1st section

1 The use of decision models.

A. Is possible when the variables value is known

B. Reduces the scope of judgement & intuition known with certainty in decision-making

C. Require the use of computer software

D. None of the above

2 Every mathematical model.

A. Must be deterministic

B. Requires computer aid for its solution

C. Represents data in numerical form

D. All of the above

3 A physical model is example of.

A. An iconic model

B. An analogue model

C. A verbal model

D. A mathematical model

4 The qualitative approach to decision analysis relies on.

A. Experience

B. Judgement

C. Intuition

Moody Cmmms

D. All of the above

5 Operations Research, which is a very powerful tool for _____.

A. Research

B. Decision – Making

C. Operations

D. None of the above

6 Who coined the term Operations Research?

A. J.F. McCloskey

B. F.N. Trefethen

C. P.F. Adams

D. Both A and B

7 Who defined Operations Research as scientific approach to problem solving for executive management ?

A. E.L. Arnoff

B. P.M.S. Blackett

C. H.M. Wagner (c is correct)

D. None of the above

8 Who defined Operations Research as an aid for the executive in marketing his decisions by providing him with the quantitative information based on the scientific method of analysis ?

A. C. Kitte (a is correct)

Moody Cmmms

B. H.M. Wagner

C. E.L. Arnoff

D. None of the above

9 The term Operations Research was coined in the year _____.

A. 1950

B. 1940 (b is correct)

C. 1978

D. 1960

10 This innovative science of Operations Research was discovered during _____.

A. Civil War

B. World War I

C. World War II (c is correct)

D. Industrial Revolution

11 Operations Research was known as an ability to win a war without really going in to a _____.

A. Battle field

B. Fighting

C. War

D. Both A and B (d is correct)

12 Who defined Operations Research as scientific method of providing executive departments with a quantitative basis for decisions regarding the operations under their control?

A. Morse and Kimball (1946) (A is correct)

B. P.M.S. Blackett (1948)

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C. E.L. Arnoff and M.J. Netzorg

D. None of the above

13 Operations Research has the characteristics the it is done by a team of _____.

A. Scientists (a is correct)

B. Mathematicians

C. Academics

D. All of the above

14 There is a great scope for _____ working as a team to solve problems of defence by using the Operations Research approach.

A. Economists

B. Administrators

C. Statisticians and Technicians

D. All of the above (d is correct)

15 Operations Research emphasizes on the overall approach to the system. This characteristics of Operations Research is often referred as.

A. System Orientation

B. System Approach

C. Interdisciplinary

D. Team Approach (d is correct)

Moody Cmmms

16 Operations Research cannot give perfect _____ to problems.

A. Answers

B. Solutions

C. Both A and B (c is correct)

D. Decisions

17 Operations Research study generally involves how many phases ?

A. Three (a is correct)

B. Four

C. Five

D. Two

18 _____ models involves the allocation of resources to activities in such a manner that some measure of effectiveness is optimized.

A. Sequencing

B. Allocation Models (b is correct)

C. Queuing Theory

D. Decision Theory

19 Allocation problems can be solved by.

A. Linear Programming Technique

B. Non – Linear Programming Technique

C. Both A and B (c is correct).

Moody Cmms

20 In _____ models, everything is defined and the results are certain,.

A. Deterministic Models (a is correct)

B. Probabilistic Models

C. Both A and B

D. None of the above

21 In _____ models there is risk and uncertainty.

A. Deterministic Models

B. Probabilistic Models (b is correct)

C. Both A and B

D. None of the above

22 _____ models are obtained by enlarging or reducing the size of the item.

A. Iconic Models (a is correct)

B. Analogue Models

C. Symbolic Models

D. None of the above

23 Operations Research attempts to find the best and _____ solution to a problem.

A. Optimum (a is correct)

B. Perfect

C. Degenerate

D. None of the above

24 The word _____ may be defined as some action that we apply to some problems or hypothesis.

A. Research

Moody Cmms

B. Operation (b is correct)

C. Both A and B

D. None of the above

25 The operations Research technique, specially used to determine the optimum strategy is.

A. Decision Theory

B. Simulation (b is correct)

C. Game Theory

D. None of the above

26 _____ are the representation of reality.

A. Models (a is correct)

B. Phases

C. Both A and B

D. None of the above

27 _____ are called mathematical models.

A. Iconic Models

B. Analogue Models

C. Symbolic Models (c is correct)

D. None of the above

28 Probabilistic models are also known as.

A. Deterministic Models

B. Stochastic Models (b is correct)

C. Dynamic Models

D. Static Models

29._____ models assumes that the values of the variables do not change with time during a particular period.

Moody Cmmms

A. Static Models (a is correct)

B. Dynamic Models

C. Both A and B

D. None of the above

30.A _____ models considers time as one of the important variable.

A. Static Models

B. Dynamic Models (b is correct)

C. Both A and B

D. None of the above

31._____ may be defined as a method of determining an optimum programme inter dependent activities in view of available resources.

A. Goal Programming

B. Linear Programming (b is correct)

C. Decision Making

D. None of the above

32._____ are expressed is n the form of inequities or equations.

A. Constraints (a is correct)

B. Objective Functions

C. Both A and B

D. None of the above

33.If there are more than one optimum solution for the decision variable the solution is _____.

A. Infeasible

Moody Cmmms

B. Unbounded

C. Alternative (c is correct)

D. None of the above

34.Dual of the dual is _____.

A. Primal (a is correct)

B. Dual

C. Alternative

D. None of the above

35.Operations Research approach is _____

A. Multi disciplinary (a is correct)

B. Scientific

C. Initiative

D. All of the above

36.For analyzing the problem , decision – makers should normally study.

A. Its qualitative aspects (a is correct)

B. Its quantitative aspects

C. Both A and B

D. Neither A and B

37.Decision variables are _____

A. Controllable (a is correct)

B. Uncontrollable

C. Parameters

D. None of the above

Moody Cmmms

38.The issue of decision models.

A. Is possible when the variable's value is

B. Reduces the scope of judgment and intuition known with certainty in decision making

C. Requires the knowledge of computer software use

D. None of the above (d is correct)

39._____ is one of the fundamental combinatorial optimization problems.

A. Assignment problem (a is correct)

B. Transportation problem

C. Optimization Problem

D. None of the above

40.An optimization model.

A. Mathematically provides the best decision

B. Provides decision within its limited context

C. Helps in evaluating various alternatives constantly

D. All of the above (d is correct)

41.The quantitative approach to decision analysis is a.

A. Logical approach

B. Rational approach

C. Scientific approach (c is correct)

D. All of the above

42.Operations Research approach is typically based on the use of.

A. Physical model

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B. Mathematical model (b is correct)

C. Iconic model

D. Descriptive model

43.In a manufacturing process, who takes the decisions as to what quantities and which process or processes are to be used so that the cost is minimum and profit is maximum?

A. Supervisor

B. Manufacturer

C. Producer

D. Production manager (d is correct)

44.For analyzing a problem, decision-makers should study.

A. Its qualitative aspects

B. Its quantitative aspects

C. Both a & b (c is correct)

D. Neither a nor b

45.A model is.

A. An essence of reality

B. An approximation

C. An idealization

D. All of the above (d is correct)

46.Managerial decisions are based on.

A. An evaluation of quantitative data

B. The use of qualitative factors

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C. Results generated by formal models

D. All of the above (d is correct)

47.The initial solution of a transportation problem can be obtained by applying any known method. However, the only condition is that.

A. The solution be optimal

B. The rim conditions are satisfied (b is correct)

C. The solution not be degenerate

D. All of the above

48.The dummy source or destination in a transportation problem is added to.

A. Satisfy rim conditions (a is correct)

B. Prevent solution from becoming degenerate

C. Ensure that total cost does not exceed a limit

D. None of the above

49.The occurrence of degeneracy while solving a transportation problem means that.

A. Total supply equals total demand

B. The solution so obtained is not feasible (b is correct)

C. The few allocations become negative

D. None of the above

50.An alternative optimal solution to a minimization transportation problem exists whenever opportunity cost corresponding to unused route of transportation is:

Moody Cmmms

A. Positive & greater than zero

B. Positive with at least one equal to zero (b is correct)

C. Negative with at least one equal to zero

D. None of the above

51.One disadvantage of using North-West Corner rule to find initial solution to the transportation problem is that.

A. It is complicated to use

B. It does not take into account cost of transportation (b is correct)

C. It leads to a degenerate initial solution

D. All of the above

52.The solution to a transportation problem with 'm' rows (supplies) & 'n' columns (destination) is feasible if number of positive allocations are.

A. m+n

B. m*n

C. m+n-1 (c is correct)

D. m+n+1

53.If an opportunity cost value is used for an unused cell to test optimality, it should be.

A. Equal to zero

B. Most negative number (b is correct)

C. Most positive number

D. Any value

Moody Cmmms

54.During an iteration while moving from one solution to the next, degeneracy may occur when.

A. The closed path indicates a diagonal move

B. Two or more occupied cells are on the closed path but neither of them represents a corner of the path.

C. Two or more occupied cells on the closed path with minus sign are tied for lowest circled value (c is correct)

D. Either of the above

55.The large negative opportunity cost value in an unused cell in a transportation table is chosen to improve the current solution because.

A. It represents per unit cost reduction (a is correct)

B. It represents per unit cost improvement

C. It ensure no rim requirement violation

D. None of the above

56.The smallest quantity is chosen at the corners of the closed path with negative sign to be assigned at unused cell because.

A. It improve the total cost

B. It does not disturb rim conditions

C. It ensure feasible solution (c is correct)

D. All of the above

57.When total supply is equal to total demand in a transportation problem, the problem is said to be?

A. Balanced (a is correct)

B. Unbalanced

C. Degenerate

D. None of the above

Moody Cmms

58.Which of the following methods is used to verify the optimality of the current solution of the transportation problem?

A. Least cost method

B. Vogel's approximation method

C. Modified distribution method (c is correct)

D. All of the above

59.The degeneracy in the transportation problem indicates that

A. Dummy allocation(s) needs to be added

B. The problem has no feasible solution

C. The multiple optimal solution exist (c is correct)

D. a & b but not c

60.An assignment problem is considered as a particular case of a transportation problem because.

A. The number of rows equals columns

B. All xij = 0 or 1

C. All rim conditions are 1

D. All of the above (d is correct)

61.An optimal assignment requires that the maximum number of lines that can be drawn through squares with zero opportunity cost be equal to the number of.

A. Rows or columns (a is correct)

B. Rows & columns

C. Rows + columns – 1

D. None of the above

62.While solving an assignment problem, an activity is assigned to a resource through a square with zero opportunity cost because the objective is to?

Moody Cmmms

A. Minimize total cost of assignment (a is correct)

B. Reduce the cost of assignment to zero

C. Reduce the cost of that particular assignment to zero

D. All of the above

63.The method used for solving an assignment problem is called.

A. Reduced matrix method

B. MODI method

C. Hungarian method **(c is correct)**

D. None of the above

64.The purpose of a dummy row or column in an assignment problem is to.

A. Obtain balance between total activities & total resources (a is correct)

B. Prevent a solution from becoming degenerate

C. Provide a means of representing a dummy problem

D. None of the above

65.If there were n workers & n jobs there would be.

A. n! solutions (a is correct)

B. (n-1)! solutions

C. (n!)n solutions

D. n solutions

66.An assignment problem can be solved by.

A. Simplex method

B. Transportation method

C. Both a & b (c is correct)

Moody Cmmms

D. None of the above

67.For a salesman who has to visit n cities which of the following are the ways of his tour plan.

A. n!

B. (n+1)!

C. (n-1)! (C is correct)

D. n

68.The assignment problem.

A. Requires that only one activity be assigned to each resource

B. Is a special case of transportation problem

C. Can be used to maximize resources

D. All of the above **(d is correct)**

69.An assignment problem is a special case of transportation problem, where.

A. Number of rows equals number of columns

B. All rim conditions are 1

C. Values of each decision variable is either 0 or 1

D. All of the above (d is correct)

70.Every basic feasible solution of a general assignment problem, having a square pay-off matrix of order, n should have assignments equal to.

A. 2n+1

B. 2n-1 **(b is correct)**

C. m+n-1

D. m+n

Moody Cmmms

Section 2

1. To proceed with the MODI algorithm for solving an assignment problem, the number of dummy allocations need to be added are.

A. n

B. 2n

C. n-1

D. 2n-1

Answer: **Option C**
Solution:
To proceed with the MODI algorithm for solving an assignment problem, the number of dummy allocations need to be added are n-1. The Modified Distribution Method or MODI is an efficient method of checking the optimality of the initial feasible solution.

2.

The Hungarian method for solving an assignment problem can also be used to solve.

A. A transportation problem

B. A travelling salesman problem

C. A LP problem

D. Both a & b

Answer: **Option B**
Solution:
The Hungarian method for solving an assignment problem can also be used to solve a travelling salesman problem. The Hungarian method is a combinatorial optimization algorithm that solves the assignment problem in polynomial time and which anticipated later primal-dual methods.

3.

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An optimal solution of an assignment problem can be obtained only if.

A. Each row & column has only one zero element

B. Each row & column has at least one zero element

C. The data is arrangement in a square matrix

D. None of the above

Answer: **Option D**
Solution:
If the number of assigned cells is equal to the number of rows/columns, then it is an optimal solution.

4.

The objective functions and constraints are linear relationship between _____.

A. Variables

B. Constraints

C. Functions

D. All of the above

Answer: **Option A**
Solution:
The objective functions and constraints are linear relationship between variables. This means that no variables can be multiplied with each other. This formulation is called the Standard form.

5.

Assignment problem helps to find a maximum weight identical in nature in a weighted _____.

A. Tripartite graph

B. Bipartite graph

C. Partite graph

D. None of the above

Answer: **Option B**
Solution:
Assignment problem helps to find a maximum weight identical in nature in a weighted Bipartite graph. The assignment problem is a well-known graph optimization problem defined on weighted-bipartite graphs. The objective of the standard assignment problem is to maximize the summation of the weights of the matched edges of the bipartite graph. In the standard assignment problem, any node in one partition can be matched with any node in the other partition without any restriction. In this paper, variations of the standard assignment problem are defined with matching constraints by introducing structures in the partitions of the bipartite graph, and by defining constraints on these structures.

6.

All the parameters in the linear programming model are assumed to be _____.

A. Variables

B. Constraints

C. Functions

D. None of the above

Answer: **Option B**

Solution:

All the parameters in the linear programming model are assumed to be Constraints. For a problem to be a linear programming problem, the decision variables, objective function and constraints all have to be linear functions. If the all the three conditions are satisfied, it is called a Linear Programming Problem.

7.

The solution need not be in _____ numbers.

Moody Cm

A. Prime Number

B. Whole Number

C. Complex Number

D. None of the above

Answer: **Option B**

Solution:

The solution need not be in whole numbers.

8.

Graphic method can be applied to solve a LPP when there are only _____ variable.

A. One

B. More than One

C. Two

D. Three

Answer: **Option C**

Solution:

Graphic method can be applied to solve a LPP when there are only two variable. This method is used to solve a two variable linear program. If you have only two decision variables, you should use the graphical method to find the optimal solution. A graphical method involves formulating a set of linear inequalities subject to the constraints. Then the inequalities are plotted on a X-Y plane.

9.

If the feasible region of a LPP is empty, the solution is _____.

A. Infeasible

B. Unbounded

C. Alternative

D. None of the above

Answer: **Option A**

Solution:

If the feasible region of a LPP is empty, the solution is infeasible. A linear program is infeasible if there exists no solution that satisfies all of the constraints -- in other words, if no feasible solution can be constructed. Since any real operation that you are modelling must remain within the constraints of reality, infeasibility most often indicates an error of some kind. Simplex-based LP software like lp_solve efficiently detects when no feasible solution is possible.

10.

The variables whose coefficient vectors are unit vectors are called _____.

A. Unit Variables

B. Basic Variables

C. Non basic Variables

D. None of the above

Answer: **Option B**

Solution:

The variables whose coefficient vectors are unit vectors are called basic variables. The basic variables can be defined as the m variables which can take any value other than zero. Moreover, if the variables satisfy the non-negativity condition of the LP model, the basic solution created by them is called the basic feasible solution. The remaining variables are known as the non-basic variables.

Moody Cr

11.

Any column or raw of a simplex table is called a _____.

A. Vector

B. Key column

C. Key Raw

D. None of the above

Answer: **Option A**
Solution:
Any column or raw of a simplex table is called a vector. The simplex method, in mathematical optimization, is a well-known algorithm used for linear programming.

12.

If there are 'm' original variables and 'n' introduced variables, then there will be _____ columns in the simplex table.

A. M + n

B. M – n

C. 3 +m + n

D. M + n – 1

Answer: **Option C**
Solution:
If there are 'm' original variables and 'n' introduced variables, then there will be 3 + m + n columns in the simplex table.

13.

A minimization problem can be converted into a maximization problem by changing the sign of coefficients in the _____.

Moody Chi...ms

A. Constraints

B. Objective Functions

C. Both A and B

D. None of the above

Answer: **Option B**
Solution:
A minimization problem can be converted into a maximization problem by changing the sign of coefficients in the objective functions. A minimization problem is in standard form if the objective function is to be minimized, subject to the constraints where.

14.

If in a LPP , the solution of a variable can be made infinity large without violating the constraints, the solution is _____.

A. Infeasible

B. Unbounded

C. Alternative

D. None of the above

Answer: **Option B**
Solution:
If in a LPP , the solution of a variable can be made infinity large without violating the constraints, the solution is unbounded. An unbounded solution of a linear programming problem is a situation where objective function is infinite. A linear programming problem is said to have unbounded solution if its solution can be made infinitely large without violating any of its constraints in the problem.

15.

In maximization cases, _____ are assigned to the artificial variables as their coefficients in the objective function.

A. +m

B. –m

C. 0

D. None of the above

Answer: **Option A**
Solution:
In maximization cases, +m are assigned to the artificial variables as their coefficients in the objective function. There may be situation when the assignment problem calls for maximization of profit. Such problem can be solved by converting the given maximization problem into minimization problem by substracting all the elements of the given matrix from the highest element.

16.

In simplex method, we add _____ variables in the case of '='.

A. Slack Variable

B. Surplus Variable

C. Artificial Variable

D. None of the above

Answer: **Option C**

Solution:

In simplex method, we add artificial variable variables in the case of '='. In order to use the simplex method on problems with mixed constraints, we turn to a device called an artificial variable. This variable has no physical meaning in the original problem and is introduced solely for the purpose of obtaining a basic feasible solution so that we can apply the simplex method.

17.

In simplex method, if there is tie between a decision variable and a slack (or surplus) variable, _____ should be selected.

A. Slack variable

B. Surplus variable

C. Decision variable

D. None of the above

Answer: **Option C**

Solution:

In simplex method, if there is tie between a decision variable and a slack (or surplus) variable, Decision variable should be selected. A decision variable is a quantity that the decision-maker controls.

18.

A BFS of a LPP is said to be _____ if at least one of the basic variable is zero.

A. Degenerate

B. Non_degenerate

C. Infeasible

D. Unbounded

Answer: **Option A**

Solution:

A BFS of a LPP is said to be degenerate if at least one of the basic variable is zero. A basic feasible solution is called degenerate if value of at least one basic variable is zero.

19.

In LPP, degeneracy occurs in _____ stages.

A. One

B. Two

C. Three

D. Four

Answer: **Option B**

Solution:

In LPP, degeneracy occurs in two stages. Degeneracy in a linear programming problem is said to occur when a basic feasible solution contains a smaller number of non-zero variables than the number of independent constraints when values of some basic variables are zero and the Replacement ratio is same.

20.

Every LPP is associated with another LPP is called _____.

A. Primal

B. Dual

C. Non_linear programming

D. None of the above

Answer: **Option B**

Solution:

Every LPP called the primal is associated with another LPP called dual. Either of the problems is primal with the other one as dual.

21.

As for maximization in assignment problem, the objective is to maximize the _____.

A. Profit

B. optimization

C. cost

D. None of the above

Answer: **Option A**

Solution:

As for maximization in assignment problem, the objective is to maximize the Profit. An assignment problem is a particular case of transportation problem where the objective is to assign a number of resources to an equal number of activities so as to minimize total cost or maximize total profit of allocation.

22.

Operations Research simply helps in improving the _____ of the solution but does not in a perfect solution.

A. Quality

B. Clarity

C. Look

D. None of the above

Answer: **Option A**

Solution:

Operations Research simply helps in improving the quality of the solution but does not in a perfect solution. It implies that by applying its scientific approach, it can only improve the quality of solution but it may not be able to give perfect solution.

23.

Operations Research involves _____ attack of complex problems to arrive at the optimum solution.

A. Scientific

B. Systematic

C. Both A and B

D. Statistical

Answer: **Option C**

Solution:

Operations Research involves scientific and systematic attack of complex problems to arrive at the optimum solution. An optimal solution is a feasible solution where the objective function reaches its maximum (or minimum) value – for example, the most profit or the least cost. A globally optimal solution is one where there are no other feasible solutions with better objective function values.

24.

Operations Research uses models built by quantitative measurement of the variables of a given problem and also derives a solution from the model using _____ of the diversified solution techniques.

A. Two or more

B. One or more

C. Three or more

D. Only One

Answer: **Option B**

Solution:

Operations Research uses models built by quantitative measurement of the variables of a given problem and also derives a solution from the model using one or more of the diversified

MoodyCr

solution techniques. Diversified Sourcing Solutions uses various services and techniques to check for criminal background information among applicants considered for a job offer.

25.

A solution may be extracted from a model either by.

A. Conducting experiments on it

B. Mathematical analysis

C. Both A and B

D. Diversified Techniques

Answer: **Option C**
Solution:
A solution may be extracted from a model either by Conducting experiments on it and Mathematical analysis.

26.

Operations Research uses models to help the management to determine its _____ scientifically.

A. Policies

B. Actions

C. Both A and B

D. None of the above

Answer: **Option C**

Solution:

Operations Research uses models to help the management to determine its policies and actions scientifically. It uses various scientific research-based principles, strategies, and

Moody Cmmms

analytical methods including mathematical modeling, statistics and numerical algorithms to improve an organization's ability to enact rational and meaningful management decisions by arriving at optimal or near optimal solutions.

27.

The mathematical model of an LP problem is important because.

A. It helps in converting the verbal description & numerical data into mathematical expression

B. Decision-makers prefer to work with formal models

C. It captures the relevant relationship among decision factors

D. It enables the use of algebraic technique

Answer: **Option A**

Solution:

The mathematical model of an LP problem is important because it helps in converting the verbal description & numerical data into mathematical expression. Linear programming (LP, also called linear optimization) is a method to achieve the best outcome (such as maximum profit or lowest cost) in a mathematical model whose requirements are represented by linear relationships.

28.

Operations Research is a _____.

A. Science

B. Art

C. Mathematics

D. Both A and B

Answer: **Option D**

Solution:

Operations Research is a Science and Art. Operations Research is an Art and Science It had its early roots in World War II and is flourishing in business and industry with the aid of computer Primary applications areas of Operations Research include forecasting, production scheduling, inventory control, capital budgeting, and transportation.

29.

What have been constructed for Operations Research problems and methods for solving the models that are available in many cases?

A. Scientific Models

B. Algorithms

C. Mathematical Models

D. None of the above

Answer: **Option C**

Solution:

Mathematical Models have been constructed for Operations Research problems and methods for solving the models that are available in many cases. A mathematical model can be defined as a description of a system using mathematical concepts and language to facilitate proper explanation of a system or to study the effects of different components and to make predictions on patterns of behaviour (Abramowitz and Stegun, 1968).

30.

Which technique is used in finding a solution for optimizing a given objective, such as profit maximization or cost minimization under certain constraints?

A. Quailing Theory

B. Waiting Line

C. Both A and B

D. Linear Programming

Answer: **Option D**

Solution:

Linear programming is a mathematical technique for solving constrained maximization and minimization problems when there are many constraints and the objective function to be optimized, as well as the constraints faced, are linear (i.e., can be represented by straight lines).

31.

What aims at optimizing inventory levels?

A. Inventory Control

B. Inventory Capacity

C. Inventory Planning

D. None of the above

Answer: **Option C**

Solution:

Inventory Planning aims at optimizing inventory levels. The aim of inventory optimization is to reduce the holding and maintenance costs, without neglecting the customer satisfaction level. In other words, inventory optimization helps to reduce inventory while improving service level.

32.

What can be defined as a useful idle resource which has economic value eg; raw materials, spareparts, finished items, etc?

A. Inventory Control

B. Inventory

C. Inventory Planning

D. None of the above

Answer: **Option B**

Solution:

Inventory can be defined as a useful idle resource which has economic value eg; raw materials, spareparts, finished items, etc. Inventory is an idle stock of physical goods that contain economic value, and are held in various forms by an organization in its custody awaiting packing, processing, transformation, use or sale in a future point of time.

33.

Which theory concerns making sound decisions under conditions of certainity, risk and uncertainty?

A. Game Theory

B. Network Analysis

C. Decision Theory

D. None of the above

Answer: **Option C**

Solution:

Decision Theory concerns making sound decisions under conditions of certainity, risk and uncertainty. Decision theory is an interdisciplinary approach to arrive at the decisions that are the most advantageous given an uncertain environment. Decision theory brings together psychology, statistics, philosophy, and mathematics to analyze the decision-making process.

34.

Key concept under which technique are network of events and activities , resource allocation, time and cost considerations, network paths and critical paths ?

A. Game Theory

B. Network Analysis

C. Decision Theory

D. None of the above

Answer: **Option B**

Solution:

Key concept under Network Analysis are network of events and activities , resource allocation, time and cost considerations, network paths and critical paths. Network analysis is any structured technique used to mathematically analyze a circuit (a “network” of interconnected components).

35.

Which technique is used to imitate an operation prior to actual performance ?

A. Simulation

B. Integrated Production Models

C. Inventory Control

D. Game Theory

Answer: **Option A**

Solution:

Simulation technique is used to imitate an operation prior to actual performance. A simulation technique uses a probability experiment to mimic a real-life situation. Instead of studying the actual situation, which might be too costly, too dangerous, or too time-consuming, scientists and researchers create a similar situation but one that is less expensive, less dangerous, or less time-consuming.

36.

What is concerned with the prediction of replacement costs and determination of the most economic replacement policy ?

A. Search Theory

B. Theory of replacement

C. Probabilistic Programming

D. None of the above

Answer: **Option B**

Solution:

Theory of replacement is concerned with the prediction of replacement costs and determination of the most economic replacement policy. The Replacement Theory in Operations Research is used in the decision making process of replacing a used equipment with a substitute; mostly a new equipment of better usage. The replacement might be necessary due to the deteriorating property or failure or breakdown of particular equipment.

37.

What refers to Linear Programming that includes an evaluation of relative risks and uncertainties in various alternatives of choice for management decisions ?

A. Probabilistic Programming

B. Stochastic Programming

C. Both A and B

D. Linear Programming

Answer: **Option C**

Solution:

Probabilistic Programming and Stochastic Programming refers to Linear Programming that includes an evaluation of relative risks and uncertainties in various alternatives of choice for management decisions. Probabilistic programming is a programming paradigm in which probabilistic models are specified and inference for these models is performed automatically. Stochastic Programming. Stochastic programs are mathematical programs where some of the data incorporated into the objective or constraints is uncertain.

38.

What enables us to determine the earliest and the latest times for each of the events and activities and thereby helps in the identification of the critical path?

A. Programme Evaluation

B. Review Technique (PERT)

C. Both A and B

D. Deployment of resources

Answer: **Option C**

Solution:

Programme Evaluation and Review Technique (PERT) enables us to determine the earliest and the latest times for each of the events and activities and thereby helps in the identification of the critical path. Program evaluation is a systematic method for collecting, analyzing, and using information to answer questions about projects, policies and programs, particularly about their effectiveness and efficiency. Review Technique or PERT is used to identify the time it takes to finish a particular task or activity.

39.

Linear Programming technique is used to allocate scarce resources in an optimum manner in problems of _____ ?

A. Schedule

B. Product Mix

C. Both A and B

D. Servicing Cost

Answer: **Option C**

Solution:

Linear Programming technique is used to allocate scarce resources in an optimum manner in problems of Schedule and Product Mix. Linear programming is a mathematical technique for allocating limited resources is optimum manner. In the words of William M. Fox, "Linear programming is a planning technique that permits some objective function to be minimized or maximized within the framework of given situational restrictions."

40.

Operations Research techniques helps the directing authority in optimum allocation of various limited resources, such as _____.

A. Men and Machine

B. Money

C. Material and Time

D. All of the above

Answer: **Option D**

Solution:

Operations Research techniques helps the directing authority in optimum allocation of various limited resources, such as Men and Machine, Money and Material and Time.

41.

The operations Research technique which helps in minimizing total waiting and service costs is.

A. Queuing Theory

B. Decision Theory

C. Both A and B

D. None of the above

Answer: **Option A**

Solution:

The operations Research technique which helps in minimizing total waiting and service costs is Queuing Theory. Queuing theory (or "queueing theory") examines every component of waiting in line to be served, including the arrival process, service process, number of servers, number of system places, and the number of customers—which might be people, data packets, cars, etc.

42.

Linear programming is a.

A. Constrained optimization technique

B. Technique for economic allocation of limited resources

C. Mathematical technique

D. All of the above

Answer: **Option D**

Solution:

Linear programming is a Constrained optimization technique, Technique for economic allocation of limited resources and Mathematical technique.

43.

A constraint in an LP model restricts.

A. Value of objective function

B. Value of a decision variable

C. Use of the available resources

D. All of the above

Answer: **Option D**

Solution:

A constraint in an LP model restricts value of objective function, value of a decision variable and use of the available resources.

44.

The distinguishing feature of an LP model is.

A. Relationship among all variables is linear

B. It has single objective function & constraints

C. Value of decision variables is non-negative

D. All of the above

Answer: **Option A**

Solution:

The distinguishing feature of an LP model is relationship among all variables is linear. The linear programming model is an algebraic description of the objective to be minimized and the constraints to be satisfied by the variables.

45.

Constraints in an LP model represents.

A. Limitations

B. Requirements

C. Balancing limitations & requirements

D. All of the above

Answer: **Option D**

Solution:

Constraints in an LP model represents Limitations, Requirements and Balancing limitations & requirements.

46.

Non-negativity condition is an important component of LP model because.

A. Variables value should remain under the control of the decision-maker

B. Value of variables make sense & correspond to real-world problems

C. Variables are interrelated in terms of limited resources

D. None of the above

Answer: **Option B**

Solution:

Moody

Non-negativity condition is an important component of LP model because value of variables make sense & correspond to real-world problems. Non-negativity restriction indicates that all decision variables must take on values equal to or greater than zero.

47.

Before formulating a formal LP model, it is better to.

A. Express each constrain in words

B. Express the objective function in words

C. Verbally identify decision variables

D. All of the above

Answer: **Option D**

Solution:

Before formulating a formal LP model, it is better to Express each constrain in words, Express the objective function in words and Verbally identify decision variables.

48.

Maximization of objective function in an LP model means.

A. Value occurs at allowable set of decisions

B. Highest value is chosen among allowable decisions

C. Neither of above

D. Both a & b

Answer: **Option A**

Solution:

Maximization of objective function in an LP model means Value occurs at allowable set of decisions. Linear programming refers to choosing the best alternative from the available

Moody

alternatives, whose objective function and constraint function can be expressed as linear mathematical functions.

49.

Which of the following is not a characteristic of the LP model?

A. Alternative courses of action

B. An objective function of maximization type

C. Limited amount of resources

D. Non-negativity condition on the value of decision variables.

Answer: **Option B**

Solution:

An objective function of maximization type is not a characteristic of the LP model. The objective of linear programming is to: “maximize or to minimize some numerical value.

50.

The best use of linear programming technique is to find an optimal use of.

A. Money

B. Manpower

C. Machine

D. All of the above

Answer: **Option D**

Solution:

The best use of linear programming technique is to find an optimal use of Money, Manpower and Machine.

Moody Gems

51.

Which of the following is not a characteristic of the LP?

A. Resources must be limited

B. Only one objective function

C. Parameters value remains constant during the planning period

D. The problem must be of minimization type

Answer: **Option D**

Solution:

The problem must be of minimization type is not a characteristic of the LP. The objective of linear programming is to: "maximize or to minimize some numerical value.

52.

Non-negativity condition in an LP model implies.

A. A positive coefficient of variables in objective function

B. A positive coefficient of variables in any constraint

C. Non-negative value of resources

D. None of the above

Answer: **Option D**

Solution:

Non-negativity restriction indicates that all decision variables must take on values equal to or greater than zero.

53.

Which of the following is an assumption of an LP model?

Moody Cl ms

A. Divisibility

B. Proportionality

C. Additivity

D. All of the above

Answer: **Option D**

Solution:

Divisibility, Proportionality and Additivity is an assumption of an LP model.

54.

Which of the following is a limitation associated with an LP model?

A. The relationship among decision variables in linear

B. No guarantee to get integer valued solutions

C. No consideration of effect of time & uncertainty on LP model

D. All of the above

Answer: **Option D**

Solution:

The relationship among decision variables in linear, No guarantee to get integer valued solutions and No consideration of effect of time & uncertainty on LP model are the limitation associated with an LP model.

55.

The graphical method of LP problem uses.

A. Objective function equation

B. Constraint equations

C. Linear equations

D. All of the above

Answer: **Option D**

Solution:

The graphical method of LP problem uses Objective function equation, Constraint equations and Linear equations.

56.

A feasible solution to an LP problem.

A. Must satisfy all of the problem's constraints simultaneously

B. Need not satisfy all of the constraints, only some of them

C. Must be a corner point of the feasible region

D. Must optimize the value of the objective function

Answer: **Option A**

Solution:

A feasible solution to an LP problem must satisfy all of the problem's constraints simultaneously. A feasible solution is a set of values for the decision variables that satisfies all of the constraints in an optimization problem. A local optimal solution is one where there is no other feasible solution "in the vicinity" with a better objective function value.

57.

Which of the following statements is true with respect to the optimal solution of an LP problem?

A. Every LP problem has an optimal solution

B. Optimal solution of an LP problem always occurs at an extreme point

C. At optimal solution all resources are completely used

D. If an optimal solution exists, there will always be at least one at a corner

Answer: **Option D**

Solution:

If an optimal solution exists, there will always be at least one at a corner statement is true with respect to the optimal solution of an LP problem.

58.

An iso-profit line represents.

A. An infinite number of solutions all of which yield the same profit

B. An infinite number of solution all of which yield the same cost

C. An infinite number of optimal solutions

D. A boundary of the feasible region

Answer: **Option A**

Solution:

An iso-profit line represents an infinite number of solutions all of which yield the same profit. The graph of the profit function is called an iso-profit line. It is called this because "iso" means "same" or "equal" and the profit anywhere on the line is the same.

59.

If an iso-profit line yielding the optimal solution coincides with a constaint line, then.

A. The solution is unbounded

B. The solution is infeasible

C. The constraint which coincides is redundant

D. None of the above

Answer: **Option D**

Solution:

An iso-profit line represents an infinite number of solutions all of which yield the same profit. The graph of the profit function is called an iso-profit line. It is called this because "iso" means "same" or "equal" and the profit anywhere on the line is the same.

60.

While plotting constraints on a graph paper, terminal points on both the axes are connected by a straight line because?

A. The resources are limited in supply

B. The objective function as a linear function

C. The constraints are linear equations or inequalities

D. All of the above

Answer: **Option C**

Solution:

While plotting constraints on a graph paper, terminal points on both the axes are connected by a straight line because the constraints are linear equations or inequalities. An optimal solution is a feasible solution where the objective function reaches its maximum (or minimum) value – for example, the most profit or the least cost. A globally optimal solution is one where there are no other feasible solutions with better objective function values.

61.

A constraint in an LP model becomes redundant because.

A. Two iso-profit line may be parallel to each other

Cmmms

B. The solution is unbounded

C. This constraint is not satisfied by the solution values

D. None of the above

Answer: **Option D**

Solution:

A redundant constraint is a constraint that can be omitted from the system without changing the set of feasible solutions S. An implicit equality constraint is an inequality constraint that can be replaced by an equality constraint without changing S.

62.

If two constraints do not intersect in the positive quadrant of the graph, then.

A. The problem is infeasible

B. The solution is unbounded

C. One of the constraints is redundant

D. None of the above

Answer: **Option A**

Solution:

If two constraints do not intersect in the positive quadrant of the graph, then the problem is infeasible.

63.

Constraints in LP problem are called active if they.

A. Represent optimal solution

B. At optimality do not consume all the available resources

C. Both a & b

D. None of the above

Answer: **Option A**

Solution:

Constraints in LP problem are called active if they Represent optimal solution. An optimal solution that lies at the intersection. point of two constraints causes both of those constraints to be considered active.

64.

The solution space (region) of an LP problem is unbounded due to.

A. An incorrect formulation of the LP model

B. Objective function is unbounded

C. Neither a nor b

D. Both a & b

Answer: **Option C**

Solution:

An infeasible problem is a problem that has no solution while an unbounded problem is one where the constraints do not restrict the objective function and the optimal objective goes to infinity. Both situations arise due to errors or shortcomings in the formulation or in the data defining the problem.

65.

While solving a LP model graphically, the area bounded by the constraints is called?

A. Feasible region

B. Infeasible region

C. Unbounded solution

D. None of the above

Answer: **Option A**

Solution:

While solving a LP model graphically, the area bounded by the constraints is called feasible region. It is the set of all possible points (sets of values of the choice variables) of an optimization problem that satisfy the problem's constraints, potentially including inequalities, equalities, and integer constraints.

66.

Alternative solutions exist of an LP model when.

A. One of the constraints is redundant

B. Objective function equation is parallel to one of the constraints

C. Two constraints are parallel

D. All of the above

Answer: **Option B**

Solution:

Alternative solutions exist of an LP model when objective function equation is parallel to one of the constraints. Linear programming (LP, also called linear optimization) is a method to achieve the best outcome (such as maximum profit or lowest cost) in a mathematical model whose requirements are represented by linear relationships.

67.

While solving a LP problem, infeasibility may be removed by?

A. Adding another constraint

B. Adding another variable

C. Removing a constraint

D. Removing a variable

Answer: **Option C**

Solution:

While solving a LP problem, infeasibility may be removed by removing a constraint. A linear program is infeasible if there exists no solution that satisfies all of the constraints in other words, if no feasible solution can be constructed.

68.

If a non-redundant constraint is removed from an LP problem then.

A. Feasible region will become larger

B. Feasible region will become smaller

C. Solution will become infeasible

D. None of the above

Answer: **Option A**

Solution:

If a non-redundant constraint is removed from an LP problem then feasible region will become larger. A redundant constraint is a constraint that can be omitted from the system without changing the set of feasible solutions S. An implicit equality constraint is an inequality constraint that can be replaced by an equality constraint without changing S.

69.

If one of the constraint of an equation in an LP problem has an unbounded solution, then.

A. Solution to such LP problem must be degenerate

B. Feasible region should have a line segment

C. Alternative solutions exist

D. None of the above

Answer: **Option B**

Solution:

If one of the constraint of an equation in an LP problem has an unbounded solution, then feasible region should have a line segment. If there is going to be an optimal solution to a linear programming problem, it will occur at one or more corner points, or on a line segment between two corner points.

70.

Customer behavior in which the customer moves from one queue to another in a multiple channel situation is.

A. Balking

B. Reneging

C. Jockeying

D. Altering

Answer: **Option C**

Solution:

Customer behavior in which the customer moves from one queue to another in a multiple channel situation is Jockeying. Customers may jockey from one line to another, i.e. move from one line to another. This can be seen typically at supermarkets as well as train stations, where a person leaves the line he is standing in, and joins another line which appears to be shorter, or appears to be moving faster.

3rd section

1.Which of the following characteristics apply to queuing system?

A. Customer population

B. Arrival process

C. Both a & b

D. Neither a nor b

Answer: **Option C**

Solution:

Customer population and Arrival process characteristics apply to queuing system. Queuing theory is the mathematical study of the congestion and delays of waiting in line. Queuing theory (or "queueing theory") examines every component of waiting in line to be served, including the arrival process, service process, number of servers, number of system places, and the number of customers—which might be people, data packets, cars, etc.

2.

Which of the following is not a key operating characteristics apply to queuing system?

A. Utilization factor

B. Percent idle time

C. Average time spent waiting in the system & queue

D. None of the above

Answer: **Option D**

Solution:

Moody

In designing a good queuing system, it is necessary to have good information about the model. The characteristics listed below would provide sufficient information.
1. The arrival pattern.
2. The service mechanism.
3. The queue discipline.
4. The number of customers allowed in the system.
5. The number of service channels.

3.

Priority queue discipline may be classified as.

A. Finite or infinite

B. Limited & unlimited

C. Pre-emptive or non-pre-emptive

D. All of the above

Answer: **Option C**

Solution:

Priority queue discipline may be classified as Pre-emptive or non-pre-emptive. For priority queues, one must distinguish pre-emptive service from non-pre-emptive service. A service discipline is said to be non-pre-emptive if, once the service to a customer is started, it is not disrupted until the whole service requirement is completed.

4.

The calling population is assumed to be infinite when.

A. Arrivals are independent of each other

B. Capacity of the system is infinite

C. Service rate is faster than arrival rate

D. All of the above

Answer: **Option A**

Solution:

The calling population is assumed to be infinite when arrivals are independent of each other. The population of potential customers is refered to as the calling population. The calling population can be finite or infinite. In the systems with large population, we usually assume the population is infinite.

5.

Which of the cost estimates & performance measures are not used for economic analysis of a queuing system?

A. Cost per server per unit of time

B. Cost per unit of time for a customer waiting in the system

C. Average number of customers in the system

D. Average waiting time of customers in the system

Answer: **Option D**

Solution:

Average waiting time of customers in the system of the cost estimates & performance measures are not used for economic analysis of a queuing system. Queuing theory (or "queueing theory") examines every component of waiting in line to be served, including the arrival process, service process, number of servers, number of system places, and the number of customers—which might be people, data packets, cars, etc.

6.

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

Cmmms

D. All of the above

Answer: **Option B**

Solution:

A calling population is considered to be infinite when Arrivals are independent of each other. If new customer's arrival is independent of the number of customers already in the system, the calling population is called unlimited or infinite.

7.

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

Answer: **Option D**

Solution:

In designing queueing systems we need to aim for a balance between service to customers (short queues implying many servers) and economic considerations (not too many servers).

8.

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

Answer: **Option A**

Solution:

Service mechanism in a queuing system is characterized by Server's behavior. Queuing theory is the mathematical study of the delays of waiting in line, covering all aspects, from arrival time to the number of servers.

9.

Probabilities of occurrence of any state are.

A. Collectively exhaustive

B. Mutually exclusive

C. Representing one of the finite numbers of states of nature in the system

D. All of the above

Answer: **Option D**

Solution:

Probabilities of occurrence of any state are Collectively exhaustive, Mutually exclusive and Representing one of the finite numbers of states of nature in the system.

10.

In a matrix of transition probability, the probability values should add up to one in each.

A. Row

B. Column

C. Diagonal

D. All of the above

Answer: **Option A**

Solution:

Moodymms

In a matrix of transition probability, the probability values should add up to one in each row.

11.

In a matrix of transition probability, the element aij where i=j is a.

A. Gain

B. Loss

C. Retention

D. None of the above

Answer: **Option C**

Solution:

In a matrix of transition probability, the element aij where i=j is a retention.

12.

In Markov analysis, state probabilities must.

A. Sum to one

B. Be less than one

C. Be greater than one

D. None of the above

Answer: **Option A**

Solution:

In Markov analysis, state probabilities must sum to one. Markov assumptions: (1) the probabilities of moving from a state to all others sum to one, (2) the probabilities apply to all system participants, and (3) the probabilities are constant over time.

13.

Moody Cr ms

State transition probabilities in the Markov chain should.

A. Sum to 1

B. Be less than 1

C. Be greater than 1

D. None of the above

Answer: **Option A**

No explanation is given for this question

14.

If a matrix of transition probability is of the order n*n, then the number of equilibrium equations would be.

A. n

B. n-1

C. n+1

D. None of the above

Answer: **Option A**

Solution:

If a matrix of transition probability is of the order n*n, then the number of equilibrium equations would be n.

15.

In the long run, the state probabilities become 0 & 1.

A. In no case

B. In same cases

C. In all cases

D. Cannot say

Answer: **Option C**

Solution:

In the long run, the state probabilities become 0 & 1 in all cases.

16.

While calculating equilibrium probabilities for a Markov process, it is assumed that?

A. There is a single absorbing state

B. Transition probabilities do not change

C. There is a single non-absorbing state

D. None of the above

Answer: **Option B**

Solution:

While calculating equilibrium probabilities for a Markov process, it is assumed that transition probabilities do not change. Markov Analysis is a method used to forecast the value of a variable whose future value is influenced only by its current position or state, not by any prior activity that led the variable to its current position or state.

17.

The first-order Markov chain is generally used when.

A. Transition probabilities are fairly stable

B. Change in transition probabilities is random

C. No sufficient data are available

D. All of the above

Answer: **Option A**

Solution:

The first-order Markov chain is generally used when transition probabilities are fairly stable. The first order Markov chain transition probability is the conditional probability that the second amino acid occurs in a two-amino-acid sequence, given the occurrence of the first amino acid, ie P(second amino acid|first amino acid).

18.

A problem is classified as Markov chain provided.

A. There are finite number of possible states

B. States are collectively exhaustive & mutually exclusive

C. Long-run probabilities of being in a particular state will be constant over time

D. All of the above

Answer: **Option D**

Solution:

A problem is classified as Markov chain provided are there are finite number of possible states, States are collectively exhaustive & mutually exclusive and Long-run probabilities of being in a particular state will be constant over time.

19.

The transition matrix elements remain positive from one point to the next. This property is known as:

A. Steady-state property

B. Equilibrium property

C. Regular property

D. All of the above

Answer: **Option C**

Solution:

The transition matrix elements remain positive from one point to the next. This property is known as Regular property. A transition matrix (stochastic matrix) is said to be regular if some power of T has all positive entries.

20.

Markov analysis is useful for:

A. Predicting the state of the system at some future time

B. Calculating transition probabilities at some future time

C. All of the above

D. None of the above

Answer: **Option C**

Solution:

Markov analysis is useful for Predicting the state of the system at some future time and Calculating transition probabilities at some future time.

21.

Which of the following is not one of the assumptions of Markov analysis:

A. There are a limited number of possible states

B. A future state can be predicted from the preceding one

C. There are limited number of future periods

D. All of the above

Answer: **Option C**

No explanation is given for this question

22.

An advantage of simulation as opposed to optimization is that.

A. Several options of measure of performance can be examined

B. Complex real-life problems can be studied

C. It is applicable in cases where there is an element of randomness in a system

D. All of the above

Answer: **Option D**

Solution:

An advantage of simulation as opposed to optimization is that Several options of measure of performance can be examined, Complex real-life problems can be studied and It is applicable in cases where there is an element of randomness in a system.

23.

The purpose of using simulation technique is to.

A. Imitate a real-world situation

B. Understand properties & operating characteristics of complex real-life problems

C. Reduce the cost of experiment on a model of real situation

D. All of the above

Answer: **Option D**

Mocmms

Solution:

The purpose of using simulation technique is to Imitate a real-world situation, Understand properties & operating characteristics of complex real-life problems and Reduce the cost of experiment on a model of real situation.

24.

Which of the following is not the special purpose simulation language?

A. BASIC

B. GPSS

C. GASP

D. SIMSCRIPT

Answer: **Option A**

Solution:

BASIC is not the special purpose simulation language. BASIC stands for beginner's all-purpose symbolic instruction code, and is a computer programming language that was invented in 1964 at Dartmouth University by John G Kemeny and Thomas E Kurtz. BASIC has the advantage of English-like commands that are easier to understand and remember than those of most other languages.

25.

As simulation is not an analytical model, therefore the result of simulation must be viewed as.

A. Unrealistic

B. Exact

C. Approximation

D. Simplified

Answer: **Option C**

Solution:

As simulation is not an analytical model, therefore the result of simulation must be viewed as approximation. Analytical models are mathematical models that have a closed form solution, i.e. the solution to the equations used to describe changes in a system can be expressed as a mathematical analytic function.

26.

While assigning random numbers in Monte Carlo simulation, it is?

A. Not necessary to assign the exact range of random number interval as the probability

B. Necessary to develop a cumulative probability distribution

C. Necessary to assign the particular appropriate random numbers

D. All of the above

Answer: **Option B**

Solution:

While assigning random numbers in Monte Carlo simulation, it is Necessary to develop a cumulative probability distribution. A cumulative probability refers to the probability that the value of a random variable falls within a specified range. Frequently, cumulative probabilities refer to the probability that a random variable is less than or equal to a specified value.

27.

Analytical results are taken into consideration before a simulation study so as to.

A. Identify suitable values of the system parameters

B. Determine the optimal decision

C. Identify suitable values of decision variables for the specific choices of system parameters

D. All of the above

Answer: **Option C**

Solution:

Analytical results are taken into consideration before a simulation study so as to Identify suitable values of decision variables for the specific choices of system parameters. A true analytical result presumes an analytical procedure without systematic errors. They can be detected by comparing the analytical results with the true value or with an accepted reference.

28.

Biased random sampling is made from among alternatives which have.

A. Equal probability

B. Unequal probability

C. Probability which do not sum to 1

D. None of the above

Answer: **Option B**

Solution:

Biased random sampling is made from among alternatives which have Unequal probability. A sampling method is called biased if it systematically favors some outcomes over others.

29.

Large complicated simulation models are appreciated because.

A. Their average costs are not well-defined

B. It is difficult to create the appropriate events

C. It is difficult to create the appropriate events

D. All of the above

Answer: **Option C**

Solution:

Large complicated simulation models are appreciated because It is difficult to create the appropriate events. A simulation model has 'entities' (e.g. machines, materials, people, etc.) and 'activities' (e.g. processing, transporting, etc.). It also has a description of the logic governing each activity.

30.

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

Answer: **Option D**

Solution:

Simulation should not be applied in all cases because it Requires considerable talent for model building & extensive computer programming efforts, Consumes much computer time and Provides at best approximate solution to problem.

31.

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

Answer: **Option D**

Solution:

Simulation is defined as a technique that uses computers, An approach for reproducing the processes by which events by chance & changes are created in a computer and A procedure for testing & experimenting on models to answer what if ___, then so & so ___ types of questions.

32.

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

Answer: **Option B**

Solution:

The general purpose system simulation language does not require programme writing. General Purpose Simulation System (GPSS) is a discrete time simulation general-purpose programming language, where a simulation clock advances in discrete steps. It is used primarily as a process flow oriented simulation language; this is particularly well-suited for problems such as a factory.

33.

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

Answer: **Option D**

Solution:

Special simulation languages are useful because they Reduce programme preparation time & cost, have the capability to generate random variables and require no prior programming knowledge.

34.

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

Answer: **Option D**

Solution:

Few causes of simulation analysis failure are Inadequate level of user participation, Inappropriate levels of detail and Incomplete mix of essential skills.

35.

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

Answer: **Option D**

Solution:

To make simulation more popular, we need to avoid Large cost over runs, Prolonged delays and User dissatisfaction with simulation results.

36.

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

Answer: **Option D**

Solution:

The important step required for simulation approach in solving a problem is to Test & validate the model, Design the experiment and conduct the experiment.

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