**Module D: Simulation**

**Test Bank**

**Multiple Choice**

1. \_\_\_\_\_\_\_ is the act of duplicating the operation of a real-world process or system over time.

a. Duplication

b. Simulation

c. Programming

d. Modeling

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Introduction to Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

2. Which of the following is the most preferred option to be used whenever it is impossible, cost prohibitive, or impractical to use any other approach for problem solving?

a. prototype building

b. field study

c. market research

d. simulation

Ans: D

Cognitive Domain: Knowledge (Remember)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Introduction to Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

3. Which of the following statements about simulation process is FALSE?

a. It is not iterative in nature.

b. It is not automatic because the intervention of an experienced simulation analyst will be needed.

c. It can be used to show the real impact of alternative conditions and courses of action on the system.

d. It can be used to evaluate the performance of an existing or proposed system and draw conclusions about the behavior of the actual system.

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Introduction to Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

4. Building a model aircraft for wind-tunnel studies to stimulate the performance of a real aircraft design is an example of \_\_\_\_\_\_.

a. an abstract simulation

b. a physical simulation

c. a process simulation

d. a design simulation

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Introduction to Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

5. Which of the following statements is FALSE about formulating the mathematical model for simulation?

a. The model has to exactly match the real system.

b. Basic assumptions that characterize the system should be included.

c. The analyst should start with a simple model and progressively make it more complex.

d. The model should abstract the essential features of the system that is being studied.

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Introduction to Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

6. Which of the following is often the most time-consuming phase of a simulation study?

a. defining the problem

b. collecting data

c. formulating the mathematical model

d. validating the model

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Introduction to Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

7. \_\_\_\_\_\_ involves ensuring that the simulation model behaves as intended.

a. Model verification

b. Validation

c. Model formulation

d. Experimentation

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Introduction to Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

8. \_\_\_\_\_\_ is the process of ensuring that the model is reasonably robust and an accurate reflection of the real-world system that is being used.

a. Model verification

b. Validation

c. Model formulation

d. Experimentation

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Introduction to Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

9. \_\_\_\_\_\_ is typically achieved through statistical analysis.

a. Model verification

b. Validation

c. Model formulation

d. Experimentation

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Introduction to Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

10. \_\_\_\_\_\_ involves testing alternative courses of action by choosing alternative models and executing the simulation repeatedly as necessary.

a. Model verification

b. Validation

c. Model formulation

d. Experimentation

Ans: D

Cognitive Domain: Knowledge (Remember)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Introduction to Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

11. \_\_\_\_\_\_ consists of preparing a detailed report of the simulation study.

a. Experimentation

b. Model formulation

c. Documentation

d. Validation

Ans: C

Cognitive Domain: Knowledge (Remember)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Introduction to Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

12. Which of the following statements about simulation is FALSE?

a. Since each simulation model is specifically developed to analyze a specific problem, the models, results, or the conclusions cannot be transferred to other problems.

b. Simulation results are generally not more accurate than analytical models.

c. It is a flexible tool and can be quickly adapted as conditions in the problem environment change.

d. Developing complex simulation models can be time-consuming and expensive.

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Advantages and Disadvantages of Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

13. Which of the following techniques involves selecting numbers randomly from a known probability distribution to be used in simulation trials?

a. Monte Carlo simulation

b. cumulative probability distribution

c. Arena

d. ProModel

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

14. Monte Carlo simulation is composed of \_\_\_\_\_\_ steps.

a. four

b. five

c. six

d. three

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

15. Which of the following steps is part of an Excel function that can be used to generate a random number between 0 and 1?

a. RAND()

b. RANDbetween()

c. RANDOM()

d. RD()

Ans: A

Cognitive Domain: Knowledge (Remember)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

16. The demand distribution for LED TVs is tabled here. Determine the expected demand for LED TVs in the long run using probability distribution.

|  |  |
| --- | --- |
| *Demand for LED TVs* | *Frequency of Occurrence in Days* |
| 0 | 10 |
| 5 | 20 |
| 10 | 30 |
| 20 | 10 |
| 25 | 5 |

a. 10

b. 9.67

c. 3.45

d. 8.65

Ans: B

Cognitive Domain: Application (Apply)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Medium

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

17. Which of the following formulae can be used in Excel to generate normally distributed random numbers for a given mean and standard distribution?

a. norminv()

b. normdist(rand(), mean, standard deviation)

c. norminv(rand(), mean, standard deviation)

d. normdist()

Ans: C

Cognitive Domain: Knowledge (Remember)

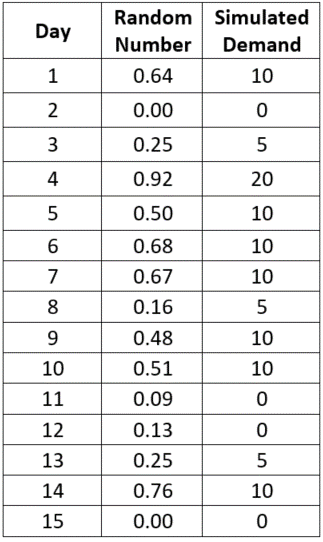
Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

18. For the Monte Carlo simulation results shown in the following table, determine the average simulated demand.



a. 3

b. 7

c. 5

d. 9

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

19. There are \_\_\_\_\_\_ key steps in developing a simulation model.

a. six

b. seven

c. eight

d. nine

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Introduction to Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

20. \_\_\_\_\_\_ is the act of duplicating the operation of a real-world process or system over time using physical objects to replace the actual objects.

a. Abstract simulation

b. Physical simulation

c. Process simulation

d. Design simulation

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Introduction to Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

21. \_\_\_\_\_\_ are defined as a sequence of numbers that are \_\_\_\_\_\_ distributed over a defined interval range, for what it is not possible to predict their future values based on their current or past values.

a. Rational numbers, uniformly

b. Rational numbers, normally

c. Random numbers, uniformly

d. Random numbers, normally

Ans: C

Cognitive Domain: Knowledge (Remember)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Introduction to Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

22. Which of the following statements about simulation is FALSE?

a. Simulation can be used to study the behavior of a system without the expensive alternative of actually building it.

b. Many real-world complex problems that do not lend themselves to analysis using mathematical models can be studied using simulation.

c. Simulation results are generally less accurate than analytical models.

d. Simulation models do not make restrictive assumptions that typically do not hold in real-world scenarios.

Ans: C

Cognitive Domain: Knowledge (Remember)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Introduction to Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

23. A sequence of numbers uniformly distributed over a defined interval or range, for which it is not possible to predict their future values based on their past or current values, is commonly referred to as \_\_\_\_\_\_.

a. a normal distribution

b. random numbers

c. discrete distribution

d. integers

Ans: B

Cognitive Domain: Knowledge (Remember)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Introduction to Simulation

Difficulty Level: Easy

AACSB: Systems and processes in organizations, including planning and design, production/operations, supply chains, marketing, and distribution

**Use the following data set to answer questions 24-79.**

Demand for Microwave Ovens

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Demand for Microwave Ovens*** | ***Frequency of Occurrence in Days*** | ***Probability*** | ***Cumulative Probability*** | ***Random Number Interval*** |
| 0 | 20 | 10.00% | 10.00% | 0 to 9 |
| 1 | 40 | 20.00% | 30.00% | 10 to 29 |
| 2 | 70 | 35.00% | 65.00% | 30 to 64 |
| 3 | 50 | 25.00% | 90.00% | 65 to 89 |
| 4 | 10 | 5.00% | 95.00% | 90 to 94 |
| 5 | 10 | 5.00% | 100.00% | 95 to 99 |

24. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 47, 9, 83, 79, 29, and 28?

a. 9

b. 10

c. 11

d. 12

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Inventory Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

25. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 56, 74, 93, 83, 39, and 69?

a. 17

b. 10

c. 11

d. 12

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Inventory Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

26. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 59, 8, 60, 10, 80, and 31?

a. 8

b. 9

c. 10

d. 11

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

27. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 24, 89, 10, 7, 96, and 21?

a. 9

b. 10

c. 11

d. 12

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

28. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 61, 36, 32, 36, 87, and 56?

a. 10

b. 11

c. 12

d. 13

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

29. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 1, 80, 10, 4, 35, and 62?

a. 8

b. 9

c. 10

d. 11

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

30. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 97, 49, 18, 13, 20, and 13?

a. 8

b. 9

c. 10

d. 11

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

31. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 11, 94, 58, 49, 35, and 14?

a. 9

b. 12

c. 10

d. 11

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

32. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 13, 90, 6, 5, 4, and 49?

a. 8

b. 9

c. 6

d. 7

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

33. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 61, 89, 94, 96, 42, and 13?

a. 15

b. 9

c. 17

d. 11

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

34. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 86, 83, 29, 63, 82, and 35?

a. 14

b. 15

c. 16

d. 17

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

35. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 69, 32, 86, 60, 90, and 55?

a. 15

b. 16

c. 17

d. 18

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

36. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 44, 43, 88, 55, 8, and 45?

a. 8

b. 9

c. 10

d. 11

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

37. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 11, 16, 95, 83, 97, and 77?

a. 17

b. 18

c. 15

d. 14

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

38. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 78, 65, 93, 47, 65, and 57?

a. 17

b. 18

c. 19

d. 20

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

39. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 71, 74, 75, 95, 51, and 57?

a. 20

b. 21

c. 16

d. 18

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

40. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 70, 49, 12, 9, 84, and 86?

a. 10

b. 11

c. 12

d. 13

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

41. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 47, 43, 99, 57, 95, and 36?

a. 16

b. 17

c. 18

d. 19

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

42. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 44, 84, 15, 96, 86, and 41?

a. 14

b. 15

c. 16

d. 17

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

43. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 87, 61, 99, 26, 93, and 31?

a. 17

b. 18

c. 19

d. 20

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

44. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 7, 66, 34, 51, 8, and 28?

a. 8

b. 9

c. 10

d. 11

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

45. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 96, 18, 36, 32, 38, and 3?

a. 11

b. 12

c. 13

d. 14

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

46. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 27, 29, 84, 29, 98, and 79?

a. 12

b. 13

c. 14

d. 15

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

47. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 86, 12, 33, 43, 43, and 27?

a. 8

b. 9

c. 10

d. 11

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

48. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 18, 14, 7, 50, 21, and 47?

a. 8

b. 9

c. 6

d. 7

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

49. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 90, 5, 98, 41, 55, and 31?

a. 15

b. 16

c. 17

d. 18

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

50. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 65, 32, 23, 33, 80, and 14?

a. 12

b. 13

c. 14

d. 15

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

51. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 56, 84, 24, 81, 42, and 51?

a. 12

b. 13

c. 14

d. 15

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

52. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 18, 3, 50, 10, 17, and 21?

a. 3

b. 4

c. 5

d. 6

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

53. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 90, 51, 32, 45, 93, and 70?

a. 17

b. 18

c. 19

d. 20

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

54. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 79, 64, 43, 88, 47, and 53?

a. 14

b. 15

c. 16

d. 17

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

55. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 48, 76, 17, 82, 43, and 3?

a. 8

b. 9

c. 10

d. 11

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

56. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 77, 29, 2, 7, 64, and 71?

a. 8

b. 9

c. 10

d. 11

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

57. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 70, 22, 20, 13, 75, and 18?

a. 8

b. 9

c. 10

d. 11

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

58. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 59, 46, 49, 31, 68, and 60?

a. 12

b. 13

c. 14

d. 15

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

59. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 29, 68, 35, 56, 46, and 72?

a. 13

b. 14

c. 15

d. 16

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

60. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 31, 73, 53, 92, 12, and 52?

a. 14

b. 15

c. 16

d. 17

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

61. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 88, 63, 57, 79, 38, and 18?

a. 13

b. 14

c. 15

d. 16

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

62. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 32, 71, 38, 10, 27, and 42?

a. 8

b. 9

c. 10

d. 11

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

63. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 9, 9, 16, 61, 51, and 31?

a. 7

b. 9

c. 5

d. 11

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

64. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 76, 75, 25, 12, 76, and 51?

a. 8

b. 13

c. 6

d. 11

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

65. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 87, 44, 3, 10, 26, and 39?

a. 8

b. 9

c. 10

d. 11

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

66. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 35, 38, 42, 16, 81, and 19?

a. 8

b. 9

c. 10

d. 11

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

67. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 85, 69, 78, 85, 71, and 39?

a. 17

b. 18

c. 19

d. 22

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

68. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 5, 41, 67, 98, 69, and 66?

a. 8

b. 16

c. 10

d. 11

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

69. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 86, 47, 38, 81, 47, and 45?

a. 15

b. 14

c. 13

d. 12

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

70. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 38, 34, 99, 40, 35, and 66?

a. 16

b. 9

c. 10

d. 11

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

71. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 69, 79, 84, 6, 37, and 39?

a. 13

b. 9

c. 10

d. 11

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

72. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 71, 63, 16, 9, 66, and 75?

a. 8

b. 9

c. 10

d. 12

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

73. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 39, 34, 89, 67, 82, and 22?

a. 14

b. 9

c. 10

d. 11

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

74. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 66, 68, 12, 34, 12, and 61?

a. 12

b. 9

c. 10

d. 11

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

75. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 58, 13, 6, 43, 89, and 6?

a. 8

b. 9

c. 10

d. 11

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

76. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 94, 28, 13, 86, 48, and 71?

a. 8

b. 14

c. 10

d. 11

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

77. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 82, 22, 86, 26, 13, and 79?

a. 12

b. 7

c. 10

d. 11

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

78. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 69, 29, 56, 8, 83, and 55?

a. 8

b. 9

c. 10

d. 11

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

79. Consider the Demand for Microwave Ovens dataset. What is the total demand corresponding to random numbers 9, 34, 61, 26, 36, and 47?

a. 8

b. 9

c. 10

d. 11

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

**Use the following data to answer questions 80-85.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Inventory for Blenders Over a 20-Day Period* | | | | | | |
| *Day* | *Supply Received* | *Beginning Inventory* | *Demand* | *Ending Inventory* | *Order Placed* | *Lead Time* |
| 1 |  | 20 | 2 | 18 | NO |  |
| 2 |  | 18 | 3 | 15 | YES | 3 |
| 3 |  | 15 | 6 | 9 | NO |  |
| 4 |  | 9 | 4 | 5 | NO |  |
| 5 |  | 5 | 4 | 1 | NO |  |
| 6 | 30 | 31 | 3 | 28 | NO |  |
| 7 |  | 28 | 7 | 21 | NO |  |
| 8 |  | 21 | 2 | 19 | NO |  |
| 9 |  | 19 | 4 | 15 | YES | 2 |
| 10 |  | 15 | 4 | 11 | NO |  |
| 11 |  | 11 | 5 | 6 | NO |  |
| 12 | 30 | 36 | 5 | 31 | NO |  |
| 13 |  | 31 | 7 | 24 | NO |  |
| 14 |  | 24 | 2 | 22 | NO |  |
| 15 |  | 22 | 7 | 15 | YES | 4 |
| 16 |  | 15 | 2 | 13 | NO |  |
| 17 |  | 13 | 6 | 7 | NO |  |
| 18 |  | 7 | 7 | 0 | NO |  |
| 19 |  | 0 | 7 | -7 | NO |  |
| 20 | 30 | 23 | 3 | 20 | NO |  |

80. Consider the data on Inventory for Blenders Over a 20-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 30 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the holding costs per unit were $8, what are the total inventory costs for the 20-day period?

a. $2,184

b. $2,240

c. $2,296

d. $2,136

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

81. Consider the data on Inventory for Blenders Over a 20-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 30 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the ordering costs were $38 each time the product is ordered, what are the total ordering costs during the 20-day period?

a. $114

b. $228

c. $76

d. $182

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

82. Consider the data on Inventory for Blenders Over a 20-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 30 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the backorder costs were $19 per unit, what are the total backorder costs during the 20-day period?

a. $133

b. $113

c. $76

d. $182

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

83. Consider the data on Inventory for Blenders Over a 20-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 30 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the holding cost per unit were $12, what are the total inventory costs for the 20-day period?

a. $3,360

b. $3,360

c. $3,444

d. $3,204

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

84. Consider the data on Inventory for Blenders Over a 20-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 30 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the ordering costs were $32 each time the product is ordered, what are the total ordering costs during the 20-day period?

a. $114

b. $96

c. $76

d. $182

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

85. Consider the data on Inventory for Blenders Over a 20-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 30 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the backorder costs were $20 per unit, what are the total backorder costs during the 20-day period?

a. $140

b. $113

c. $76

d. $182

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

**Use the following data set to answer questions 86-100.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| *Inventory of Widgets Over a 10-Day Period* | | | | | | |
| *Day* | *Supply Received* | *Beginning Inventory* | *Demand* | *Ending Inventory* | *Order Placed* | *Lead Time* |
| 1 |  | 30 | 8 | 22 | NO |  |
| 2 |  | 22 | 5 | 17 | NO |  |
| 3 |  | 17 | 6 | 11 | YES | 1 |
| 4 |  | 11 | 8 | 3 | NO |  |
| 5 | 20 | 23 | 7 | 16 | NO |  |
| 6 |  | 16 | 7 | 9 | YES | 1 |
| 7 |  | 9 | 6 | 3 | YES |  |
| 8 | 20 | 23 | 6 | 17 | NO |  |
| 9 |  | 17 | 5 | 12 | YES | 1 |
| 10 |  | 12 | 7 | 5 | NO |  |

86. Consider the data on Inventory of Widgets Over a 10-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 20 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the backorder costs are $10 per widget that is on backorder, what are the total backorder costs during the 10-day period?

a. $18

b. $0

c. $7

d. $22

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

87. Consider the data on Inventory of Widgets Over a 10-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 20 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the inventory costs are $5 per widget, what are the total inventory costs during the 10-day period?

a. $115

b. $575

c. $45

d. $230

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

88. Consider the data on Inventory of Widgets Over a 10-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 20 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the ordering costs are $15 per order, what are the total ordering costs during the 10-day period?

a. $115

b. $575

c. $45

d. $230

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

89. Consider the data on Inventory of Widgets Over a 10-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 20 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the ordering costs are $20 per order, what are the total ordering costs during the 10-day period?

a. $60

b. $3

c. $20

d. $180

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

90. Consider the data on Inventory of Widgets Over a 10-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 20 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the inventory costs are $8 per widget per day, what are the total inventory costs during the 10-day period?

a. $115

b. $8

c. $920

d. $928

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

91. Consider the data on Inventory of Widgets Over a 10-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 20 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the cost of each widget that is on backorder is $20, what are the total backorder costs during the 10-day period?

a. $0

b. $20

c. $3

d. $60

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

92. Consider the data on Inventory of Widgets Over a 10-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 20 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the cost of holding inventory amounts to $7 per widget per day, what are the total inventory costs during the 10-day period?

a. $805

b. $115

c. $7

d. $122

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

93. Consider the data on Inventory of Widgets Over a 10-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 20 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the cost of holding inventory amounts to $10 per widget per day, what are the total inventory costs during the 10-day period?

a. $805

b. $1,150

c. $7

d. $122

Ans: B

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

94. Consider the data on Inventory of Widgets Over a 10-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 20 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the cost of placing an order is $14, what are the total ordering costs during the 10-day period?

a. $3

b. $14

c. $42

d. $45

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

95. Consider the data on Inventory of Widgets Over a 10-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 20 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the cost of placing an order is $8, what are the total ordering costs during the 10-day period?

a. $3

b. $42

c. $8

d. $24

Ans: D

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

96. Consider the data on Inventory of Widgets Over a 10-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 20 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the cost of holding inventory is $6 per unit per day, what are the total ordering costs during the 10-day period?

a. $6

b. $115

c. $690

d. $695

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

97. Consider the data on Inventory of Widgets Over a 10-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 20 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the backorder costs amount to $9 for each widget that is on backorder, then what are the total backorder costs?

a. $0

b. $115

c. $9

d. $90

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

98. Consider the data on Inventory of Widgets Over a 10-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 20 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the backorder costs amount to $14 for each widget that is on backorder, then what are the total backorder costs?

a. $0

b. $14

c. $126

d. $90

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

99. Consider the data on Inventory of Widgets Over a 10-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 20 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the backorder costs amount to $3 for each widget that is on backorder, then what are the total backorder costs?

a. $3

b. $22

c. $0

d. $68

Ans: C

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)

100. Consider the data on Inventory of Widgets Over a 10-Day Period. Any time that ending inventory falls to 15 or below, an order is placed for 20 units of the product. The lead time for delivery varies and is shown in the column under Lead Time. If the inventory costs amount to $3 per widget per day, then what are the total inventory costs?

a. $345

b. $215

c. $785

d. $68

Ans: A

Cognitive Domain: Analysis (Analyze)

Learning Objective: D-1. Explain the concept of simulation, its advantages, and the key steps in developing a simulation model.

Answer Location: Monte Carlo Simulation

Difficulty Level: Hard

AACSB: Analytical thinking (able to analyze and frame problems)