrieved on product or service

(a)   Relevant Cost

(b)   Sunk Cost

(c)   Product Cost

(d)   Irrelevant Cost

13.   Fixed cost per unit decreases when:

(a)   Production volume increases.

(b)   Production volume decreases.

(c)   Variable cost per unit decreases.

(d)   Variable cost per unit increases.

14.   Find the value of purchases if Raw material consumed Rs. 90,000; Opening and closing stock of raw material is Rs. 50,000 and 30,000 respectively.

(a)   Rs. 10,000

(b)   Rs. 20,000
(c)   Rs. 70,000
(d)   Rs. 1,60,000

15.   If Cost of goods sold = Rs. 40,000 GP Margin = 20% of sales Calculate the Gross profit margin.
(a)   Rs. 32,000
(b)   Rs. 48,000
(c)   Rs. 8,000
(d)   Rs. 10,000

16.   Prime cost + Factory overhead cost is:
(a)   Conversion cost.
(b)   Production cost.
(c)   Total cost.
(d)   None of the Above

17.   An organization can classify costs on the basis of their:
(a)   Behavior.
(b)   Traceability.
(c)   Controllability.
(d)   Relevance and function.
(e)   All of the above.

18.   Which of the following is true with respect to a variable cost?
(a)   It changes in proportion to changes in the volume of activity.
(b)   It remains constant even if activity levels change.
(c)   It has an inverse relationship to sales and production levels.
(d)   Variable costs are not important in manufacturing environments.
(e)   None of the above.

19.   As per AS-2, inventories are valued at lower of cost or:
(a)   Reliable value
(b)   Replacement value
(c)   Net Reliable value
(d)   Market value

20.   Which inventory valuation method best matches the cost of goods sold with current replacement cost
(a)   Specific identification
(b)   LIFO
(c)   FIFO
(d)   Weighted Average

21.   If inventory cost at the end of the period was lower using FIFO than LIFO, what direction did the cost of purchase move during the period assuming there was no inventory in the beginning of the period
(a)   Increase

(b)   Decrease
(c)   Constant
(d)   None of the above

22.   As per AS-2, cost of inventory is determined by applying
(a)   First in first out
(b)   Last in first out
(c)   Highest in first out
(d)   Next in first out

23.   When a manufacturing process requires mostly human labor and there are widely varying wage rates among workers, what is probably the most appropriate basis of applying factory costs to work in process?
(a)   Machine hours
(b)   Cost of materials used
(c)   Direct labor hours
(d)   Direct labor dollars

24.   A disadvantage of an hourly wage plan is that it:
(a)   Provides no incentive for employees to achieve and maintain a high level of production.
(b)   Is hardly ever used and is difficult to apply.
(c)   Establishes a definite rate per hour for each employee.
(d)   Encourages employees to sacrifice quality in order to maximize earnings.

25.   Differential piece rate system provides higher wages to:
(a)   Efficient workers
(b)   Inefficient workers
(c)   Average workers

26.   A control account:
(a)   Is a temporary account.
(b)   Is supported by a set of subsidiary ledger accounts.
(c)   Summarizes revenue and expense accounts.
(d)   Is closed at the end of the period to cost of goods sold.
(e)   None of the above.

27.   H Company started March with Rs. 35,000 in direct materials inventory. During the month, direct materials in the amount of Rs. 145,000 were purchased and Rs. 22,000 was in the ending direct materials inventory at the end of March. What was the amount of direct material used in production in March?
(a)   Rs. 158,000
(b)   Rs. 167,000
(c)   Rs. 180,000
(d)   Rs. 193,000
(e)   None of the above.

28. ABC Company uses a Manufacturing Overhead Control account and a Manufacturing Overhead Applied account. If overhead is overapplied during the period, the journal entry to write it off to cost of goods sold will include:

(a) a credit to applied manufacturing overhead
(b) a debit to cost of goods sold
(c) a debit to manufacturing overhead control
(d) a credit to cost of goods sold
(e) None of the above.

29. What type of cost is composed of actual direct material and labor cost plus overhead applied using a predetermined rate and an actual allocation base?

(a) Actual
(b) Normal
(c) Standard
(d) Real
(e) None of the above.

30. Which of the following statements describe a primary difference in job costing between service companies and manufacturing companies?

(a) Service companies generally use fewer direct materials.
(b) Service companies' overhead accounts have slightly different names.
(c) Service companies' finished goods are charged to Cost of Services.
(d) All of the above.
(e) None of the above.

31. Which of the following terms is used to describe complex tasks that often take months
or years to complete and require the work of many different departments, divisions, or subcontractors?

(a) Jobs
(b) Tasks
(c) Projects
(d) Ventures
(e) None of the above

32. Which of the following is characteristic of a job order cost accounting system?

(a) It records manufacturing activities using a perpetual inventory system.
(b) It tracks cost by job.
(c) It is best suited for customized products.
(d) All of the above.
(e) None of the above.

33. Which of the following manufacturers is most likely to use a job order cost accounting system?

(a) A soft drink producer.
(b) A flour mill

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(c)   A gold mining operation.
(d)   A builder of offshore oil rigs.
(e)   All of the above.

34.   Which of the following would be considered factory overhead using a job order cost system?
(a)   Direct materials.
(b)   Direct labor.
(c)   Depreciation on factory buildings.
(d)   Salesperson's salary.
(e)   None of the above.

35.   Service costing is also known as
(a)   Output costing
(b)   Operating costing
(c)   Operation
(d)   Continuous process.

36.   Service costing is not used in one of the following;
(a)   Electricity
(b)   Transport
(c)   Hospitals
(d)   Electronics

37.   If the present cost of the car is Rs. 50,000, residual value at the end of 5th year is Rs. 10,000, the monthly depreciation is:

(a)   Rs. 8,000
(b)   Rs. 667
(c)   Rs. 8,667
(d)   None of the above

38.   A truck starts with a load of 10 tones of goods from station P. It unloads 4 tones at station Q and rest of the goods at station R. It reaches back directly to station P after reloaded with 8 tones of goods at station R. The distances between P to Q, Q to R and then from R to P are 40 kms, 60 kms and 80 kms respectively. What is absolute tone km.
(a)   1400
(b)   1200
(c)   1600
(d)   2400

39.   A truck starts with a load of 10 tones of goods from station P. It unloads 4 tones at station Q and rest of the goods at station R. It reaches back directly to station P after reloaded with 8 tones of goods at station R. The distances between P to Q, Q to R and then from R to P are 40 kms, 60 kms and 80 kms respectively. What is commercial tone km.

(a) 1400
(b) 1440
(c) 1640
(d) 2440

40. The aggregate of direct material and direct labour cost is known as
(a) Prime Cost
(b) Work Cost
(c) Total Cost of Production
(d) Cost of Sales

41. The Cost expended in the past that cannot be retrieved on product or service is :
(a) Relevant Cost
(b) Sunk Cost
(c) Product Cost
(d) Irrelevant Cost

42. From the following , find out the Economic Order Quantity: Annual Demand 12000 units, Ordering cost Rs. 90 per order, Inventory carrying cost p.a. Rs. 15 per unit.
(a) 289 units
(b) 379 units
(c) 356 units

43. Which of the following changes in proportion to changes in volume?
(a) Fixed Cost
(b) Sunk Cost
(c) Opportunity Cost
(d) None of the above.

44. Complete the following table:

	Per Unit	Total
Fixed Cost	Increase	Constant
Variable Cost	?	?
Total Cost	Increase	Decrease

(a) Constant, Decrease
(b) Decrease, Decrease
(c) Increase, Increase
(d) Increase, Decrease

45. 'Opportunity Cost' concept is used for:
(a) Controlling Cost
(b) Management Decision

    (c)   Quantification of Cost

    (d)   Calculation of Variance

46.   The expenses for goods that are purchased or manufactured for sale are known as:
    (a)   Variable Cost
    (b)   Cost of Goods Sold
    (c)   Gross Cost
    (d)   Fixed Cost

47.   The Margin of Safety can be expressed as:
    (a)   The excess of stocks held over the expected demand
    (b)   The difference between actual and budgeted output
    (c)   The excess of selling Price over Cost of Goods Sold
    (d)   The difference between actual output and Break-even Point

48.   Bin Card shows:
    (a)   Receipt of stores
    (b)   Issue of stores
    (c)   Closing balance of stores
    (d)   All of the above

49.   In ABC analysis 'A' class items require:
    (a)   Loose Control
    (b)   Tight Control
    (c)   Moderate Control
    (d)   None of the above.

50.   Piece Workers are paid wages on
    (a)   Piece rate basis
    (b)   Time rate basis
    (c)   Time saved basis
    (d)   None of the above

51.   Under Halsey Premium Plan, _____ % of time saved is shared by employer
    (a)   110
    (b)   115
    (c)   50

52.   Incremental cost is a type of_____
    (a)   Differential cost
    (b)   Out-of-pocket cost
    (c)   Conversion cost

53. Variable cost per unit_____
   (a) Remains fixed
   (b) Fluctuates with the volume of production
   (c) Varies in sympathy with the volume of sales

54. Fixed cost per unit increases when _____
   (a) Production volume decreases
   (b) Production volume increases
   (c) Variable cost per unit decreases

55. Opportunity cost helps in_____
   (a) Ascertainment of cost
   (b) Controlling cost
   (c) Making managerial decisions

56. Conversion cost is the sum total of_____
   (a) Direct material cost and direct wages cost
   (b) Direct wages, direct expenses and factory overheads
   (c) Indirect wages and factory overheads

57. Direct costs are _____
   (a) Costs which can be identified with a cost centre but not identified to a single cost unit.
   (b) Costs incurred as a direct result of a particular decision.
   (c) Cost incurred which can be attributed to a particular accounting period.
   (d) None of the above

58. The following is cost of direct materials
   (a) Freight charges
   (b) Grease
   (c) Coolant
   (d) Cotton waste

59. The payment made to the following is cost of direct labour.
   (a) Machinist
   (b) Supervisor
   (c) Inspector
   (d) Sweeper

60. The payment made to the following is cost of indirect labour.
   (a) Time keeper
   (b) Welder
   (c) Moulder
   (d) Turner

Ans. (1)(a), (2)(a), (3)(b), (4)(c), (5)(b), (6)(b), (7)(c), (8)(a), (9)(b), (10)(c), (11)(b), (12)(b), (13)(a), (14)(c), (15)(d), (16)(d), (17)(e), (18)(a), (19)(c), (20)(b), (21)(b), (22)(a), (23)(c), (24)(a), (25)(a), (26)(b), (27)(a), (28)(d), (29)(b), (30)(d), (31)(c), (32)(d), (33)(d), (34)(c), (35)(b), (36)(d), (37)(b), (38)(a), (39)(b),(40)(a), (41)(b), (42)(b), (43)(d), (44)(a), (45)(b), (46)(b), (47)(d), (48)(d), (49)(b), (50)(a), (51)(c), 52(a), 53(b), 54(a), 55(c), 56(b), 57(d), 58(a), 59(a), 60(a).

II   Short Answer Type Questions:

1   Write short notes on the following

    (a)   Cost Centre
    (b)   Responsibility Accounting
    (c)   Standard Costing
    (d)   Transfer pricing
    (e)   Variable costing
    (f)   Opportunity Costs

2   What are methods of costing? Difference between cost reduction and cost control?

3   Briefly explain Out-of-the-pocket cost

4   What is bin cards?

5   What is meant by 'EOQ'?

6   What is buffer stock?

7   Write short notes on
    (a)   FIFO
    (b)   LIFO

8   What is ABC analysis?

9   What is the use of Batch Costing?

10   What do you mean by just in time (JIT) inventory system?

11   Differentiate idle time and overtime premium in cost accounting.

12   Write a short note on Cost Ledger Control Account.

13.   Differentiate the following:
    (a)   Controllable cost and Uncontrollable cost
    (b)   Escapable and Inescapable Cost
    (c)   Differential, incremental or Decremental Costs

14.   What do you mean by work cost?

15.   Describe the advantages of bincard

16.   What do you mean by apportionment of overheads/

17.   What is Halsery Plan of payment of wages

18.   Why the statement of reconciliation of profit is prepared?

19.   What are the requirements of an efficient system of material control?

20.   What is a stores Ledger?

21.   What are the various methods of pricing materials issues?

22.   What is reorder level?

23. What is 'Perpetual Inventory System'?
24. Distinguish between direct and indirect labour.
25. What is idle time? Give reasons for Idle time.
26. What do you mean by labour turnover?
27. Distinguish between normal and abnormal idle time.
28. Define by example the following terms:
    (a) Allocation of overheads
    (b) Apportionment of overheads
    (c) Absorption of overheads
29. Write a short note on "Job Cost Sheet".
30. Explain Job Costing.
31. What are the main features of cost-plus contracts?
32. What is a "Log Sheet"?
33. Mention the method of costing used by following organization: a. Brick works b. Textile production c. Goods transport d. Ship buildings e. Power generation.
34. Write the objectives of service costing in a transport industry?
35. Write difference between fixed cost and variable cost?
36. Briefly explain how under-absorption and over-absorption is treated in cost of accounts?
37. What is the difference between bin cards and store ledgers?
38. How labor turnover is measured? What are the effects of labor turnover on cost of production?
39. Give steps in applying Activity Based Costing in a manufacturing firm?
40. What is Equivalent production
41. A customer has been ordering 60,000 special design metal columns at the columns at the rate of 18,000 per order during the past years. The production cost comprises 120 for material, ₹ 60 for labour and ₹ 20 for fixed overheads. It costs ₹ 1500 to set up for one run of 18,000 column and inventory carrying cost is 15% since this customer may buy at least 5000 columns this year, the company would like to avoid making five different production runs. Find the most economic production run.
42. AB Ltd.is committed to supply 24,000 bearings per annum to CD Ltd. On a steady basis. It is estimated that it costs 10 paise as inventory holding cost per bearing per month and that the set-up cost per run of bearing manufacture is ₹ 324.
    (a) What would be the optimum run size for bearing manufacture?
    (b) What is the minimum inventory holding cost at optimum run size?
    (c) Assuming that the company has a policy of manufacturing 6000 bearing per run, how much extra costs would the company be incurring as compared to the optimum run suggested in (a)?
43. Explain the features of integrated accounting system.
44. "The term 'cost' must be qualified according to its context". Discuss this statement referring to important concepts of cost.
45. What do you mean by elements of cost? Discuss the various elements of cost.

III   Long Answer Type Questions:

1   Explain the advantages of ABC analysis as a technique of inventory control.

2   Explain the type of responsibility centers.

3   Discuss different methods of transfer pricing.

4   What are different types of Labor variances? How they are calculated and dealt with?

5   What are the various circumstances under which material price and material usage variance are likely to arise?

6   Explain the principles involved in taking profits on incomplete contracts.

7   What is "Job Costing"? Specify some industries where this system is suitable.

8   What are Cost sheets? In what respects do they differ from a working of production account.

9   What do you mean by over-absorption and under-absorption of overheads? How would you dispose of under and over-absorbed costs?

10   Explain various methods of wage payment, and also describe any two incentive schemes.

11   What factors have to be considered for adopting a method for the pricing of materials in the light of these and other relevant factors? Give a comparative description of LIFO and FIFO.

12   What do you understand by 'Cost Plus Contract' and 'Escalator Clause' on contract costing.

13   (a) Define 'Joint products', 'by products' and give examples of each.
      (b) Explain the various ways for apportioning joint costs to joint products?

14   Differentiate between Job costing and Process costing.

15   Distinguish between normal and abnormal wastage of materials with special reference
to   their accounting treatment and control.

16   Enumerate the factors to be considered in fixing the re-order level of a raw material
item.

17   Define productivity. "Higher productivity does not result in lower costs or increase in efficiency." Give your comments.

18   What are the basic considerations which govern remuneration of workers? Name the various factors that are taken into account for determining wages level as well as individual worker's remuneration.

19   What is meant by idle time and state the accounting treatment which ought to be made
in   respect of idle time relating to direct production personnel.

20   Explain how will you treat the following items in cost accounts:
      (a)   Trade and cash discount on purchase of materials
      (b)   Data processing cost
      (c)   Cost of tools
      (d)   Bad debts

21.   What are the various methods of payment of wages?

22.   How the determination of different level of stock is helping the management in controlling the cost.

23.   What do you mean by economic order quantity? How it is calculated and what are its advantages.

24. Describe those factors which are causing the difference in profits shown by financial books and costing books.
25. What are the accounting practices followed to transfer the profit on incomplete contracts in the profit and loss account for a concern financial year?
26. State the salient features of operating costing?
27. What is composite Unit? Give three examples?
28. Describe the conditions which necessitate reconciliation financial and cost records.
29. Write a note on "Memorandum Reconciliation Statement".
30. How will you treat profit on incomplete contracts in cost accounting?
31. What are the requisites of a good method of absorption of overheads?
32. Explain Blanket and departmental overhead rate.
33. Explain the costs associated with labour turnover?
34. What do you understand by material control system? Briefly discuss perpetual inventory system of material control?
35. What area the different ways in which costs may be classified? Discuss the significance of each of these classifications.
36. Distinguish between Controllable cost and Uncontrollable cost? Give examples.
37. Explain normal and abnormal losses. How do you treat this in cost accounts?
38. What do you mean by absorption of overheads? Discuss the different methods for the absorption of factory overheads?
39. Distinguish between Activity based costing and Traditional based costing?
40. What is idle time? What is difference between idle time and idle capacity? How Idle Time is treated in cost accounts?
41. State the advantages that may be derived from a sound system of cost accounting.
42. Cost accounting assists: (a) in controlling efficiency; (b) in pricing products; and (c) in providing a basis for operating policy. Amplify these points, giving reasons for your views.
43. Explain the significance of decision-making costs. Briefly explain the various type of costs used by the management in decision-making.
44. Explain what is 'minimum level', 'maximum level', 'ordering level', quantity. How are they determined?
45. Perpetual inventory is a method of maintaining records, whereas continuous stock taking involves physical checking of those records with actual stock. Comment.

IV   Practical Questions:

1   The following particulars have been extracted from the books of M. Manufacturing Co. Ltd., Calcutta, for the year ended on 31st March 2008

Stock of material as on 31-3-2007	47,000
Stock of material of 31-3-2008	5,0000
Material purchased	208,000
Drawing office salaries	9600
Counting house salaries	14,000
Carriage inward	8200
Carriage outward	5100
Cash discount allowed	3400
Bad debts written off	4700

Repair of plant, machinery and tools	10600
Rent, rates, taxes and insurance (factory)	3,000
Rent, rates, taxes and insurance (office)	1,000
Travelling expenses	3100
Travellers salaries and commission	8400
Production wages	14,0000
Depreciation written off on machinery, plant and tools	7100
Depreciation written off on furniture	600
Director's fee	6,000
Gas and water charges (factory)	1500
Gas and water charges (office)	300
General charges	5,000
Manager's salary	12,000

Out of 48 working hours in a week, the time devoted by the manager to the factory and office was on average 40 hours, respectively, throughout the accounting year.

Prepare a statement giving the following information:

 (a) Prime cost

 (b) Factory overheads and percentage on production wages,

 (c) Factory cost,

 (d) General overheads and percentage on factory cost.

 (e) Total cost

 Ans. **Prime Cost-Rs.353200, Factory Cost-Rs.395000, Cost of Production-Rs.423900, Total Cost-Rs. 445200**

2 Prepare a store ledger account from the following information adopting FIFO, LIFO and HIFO method of pricing of issues of materials:

2008	Particulars
March 1	Opening balance 500 tonnes @ Rs. 200
March 3	Issues Deptt. 70 tones
March 4	Issues Deptt A 100 tonnes
March 8	Issued Deptt. A 80 tonnes
March 13	Received from supplier 200 tonnes @ Rs. 190
March 14	Returned from Department A 15 tonnes
March 16	Issued Deptt B 180 tonnes
March 20	Received from supplier 240 tonnes @ Rs. 195
March 24	Issued Deptt B 180 tonnes
March 25	Received from supplier 320 tonnes @200
March 26	Issued Deptt B 115 tonnes
March 27	Returned from Deptt B 35 tonnes
March 28	Received from supplier 100 tonnes @ Rs. 200

3   The following particulars are available for a company:

Reorder quantity	1,500 Units
Normal consumption	300 units per week
Minimum consumption	250 units per week
Maximum consumption	400 units per week
Re-order period	4 to 6 weeks

Compute the following:

(a)   Re-order level
(b)   Minimum level
(c)   Maximum level
(d)   Average stock level

Ans.   (a) Rs.2400 units, (b) 900 units,   (c) 2900 units, (d) 1900 units

4 (a)   EXE limited has received an offer of quantity discounts on its order of materials as under:

Price per tone (Rs.)	Tonnes
1,200	Less than 500
1,180	500 and less than 1000
1,160	1,000 and less than 2,000
1,140	2,000 and less than 3,000
1,120	3,000 and above

The annual requirement for the material is 5,000 tonnes. The ordering cost per order is   Rs. 1,200 and the stock holding cost is estimated at 20% of material cost per annum. You   are required to compute the most economical purchase level.

 (c)   What will be your answer to the above question if there are no discounts offered and the   price per tonne is Rs. 1500.

Ans: (a)   Most economic order quantity – 1000 tonnes.
        (b)   Economic order quantity – 200 tonnes.

5   From the following information you are required to calculate maximum level, minimum level and ordering level for material X and Y:

Material	X	Y
Normal usage per week	150	200
Reordering quantity	900	1500
Maximum usage per week	225	250
Minimum usage per week	75	100
Reordering period (Weeks)	12 to 18	6 to 12

Ans: (a) Maximum level: X 4,050 units, Y 3,900 units
(b) Minimum level: X 1,800 units, Y 1,200 units
(c) Reordering level: X 4,050 units, Y 3,000 units

6   From the details given below, calculate:
    (i)   Reordering level
    (ii)   Maximum level
    (iii)   Minimum level
    (iv)   Danger level

Reordering quantity is to be calculated on the basis of following information:
Cost of placing a purchase order is Rs. 20
Number of units to be purchased during the year is 5000.
Purchase price per unit inclusive of transportation cost is Rs. 50.
Annual cost of storage per unit is Rs. 5.
Details of lead time: Average 10 days, maximum 15 days, Minimum 6 days and for emergency purchases 4days.
Rate of consumption: Average = 15 units per day and maximum = 20 units per day.
Ans: (i) 300 units (ii) 440 units (iii) 150 units (iv) 60 units

7   Calculate the earnings of a worker under (i) Halsey plan and (ii) Rowan plan from the following particulars

    i.   Hourly rate of wages guaranteed 0.50 paise per hour.
    ii.   Standard time for producing one dozen articles – 3 hours
    iii. Actual time taken by the worker to produce 20 dozen articles – 48 hours

    Ans: (i) Halsey plan: Rs. 27 (ii) Rowan plan: Rs. 28.80

8   A worker under the HALSEY METHOD of remuneration has a day rate of Rs.12 per week of 48 hours Plus a cost of living bonus of 10 paise per hour work. He is given an 8

hour task to perform which he accomplishes in 6 hours He is allowed 30% of the time saved as premium bonus. What would be his total hourly rate of earnings and what difference would it make if he were paid under the Rowan method?

Ans.   37.5 paise hourly rate under halsey method, Earning for 6 hours- 2.25 Rs.

Ans.   41.17 paise hourly rate under Rowan method,
Earning for 6 hours- 2.47 Rs.

9   A company has 20 vehicles, which capacities are as follows:

No. of Vehicles	Capacity per vehicle
5	9 tonne
6	12 tonne
7	15 tonne
2	20 tonne

The company provides the goods transport service between stations 'A' to station 'B'. Distance between these stations is 200 kilometers. Each vehicle makes one round trip per day an average. Vehicles are loaded with an average of 90 percent of capacity at the time of departure from station 'A' to station 'B' and at the time of return back loaded with 70 per cent of capacity. 10 per cent of vehicles are laid up for repairs every day. The following informationare related to the month of October 2008:

Salary of transport manager	Rs. 30,000
Salary of 30 drivers	Rs. 4,000 each driver
Wages of 25 helpers	Rs. 2,000 each helper
Wages of 20 Labourers	Rs. 1,500 each labourer
Consumables stores	Rs. 45,000
Insurance (Annual)	Rs. 24,000
Road License (Annual)	Rs. 60,000
Cost of diesel per litre	Rs.35
Kilometers run per litre each vehicle	5 Km.
Lubricant, oil etc.	Rs. 23,500

Cost of replacement of tyres, tubes other parts etc.	Rs.1,25,000
Garage rent (Annual)	Rs. 90,000
Transport technical service charges	Rs. 10,000
Electricity and gas charges	Rs. 5,000
Depreciation of vehicles	Rs.2,00,000

There is a workshop attached to transport department which repairs these vehicles and other vehicles also. 40 per cent of transport manager's salary is debited to the workshop. The transport department is charged Rs. 28,000 for the services rendered by the workshop during October 2008. During the month of October, 2008 operation was 25 days.

You are required:

(i)   Calculate per tonne kilometer operating cost.
(ii)   Find out the freight to be charged per tone kilometer, if the company earned a profit of Rs. 25 per cent on freight.
(iii)

Ans: (i) Cost per ton-km Rs. 1.022 (ii) Chargeable freight per ton-km - Rs. 1.36

10   The Hindustan construction company Ltd. Have undertaken the construction of a bridge over the river Yamuna for the Municipal Corporation. The value of the contract is Rs. 125,0000, subject to retention of 20% until one year after the certified completion of the contract, and the final approval of the corporation's engineer. The following are the details as shown in the books on 30th June, 2007:

(Figures in Rs.)

Labor on site	405,000
Material direct to site less return	42,0000
Material from store	81200
Hire and use of plant-plant upkeep account	12100
Direct Expenses	23,000
General overheads allocation to the contract	37100
Material in hand on June 30,2007	6300
Wages accrued on June 30,2007	7800
Direct expenses on June 30, 2007	1600

Work not yet certified at cost	16500
Amount certified by the Corporation Engineer	11,00000
Cash received on account	88,0000

Prepare (a) Contract Account, (b) Contractee's Account and (c) how the relevant items would appear in the balance sheet.

Ans.   Profit P&L=Rs.72800, Total of Contract A/C- Rs.1059800

11   Goodwill Ltd. commenced a contract on 1ˢᵗ January, 2005. The total contract was for Rs. 10,00,000 (estimated by the contractee) and was accepted by Goodwill at 10% less. It was decided to estimate the total profit and to take to the credit of P& L Account that proportion of estimated profit on cash basis which the work completed bore to the total contract. Actual expenditure in 2005 and estimated expenditure in 2006 are given below:

	2005(Actual)	2006(Estimated)
Materials	1,50,000	2,60,000
Labour: Paid	1,00,000	1,20,000
Accrued	10,000	-
Plant purchased	80,000	-
Expenses	40,000	71,000
Plant returned to store on (cost)	20,000	50,000
	(31 Dec.)	(on 30.09.06)
Material at site	10,000	-
Work certified	4,00,000	Full
Work Uncertified	15,000	-
Cash received	3,00,000	Full

The plant is subject to annual depreciation @ 20% of cost. The contract is likely to be completed on 30ᵗʰ September, 2006. Prepare the Contract account.

12   Late in 2007, a Company Set up a Factory Overhead Absorption rate of 84% of direct labour cost based on the following budget:
    (a)   Factory overhead cost- 75600Rs.
    (b)   Direct labour hours- 60000
    (c)   Labour rate per hour- Rs. 1.5
    (d)   Direct Labour Cost- Rs.90000

Early in 2008, the method of operation was changed. The new Operation require labour that will be paid Rs. 1.75 per hour. The operating time would be reduced by 20%. What steps should be taken by the company's cost accountant to meet the situation?

Ans. **The company cost accountant should charge factory overhead at 90% of direct labour cost in 2008 as compared to 84% in 2007.**

13 In a machine shop, the machine hour rate, worked out at the beginning of a year on the basis of 13-week period which is equal to 3 calendar months. The following estimates for operating a machine are relevant:

Total working hours available per week	48 hours
Maintenance time included in above	2 hours
Setting up time included in above	2 hours

Cost details

Operator's wages p. m	
Supervisory salary p.m	(Common supervisor's for three machines)
W. D. V. of machine	(Dep. at 10% plus 2% on an average for extra shift allowance)
Repairs and maintenance p.a.	
Consumable stores p. a	
Rent, rates and taxes	(for the quarter apportioned)

Power consumed @ 15 units per hour @ 40 paise per unit. Power required for productive time but no power is required for setting up jobs.

14 In a manufacturing unit, factory overhead was recovered at a predetermined rate of Rs. 25 per man day. The total factory overhead expenses incurred and the man days actually worked were Rs. 41.50 lakhs man days respectively. Out of the 40,000 units produced during a period, 30,000 units were sold. On analyzing the reasons, it was found that 60% of the unabsorbed overheads were due to defective planning and rest were attributable to increase in overhead costs. How would unabsorbed overheads be treated in cost accounts?

Ans: Supplementary overhead rate: Rs. 4 per unit

15 The following particulars refer to process used in the treatment of material subsequently incorporated in a component forming part of an electrical appliance.

(a) the original cost of the machine used (purchased in June 1998) was Rs. 10000. Its estimated life is 10 years. The estimated scrap value at the end of its life is Rs. 1000

and the estimated working time per year (50 weeks of 44 hours) is 2200 hours of which machine maintenance etc. is estimated to take up 200 hours

(b) Electricity used by the machine during production is 16 units per hour at cost of 9 Rs. Per unit. No current is taken during maintenance or setting up.

(c) The machine requires a chemical solution which is replaced at the end of week at a cost of Rs. 20 each time.

(d) The estimated cost of maintenance per year is Rs. 1200.

(e) Two attendants control the operation of the machine together with five other identical machines. Their combined weekly wages, insurance and employer's contributions to holiday pay amount to Rs. 120.

(f) Departmental and general works overheads allocated to this machine for the current year amount of Rs. 2000.

You are required to calculate the machine hour rate necessary to provide for recoupment of the cost of operating the machine.

16   The following figures have been extracted from the Financial Accounts of manufacturing firm for the first year of operation:

	Rs.
Direct material consumption	50,00,000
Direct wages	30,00,000
Factory overheads	16,00,000
Administrative overheads	7,00,000
Selling and distribution overheads	9,60,000
Bad debts	80,000
Preliminary expenses written off	40,000
Legal charges	10,000
Dividends received	1,00,000
Interest received on deposits	20,000
Sales (1,20,000 units)	1,20,00,000
Closing stocks:	
Finished goods (4,000 units)	3,20,000
Work-in-progress	2,40,000

The cost accounts for the same period reveal that the direct material consumption was Rs. 56,00,000. Factory overhead is recovered at 20% on prime cost. Administrative overhead is recovered at Rs. 6 per unit of production. Selling and distribution overheads are recovered at Rs. 8 per unit sold. Prepare the profit and loss accounts both as per financial records and as per cost records. Reconcile the profits as per the two records.

Ans: Profits as per financial records Rs. 12,90,000.

17   A firm is able to obtain quantity discounts on its order of material as follows:

Price per ton	Tonnes	Price per ton	Tonnes
Rs. 6.00	Less than 250	Rs. 5.70	2,000 and less than 4,000
Rs. 5.90	250 and less than 800	Rs. 5.60	4,000 and over
Rs. 5.80	800 and less than 2,000		

The annual demand for the material is 4,000 tonnes. Stock holding costs are 20% of material cost per annum. The delivery cost per order is Rs. 6.00. You are required to calculate the best quantity to order.

18 In a company, weekly minimum and maximum consumption of material A are 25 and 75 units respectively. The reorder quantity as fixed by the company is 300 units. The material is received within 4 to 6 weeks from issue of supply order.

  Calculate minimum level and maximum level of material A.

Ans. Minimum Stock Level = = 200 units, Maximum Stock Level = 650 units

19   The following information is provided by Sunrise Industries for the fortnight of April, 2007:

Stock on 1-4-2007 100 units at Rs.5 per unit

	Purchases		Issues
5-4-2007	300 units at Rs.6	6-4-2007	250 units
8-4-2007	500 units at Rs.7	10-4-2007	400 units
12-4-2007	600 units at Rs.8	14-4-2007	500 units

Required:

(i)   Calculate using FIFO and LIFO methods of pricing issues:
(a)   the value of materials consumed during the period, **(Ans. FIFO: 7,800, LIFO: 8,300)**
(b)   the value of stock of materials on 15-4-2007. **(Ans. FIFO: 2,800, LIFO: 2,300)**
(ii)   Explain why the figures in (a) and (b) in part (i) of this question are different under the two methods of pricing of material issues used. You need not draw up the stores ledgers.

20   Ina light engineering factory, the following particulars have been collected for the three monthly period ending 31st December 1994. Compute the departmental overhead rates for each of the production department assuming that overheads are recovered as a percentage of direct wages:

Item	Production deptts			Service deptts.	
	A	B	C	D	E
Direct wages Rs.	2,000	3,000	4,000	1,000	2,000
Direct materials Rs.	1,000	2,000	2,000	1,500	1,500
Staff No. s	100	150	150	50	50
Electricity kwh	4,000	3,000	2,000	1,000	1,000
Light points No. s	10	16	4	6	4
Asset value Rs.	60,000	40,000	30,000	10,000	10,000
Area occupied Sq. yards	150	250	50	50	50

The expenses for the period were:

Motive power	550
Lighting power	100
Stores overhead	400
Amenities to staff	1,500
Depreciation	15,000
Repairs and maintenance	3,000
General overheads	6,000
Rent and taxes	275

Apportion the expenses of service deptt E proportionate to direct wages and those of deptt. D in the ratio of 5:3:2 to deptt A, B and C respectively.

(**Ans. Rates of overhead absorption:**

Production department A: (12,443 / 2,000) x 100 = 622.15%

Production department B: (10,523 / 3,000) x 100 = 350.77%

Production department C: (9,859 / 4,000) x 100 = 246.47%)

21   The following information for the month of April is extracted from the cost records of B&B Ltd. which specializes in the manufacture of automobile spares. The parts are manufactured in Deptt. A and assembled in Deptt. B:

	Total	Deptt A	Deptt. B
Direct material	65,000	50,000	15,000
Direct labour	90,000	40,000	50,000
Factory rent	15,000		
Supervision	6,000	2,500	3,500
Depreciation on machines	5,000		
Power	4,000		
Repairs to machines	2,000	1,600	400
Indirect labour	4,000	2,000	2,000
Direct labour hours worked	80,000	30,000	50,000
Machine hours worked	30,000	25,000	5,000
Machine horse power (H.P.)	400	353	47
Book value of machines (Rs.)	50,000	40,000	10,000
Floor space (sq. ft.)	20,000	10,000	10,000

The prime cost of Batch 401 has been booked as under:

	Total	Deptt. A	Deptt. B
Materials	3,200	2,700	500

Labour	7,500	3,000	4,500

Direct labour hours worked on batch B 401 were 2,500 in deptt. A and 5,000 in deptt. B. Machine hours worked in this batch were 1,250 in deptt. A and 600 in deptt. B. Allocate overhead expenditure and calculate the cost of each unit in Batch 401 which consists of 1,000 units.

(Ans. Cost of each unit = 13,681 / 1,000 = Rs. 13.68)

22 A factory uses a job costing system. The following data are available from books at the year ending 31st March 1999:

Direct Material	Rs. 9,00,000	Selling & Distribution Overhead	Rs.5,25,000
Direct Wages	7,50,000	Administrative Overhead	4,20,000
Profit	6,09,000	Factory Overhead	4,50,000

Required:

(a) Prepare a Cost Sheet indicating the

(i) Prime Cost, **(Ans.16,50,000)**

(ii) Works Cost, **(Ans.21,00,000)**

(iii) Production Cost, **(Ans.25,20,000)**

(iv) Cost of Sales **(Ans.30,45,000)**

(v) Sales Value. **(Ans.36,54,000)**

(b) in 1999-2000, the factory has received an order for a number of jobs. It is estimated that the direct materials would be Rs.12,00,000 and direct labour would cost Rs.7,50,000. What would be the price for these jobs if the factory intends to earn the same rate of profit, on sales, assuming that the selling and distribution overhead has gone up by 15%? The factory recovers factory overhead as a percentage of direct wages and administrative and selling and distribution overhead as a percentage of works cost, based on the cost rates prevalent in the previous year. **(Ans. 42,84,000)**

23 A truck starts with a load of 10 tonnes of goods from station P. It unloads 4 tonnes at station Q and rest of the goods at station R. It reaches back directly to station P after getting

reloaded with 8 tonnes of goods at station R. The distances between P to Q, Q to R and then from R to P are 40 km, 60 km and 80 km respectively. Compute

(a) Absolute tone-km and **(Ans.** 1,400 tonne-km)

(b) Commercial tone-km. **(Ans.** 1,440 tonne-km)

24   Fast Roadway runs 10 buses between two suburban centers which are 25 kilometers apart. Seating capacity of each bus is 30 passengers. The expenses for the month of November 1994 were as under:

Salaries of Drivers and Conductors	Rs. 60,000
Salaries of Mechanical Staff	6,000
Diesel Oil and Lubricants	40,000
Taxes, Insurance, etc.	5,200
Repairs, and Maintenance	8,000
Depreciation	32,000

Seating capacity utilized was 60%.
All the buses ran 25 days of the month.
Each bus made four round trips daily.

(a) Find out the cost per passenger-km and the cost per round trip per passenger. **(Ans.** Rs. 0.168 and Rs. 8.40)

(b) What would have been the cost per round trip per passenger, if the seating capacity utilization were to go up to 80%? **(Ans.**Rs.6.30)

(c) What would have been the cost per round trip per passenger, if all the expenses (other than depreciation) were to go up by 20% at a seating capacity utilization of 80%? **(Ans.**Rs.7.30)

25   S has been promised a contract to run a tourist car on a 20-km long route for the chief executive of a multinational firm. He buys a car costing Rs. 1,50,000. The annual cost of insurance and taxes are Rs. 4,500 and Rs. 900 respectively. He has to pay Rs. 500 per month for a garage where he keeps the car when not in use. The annual repair costs are estimated at Rs. 4,000. The car is estimated to have a life of 10 years, at the end of which the scrap value is likely to be Rs. 50,000. He hires a driver who is to be paid Rs. 300 per month plus 10% of the takings as commission. Other incidental expenses are estimated at Rs. 200 per month. Petrol and oil will cost Rs. 100 per 100 kms. The car will make 4 round trips each day. Assuming that a profit of 15% on takings is desired and that the car will be on the road for 25 days on an average per month, what should be the charge per round trip? **(Ans. Rs. 88.22)**

26. From the following information, prepare a monthly cost sheet of XYZ Brick Works, showing Cost and Profit per 'S' brick. (S= 1,000 bricks)

Material used:

Lime	895 tonnes at Rs. 500 per tone
Coal	825 tonnes at Rs. 300 per tone
Sand	Rs. 15 per S bricks made
Stores	Rs. 1,46,500

Labour:

Sand digging and running	Rs. 1,00,000
Bricks making	Rs. 4,00,000
Factory O/H	25% on direct charges
Office O/H	10% on direct charges
Bricks sold	3,500 S @ Rs. 550 per S
Opening stock of bricks	100S
Closing stock of bricks	600 S

(Ans. Cost of S brick: 473.0125, Profit per 'S' brick: 76.9875)

27. A transport service company is running four buses between two towns, which are 100 miles apart. The seating capacity of each bus is 40 passengers. The following particulars are available for October 2013:

	Rs.
Wages of drivers, conductors and cleaners	48,000
Salaries of office staff and inspectors	20,000
Diesel and lubricants	80,000
Repairs and maintenance	16,000
Road tax and insurance	32,000
Depreciation	52,000

Interest and other charges	40,000

Actual passengers carried were 75% of the capacity. All the buses ran for 30days. Each bus made one round trip per day. Calculate cost per passenger mile.

(Ans. Cost per passenger mile 0.40)

28. In a factory, Ahaan is a worker who is paid the basic wage of Rs. 10000 per month plus a dearness allowance of Rs 4000. The average working days in a month are 25 of 8 hours each. The attendance record of Ahaan for a week is as follows:

      a. Monday   11 hours
      b. Tuesday   09 hours
      c. Wednesday   08 hours
      d. Thursday   08 hours
      e. Friday   11 hours
      f. Saturday   08 hours

Compute the overtime wages due to Ahaan.

(Ans. Rs. 980)

29. Calculate machine hour rate from the following data:

    Cost of Machine   Rs. 116000
    Estimated Scrap Value   Rs. 16000
    Estimated working life   Hrs. 20000
    Estimated maintenance cost during working life of Machine   Rs. 2400
    Power used per machine   Rs. 1 per hour
    Rent rates per month (10% to be charged to machine)   Rs. 3000
    Normal machine running hours during a month   180
    Standing charges other than rent, rates etc. per month   Rs. 400

(Ans. Machine Hour Rate: - 10.01)

30. Following information is extracted from the job ledger in respect of Job no. 123:
      a. Materials: Rs. 6800
      b. Wages 80 hours @ 5 Per hour
      c. Variable overheads incurred for all jobs Rs. 10000 for 4000 Labour hours
         Find out the profit if the job is billed for Rs. 9000

(Ans. RS. 1600)

31. The following was the expenditure on the contract for Rs. 6,00,000. Work commenced on 1st January,2015:
Materials   Rs. 1,30,000
Wages   Rs. 1,44,000

| Plant | Rs. | 20,000 |
| Other Expenses | RS. | 18,600 |

Cash received on account was Rs. 2,40,000, being 80% of work certified. Value of materials on hand at 31st December, 2015 was Rs. 10,000. Plant is to be depreciated @10%. Prepare Contract account for 2015, showing the profit to be credited to Profit and Loss account.

(Ans. Profit to be credited to P&L A/C : Rs. 8,213)

32. M/s Jain & Sons is a firm of Govt. Contractors. It took a contract for Rs. 5,00,000 on 1st Jan. 2010 and incurred the following expenses on it up to 31st Dec. 2010:

	Rs.
Materials Purchased	62,500
Materials issued from stores	45,000
Plant issued	30,000`
Wages paid	65,000
Outstanding wages	14,500
Office expenses	10,500

Cash received up to 31st Dec. 2010 amounted to Rs. 2,10,000 being 75% of the work certified. Materials valued Rs. 6,000 and plant costing Rs. 5,000 were destroyed due to fire in the depot. On 31st Dec. 2010, plant costing Rs. 5,000 returned to stores and the materials coting Rs. 5,000 were sold for Rs. 8,000. He cost of work done but uncertified was Rs. 15,000, Materials at site were valued at Rs. 8,000. Charge depreciation @10% on plant, reserve ¼ of profit received, transfer ¾ of profit received to P&L a/c and prepare Contract Account. Also, prepare work in progress A/c and Balance Sheet.

(Ans. Profit to be c/f to B/S: 64,125)

UNIT - III

Multiple Choice Questions:

1   One of the following statements is not a benefit of budgeting
   (a)   One of the following statements is not a benefit of budgeting
   (b)   It forces managers to think and plan for the future
   (c)   It helps with allocating resources to places where they are needed
   (d)   It means that in all cases budgets are not based on previous ones

2   Which one of the following is not a criticism that has been made of budgets
   (a)   Budgets concentrate on events that are easy to measure
   (b)   Benchmarking is a not a valid alternative to some of the functions of budgets
   (c)   Activities covered by budgets become institutionalized
   (d)   Budgets hinder any response by the organisation to uncertainty

3   A flexible budget is defined as
      (a)   A budget of variable production costs only
      (b)   A budget which shows the costs and revenues at different levels of activity
      (c)   A budget which is prepared using a computer spreadsheet model
      (d)   A budget which is updated with actual costs and revenues as they occur during
              the budget period

4   The master budget comprises
      (a)   The budgeted profit and loss account
      (b)   The capital expenditure budget
      (c)   The budgeted profit and loss account, budgeted, cash flow and budgeted balance
              sheet
      (d)   The budgeted cashflow

5   One of the following statements is untrue regarding labour standards
      (a)   The standard labour cost should not make an allowance for holidays
      (b)   Pension and NIC costs should always be included
      (c)   Sometimes an average wage rate is used for groups of workers
      (d)   The standard cost should make allowance for meal breaks

6   Which one of the following is not an aim of standard costing
      (a)   To find someone to blame
      (b)   To investigate the cause of significant variances
      (c)   To remedy problems
      (d)   To try and ensure that it doesn't happen again

7   One of the following would not be considered a good feature of the balanced scorecard
      (a)   Immediate feedback
      (b)   A large number of performance measures
      (c)   A number of non-financial measures
      (d)   An employee is only held responsible for what he/she can influence

8   One of the following is not a feature of responsibility accounting
      (a)   It prevents things "falling between" people
      (b)   Each line item in the budget is made the responsibility of one of the managers
      (c)   One of the purposes is to penalize managers for missing targets
      (d)   The managers should correct any unfavourable variances on their own initiative

9   Which one of the following is not a basic premise of responsibility accounting
      (a)   Budget data can be a basis for evaluating performance
      (b)   Costs can be organized in levels of management responsibility
      (c)   Managers are only made responsible for costs under their control

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(d)   The managers in all cases must participate in the setting of the budget

10   The scarce factor of production is known as
(a)   Key factor
(b)   Limiting factor
(c)   Critical factor
(d)   All of the above

11.   What term is given to the idea that traditional budgeting should be replaced by a new
type   of budgeting
(a)   Beyond budgeting
(b)   Flexible budgeting
(c)   Better budgeting
(d)   Behavioral budgeting

12.   The basic difference between a static budget and a flexible budget is that

(a)   A flexible budget considers only variable costs, but a static budget considers all
costs
(b)   Flexible budgets allow management latitude in meeting goals, whereas a static
budget is based on a fixed standard
(c)   A static budget is for an entire production facility, but a flexible budget is
applicable only to a single department
(d)   A static budget is based on one specific level of production and a flexible budget
can be prepared for any production level within a relevant range

13.   A hospital boiler house has a total budget cost allowance for next year of Rs.600000,
based on a budgeted level of operation of 80% of maximum. Of the budgeted costs,

60%   are wholly fixed irrespective of the level of operation, the remaining 40% being

variable with the level of operation.

What will be the boiler house's total budget cost allowance for a level of operation of
84% of maximum?

(a)   Rs.612000
(b)   Rs.618000
(c)   Rs.630000

14.   The statements below relate to a month in which the fixed budget had a lower sale
volume than actual:
I   Actual sales volume equaled flexible budget sales volume
II   Flexible budget sales volume equaled fixed budget sales volume
III   The flexible budget variance for sales volume was favorable.

Which of the statements above is/are correct?

(a)   I only
(b)   II only
(c)   I and II only
(d)   II and III only

15.   Which of the following represents the normal sequence in which the below budgets are prepared

(a)   Sales, Balance Sheet, Income Statement
(b)   Balance Sheet, Sales, Income Statement
(c)   Sales, Income Statement, Balance Sheet
(d)   Income Statement, Sales, Balance Sheet

16.   In preparing a master budget, top management is generally best able to

(a)   Prepare detailed departmental-level budget figures
(b)   Provide a perspective on the company as a whole
(c)   Point out the particular persons who are to blame for inability to meet budget goals
(d)   Responses a, b and c are correct

17.   When preparing a production budget, the required production equals

(a)   Budgeted sales + beginning inventory + desired ending inventory
(b)   Budgetary sales – beginning inventory + desired ending inventory
(c)   Budgeted sales – beginning inventory – desired ending inventory
(d)   Budgeted sales + beginning inventory – desired ending inventory

18.   If a cost is a common cost of the segments on a segmented income statement, the cost should

(a)   Be allocated to the segment on the basis of segment sales
(b)   Not be allocated to the segments
(c)   Excluded from the income statement
(d)   Treated as a product cost rather than as a period cost

19.   A budget is all of the following, except

(a)   A system which helps to co-ordinate internal activities
(b)   A plan which will ensure the generation of future profits
(c)   A financial plan for the future
(d)   A system to integrate the operations for future activity

20.   For a budget to be useful and relevant for performance measurement it should satisfy all of the following, except

(a)   It will have been imposed from the highest level of management
(b)   It should have involved subordinate staff in the preparation
(c)   Will have been agreed by those being evaluated
(d)   It will be flexible for a range of possible activity volumes

21. Budgetary control involves all but one of the following
    (a) Modifying future plans
    (b) Analyzing differences
    (c) Using static budgets
    (d) Determining differences between actual and planned results

22. A static budget is useful in controlling costs when cost behavior is
    (a) Mixed
    (b) Fixed
    (c) Variable
    (d) Linear

23. Which of the following is not one of the objectives in utilizing standard costs?
    (a) To simplify costing procedures and expedite cost reports
    (b) To allow management to readily determine and focus attention on special problem areas.
    (c) To allow a measure of cost assuming ideal or perfect operating conditions
    (d) To provide a measure of budgeted cost for a single unit of activity

24. A technique which uses standards for costs and revenues for the purpose of control through variance analysis is called:
    (a) Variance accounting
    (b) Standard costing
    (c) Budgetary control
    (d) Performance analysis

25. A predetermined calculation of how much costs should be under specified working conditions is called:
    (a) Standard cost
    (b) Estimated cost
    (c) Predetermined cost
    (d) Actual cost

26. The management's time is saved by reporting only the deviations from the predetermined standards is called:
    (a) Management by objectives
    (b) Budgetary control
    (c) Standard costing
    (d) Management by exception

27. Actual costs can be compared with----- in order to evaluate performance
    (a) Actual revenue
    (b) Standard costs
    (c) Budgeted costs
    (d) Predetermined costs

28. The type of costing which is most suitable for cost control purposes is
    (a) Standard costing
    (b) Post costing
    (c) Continuous costing

29. Which of the following would most likely be included as part of manufacturing overhead for a company that makes tables?
    (a) Amounts paid to a worker who paints the table
    (b) Commission paid to the employees who sells the table
    (c) The cost of glue used in the table
    (d) The cost of the wood used in the table

30. Direct labour combined with manufacturing overhead is
    (a) A period cost
    (b) Conversion costs
    (c) Prime costs
    (d) A direct cost

31. Product costs are also called
    (a) Inventoriable costs
    (b) Discretionary costs
    (c) Selling costs
    (d) Administrative costs

32. Which of the following would be direct labour?
    (a) Custodians who work in the factory
    (b) Supervisors on the production line
    (c) The worker who puts the materials together
    (d) The quality inspectors of the finished products

33. Which of the following is not a manufacturing cost?
    (a) Indirect labor
    (b) Inexpensive materials, like glue or tape
    (c) Depreciation on a delivery truck
    (d) Depreciation on manufacturing equipment

34. Which of the following would be considered a direct material?
    (a) The plastic handle on the product
    (b) Materials, like glue or tape, that are difficult to tract
    (c) Depreciation on a delivery truck
    (d) Salaries for the inspector of the completed product

35. The distinction between direct and indirect costs depends on whether a cost
    (a) Is controllable or non-controllable
    (b) Can be conveniently traced to a product
    (c) Is included in manufacturing costs
    (d) Is paid weekly or monthly

36. Which of the following would always be a period cost?
    (a) Salary of the accountant at the plant
    (b) Salary of the inspection of the finished product
    (c) Salary of the janitor at the plant
    (d) Salary of the warehouse worker

37. Property taxes at the manufacturing plant is
    (a) A direct cost
    (b) A manufacturing overhead and period cost
    (c) A manufacturing overhead and product cost
    (d) A period cost – administrative

38. The cost of manufacturing finished goods inventory moves from the balance sheet to the income statement when
    (a) Direct materials are purchased
    (b) Production is finished
    (c) Finished goods are sold
    (d) Goods are moved from one work station to another

39. Product costs will be found on which financial statement(s)?
    (a) Income statement
    (b) Balance sheet
    (c) Both a and b
    (d) None of the above

40. Which of the following would need to be allocated to a product?
    (a) Direct material
    (b) Direct labour
    (c) All manufacturing product costs
    (d) Indirect manufacturing overhead costs

41. If Production increases in relevant range, the fixed cost per unit:
    (a) Increases
    (b) Decreases
    (c) Remain unchanged
    (d) None of the above.

42. The type of standard best suitable for cost control purpose is
    (a) Basic standard
    (b) Ideal standard
    (c) Normal standard
    (d) Expected standard

43. Volume variance arises because of:
    (a) Increase in overhead rate per hour;
    (b) Decrease in overhead rate per hour;
    (c) Increase or decrease in actual output as compared to the budgeted output;

(d)   Difference in budgeted overheads and actual overheads.

44.   The responsibility centres are classified as :
(a)   Cost centre and Profit centre
(b)   Profit centre and Investment centre
(c)   Cost centre and investment centre
(d)   Cost centre, profit centre and Investment centre

45.   Return on Investment increases when
(a)   Assets increases.
(b)   Cost decreases.
(c)   Cost increases.
(d)   Selling Price decreases.

46.   In responsibility accounting, internal reports are prepared on the basis of
(a)   Conversion Cost,
(b)   Variable Cost
(c)   Controllable cost,
(d)   Fixed Cost.

47.   Which of the following is not included in cost variances?
(a)   Material Variance,
(b)   Labour Variance
(c)   Overhead Variance
(d)   Sales Variance

48.   Material cost variance can be segregated between:
(a)   Mix Variance and Yield Variance
(b)   Usage Variance and Mix Variance
(c)   Price Variance and Usage Variance
(d)   None of the above

49.   PQR Ltd. shows required production of 120 units of product for the month and direct labour per unit is 3 hours @ Rs. 12 per hour. Budgeted labour costs for the month should be:
(a)   360 hours
(b)   Rs. 1,440
(c)   Rs. 4,320
(d)   Rs. 5,346

50.   ROI is 30% and Assets Turnover is 1.5. The profit Margin for the firm is:
(a)   20%
(b)   45%
(c)   31.5%

(d)   28.5%

51.   The concept of budget that requires all levels to work from scratch is
        (a)   Flexible budget
        (b)   Total budget
        (c)   Master Budget
        (d)   Zero base budgets

52.   A variable such as activity that causes cost over a given time is
        (a)   Cost driver
        (b)   Cost behavior
        (c)   Cost centre
        (d)   None of these

53.   In the context of standard costing, basic standards are established for
        (a)   Short period
        (b)   Current Period
        (c)   Identified Period
        (d)   Pre- defined period

54.   What may be the principle budget factor in case of Plant?
        (a)   General shortage of power
        (b)   Shortage of experienced salesman
        (c)   Insufficient capacity
        (d)   All of these

55.   Angle of Incidence is
        (a)   Angle between sales and fixed cost lines
        (b)   Angle between sales and variable cost lines
        (c)   Angle between sales and total cost lines
        (d)   None of the above

56.   Control ratios are calculated for
        (a)   Comparison of actual performance with budgets
        (b)   Planning of activities
        (c)   Financial performance measurement
        (d)   None of the above

57.   Material Price Variance is loss or gain
        (a)   Due to using more or less material
        (b)   Due to wastage of material
        (c)   Due to payment of higher or lower price than what is specified
        (d)   None of the above

58.   Preparing budget figures for different levels of activity within a range under flexible
        budgeting is
        (a)   Formula method
        (b)   Multi activity method

(c) Budget cost allowance method

(d) None of these

59. Operation budgets normally cover a period of

(a) One to ten years

(b) One to two years

(c) One to five years

(d) One year or less

60. Which one of the following standards can be attained under the most favorable conditions possible?

(a) Basic standard

(b) Normal standard

(c) Expected standard

(d) Theoretical standard

Ans. (1)(d), (2) (b), (3)(b), (4)(c), (5)(a), (6) (a), (7) (b), (8) (c), (9)(d), (10)(d), (11)(a),(12)(d), (13)(a), (14)(a), (15)(c), (16)(a),(17)(b), (18)(a), (19)(b), (20)(a), (21)(c),(22)(b), (23)(a), (24)(b), (25)(a), (26)(d), (27)(b), (28)(a), (29)(c), (30)(b), (31)(a), (32)(c), (33)(c), (34)(a), (35)(b), (36)(d), (37)(c), (38)(c), (39)(c), (40)(d), (41)(b), (42)(d), (43)(c), (44)(d), (45)(b), (46)(c), (47)(d), (48)(c), (49)(c), (50)(a), 51(d), 52(b), 53(b), 54(c), 55(c), 56(a), 57(c), 58(b), 59(d), 60(d).

II   Short Answer Type Questions:

1   Define budget.

2   Define budgetary control.

3   Explain zero base budgeting.

4   Explain master budget.

5   Define functional budgets with examples.

6   What are the basic differences between forecast and budget.

7   Write short note on 'budgeting as a tool for cost control'.

8   What do you understand by budget manual.

9   Write short note on behavioural aspects of budgeting.

10   What is the role of budget committee.

11   What is meant by rolling budget?

12   What do you mean by e-budgeting?

13   Distinguish between cost control and cost reduction.

14   Define standard costing.

15   Explain the primary objectives of standard costing.

16   Distinguish between standard costing and historical costing.

17   Define variance analysis.

18   Write a short note on sales variance.

19   Define responsibility centre.

20   What is meant by responsibility accounting?

21   Define balanced scorecard.

22   What are the problems faced in setting standard costs.

23   Distinguish between standard cost and budgeted cost.

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24   What do you mean by standard costing
25   What do you mean by direct material cost variance
26   Describe four advantages of standard costing
27   Write a note on sales budget
28   What is the need of preparing cash budget?
29   Write a short note on Performance Budgeting?
30   Briefly describe any five objectives of budgetary control?
31   Write a short note on Efficiency Ratio?
32   What is labour variance? What are the elements of labour variance?
33   Enumerate the limitations of Variance analysis?
34   What do you mean by Cost Centre?
35   State the objectives of Balance Score card?
36   What are the different types of Standards?
37   Distinguish between traditional budgeting and zero-base budgeting.
38   What are the principles of Responsibility Accounting?
39   Describe the requirements of effective Responsibility Accounting.
40   What is the concept of Absolute control?
41   Write a note on Disposal of Variances.
42   Write a short note on Sales Variance.
43   Mention the causes that give rise to labour rate variance.
44   Distinguish between Standard Costing and historical Costing.
45   List four major uses of Standard Costs.

III   Long Answer Type Questions:

1   Distinguish between budget and forecast. What is cash budget and what are its uses.
2   Discuss in detail the functional budgets prepared by a business.
3   What is flexible budget. How does the sales forecast differ from sales budget?
4   Define budgetary control and discuss the objectives of introducing a budgetary control system in an organization.
5   Explain the control ratios used for performance evaluation.
6   What is a Master Budget? State the steps required in the preparation of a Master Budget.
7   "The concept of performance budgeting relates to greater management efficiency especially in government organizations." Explain.
8   Define zero based budgeting. Explain clearly the steps involved for introduction of ZBB in an organization. Mention also the advantages and drawbacks of ZBB.
9   The impact of control system on human behavior can be explained by budgetary control. Explain.
10   "Principal budget factor is of vital importance to management in profit planning." Comment.
11   "Standard costing and budgetary control are interrelated but not interdependent." Comment.
12   "Variance analysis is an integral part of standard cost accounting." Explain.
13   "A firm can avoid standard costing but, of course, at its own peril." Elucidate.
14   Explain the term variance and distinguish between controllable and uncontrollable variances.
15   Explain the concept of responsibility accounting. Also, discuss the various types of responsibility centres.

16 "Calculation of variances in standard costing is not an end in itself, but a means to an end." Discuss.

17 Discuss the importance of variance analysis in controlling costs.

18 Explain the problems concerning control of operations that a manufacturing company can be expected to experience in using a standard costing system during periods of rapid inflation.

19 A budget has been defined as "A financial quantitative interpretation, prior to a defined period of time, of a policy to be pursued for that period to attain a given objective." Bring out, from the above definition, the essentials of a budget.

20 Budget is an aid to management not a substitute to management.

21 Enumerate the various factors which should be considered while preparing the sales budget and production budget.

22 Define budgetary control and distinguish it from standard costing. Discuss the inter-relationship between budgetary control and standard costing system.

23 Explain the possible causes for material price and material usage variances in standard cost. What are the remedial measures.

24 What is Budgetary Control and how is it exercised? What precaution should be taken while preparing the budget to make it more serviceable? Explain.

25 Define standard costing. What are its advantages and limitations.

26 What are the various types of cost budgets?

27 What is the difference between fixed base budget and zero-base budget?

28 What do you mean by budgetary control ? what are its advantages and limitations?

29 Describe the various types of material cost variances.

30 "The aim of responsibility accounting is not to place blame. Instead, it is to evaluate performance and provide feedback so that future operations can be improved".

31 What are the financial and non-financial methods of Performance measurement? Explain.

32 What are various circumstances under which material price variances are likely to arise?

33 Proper Interpretation of variances is important for the success of standard costing as a tool for cost control. Mention some factors that must be borne in mind while interpreting variances.

34 What is a cash budget? Why is a reliable cash budget required even with the projected income statement?

35 What is a performance report? What are the contents of a performance report?

36 Write a short note on 'break-even chart'.

37 Marginal costs are primarily used in guiding decisions yet to be made. Explain the statement giving examples.

38 Explain zero based budgeting. What are its advantages and limitations?

39 Write a short note on sales variance.

40 What are the various circumstances under which material price and material usage variance are likely to arise?

41 What is a principal budget factor? Give a list of such 'principal budget factors' and state the effect of the existence of two or more budget factors in a business.

42 What do you understand by master budget? Into what sections is it usually divided, and what are the purposes of the divisions?

43 Define 'Variance analyses. What are the ways of disposing of cost variances?

44 Variance analyses is an integral part of standard costing system. Discuss.

45   What role does Budgetary Control play in Cost Control? What Are the requirements for its successful implementation?

IV   Practical Questions:

1   PCT Ltd. provides the following information at 80% capacity.

Production and sales	2,000 units
Direct material	Re. 1 per unit
Direct labour	Re. 1 per unit
Direct expenses	Re. 0.80 per unit
Factory overheads (15% variable)	Rs. 2 per unit
Administrative overheads (80% fixed)	Rs. 2 per unit
Selling overheads (25% variable)	Rs. 2 per unit
Total cost	Rs. 8.80 per unit
Profit per unit	Rs. 1.20 per unit
Selling price	Rs. 10 per unit

Draw up a flexible budget at 60% and 90% capacity.

Ans.   Net profit before taxes- (600) at 60 % and Rs.3900 at 90%

2   X Ltd. has prepared the following sales budget for the first five months of 2009:

	Sales (Units)
January	10,800
February	15,600
March	12,200
April	10,400
May	9,800

Inventory of finished goods at the end of every month is to be equal to 25% of sales estimate for the next month. On 1st January 2009, there were 2,700 units of product on hand. There is no work in progress at the end of any month.

Every unit of product requires two types of materials in the following quantities:
    Material A – 4 kg
    Material B – 5 kg
Materials equal to one half of the requirement of next month's production are to be in hand at the end of every month. This requirement was also met on 1st January 2009.

Prepare the following budgets for the quarter ending 31st March, 2009.
        (a)   Production Budget (Quantitative)
        (b)   Material Purchase Budget (Quantitative)

Ans.   Production Budget- Jan-12000, Feb-14750, March-11750, Total- 38500
Material Production Budget- Jan-66875, Feb-66250, March-55000, Total-188125

3   Factory overheads are applied on the basis of direct labour hours:

	Dept. P	Dept. Q
Fixed overheads	48,000	14,000
Variable overheads per labour hour	0.50	1.50
Direct labour hour required as per direct labour hours budget:		
For product A	20,000	10,000
For product B	4,000	4,000

Prepare factory overhead cost budget.

Ans.   Factory Overhead- P-60000, Q-35000

4   On 30th September 2008, the Balance Sheet of MP Ltd. was as under:

Liabilities	Rs.	Assets	Rs.
Equity shares of Rs. 10 each fully paid	20,000	Equipment at cost 20,000 Less: Depreciation 5,000	15,000
Reserves and surplus	10,000	Stock	20,000
Trade creditors	40,000	Trade debtors	15,000
Proposed dividend	15,000	Balance at bank	35,000
	85,000		**85,000**

The company is developing a system of forward planning, and on 1st October, 2008 it supplies the following information:

Month	Credit sales	Cash sales	Credit purchases
September (Actual)	15,000	14,000	40,000
October (Budget)	18,000	5,000	23,000
November (Budget)	20,000	6,000	27,000
December (Budget)	25,000	8,000	26,000

All trade debtors are allowed one month's credit and are expected to settle promptly. All trade creditors are paid in the month following delivery. Uniform Gross Profit Ratio is 25%. On 1st October, all the equipment will be replaced at a cost of Rs. 30,000, Rs. 14,000 will be allowed in exchange for the old equipment and a net payment of Rs.

16,000 was made. Depreciation is to be provided at the rate of 10% per annum. The proposed dividend will be paid in December. The following expenses will be paid: Wages Rs. 3,000 per month, Administration Rs. 1,500 per month, Rent Rs. 3,600 per month for the year to 30th September 2009 (to be paid in October 2008).

Prepare cash budget for the months of October, November and December. Also, prepare Income Statement for the three months ended 31st December, 2008.

Ans. cash budget closing balances- October-(9100), November-(12600), December-(31100) & net profit of income statement- Rs.13350)

5   Glass Manufacturing Company requires you to calculate and present the budget for the year 2011 from the following information:

Sales	
Toughened glass	Rs. 3,00,000
Bent thoughened glass	Rs. 5,00,000
Direct material cost	60% of sales
Direct wages	20 workers @ Rs. 150 p.m.
Factory overheads	
Indirect labour:	
Works manager Rs. 500 per month Foreman Rs. 400 per month	
Stores and spares	21/2% on sales
Depreciation on Mach	Rs. 12,600
Light and power	Rs. 5,000
Repairs etc.	Rs. 8,000
Other sundries	10% on Daily Wages

Administration, Selling and Distribution expenses Rs. 14,000 per annum.

(Ans. Net sales revenue as per sales budget Rs. 7,86,000; Works cost as per production cost budget: Rs. 5,76,000; Expected Profit: Rs. 2,10,000)

6   Gama Engineering Company Ltd. manufactures two products X and Y. An estimate of the number of units expected to be sold in the first seven months of 2011 is given below:

	Product X	Product Y
January	500	1,400
February	600	1,400

March	800	1,200
April	1,000	1,000
May	1,200	800
June	1,200	800
July	1,000	900

It is anticipated that:

(a) there will be no work-in-progress at the end of any month; and

(b) finished units equal to half the anticipated sales for the next month will be in stock at the end of each month (including December, 2010).

The budget production and production costs for the year ending 31st December, 2011 are as follows:

	Product X	Product Y
Production (units)	11,000	12,000
Direct materials per unit (Rs.)	12	19
Direct wages per unit (Rs.)	5	7
Other manufacturing charges apportionable to each type of product (Rs.)	33,000	48,000

You are required to prepare:

(a) a production budget showing the number of units to be manufactured each month **(Ans. 1400 units, 1300 units, 1100 units 900 units, 800 units and 850 units for the months Jan. – June respectively)**

(b) a summarized production cost budget for the 6-month period i.e. Jan. June **(Ans. Product X: Production 5,550 units, unit cost Rs. 20 and total cost Rs. 1,11,000. Product Y: Production 6,350 units, unit cost Rs. 30 and total cost Rs. 1,90,500)**

7   A factory manufactures two types of articles- X and Y. Article X takes 10 hours to make and article Y requires 20 hours in a month (25 days of 8 hours each) 500 units of X and 30 units of Y are produced. The budgeted hours 8500 p.m. The factory employs 60 men in their department concerned. Compute Activity RATIO. Capacity ratio and efficiency 4 ratio.

    Ans.   A.R= 129%, C.R.=141%., E.R.=92%

8   The standard output of product X is 25 units per hour in manufacturing department of a company employing 100 workers. The standard wage rate per labour hour is Rs. 6. In a 42 hours week, the department produced 1,040 units of X despite 5% of the time paid was lost due to an abnormal reason. The hourly wage rate actually paid were Rs. 6.20, Rs. 6 and Rs. 5.70 respectively to 10,30 and 60 of the workers. Compute labour cost variance, labour efficiency variance, labour yield variance, idle time variance and labour rate variance.

    Ans.   LCV=432(FAVOURABLE),

LEV-240(ADVERSE),
LYV=1020(FAVOURABLE),
LITV-1260(ADVERSE),
LRV-672(FAVOURABLE)

9   ABC Ltd. has furnished the following data:

	Budgeted	**Actual**
Standard time per unit	10	-
Production in units	20,00	21,00
Fixed overheads for june	Rs. 10000	Rs. 12,000

Actual hours in June 2, 2000.

Calculate the following variances:

(a) Efficiency variance
(b) Capacity variance
(c) Volume variance
(d) Expenditure variance
(e) Fixed overhead cost variance

Ans.   **(a)   Efficiency variance- 500(A)**
(b)   Capacity variance- 1000(F)
(c)   Volume variance-500(F)
(d)   Expenditure variance-2000(A)
(e)   Fixed overhead cost variance-1500(A))

10   The standard costs of one of the products of a "distempers" manufacturing company as follows:

Materials	**Quantity(Kgs)**	**Standard Price Per Kg(Rs.)**	**Total(Rs.)**
A	40	75	3,000
B	10	50	500
C	50	20	1,000

Standard cost per kg of output is Rs. 50/-

The standard input mix is 100 kg and the standard output of the finished product is 90 kg.

The actual results for a period are as follows:

Material Used	**Quantity**	**Rate**

	(Kgs)	(Rs)
A	2,40,000	80
B	40,000	52
C	2,20,000	21

Calculate:

(a)   Material Cost variance

(b)   Material Price Variance

(c)   Material Usage Variance

(d)   Material Mix Variance

(e)   Material Yield Variance

Ans.   MCV- 4900000(A)

MPV-1500000(A)

MUV-3400000(A)

MMV-1900000(A)

MYV-1500000(A)

11   Raj Ltd. produces an article by blending two basic raw materials. It operates a standard costing system and the following standards have been set for raw materials.

Material	Standard Mix	Standard Price Per Kg.
A	40%	Rs. 4.00
B	60%	Rs. 3.00

The standard loss in processing is 15%.

During April 2008, the company produced 1700 kg of finished output.

The position of stock and purchases for the month of April 2008 are as under:

Materials	Stock (Kg) 1/4/08	Stock (Kg) 30/4/08	Purchase (Kg) during April 2008	Cost Rs.
A	35	5	800	3400
B	40	50	1200	3000

Calculate:

(i) Material Price Variance   (ii) Material Usage Variance

(iii) Material Yield Variance   (v) Material Mix Variance

(v) Total Material Cost Variance

12   From the following you are required to calculate (a) material price variance, (b) material usage variance, and (c) material cost variance.
Quantity of material purchased 3,000 units
Value of material purchased Rs. 9,000
Standard quantity of material required for one tone of finished product 25 units
Standard rate of material Rs. 2 per unit
Opening stock of material nil
Closing stock of material 500 units
Finished production during the period 80 tonnes.
(Ans. MCV = Rs. 3,500 (A), MPV = Rs. 2,500 (A), MUV = Rs. 1,000 (A))

13   Standard hours for manufacturing two products M and N are 15 hours per unit and 20 hours per unit respectively. Both products require identical kind of labour and the standard wage rate per hour is Rs. 5. In the year 19X1, 10,000 units of M and 15,000 units of N were manufactured. The total of labour hours actually worked were 4,50,000 and the actual wage bill came to Rs. 23,00,000. This included 12,000 hours paid for @ Rs. 7 per hour and 9,400 hours paid for @ Rs. 7.50 per hour, the balance having been paid at Rs. 5 per hour. Compute the labour variances.

(Ans. LCV = Rs. 50,000 (A), LRV = Rs. 47,500 (A), LEV = Rs. 2,500 (A)

14   The details regarding composition and weekly wage rate of labour force engaged on a job scheduled to be completed in 30 weeks are as follows:

Category of workers	Standard		Actual	
	No. of labourers	Weekly wage rate (Rs.)	No. of labourers	Weekly wage rate (Rs.)
Skilled	75	60	70	70
Semi-skilled	45	40	30	50
Unskilled	60	30	80	20

The work is actually completed in 32 weeks. Calculate the various labour variances.

(Ans. LCV = Rs. 13,000 (A), DLRV = Rs. 6,400 (A), DLEV = Rs. 6,600 (A), DLMV = Rs. 9,600 (F), RLEV = Rs. 16,200 (A))

15   To manufacture a product, the following standards have been set:

Direct materials:	
2 units of P @ Rs. 2 per unit	Rs. 4.00
3 units of Q @ Rs. 1.50 per unit	4.50
15 units of R @ Rs. 0.50 per unit	7.50
Total direct materials	Rs. 16.00

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Direct labour (3 hours @ Rs. 4 per hour)	12.00
Variable overheads (Rs. 3 per direct labour hr.)	9.00
Total standard unit cost	Rs. 37.00

The company manufactured and sold 60,000 units of the product during the year. Direct materials cost was as follows:

      1,25,000 units of P @ Rs. 2.20 per unit
      1,80,000 units of Q @ Rs. 1.40 per unit
      8,85,000 units of R @ Rs. 0.60 per unit

The company worked 1,75,000 direct labour hours during the year. For 25,000 of these hours, the company paid at Rs. 6 per hour, while for the remaining the wages were paid at the standard rate. The actual variable overheads varied at the rate of Rs. 3 per direct labour as budgeted. Calculate variances.

(Ans. MPV = Rs. 95,500 (A), MQV = Rs. 7,500 (A), LRV = Rs. 50,000(A), LEV = Rs. 20,000 (F))

16   The Navyug Tools Manufacturer produces two products – M and N. To manufacture 1 unit each of product M and product N, the standard time allowed is 20 minutes (1/3 hour) and 15 minutes (1/4 hour) respectively. During 19X1 the firm will operate at a normal capacity of 1,20,000 machine hours The budgeted fixed manufacturing overheads are Rs. 6,00,000 and variable manufacturing overheads are Rs. 2.50 per machine hour'. The actual production during 19X1 was 1,29,000 units of product M in 45,000 hours and 2,00,000 units of product N in 55,000 hours Actual variable manufacturing overheads were Rs. 2,32,000 and the actual fixed manufacturing overheads were Rs. 6,50,000.

Calculate the manufacturing overheads variances.

(Ans. VO spending var. = Rs. 18,000 (F), VO Efficiency Var. = Rs. 17,500 (A), net variable overhead variance = Rs. 500 (F), Fixed overhead spending variance = Rs. 50,000 (A), Volume Variance = Rs. 1,35,000 (A), idle capacity variance = Rs. 1,00,000 (A), fixed overhead efficiency variance = Rs. 35,000 (A), net fixed overhead variance = Rs. 1,85,000 (A))

17   A factory has estimated its overheads for the coming fiscal year at Rs. 1,9,000. The factory is expected to work 300 days in the year, and 8 hours a day. The budgeted production for the coming year is 36,000 units of product.

Actual overheads	Rs. 17,000
Output	3,210 units

Idle time	6 hours

Calculate:

(i)   overhead budget variance; **(Ans. Rs. 1,000 (A))**
(ii)   overhead efficiency variance; **(Ans. Rs. 1,600 (F))**
(iii)   idle time variance; and **(Ans. Rs. 480 (A))**
(iv)   net overhead cost variance. **(Ans. Rs. 120 (A))**

18   80 kgs of material A at a standard price of Rs. 2 per kg and 40 kgs of material B at a standard price of Rs. 5 per kg were to be used to manufacture 100 kgs of a chemical. During a month, 70 kgs of Material A priced at Rs. 2.10 per kg and 50 kgs of Material B is priced at Rs. 4.50 per kg were actually used and the output of the chemical was 102 kg.
Find out Material (i) Price; (ii) Usage; (iii) Mix; and (iv) Yield Variances.

19   The parts of an automobile vehicle are produced to rigorous standards of accuracy. Every batch of 1,00,000 units is tested to discover whether the units are defective at a cost of Rs. 12.50 per unit. The defective units are then rectified and put in good order at a cost of Rs. 50 per unit. If the units are not tested, any defect would become apparent later when they are fitted in the vehicle. At that stage it would cost Rs. 100 per unit to put the parts in good working order.

Find out by calculation the minimum percentage of defective units in a batch such that it would be cheaper to test all the units in the batch instead of none of them.

20   Prepare a cash budget for the months of May, June and July 2012 on the basis of the following information:

(1) Income and expenditure Forecasts

Month	Credit Sales	Credit Purchases	Wages	Manufacturing Expenses	Office Exp	Selling Exp
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 balances on 1st May, 2012 Rs. 8,000
(3) Plant costing Rs. 16,000 is due for delivery in July, payable 10% on delivery and the balance after 3 months.

(4) Advance tax of Rs. 8,000 each is payable in March and June.
(5) Period of credit allowed by suppliers – two months and to customers – one month.
(6) Lag in payment of manufacturing-1/2 months
(7) Lag in payment of office and selling expenses – one month.

(Ans. Closing balance of cash for May Rs. 13,750, June Rs. 12,250, July Rs. 16,900)

21 For production of 10,000 electrical automatic irons, the following are budgeted expenses:

Direct Materials	60
Direct Labour	30
Variable overheads	25
Fixed overheads	15
Variable expenses (Direct)	5
Selling expenses (10% Fixed)	15
Administration expenses (Rs. 50,000 rigid for all levels of production)	5
Distribution expenses	5
Total cost of sales per unit	160

Prepare a budget for the production of 6,000, 7,000 and 8,000 irons, showing directly marginal cost and total cost.

(Ans.	**6,000**	**7,000**	**8,000**
Marginal cost	**8,25,000**	**9,62,500**	**11,00,000**
Total cost	**10,50,000**	**11,87,500**	**13,25,000)**

22 Appex Co. can produce 4,000 units of a product at 100% capacity. The following information is available from its records:

	April	May
Units of produced	2,800	3,600

Power	Rs. 1,800	Rs. 2,000
Repairs and Maintenance	500	560
Indirect labour	700	900
Consumable stores	1,400	1,800
Inspection	200	240
Depreciation	1,400	1,400
Salaries	1,000	1,000

Direct material cost per unit is Rs. 1 and direct wages per hour is Rs. 4. Rate of production per hour is 10 units.

You are required to:

(i) Compute the cost of production at the following capacity levels showing variable, fixed and semi-variable items under the flexible budget.

(Ans.

		Variable	**Semi-variable**	**Fixed**	**Total**
a)	**100%**	**3,000**	**2,950**	**2,400**	**13,950**
b)	**80%**	**2,400**	**2,650**	**2,400**	**11,930**
c)	**60%**	**1,800**	**2,350**	**2,400**	**9,910**

(ii) Compute overhead absorption rate at 80% capacity.**(Ans.23.3 per labour hour)**

23 A factory produces 2 products P and Q. P takes 10 hours to produce and Q requires 16 hours as per the budget. A month has 25 budgeted days of 8 hours each. During the month 500 units of P and 400 units of Q were produced. The factory employs 50 workers. They actually worked for 9 hours daily for 24 days. Calculate Efficiency ratio, Capacity   ratio and Calendar ratio.

(Ans. Efficiency ratio = 105.55%, Capacity ratio = 108%, Calendar ratio = 96%)

24 S.V.Ltd. manufacturers BXE by mixing three raw materials. For every batch of 100 kgs.of BXE, 125 kgs. of raw materials are used. In February 2009, 60 batches were prepared to produce an output of 5,600 kgs. of BXE. The standard and actual particulars for February, 2009 are as under:

Raw Material	Mix	Standard Price per kg.	Mix	Actual Price per Kg.	Quantity of Raw Materials Purchased
	%	Rs.	%	Rs.	Kg.
A	50	20	60	21	5,000
B	30	10	20	8	2,000

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C	20	5	20	6	1,200

Calculate:

    (i)   Material Cost Variance   **(17,500 (A))**   (ii) Material Price Variance**(3,000 (A))**
    (iii)   Material Mix Variance   **(7,500(A))**   (iv) Material Yield Variance**(7,000(A))**

25. Common brass is an alloy consisting of 70% copper and 30% zinc. In melting and processing it is expected that a 4% loss of metal will occur. Standard prices are Rs. 40,000 per tone for copper and Rs. 15,000 per tone for zinc. Using suitable figures for the purpose of illustration, show clearly how you would record
(a) Material Price Variance, **(Ans. Rs. 30,00,000(A))**
(b) Material Usage Variance, **(Ans. Rs. 27,50,000(F))**
(c) Mix Variance, **(Ans. Rs. 60,00,000(F))**
(d) Yield Variance.**(Ans. Rs. 32,50,000)**

26. A.S. Ltd. operates a system of standard costing in respect of one of its products which is manufactured within a single cost centre, the following information is available:
For one unit of product, the standard material input is 20 litres at a standard price of Rs. 2 per litre. The standard wage rate is Rs. 6 per hour and 5 hours are allowed to produce one unit. Fixed production overhead is absorbed at a rate of 100% of direct wages cost. During the month just ended the following occurred:

Actual price paid for material purchased   Rs. 1.95 per litre
Total direct wages cost was   Rs. 1,56,000
Fixed production overhead incurred was   Rs. 1,58,000

Variances	Favourable	Adverse
Direct material price	8,000	-
Direct material usage	-	5,000
Direct labour usage	-	5,760
Direct labour efficiency	2,760	-
Fixed production overhead expenditure	-	8,000

Calculate the following for the month:

    (i)   Budgeted output in units   **(Ans. 5,000 units)**
    (ii)   Number of litres purchased**(Ans. 1,60,000)**
    (iii)   Number of litres used above standard allowed   **(Ans. 1,57,500)**
    (iv)   Actual units purchased   **(Ans. 5,100 units)**

(v)   Actual hours worked   **(Ans. 25,040 hours)**

(vi)   Actual wage rate per hour**(Ans. Rs. 6.23)**

27. The standard cost of a company shows:

Standard mix:

40% of Material A @ Rs. 10 per tone

60% of Material B @ Rs. 20 per tone

The normal loss in production is 10% of input. During the month of Feb. 2012, the cost and production records reveal the following:

90 tonnes of Material A @ Rs. 9 per tonne.

110 tonnes of Material B @ Rs. 24 per tone

The yield produced 190 tonnes of good production.

Calculate:

(a) Material price variance (Ans. 350 (A))

(b) Material usage variance (Ans. 277.78 (F))

(c) Material yield variance (Ans. 177.80 (F))

28. Calculate material cost variances from the following:
   Standard quantity of material for on unit 10 units standard price Rs. 50 per unit during the month of June, 2015, 4000 units were produced and it consumed 39000 units of material which was purchased @ Rs. 60 per unit.
   Ans.DMPV= Rs. 3,90,000 (A), DMUV= Rs. 50,000 (F), DMCV= Rs. 3,40,000 (A)

29. Calculate labour cost variances from the following:
   Standard labour time required to produce one unit 5 hours @ Rs. 20 per hour units produced during the months of May 2015 were 1000 and labour took 5200 hours and was paid @ Rs. 16 per hour.
   Calculate labour cost variances.
   Ans: DLRV= Rs. 20,800(F), DLTV Rs. 4,000(A), DLCV Rs. 16800 (F)

30. Prepare a cash budget for the month of April ,May and June 2015 from the following data, so that co. may arrange for bank overdraft if needed:
   a)

Months 2015	Sales Rs.	Purchase Rs.	Wages (Rs.)
February	3,60,000	2,49,600	24,000
March	3,84,000	2,88,000	28,000
April	2,16,000	4,86,000	22,000
May	3,48,000	4,92,000	20,000
June	2,52,000	3,36,000	15,000

b) All sales are credit 50% is realized n the month following the sale and the remaining 50% in the second month following

c) All purchases are credit . Creditors are paid in the following the month of purchase

d) Cash at bank on 1ˢᵗ April 2015 is estimated Rs. 50,000

Ans. April Rs. 1,12,000, May Rs. 94,000 (overdraft) and June Rs. 3,34,000 (overdraft)

31.

Particulars	Rs. In Lakhs	Rs. In Lakhs
Fixed Expenses		
Wages and Salaries	8.4	
Rent, Rates and Taxes	5.6	
Depreciation	7.0	
Administration Expenses	8.9	29.9
Semi Variable Expenses (at 50% capacity)		
Maintenance and Repairs	2.5	
Indirect Labour	9.9	
Sales Salaries	2.9	
Administration Expenses	2.6	17.9
Variable Expenses		
Material	24.0	
Labour	25.6	
Other Expenses	3.8	53.8

Draw up a flexible budget from the following figures at 60%, 75%, 90% and 100% capacity

Assume that fixed expenses remain constant for all levels of production , semi- variable remain constant between 45% and 65% capacity, increasing by 10% between 65% and 80 % capacity and by 20% between 80% and 100% capacity

Sales at various levels are

	Rs. Lakhs
60%	100.00
75%	120.00
90%	150.00

100 %	170.00

Ans. Total cost in Lakh Rs. 111.85, 129.89, 147.50, 158.18
Total Profit in lakh Rs. (11.88), (9.69), 2.50 and 11.82

32   ABC Ltd. Is engaged in producing product 'N' using 60 kg of Material X and 40 kg of Y. The standard loss of production is 30% of input. The standard price of X is Rs. 5 per kg and of Y is Rs. 10 per kg. The actual mix and yield were as follows:

    X 80kg @ Rs. 4.50 per kg
    Y 70kg @ Rs. 8.00 per kg

Actual yield is 115 kg
Calculate various material cost variances
[Ans. DMPV Rs. 180(F), Usage Variance Rs. 50 (A), Yield Variance Rs. 100(F), Mix Variance Rs. 50 (A), Total Cost Variance Rs. 130 (F).]

33.   Tortoise toys Ltd. requires you to prepare the Master Budget for the year 2016 from the following
 information :

Sales of Plastic Toys	Rs. 3,00,000
Sales of Electronic Toys	RS. 5,00,000
Direct Material Cost	60% of Sales
Direct Wages	1 worker @ Rs. 3,000 per month

Factory overheads :

Indirect Labour : works manager Rs. 500 per month and Foreman Rs. 400 per month

Stores and spares	2.5% on sales
Depreciation on Machinery	Rs. 12,600
Light & Power	Rs. 5,000
Repairs & Maintenance	Rs. 8,000
Other Expenses	10% on Direct Wages
Administration Expenses	Rs. 14,000 per year

(Ans. Net Profit: Rs. 2,10,000)

34. A factory manufactures two types of articles – X and Y. Article X takes 10 hours to make and Y requires 20 hours. In a month(25 days of 8 hours each) 500 units of X and 300 units

of Y are produced. The Budgeted hours are 8,500 per month. The factory employs 60 men in the department concerned. Compute Activity, Capacity Ratio and Efficiency Ratio?

(Ans. Activity Ratio : 129.41%, Capacity Ratio : 141.7% and Efficiency Ratio : 91.67%)

35.   The following information rlates to a manufacturing company :
       No. of employees   150
       Weekly hours worked   30
       Standard Wage rate   50 p/hr
       Standard O/P   200 units per hr
       8 Employees were paid at 45 paise per hr and 2 employees at 55 paise per hour, the rest employees were paid at standard rates. Idle time is 1 hour per employee. Actual output was 6250 units. Calculate Labour variances.

36. Company manufactures a particular product the standard direct material cost of which is Rs. 10 per unit. The following information is obtained from the costing records.
a) standard mix:

Material	Quantity	Rate	Amount
A	70	10	700
B	30	5	150
	---------		----------
	100		850
Loss(15%)	15		-------

	85		850

b) Actual results for the month of June 1998:

Material	Quantity	Rate	Amount
A	400	11	4400
B	200	6	1200
	---------		----------
	600		5600
Loss(10%)	60		-------

	540		5600

Compute:
a) Material price variance(600 Adverse)
b) Material usage variance(400 Favourable)
c) Material yield variance(300 Favourable)
d) Material mix variance(100 Favourable)

37.   A Ltd. expected to have Rs. 25,000 in Bank on May 1, 2016 and requires you to prepare an estimate of cash position for three months May, June and July 2016. The following information is supplied to you:

Months	Sales Rs.	Purchases Rs.	Wages Rs.	Factor Exp. Rs.	Office Exp. Rs.	Selling Exp. Rs.

March	50,000	30,000	6,000	5,000	4,000	3,000
April	56,000	32,000	6,500	5,500	4,000	3,000
May	60,000	35,000	7,000	6,000	4,000	3,500
June	80,000	40,000	9,000	7,500	4,000	4,500
July	90,000	40,000	9,500	8,000	4,000	4,500

20% of sales are in cash, remaining is collected in the month following sale.

(a) Suppliers provide two months' credit.

(b) Wages and all other expenses are paid in the month following the one in which they are incurred.

(c) The company pays dividends to shareholders and bonus to workers of Rs. 10,000 and Rs. 15,000 respectively in the month of May.

(d) Plant has been ordered and is expected to be delivered in June. It will cost Rs.80, 000 to be paid in June.

Income-tax Rs. 25,000 is payable in July. Prepare a cash budget from the above budgeted data.

38.   A Company has normal capacity of 100 machines working 8 hours per day of 25 days in a   month. The budgeted fixed overheads of a month are Rs. 1,50,000. The Standard time required to manufacture one unit of product is 4 hours. In a particular month, the company worked for 24 days of 750 machine hours per day and produced 4,500 units of the product. The actual fixed overheads incurred were Rs. 1.45,000.
Compute:
(a) Efficiency Variance
(b) Capacity Variance
(c) Calendar Variance
(d) Expenditure Variance
(e) Volume Variance
(f) Total Fixed Overhead Variance

[Ans: (a) Nil, (b) 9000(A), (c) 6000(A), (d) 15000(A), (e) 5000(F), (f) 10,000(A)]

UNIT - IV

I   Test Your Skills:

Multiple Choice Questions:

1   The break-even point is 10,000 units, sales are 12,000 units. The margin of safety expressed as a percentage of the break-even point is therefore
(a) 25%
(b) 80%
(c) 120%
(d) 20%

2   Contribution per unit is Rs.1. Fixed costs are Rs.5,000. Production and sales are 7,500 units, selling price is Rs.2 per unit. Contribution Margin Ratio is
(a) 200%
(b) 75%
(c) 50%
(d) 100%

3   Contribution Margin Ratio is 50%. The fixed costs are Rs.30,000. The break-even point is
(a)   Rs. 1,20,000
(b)   Rs. 60,000
(c)   Rs. 30,000
(d)   Rs. 15,000

4   Profit = Contribution per unit X _____.
(a)   Margin of safety (units)
(b)   Sales (units)

5   Cost volume profit analysis focuses attention on the _____ effect of a particular course of action.
(a)   Short run
(b)   Long run
(c)   Short and long run

6   A firm makes dresses. The material and labour cost of producing each dress is Rs.4. The fixed cost apportioned to each dress is Rs.5. The current price each dress is sold for is Rs.12. A special order is coming in and the buyer wants to pay Rs.7. One of the following statements is true

(a)   The order should be rejected, as the price is less than the normal price
(b)   The order should be rejected, as the price is less than the absorption cost
(c)   The order should be accepted as we would be making a gain of Rs.3 per dress
(d)   The order should be accepted as we would be making a gain of Rs.8 per dress

7   One of these statements will be true when considering the profitable use of a constrained resource
(a)   The manager should select the course of action that maximises the total contribution margin
(b)   The manager should select the course of action that maximises the profit of the firm
(c)   The manager should select the course of action that minimises the fixed costs
(d)   The manager should select the course of action that maximises the sales

8   Uniform costing systems is useful in the following areas
     (a)   Classification of cost accounts
     (b)   Preparing financial statements

9.   Which of the following is the correct description of the break-even point?
     (a)   Where total revenue equals total fixed costs
     (b)   Where total revenue equals total fixed and variable costs
     (c)   Where total revenue equals total variable costs
     (d)   Where total revenue equals total contribution

10. In a profit-volume chart, what does the point at which the contribution line touches the vertical axis represent?
     (a)   Total contribution
     (b)   Total variable costs
     (c)   The break-even point
     (d)   Total fixed cost

11. Which of the following best describes a fixed cost?
     (a)   A cost that is unaffected by the level of inflation
     (b)   A cost that is unaffected by time
     (c)   A cost that is unaffected by the level of output
     (d)   A cost that involves a long-term commitment by the business

12. Which one of the following best describes the margin of safety?

     (a)   The extent to which the total sales revenue exceeds the total fixed costs
     (b)   The extent to which the total sales revenue exceeds the total fixed and variable costs
     (c)   Fixed costs/ (Sales revenue per unit – variable costs per unit)
     (d)   The extent to which the total sales revenue exceeds the total variable costs

13. Which one of the following statements is correct? A variable cost is one which:
     (a)   Varies with the time period
     (b)   Varies directly but not proportionately with output
     (c)   Varies with the general rate of inflation
     (d)   Is constant per unit of output irrespective of the level of output

14. Nanyang Ltd. produces a single product. The selling price is Rs.a unit and the variable cost is Rs.30 a unit. The annual fixed cost of the business are Rs.4,000. The business aims to make Rs.10,000 profit during the forthcoming year. How many units must be sold to achieve this target?
     (a)   700 units
     (b)   500 units
     (c)   280 units
     (d)   200 units

15. In the context of operating leverage break-even analysis, if selling price per unit falls
and all other variables remain constant, the operating break-even point in units will
    (a)   Fall
    (b)   Rise
    (c)   Stay the same

16. Nanyang Ltd produces a single product. The selling price is Rs.50 per unit and the
variable costs is Rs.30 per unit. The annual fixed costs of the business are Rs.4,000.
The company aims to make Rs.10,000 profit during the forthcoming year. How many units
must be sold to achieve this target?
    (a)   280 units
    (b)   200 units
    (c)   700 units
    (d)   500 units

17. Cost-volume-profit (CVP) analysis may be used to answer which of the following
questions?
    (a)   What level of sales is required to break-even (revenues = expenses)?
    (b)   What will be the effect of changes in fixed costs?
    (c)   How many units of sales are required to break-even (revenues = expenses)?
    (d)   All of the above questions can be answered with CVP

18. Which of the following is most likely variable cost?
    (a)   The cost of gasoline for your automobile, assuming the per-gallon cost of
        gasoline
    (b)   The yearly cost of insuring and licensing your automobile
    (c)   The monthly cost of your telephone service
    (d)   Both A and C

19. The break-even point may be defined as which of the following?
    (a)   The point at which revenues are equal to fixed costs
    (b)   The point at which revenues are equal to variable costs
    (c)   The point at which operating income is equal to zero
    (d)   The point at which the company can no longer produce units

20. At the point at which the total revenue line intersects the total cost line in a graphic
presentation of the *break-even point*, the *area beyond* this intersection and within the
boundaries of the total revenue line and total cost line is which of the following?
    (a)   Profit area
    (b)   Net income
    (c)   Operating income
    (d)   Variable costs

21. The contribution margin is which of the following?
    (a)   The amount by which revenue exceeds variable costs
    (b)   The amount by which revenue exceeds total costs

(c)   The amount by which variable costs exceed fixed costs
(d)   The amount remaining after all variable and fixed costs have been deducted from sales

22.   The selling price of Product A is Rs.15. The variable costs to manufacture and sel the product are Rs.6. What is the contribution margin ration?
(a)   60%
(b)   40%
(c)   35%
(d)   50%

23.   The contribution margin ratio is 45% and the unit sales price is Rs.80. What is the contribution margin per unit?
(a)   Rs.44
(b)   Rs.8
(c)   Rs.52
(d)   Rs.36

24.   The contribution margin ratio is 52 percent. After the break-even point is reached, an additional Rs.35,000 of sales dollars will result in which of the following?
(a)   A 48 percent in net income
(b)   A 52 percent increase in operating profit
(c)   A 52 percent increase in variable costs
(d)   A 48 percent increase in operating profit

25.   A company achieved its target operating income with fixed costs of Rs.80,000, sales price per unit of Rs.15, a contribution margin of 40%, and a sales volume in dollars of Rs.1,400,000. What was the target operating income?
(a)   Rs.480,000
(b)   Rs.540,000
(c)   Rs.430,000
(d)   Rs.600,000

26.   The contribution margin ratio is 40%. Operating income is Rs.320,000. What is the margin of safety?
(a)   Rs.800,000
(b)   Rs.128,000
(c)   Rs.672,000
(d)   Rs.928,000

27.   Which of the following is true about the margin of safety?
(a)   It can be measured at any level of activity
(b)   It represents the dollar amount by which sales can decline before an operating loss occurs
(c)   It is synonymous with operating income
(d)   Both a and b are true

28. The key sources of value (earning an excess return) for a company can be distributed primarily to
    (a) Competitive advantage and access to capital
    (b) Quality management and industry attractiveness
    (c) Access to capital and quality management
    (d) Industry attractiveness and competitive advantage

29. The overall (weighted average) cost of capital is composed of a weighted average of
    (a) The cost of common equity and the cost of debt
    (b) The cost of common equity and the cost of debt
    (c) The cost of common equity, the cost of preferred stock, and the cost of debt

30. What is the overall (weighted average) cost of capital in the following situation? The firm has Rs.10 million in long-term debt, Rs.2 million in preferred stock, and Rs.8 million in common equity -- all at market values. The before-tax cost for debt, preferred stock, and common equity forms of capital are 8%, 9%, and 15%, respectively. Assume a 40% tax rate.
    (a) 6.40%
    (b) 6.54%
    (c) 9.30%
    (d) 10.90%

31. For which of the following costs is it generally necessary to apply a tax adjustment to a yield measure?
    (a) Cost of debt
    (b) Cost of preferred stock
    (c) Cost of common equity
    (d) Cost of retained earnings

32. Which of the following is not a recognized approach for determining the cost of equity?
    (a) Dividend discount model approach
    (b) Before-tax cost of preferred stock plus risk premium approach
    (c) Capital-asset pricing model approach
    (d) Before-tax cost of debt plus risk premium approach

33. How is economic value added (EVA) calculate?
    (a) It is the difference between the market value of the firm and the book value of equity
    (b) It is the firm's net operating profit after tax (NOPAT) less a dollar cost of capital charge
    (c) It is the net income of the firm less a dollar cost that equals the weighted average cost of capital multiplied by the book value of liabilities and equities
    (d) None of the above are

34. What is the difference between economic profit and accounting profit?
    (a) Economic profit includes a charge for all providers of capital while accounting profit includes only a charge for debt
    (b) Economic profit covers the profit over the life of the firm, while accounting profit only covers the most recent accounting period
    (c) Accounting profit is based on current accepted accounting rules while economic profit is based on cash flows
    (d) All of the above are

35. Which of the performance evaluation methods takes into consideration tax effect?
    (a) Residual income
    (b) Return on investment
    (c) Return on sales
    (d) Economic value added

36. The method of asset valuation measurement that causes the value of the investment to decrease as the assets age is the
    (a) Gross book value
    (b) Net book value
    (c) Current cost
    (d) Historical cost

37. When two prices for two different sections of the society are fixed by the government, the price so fixed is termed as
    (a) Dual Price
    (b) Differential Price
    (c) Leader Price

38. In activity-based costing, overhead costs are allocated into
    (a) Cost centres
    (b) Cost pools
    (c) Cost accounts
    (d) Cost groups

39. Activity-based costing seeks to identify suitable
    (a) Activity drivers
    (b) Cost drivers
    (c) Expense drivers
    (d) Value drivers

40. Additional cost of additional unit is known as:
    (a) Standard Cost
    (b) Fixed Cost
    (c) Total cost
    (d) Marginal Cost

41. To obtain the break-even point in rupee sales value, total fixed costs are divided by :
    (a) Variable cost per unit
    (b) Contribution margin per unit

(c)   Fixed cost per unit

(d)   Profit/Volume ratio.

42.   Margin of safety is referred to as:
- (a)   Excess of actual sales over fixed expenses;
- (b)   Excess of Actual sales over variable expenses;
- (c)   Excess of actual sales over break-even sales;
- (d)   Excess of budgeted sales over fixed costs.

43.   If P/L ratio is 40% and sales value Rs. 10,000, the Variable cost will be :
- (a)   Rs.   4,000
- (b)   Rs. 40,000
- (c)   Rs. 10,000
- (d)   None of the above.

44.   If sales are Rs. 2 Lakhs, Fixed cost Rs. 30,000, P/L ratio 40% the amount of profit will be:
- (a)   Rs. 50,000
- (b)   Rs. 80,000
- (c)   Rs. 12,000
- (d)   None of the above.

45.   Contribution margin is also known as :
- (a)   Marginal Income
- (b)   Gross Profit
- (c)   Net Income

46.   Economic value added represents
- (a)   Sales – Cost of bought in goods and services
- (b)   NOPPAT – COCE
- (c)   Market Capitalisation Value – Amount of Investment in Equity Capital

47.   Balance Score card refers to
- (a)   Electronic card used for balancing the ledger accounts
- (b)   A formal method to incorporate both financial and non-financial measures into the Organisational management system
- (c)   A technique used for computing the profit available for shareholders.

48.   Target Price is the
- (a)   Price the firm will like to charge from its potential customers
- (b)   Estimated Price which a potential customer will be willing to pay
- (c)   Cost of the product/service + reasonable profit

49. Calculate EOQ from the following information: Consumption of materials per annum 10,000 kg; Order placing costs per order Rs. 50; Cost per kg. of raw materials Rs. 2; Storage costs 8% on avg. inventory.
    (a) 2500 kg.
    (b) 3000 kg.
    (c) 2000 kg.
    (d) 5000 kg.

50. Which of the following best describes a fixed cost?
    (a) A cost that is unaffected by the level of inflation
    (b) A cost that is unaffected by time
    (c) A cost that is unaffected by the level of output
    (d) A cost that involves a long-term commitment by the business

51. An industry is selling a product for Rs. 10 per unit. The fixed cost for assets is Rs. 40000 with variable cost of Rs. 6 per unit. How many units should be produced to break even?
    (a) 10,000
    (b) 12,000
    (c) 14,000
    (d) 8,000

52. Angle of incidence is the angle at which
    (a) Total revenue line intersects the total cost line
    (b) Total cost line intersects the variable cost line
    (c) Variable cost line intersects fixed cost line
    (d) Fixed cost line intersects total revenue line

53. Margin of safety is equal to
    (a) Actual sales – Sales at Breakeven point
    (b) Actual sales + Sales at Breakeven point
    (c) Actual sales x Sales at Breakeven point
    (d) Actual sales / Sales at Breakeven point

54. The following assumptions are made in case of break even analysis, except
    (a) All fixed costs are fixed
    (b) All variable costs are fixed
    (c) The prices of input factors are constant
    (d) Volume of production and volumes of sales are equal

55. The kind of costs that has been occurred in past are also known as
    (a) Unrecorded costs
    (b) Recorded costs
    (c) Sunk costs
    (d) Bunked costs

56. The third step in decision making process is
    (a) Linear predictions

(b)   Dependent predictions
(c)   Making predictions
(d)   Independent predictions

57.   In an activity based cost system; an activity/unit of work or task with differentiated purposes will be classified as
(a)   Different task
(b)   Purpose cost
(c)   An activity
(d)   An allocation cost

58.   The costs of all the activities for individual products or services can be called
(a)   Purpose level costs
(b)   output-unit level costs
(c)   input-unit level costs
(d)   Activity level costs

59.   In an activity based costing implementation, the product's diverse demand is based on
(a)   Batch size
(b)   Complexity
(c)   Process steps
(d)   All of above

60.   In the activity based costing method implementation, output unit level costs are classified as
(a)   Indirect costs
(b)   Direct cost
(c)   Labor cost
(d)   Raw material cost

Ans.   (1)(d), (2)(c), (3)(b), (4)(a), (5)(a), (6)(c), (7)(a), (8)(a), (9)(b), (10)(d), (11)(c), (12)(b), (13)(d), (14)(a), (15)(b), (16)(c), (17)(d), (18)(a), (19)(c), (20)(a), (21)(a), (22)(a), (23)(d), (24)(b), (25)(a), (26)(a), (27)(b), (28)(d), (29)(c), (30)(c), (31)(a), (32)(b) (33)(b), (34)(a), (35)(d), (36)(b), (37)(a), (38)(b), (39)(b),(40)(d), (41)(d), (42)(c), (43)(d), (44)(a), (45)(a), (46)(b), (47)(b), (48)(b), (49)(a), (50)(c), 51(a), 52(a), 53(a), 54(b), 55(c), 56(c), 57(c), 58(b), 59(d), 60(a).

II   Short Answer Type Questions:

1   A company wishes to earn a 15% profit margin on selling price when quoting for a job. What will be the profit margin of cost which will achieve the required profit margin?
2   Define break-even point with the help of a diagram.
3   Differentiate marginal costing and absorption costing.
4   What is meant by opportunity cost?
5   What is sunk cost?
6   Differentiate controllable and uncontrollable costs.

7 Write a short note on margin of safety.

8 Explain the uses and limitations of marginal costing.

9 What are the basic assumptions made by marginal costing.

10 Define limiting factor.

11 Discuss activity based costing.

12 Write a short note on target costing.

13 Explain life cycle costing.

14 Explain the concept of uniform costing.

15 State the advantages of uniform costing.

16 Explain the difference between e-business and e-commerce.

17 What is balance score card?

18 Differentiate target costing and kaizen costing.

19 What is meant by curvilinear cost?

20 What do you by engineered, committed and discretionary costs?

21 What is cash break-even point?

22 What do you mean by angle of incidence?

23 Write short note on the following:

(a) Economic value added

(b) Inflation accounting

24 Why is it that the 'debt' is the cheapest source of finance for a profit-making company?

25. What is the use of calculating BEP?

26. What do you mean by contribution?

27. What is P/V ratio?

28. Explain the meaning of margin of safety?

29. What do you mean by composite leverage?

30. What do you mean by differential cost analysis?

31. "Construction of break-even chart depends on certain assumptions." What are those assumptions

32. Give three ways by which P/V ratio can be improved?

33. What are the important characteristics of Activity Based Costing?

34. Explain briefly the objectives of Target Costing?

35. What is Life Cost Analysis?

36. What re the limitations of BEP analysis?

37. Narrate the need of CVP analysis.

38. Sales are Rs. 1,50,000, producing a profit of Rs. 4,000 in period I. Sales are Rs. 1,90,000, producing a profit of Rs. 12,000 in period II. Determine the BEP.

39. What are the four ways by which profit performance of a business can be improved?

40. Distinguish between absorption costing and marginal costing.

41. What do you mean by leverages? What are the various types of leverages? What are the advantages of calculating leverages?

42. What do you mean by marginal costing ? How it is different from absorption costing?

43. What are the advantages of marginal costing technique? Give any two examples for using marginal costing for taking decision ?

44. Explain the meaning of break-even point and what are the advantages of calculating break-even point.

45. Explain the importance of contribution, P/V ratio and margin of safety for taking various decisions.

III   **Long Answer Type Questions:**

1   "In classifying a particular cost as fixed or variable, the volume or activity level is extremely important." Discuss and illustrate this statement.

2   "The effect of a price reduction is always to reduce the P/V ratio, to raise the break-even point and to shorten the margin of safety." Explain with a suitable illustration.

3   Break even analysis assumes that variable costs and revenues are linear and the fixed costs are fixed. Briefly explain why these assumptions may not be realistic.

4   The management of ABC Ltd. is deciding whether to continue working at loss or to temporarily shut down the factory. State the qualitative aspects that must be considered before arriving at a decision. Costing system in your industry, how would you proceed? Explain in detail.

5   Describe the technique of activity based costing. State the circumstances warranting the introduction of activity based costing and the problems which you expect to face in introducing activity based costing techniques into a costing system.

6   If you are required to enforce uniform costing system in your industry, how would you proceed? Explain in detail.

7   Explain the areas where uniform costing can be applied advantageously.

8   Briefly explain what is meant by each of the following standards for managerial accountants: competence, confidentiality, integrity, and credibility.

9   Can managerial accounting plays important role in a non-profit organization? Explain your answer.

10   A company with an advanced manufacturing environment typically will have a higher break-even point, greater operating leverage, and larger safety margin than a labor-intensive firm. True or False? Explain

11   Define leverage. Explain its types. Discuss its significance.

12   'Operating leverage is determined by firm's cost structure and financial leverage by the mix of debt-equity funds used to finance the firm's fixed assets. These two leverages combined provide a risk profile of the firm". Explain.

13   'The technique of marginal costing is more used to provide a reasonable and sound basis for managerial decisions than to arrive at product cost." Explain.

14   'Cost is not the only criterion for deciding in favour of shut down. Briefly explain.

15   State the cost and non-cost considerations involved in make or buy decision.

16.   What are the main contents of a Life Cycle Costing Report?

17.   What do you understand by cost drivers and cost pools?

18.   Give the impact of Target Costing on Profitability?

19.   What is Product Mix? Is suitable product mix necessary to maximize the profits of a company?

20.   In the context of cost-volume profit analysis, what is meant by limiting factor? Discuss its utility.

21.   "The effect of a price reduction is always to reduce the P/V ratio to raise break-even point and to shorten the margin of safety". Explain and illustrate by numerical examples.

22. What do you understand by P/V ratio? Discuss the importance of P/V ratio and state how P/V ratio can be improved?
23. What is a 'Cost Driver'? What is the role of cost driver in tracing cost to products?
24. Discuss the steps in applying Activity Based Costing?
25. Distinguish between absorption costing and marginal costing.

IV   Practical Questions:

1   The following production and cost data are given for Kapila Ltd.

	2012	2011
Units manufactured	80,000	1,00,000
Units sold	1,00,000	80,000
Units selling price (Rs.)	20	20
Unit variable cost (Rs.)	6	6
Total fixed cost (Rs.)	10,00,000	10,00,000

In 2011, the company operated at normal capacity.

Prepare income statements for the two years on a standard absorption costing basis. Also explain the difference in the incomes of 2011 and 2012.

(Ans. Gross Profit: 2011: Rs. 3,20,000; 2012: 2,00,000)

2   Your company has a production capacity of 2,00,000 units per year. Normal capacity utilization is reckoned as 90%. Standard variable production costs are Rs. 11 per unit. The fixed costs are Rs. 3,60,000 per year. Variable selling costs are Rs. 3 per unit and fixed selling costs are Rs. 2,70,000 per year. The unit selling price is Rs. 20. In the year just ended on 30th June 19X3, the production was 1,60,000 units and sales were 1,50,000 units. The closing inventory on 30th June 19X3 was 20,000 units. The actual variable production costs for the year were Rs. 35,000 higher than the standard.

(i)   Calculate the profit for the year.
   (a)   by the absorption costing method, **(Ans. Rs. 2,64,375)**
   (b)   by the marginal costing method. **(Ans. 2,39,375)**
(ii)   Explain the difference in the profits.
(Ans. The difference is on account of the difference in the valuation of stocks under the two methods)

3   East India Company is currently working at 50% capacity and produces 10,000 units. At 60% working, raw material cost increases by 2% and selling price falls by 2 per cent. At 80 per cent working, raw material cost increases by 5 per cent and selling price falls by 5 per cent.
At 50% capacity working, the product costs Rs. 180 per unit and is sold at Rs. 200 per unit.

The unit cost of Rs. 180 is made up as follows:

	Rs.
Material	100
Wages	30
Factory Overheads	30 (40% fixed)
Administration Overheads	20 (50% fixed)

Prepare a Marginal Cost Statement showing the estimated profit of the business when it is operated at 60 per cent and 80 per cent capacity.

(Ans. Profit at 60% capacity: Rs. 2,12,000; at 80% capacity: Rs. 2,12,000)

4   ABC Ltd. uses a variable costing system. The following data on costs, production and sales relate to the month of January. Prepare an income statement based on variable costing. Also show the cost of ending inventories for work in process and finished goods at the end among on standard absorption costing.

Unit Variable cost (standard)	Rs.
Direct materials	5
Direct labor (3 hours x Rs. 3)	9
Variable manufacturing overheads (3 hours x Re 1)	3
Total variable manufacturing cost	17
Variable selling expenses (10% of sales prices)	4
Total variable cost	21

Cost data (actual and standard)	Standard	Actual
Variable manufacturing overheads	3,000	3,200
Fixed manufacturing overheads	5,000	5,600
Fixed selling expenses	1,000	1,000
Fixed administrative expenses	5,000	5,000
Direct labour cost		9,700
Direct materials cost		4,700
Labour hours worked		3,050 hours
Production and sales data:		
Normal capacity (units)		1,000
Units sold		800
Units completed		900
Units in process, all materials, 50% labour		100
and overheads		40
Selling price		

(Ans. Net Profit: Rs. 3,200, cost of ending inventories: for work in process: Rs. 1,184 and finished goods: Rs. 1,867)

5   X Ltd. uses both variable costing and absorption costing. Variable costing is used to provide information for internal management purposes, while absorption costing caters to the external reporting requirements.

It was expected by the company that sales would increase by 30% during the year 2012. Hence, production was increased from 1,00,000 units to 1,30,000 units. But the economic conditions turned out to be so that sales could not exceed 1,00,000 units.

The following data are for the year 2011 and 2012.

	2011	2012
Sales (units)	1,00,000	1,00,000
Production (units)	1,00,000	1,30,000
Opening inventory (units)	5,000	5,000
Closing inventory (units)	5,000	35,000
	Rs.	Rs.
Selling price per unit	25	25
Total materials, labour and variable factory Variance (unfavourable)	15,000	13,000
		Rs.
Standard variable cost per unit for both the years are:		
Materials		4
Labour		7
Variable factory overhead		3
		14
Fixed costs (actual and standard)		
Factory		5,25,000
Selling and administrative		1,75,000

The factory overhead rate under absorption costing is based upon practical plant capacity, which is 1,50,000 units per year. All variances are closed to cost of goods sold.

Prepare income statements for 2012 using variable costing and absorption costing. Also give an explanation of the differences, if any, in the net income figures and the entry, if necessary, to adjust the book figures to the financial statement figures.

(Ans. Net profit as per variable costing: Rs. 3,87,000; net profit as per absorption costing: Rs. 4,92,000)

6   Sales of a product amounted to 200 units per month at Rs. 10 per unit. Fixed overhead is Rs. 400 per month and variable cost Rs.6 per unit. There is a proposal to reduce price by 10%. Calculate the present and future P/V ratios and find by applying P/V ratios, how many units must be sold to maintain total profit?

Ans.   Present P/V Ratio40&, future P/V ratio-33.3%, unit to be sold 267)

7   X ltd. has earned contribution of Rs.2 lakh. And net profit of Rs. 150000 on sales of Rs. 8 lakhs. What is its margin of safety?

Ans.   6 lakhs

8   If margin of safety is Rs. 240000 (40% of sales and P/V ratio is 30% of AB Ltd. Calculate its

(a)   Break even sales
(b)   Amount of profit on sales of Rs.9 lakh

Ans.   BE SALES- 360000, Profit 162000

9   A Ltd. furnishes the following data relating to the year 2008:

	1st half of the year	2nd half of the year
Sales	Rs. 45,000	Rs. 50,000
Total cost	Rs. 40,000	Rs. 43,000

Assuming that there is no change in prices and variable costs and that the fixed expenses are incurred equally in the two half year periods, calculate for the year 2008:

(a) the profit – volume ratio
(b) the fixed expenses
(c) the break-even analysis
(d) the percentage of margin of safety to total sales

Ans.   PV ratio- 40%, fixed expenses-Rs.26000, break even analysis-Rs.65000, percentage of margin of safety-31.58%

10   A company sells its product at Rs. 15 per unit. Ina period if its produces and sells 8000 units, it incurs a loss of Rs. 5 per unit. If the volume is raised to 20000 units, it earns a profit of Rs. 4 per unit. Calculate B.E.P in terms of rupee as well as in units.

Ans.   180000 Rs. and 12000 units.

11   A retail dealer in garments is currently selling 24,000 shirts annually. He supplies the following details for the year ended 31st March, 2009.

Selling price per shirt	Rs. 40
Variable cost per shirt	Rs. 25

Fixed cost:

Staff salaries	Rs. 1,20,000 p.a.
General office cost	Rs. 80,000 p.a.
Advertising cost	Rs. 40,000 p.a.

As a cost accountant of a company, you are required to answer the following:

(i)   What is BEP and MOS?

(ii) Assume 20,000 units were sold during the year. Find net profit.

12   An analysis of sultan Manufacturing Co. Ltd. Led to the following information:

	Variable Cost (% of Sales)	Fixed Cost
Direct material	32.8	-
Direct labour	28.4	-
Factory Overhead	12.6	189900
Distribution overhead	4.1	58400
General administration overhead	1.1	66700

Budgeted sales are Rs.1850000. you are required to determine

1. break even sales,

2. the profit at the budgeted sales volume,

3. profit at actual sales drop by 10%

Ans. 1.   Break even sales.- 1500000

2.   The profit at the budgeted sales volume, - 73500

3.   Profit at actual sales drop by 10%- 34650

13   The following information is extracted by a financial analyst from the books of a manufacturing company:

	Rs.	Rs.
Sales		10,00,000
Variable Costs:		
Direct materials	3,00,000	
Direct labour	3,00,000	
Factory overhead	80,000	
Marketing expenses	70,000	
Administrative expenses	50,000	8,00,000

Contribution		2,00,000
Fixed costs:		
Factory overhead	50,000	
Marketing expenses	30,000	
Administrative expenses	20,000	1,00,000
Net profit		1,00,000

You are required to compute:

(1) (a) the P/V ratio and **(Ans. 20%)**
  (b) the break-even point. **(Ans. Rs. 5,00,000)**

(2) The proposal has been made to increase fixed costs by Rs. 10,000, sales and variable costs remaining unchanged. Compute the new break-even point. **(Ans. Rs. 5,50,000)**

(3) The company is also considering another proposal of modernizing its existing plant. This will need additional fixed costs of Rs. 25,000, with the expectation of saving the same amount in each of the direct materials and the direct labour costs. If this proposal is undertaken, compute

  (a) the P/V ratio, **(Ans. 25%)**
  (b) the break-even point, and **(Ans. Rs. 5,00,000)**
  (c) the profit of the company. **(Ans. 1,25,000)**

14   The sales and profit of a company during two periods were as follows:

Period	Sales (Rs.)	Profit (Rs.)
I	1,00,000	10,000
II	1,50,000	20,000

  (1) Find out the break-even point. **(Ans. 50,000)**
  (2) What amount of sales will generate a profit of Rs. 40,000? **(Ans. 2,50,000)**
  (3) What will be the profit if the sales are Rs. 20,000? **(Ans. 14,000)**

15   Two firms, X Ltd. and Y Ltd., sell identical products in the same market. Their budgeted profit and loss accounts for the year ending on 30 June 2011 are as follows:

	X Ltd.		Y Ltd.	
Sales	Rs.	Rs.	Rs.	Rs.
		4,00,000		4,00,000
Less:				
Variable costs	3,20,000		2,80,000	
Fixed costs	40,000	3,60,000	80,000	3,60,000

Net profit		40,000		40,000

You are required to:

(a) Calculate the break-even point for each firm and **(Ans. X: Rs. 2,00,000; Y: Rs. 2,66,667))**

(b) State what shall be the likely effect on the profit of the firms in conditions of (i) increasing demand for the product, (ii) falling demand for the product.

16   A multi-product company has the following costs and output data for the last year

Product				
	X	**Y**	**Z**	**Total**
Sales mix	40%	35%	25%	
Selling price (Rs.)	20	25	30	
Variable cost per unit (Rs.)	10	15	18	
Total fixed costs (Rs.)				1,50,000
Total sales (Rs.)				5,00,000

The company proposes to replace Product Z by Product S. Estimated cost and output data are:

Product				
	X	**Y**	**Z**	**Total**
Sales mix	50%	30%	20%	
Selling price (Rs.)	20	25	28	
Variable cost per unit (Rs.)	10	15	14	
Total fixed costs (Rs.)				1,50,000
Total sales (Rs.)				5,00,000

Should the company replace Z by S? Show computations.

(Ans. Product Z may be dropped to add Product Z)

17   The profit/volume ratio of Indo-Thai Co. Ltd. is 40% and its margin of safety is 50%. Work out the net profit and break-even point if sales volume is Rs. 8,00,000.

(Ans. Net Profit: Rs. 1,60,000, Break even sales: Rs. 4,00,000)

18   Alpha Company budgeted for the year 19x1 sales of Rs. 5,00,000 (selling price being Rs. 20 per unit), fixed costs Rs. 1,80,000 and variable costs Rs. 2,60,000. Find out break-even point (a) taking into consideration the budgeted figure and (b) assuming 20% increase in fixed costs. Also draw a break-even chart.

(Ans. BEP: Budgeted figure: Rs. 3,75,000; BEP: Increase in fixed costs: Rs. 4,50,000)

19   Ambitious Enterprises manufacturing table lamps is working at 40% capacity producing 10,000 lamps per year. The cost elements for each table lamp are given as under:

Material	Rs. 20
Labour	06
Overheads	10 (40% variable)

Each table lamp sells for Rs. 40. The selling price falls by 3% if production is at 50% capacity, and by 5% if worked at 90% capacity. The fall in selling prices is accompanied by similar fall in material prices.

You are required: (i) profit at 50% and 90% capacities and **(Ans. Profit at 50%: Rs. 57,500 and at 90%: Rs. 1,42,400)**

(ii) break-even points at both levels **(Ans. BEP at 50%: Rs. 2,47,660 and at 90%: Rs. 2,53,333)**.

20   XY Co. sold in two successive year 7,000 and 9,000 units and incurred a loss of Rs. 10,000 and earned Rs. 10,000 as profit respectively. The selling price per unit is Rs. 100.

Calculate: (a) the amount of fixed cost, **(Ans. Rs. 80,000)**

(b) the number of units to break-even, and **(Ans. 8,000 units)**

(c) the number of units to earn a profit of Rs. 50,000. **(Ans. 13,000 units)**

21   A company manufactures three products by processing materials through a machine shop and a finishing department. Standard product costs are based on the following figures.

Products			
	A	**B**	**C**
Materials cost (each) (Rs.)	2.30	3.50	5.00
Labour hours:			
Machine (50 p. per hour) HRs.	2	2 ½	1
Finishing (60 p. per hour) HRs.	2	1 ½	1
Selling prices (each) Rs.	8.50	10.20	12.00

Overhead rates, based on normal production, as shown in the budget are:
Machine shop: Re 1.00 per hour
Finishing department: 60 p. per hour

Examination of the overhead used in the budget shows that at the budgeted level of production one half of the total overheads charged to each department is of a variable nature, the other half being regarded as fixed. Present information to management to enable the relative profitability of the three products to be assessed when there is a shortage of any of the factors of production.

22   Ginni Products Ltd. manufactures presents the following information for the past year. The following data are available:

	Rs.
Materials cost	120000
labour costs	240000
Variable overhead	60000
Fixed overhead	120,000
Selling price per unit	50
Units produced	12000

The available capacity is production of 20000 units per year. The firm has an offer for the purchase of 5000 chairs at a price of Rs. 40 per unit. It is expected that by expecting this offer their will be a saving of Rs. 1 per unit. In material cost on all units manufactured. The fixed overhead will have increased by Rs. 35000 and overall efficiency will drop by 2% on all production. Draft a report to the management giving your recommendation as to whether or not this offer should be accepted.

Ans. The offer should not be expected as it would decrease profit by 1500.)

23   A company manufactures and markets three products P, Q and R. All the three products are made from the same set of machines. Production is limited by machine capacity. From the data given below, indicate the priorities for Products P, Q and R with a view to maximizing profits.

	P	Q	R
Raw material cost per unit	11.00	16.25	21.00
Direct labour cost per unit	2.50	2.50	2.50
Other variable cost per unit	1.50	2.25	3.50
Selling price per unit	25.00	30.00	35.00
Standard machine time required per unit (in minutes)	40	20	25

Ans.   Priority ranking- Q, R, P. contribution per minute- P-.25, Q-.45, R-.32

24   Ginni Products Ltd. manufactures and markets a single product. The following data are available:

	Rs.
Materials	16 per unit
Other variable costs	12 per unit
Dealer's margin	4 per unit
Fixed costs	3,00,000
Present capacity	90,000 units
Capacity utilization	60%

The selling price is Rs. 40 per unit. There is acute competition. Extra efforts are necessary to sell the product. Suggestions have been made for increasing sales:

(i) by reducing sales price by 5%

(ii) by increasing dealer's margin by 25%

Which of the two suggestions will you recommend, if the company desires to maintain the current profit. Give reasons/working in support of your recommendation.

Ans.   Present Profit - Rs.220000.

a.   Units required to maintain the same profit 116111 units
b.   Units required to maintain the same profit 102857 units.
             Second proposal is recommended)

25   ABC Ltd. has been offered an order from A Ltd. for 10000 units of output at Rs. 100 each which has a variable cost of Rs.60. and will involve an outlay of 60000 to set up jigs and dies. At the same time there is another offer of D Ltd. for 8000 units of output at Rs. 110 each. Variable cost are estimated at Rs. 68 each and involves an outlay of 50000 to setup jigs and dies. Which offered should the company accept.

     Ans.   A Ltd. offer

26   The following particulars are obtained from costing records of a factory:

Particulars	Product A (Per unit) Rs	Product A (Per unit) Rs
Selling Price	200	500
Material (Rs. 20 Per litre)	40	160
Labor (Rs. 10 Per Hour)	50	100
Variable Overhead	20	40

     Total fixed overheads--- Rs. 15000

Comment on the profitability of each product when:

(a) raw material is in short supply
(b) production capacity is limited
(c) sales quantity is limited
(d) sales value is limited
(e) only 1000 liters of raw material is available for both the products in total and maximum sales quantity of each product is 300 units.

Ans: Maximum Profit Rs. 22000

27   A company is producing an identical product in two factories. The following are the details in respect of both the factories:

	Factory X	Factory Y
Selling price per unit	Rs. 50	Rs. 40
Variable cost per unit	40	5
Fixed Cost	2,00,000	3,00,000
Depreciation included in above	40,000	30,000
Sales (Units)	30,000	20,000
Production capacity (units)	40,000	30,000

You are required to determine:

(b)   Break-even Point (BEP) for each factory individually
(c)   Which factory is more profitable?
(d)   Cash BEP for each factory individually
(e)   BEP for company as a whole assuming present product mix
(f)   BEP for company as a whole assuming the product mix can be altered as desired.
        Note: BEP may be indicated in number of units.

28   Calculate degree of (i) operating leverage, (ii) financial leverage and (iii) combined leverage from the following data:
      Sales 1,00,000 units @ 2 per unit = Rs. 2,00,000
      Variable Cost per unit @ Re. 0.70ZAz
      Fixed Costs Rs. 1,00,000
      Interest Charges Rs. 3,668
      Ans.   (i) 4.33, (ii) 1.14, (iii) 4.

29   Calculate the Degree of Operating Leverage, Degree of Financial Leverage and the Degree of Combined Leverage for the following firms and interpret the results:

	P	Q	R
Output (Units)	3,00,000	75,000	5,00,000
Fixed Costs (Rs.)	3,50,000	7,00,000	75,000
Unit Variable Cost (Rs.)	1.00	7.50	0.10

| Interest Expenses (Rs.) | 25,000 | 40,000 | Nil |
| Unit Selling Price (Rs.) | 3.00 | 25.00 | 0.50 |

Ans. Operating Leverage P = 2.40, Q = 2.14, R=1.60
Financial Leverage P = 1.11, Q = 1.07, R=1.00
Combined Leverage P = 2.67, Q = 2.29, R=1.60

30   The following is the balance sheet of a company:

BALANCE SHEET

Liabilities	*Amount(Rs.)*	*Assets*	*Amount(Rs.)*
Equity Capital	60,000	Net Fixed Assets	1,50,000
(Rs. 10 per share)			
10% Long-term debt	80,000	Current Assets	50,000
Retained earnings	20,000		
Current Liabilities	40,000		
	2,00,000		2,00,000

The company's total assets turnover ratio is 3.0, its fixed operating costs are Rs. 1,00,000 and its variable operating costs ratio is 40%. The income tax rate is 50%.

(i)   Calculate for the company all the three types of leverages.
(ii)   Determine the likely level of EBIT if EPS is (a) Re. 1, (b) Rs. 3, and (c) Zero.

Ans.   (i) OL 1.385; FL 1.032, CL 1.429; (ii) (a) Rs. 20,000, (b) 44,000, (c) Rs. 8,000

31   XYZ Ltd. supplies you the following data, for the year ending 31 December 2012.

Production 1100 units, sales 1000 units There was no opening stock.	Rs.
Variable manufacturing cost per unit	7
Fixed manufacturing overheads (Total)	2,200
Variable selling and administration overheads (Total)	0.50
Fixed selling and administration overheads (Total)	400
Selling price per unit	15

Prepare:

(i)   Income statement under marginal costing
(ii)   Income statement under absorption costing.
(iii)   Explain the difference in profit under marginal and absorption costing. If any.

Ans: (i) 4,900 (ii) 5,100 (iii) 200

32   Western Radio Company sold 10,000 radios last year at a price of Rs. 500 each. The
cost   structure per radio is as follows:

Materials	100
Labour	50
Variable overheads	25
Marginal cost	175
Fixed overheads	200
Total cost	375

Due to competition, the price has to be reduced to Rs. 425 for the coming year. Assuming that there will be no change in costs, find out how many radios shall be sold to ensure the same amount of total profit as last year.

33. The following information is given:

Sales	= Rs. 2,00,000
Variable cost	= Rs. 1,20,000
Fixed cost	= Rs. 30,000

  (a)   Break-even point
  (b)   New break-even point if selling price is reduced by 10%
  (c)   New break-even point if variable cost increases by 10%
  (d)   New break-even point if fixed cost increases by 10%

Ans: (a) Rs. 75,000 (b) Rs. 90,000 (c) Rs. 88,235 (d) 82,500

34   Calculate margin of safety in each of the following independent situations:

  (i)   Break-even point 40%, Actual sales Rs. 40,000
  (ii)   Actual sales – 40,000 units, break-even point 25,000 units.
  (iii)   Break-even point 75%
  (iv)   P/V ratio 40%, Profit Rs. 35,000
  (v)   Contribution per unit Rs. 20, profit Rs. 15,000

  Ans:
          (i)   24,000 (ii) 15,000 units (iii) 87,500 (iv) 750 units
 35 The variable cost structure of a product manufactured by a company during the current year is as under:

Material	Rs. 120 Per unit
Labour	Rs. 30

Overheads	Rs. 12

The selling price per unit is Rs. 270 and the fixed cost and sales during the current year are Rs. 14 lakh and Rs. 40.50 lakh, respectively.

During the forthcoming year, the direct workers will be entitled to a wage increase of 10% from the beginning of the year and the material cost, variable overheads and fixed overheads are expected to increase by 7.5%, 5% and 3% respectively.

The following are required to be computed:

(a)   New sale price in the forthcoming year if the current P/V ratio is to be maintained.
(b)   Number of units that would require to be sold during the forthcoming year, so as to yield the same amount of profit in the current year, assuming that selling price per unit will not be increased.

Ans: (a) Rs. 291 (b) Rs. 17,421 units

36   The following particulars are extracted from the records of a company:

	Product A	**Product B**
Selling price (per unit)	Rs. 100	Rs. 120
Consumption of material	2 kgs	3 kgs
Material cost	Rs. 10	Rs. 15
Direct wages	Rs. 15	Rs. 10
Direct expenses	3	2
Machine hours used Overhead expenses: Fixed Variable Direct wages per hour is Rs. 5	 Rs. 5 Rs. 15	 Rs. 10 Rs. 20

(a) Comment on the profitability of each product (Both use the same raw material) when:
(i)   Total sales potential in units is limited;
(ii)   Total sales potential in value is limited;
(iii)   Raw material is in short supply; and
(iv)   Production capacity (in terms of machine hours) is the limiting factor.

(b) Assuming raw material as the key factor, availability of which of 10,000 kgs and maximum sales potential of each product being 3,500 units, find out the product   mix which will yield the maximum profit.

Ans: Product A 18.3 Product B 34.5

37 A manufacturer of plastic buckets makes an average profit of Rs. 2.5 per piece on a selling price of Rs. 14.50 by producing and selling 60,000 pieces at 60% of potential capacity. His cost of sales is:

	Rs. Per piece
Direct materials	4.00
Direct wages	1.00
Factory overheads (Variable)	3.00
Selling overheads (Variable)	0.25
Total fixed cost is Rs. 2,25,000	

During the current year, he intends to produce the same number of units, but anticipates that (a) fixed cost will go up by 10% and (b) material and labor costs will go up by 5% each.

Under these circumstances, he obtains a bulk offer for a further 20% of his capacity. What minimum price you would recommend for acceptance to ensure an overall profit of Rs. 1,60,000.

Ans: Minimum price for sale of additional 20,000 units is Rs. 10.875, so as to ensure an overall profit of Rs. 1,60,000.

38   Manufacture of product A takes 20 hours on machine no. 101. It has a selling price of Rs.   150 and marginal cost of Rs. 110. Component part Y could be made on machine no. 101   in hours. The marginal cost of component part is Rs. 9 of which outside supplier's price is Rs. 15.

Should one make or buy component Y. Discuss in both situations when:
- (a) Machine no. 101 is working at full capacity.
- (b) There is idle capacity.

39.   A company has two similar plants and the company wants to merge these two plants. The   following particulars are available:

Capacity in operations	Plant I 100%	Plant II 60%
Sales	Rs. 3,00,000	Rs. 1,20,000
Variable cost	Rs. 2,20,000	Rs. 90,000
Fixed cost	Rs. 40,000	Rs. 20,000

Calculate:
(a)   Capacity of the merged plant to be operated for the purpose of break – even point.(Ans. Merged P/V ratio = 26%, Break-even Point= Rs. 2,30,769.23)
(b)   What would be the Profit/Loss on working at 75% of merged capacity.(Ans. Rs. 37, 500)

40. Calculate break even point from the following:
   Sales Rs. 5, 00,000
   Variable Cost Rs. 3, 00,000
   Ans. BEP: Rs 2, 50,000

II. Following data are extracted from the books of A,B,C Ltd.
   i. Fixed cost Rs. 3,00,000
   ii. Contribution (per unit) :
      Product X= Rs. 6.00
      Product Y= Rs. 2.50
      Product Z= Rs. 4.00

   iii. Sales X= 24,000 units @ 12.50
      Y= 1,00,000 units @ Rs. 7.00
      Z= 50,000 units @Rs. 10.00
      Calculate BEP

   Ans. Composite BEP Rs. 7,57,575 or
   BEP sales of product
   X Rs. 1,51,515 or 1212 units
   Y Rs. 3,53,535 or 50,505 units
   Z Rs. 2,52,525 or 25,253 units

41. A co. has sales of Rs. 1 Lk, The variable cost is 40% of sales, while fized operating cost is Rs. 30,000. The amount of interest on long term loan is Rs. 10000
   You are required to calculate:
   i. Operating Leverage
   ii. Financial Leverage
   iii. Composite Leverage and
   iv. Impact if sales is increased by 5%

   Ans. Operating Leverage: 2 and 1.91
   Financial Leverage: 1.5 and 33/23
   Composite Leverage: 3.0 and 63/23
   Impact : Profit is increased by 15%

42. Due to lack of demand in domestic market a company is operating its plant at 50% capacity and looking for export the following details are available:
   Cost of production per unit:
   Direct Material   Rs. 20
   Direct Labour   Rs. 10
   Variable Overheads   Rs. 30
   Fixed Overheads   Rs. 20
                Rs. 80

   Production per month   20,000 units
   Total Cost of production Rs. 16,00,000
   Sales Price   Rs. 14,00,000
           Loss   Rs. 2,00,000

An exporter offers to buy 5000 units at the rate of Rs. 65 per unit. You are required to advise the co. whether it should accept this offer or not giving reasons.

Ans : should accept the offer as the amount of Rs. Will be reduced from Rs2,00,000 to Rs. 1,75,000)

43. A radio manufacturing co. finds that while it costs Rs. 6.25 each to make a component used in production the same is available in the market at Rs. 5.75 each with an assurance to continued supply. The same is available in the market at Rs. 5.75 each with an assurance if continued supply. The break up costs is :

Materials	Rs. 2.75 each
Labour	Rs. 1.75 each
Other Variable cost	Rs. 0.50 each
Depreciation and other fixed cost	Rs. 1.25 each
	Rs. 6.25 each

You are required to suggest the company:
a) Should it buy or make ?
b) What would be your decision if the supplier offers the component at Rs. 4.85 each

Ans. a) Variable cost is less than buying cost therefore it should not buy.

b) If supplier offers it at Rs. 4.85 than it should be purchased as it is Rs. 0.15 less

than the Variable Cost.

44. The cost, volume and profit relationship of a company is described by equation Y= Rs. 3,00,000 + 0.7X in which X represents sales revenue and Y represents the total cost. Find out the following:
   I. C/S ratio
   II. BE point
   III. Sales volume required to earn profit of Rs. 90,000
   IV. Sales volume when there is a loss of Rs. 30,000
   (Ans: i) 30%, ii) Rs10,00,000, iii) Rs. 13,00,000, iv) Rs. 9,00,000)

45. A plant is operating at 60% capacity. The fixed cost for operating the plant amounts to Rs 20,000, and the variable cost is Rs 80000. the sale proceeds of the product realize Rs 1,25,000. The managing director asks the management accountant to find out for him the percentage of capacity at which the plant should work so that a profit of Rs 30000 is realized.

   (Ans. 66 $^2/_3$ %)

46. Modern company has maximum capacity of 4,40,000 units per annum. Normal capacity is regarded as 3,60,000 unit in a year. Variable manufacturing cost (including material and labour) is Rs. 2.20 per unit. Fixed factory overhead is Rs. 1,08,000 per annum. Selling and Distribution cost of the fixed nature is Rs. 50,400 per annum where as variable is Rs. 0.60 per unit. Sale price is Rs. 4 per unit. Calculate: (i) Break-even point, P/V Ratio and Margin of Safety. (ii) Number of

units to be sold to earn a profit of Rs. 12,000 in a year. (iii) Sales value needed to earn a profit of 10% on sales. (iv) Selling price per unit to bring down break - even point to 1,20,000 units of the product.

(Ans. i) 30%, 5,28,000 , 63.3% ii) 1,42,000, iii) 7,92,000, iv)4.12

47. Calculate the degree of operating leverage, DFL, and degree of combined leverage for the following firms and interpret the results :

Particulars	P	Q	R
Output(units)	2,50,000	1,25,000	7,50,000
Fixed Cost (Rs.)	5,00,000	2,50,000	10,00,000
Unit Variable Cost(Rs.)	5	2	7.5
Unit Selling Price(Rs.)	7.5	7	10
Interest Expense(Rs.)	75,000	25,000	-

(Ans.)

	P	**Q**	**R**
DOL	**5**	**1.67**	**2.14**
DFL	**2.5**	**1.07**	**-**
DCL	**12.5**	**1.79**	**2.14**

48. S. Ltd. manufactures and markets a single product. The following information is available:

	Rs. *per unit*
Materials	8.00
Conversion costs (variable)	6.00
Dealer's margin	2.00
Selling price	20.00

Fixed cost   Rs.   2,50,000
Present sales   80,000 units
Capacity utilization: 60 %
There is acute competition. Extra efforts are necessary to sell. Suggestions have been made for increasing sales:
(i) By reducing sales price by 5%
(ii) By increasing dealers margin by 25% over the existing rate.
Which of the two suggestions you would recommend if the company desires to maintain the present profit? Give reasons.

(Ans: C (at current level) = Rs 3,60,000, (i) 1,16,111 units, (ii) 1,02, 857 units.)

49. 'A Limited' has two factories X and Y producing the same article whose selling price is Rs. 150 per unit. The following are the other particulars:

	Factory X	*Factory Y*
Capacity (unit)	10,000	15,000
Variable cost per unit (Rs)	100	120
Fixed expenses (Rs.)	3, 00,000	2, 10,000

Determine the BEP for the two factories and for the company as a whole assuming Constant Sales Mix.**(Ans: X = Rs. 8, 05,263 or 5,369 units, Y = Rs. 12, 07,895 or 8,052 units)**

50.	A factory produces 300 units of a product per month. The selling price is Rs. 120 and variable cost Rs. 80 per unit. The fixed expenses of the factory amount to Rs 8,000 per month. Calculate: (i) the estimated profit in a month wherein 240 units are produced, (ii) the sales to be made to earn a profit of Rs. 7,000 per month.

(Ans: P/V ratio = 33.33%, (i) Rs 1,600, (ii) Desired sales = Rs. 45,