

1. What does the M/M/1 notation represent in waiting line models?

- a) Multiple servers with exponential service times
- b) Single server with exponential service times
- c) Multiple servers with constant service times
- d) Single server with constant service times

Answer: b) Single server with exponential service times

Explanation: In waiting line models, M/M/1 signifies a single-server system where arrivals and service times follow exponential distributions.

2. Which factor is crucial for determining the average length of customers in an M/M/1 queue?

- a) Arrival rate
- b) Service rate
- c) Number of servers
- d) Queue discipline

Answer: a) Arrival rate

Explanation: The average length of customers in an M/M/1 queue heavily depends on the rate at which customers arrive.

3. What is the optimum service rate in an M/M/1 queue system?

- a) Equal to the arrival rate

- b) Equal to half of the arrival rate
- c) Greater than the arrival rate
- d) Independent of the arrival rate

Answer: c) Greater than the arrival rate

Explanation: The optimum service rate in an M/M/1 queue system is greater than the arrival rate to prevent infinite queue growth.

4. In a multiple-server model (M/M/s), what does 's' represent?

- a) Number of servers
- b) Arrival rate
- c) Service rate
- d) Queue size

Answer: a) Number of servers

Explanation: 's' in the M/M/s model denotes the number of servers available to serve customers concurrently.

5. What is a competitive strategy in game theory?

- a) A strategy aimed at cooperation
- b) A strategy to dominate opponents
- c) A strategy focused on minimizing losses
- d) A strategy aimed at outperforming others

Answer: d) A strategy aimed at outperforming others

Explanation: A competitive strategy in game theory involves making decisions to achieve an advantage over other participants.

6. Which method can be used to solve two-person zero-sum games graphically?

- a) Simplex method
- b) Linear programming
- c) Dominance
- d) Payoff matrix

Answer: d) Payoff matrix

Explanation: Two-person zero-sum games can be solved graphically using a payoff matrix, where each player's strategies and payoffs are outlined.

7. What is a pure strategy in game theory?

- a) A strategy involving random choices
- b) A strategy based on mixed actions
- c) A deterministic strategy
- d) A strategy aimed at cooperation

Answer: c) A deterministic strategy

Explanation: A pure strategy in game theory involves selecting a specific action with certainty, without incorporating random elements.

8. In game theory, what does dominance refer to?

- a) Strategy that always yields the highest payoff
- b) Strategy that eliminates all opponents
- c) Strategy that guarantees a win
- d) Strategy that is always better regardless of opponents' choices

Answer: d) Strategy that is always better regardless of opponents' choices

Explanation: Dominance in game theory refers to a strategy that is superior to others regardless of opponents' choices.

9. What does LP stand for in solving game theory problems?

- a) Linear Probability
- b) Linear Performance
- c) Linear Programming
- d) Limited Play

Answer: c) Linear Programming

Explanation: LP stands for Linear Programming, a method used to solve various optimization problems, including those in game theory.

10. In a two-person zero-sum game, what is a saddle point?

- a) A point of equilibrium
- b) A point of maximum payoff

- c) A point of minimum payoff
- d) A point of dominance

Answer: a) A point of equilibrium

Explanation: In a two-person zero-sum game, a saddle point is a point of equilibrium where neither player has an incentive to change their strategy.

11. What assumption is commonly made in waiting line models regarding service times?

- a) Exponential distribution
- b) Constant distribution
- c) Normal distribution
- d) Poisson distribution

Answer: a) Exponential distribution

Explanation: Waiting line models often assume that service times follow an exponential distribution, allowing for mathematical tractability.

12. In game theory, what does a mixed strategy involve?

- a) Using a combination of deterministic actions
- b) Randomly selecting strategies
- c) Collaborating with opponents
- d) Eliminating opponents

Answer: a) Using a combination of deterministic actions

Explanation: A mixed strategy in game theory involves using a combination of deterministic actions to create uncertainty for opponents.

13. What factor is crucial for determining the average time a customer spends in a waiting line?

- a) Service rate
- b) Arrival rate
- c) Queue discipline
- d) Number of servers

Answer: c) Queue discipline

Explanation: The average time a customer spends in a waiting line is influenced by the discipline followed in managing the queue, such as first-come-first-served or priority-based.

14. Which method is used to solve game theory problems algebraically?

- a) Dominance
- b) Payoff matrix
- c) Linear programming
- d) Graphical method

Answer: c) Linear programming

Explanation: Game theory problems can be solved algebraically using techniques like linear programming to optimize strategies and outcomes.

15. What does the 'M' represent in M/M/s waiting line models?

- a) Maximum queue size
- b) Minimum service time
- c) Markovian property
- d) Maximum arrival rate

Answer: c) Markovian property

Explanation: In M/M/s waiting line models, the 'M' signifies the Markovian property, where the next state of the system depends only on its current state, not its history.

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