CS7641 ML Practice Quiz

Module RL 3: Game Theory

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Question 1

What is the fundamental concept of Game Theory?
A. It is solely focused on single-agent decision-making scenarios.
B. It deals with the mathematics of conflict and optimal choices in conflicts of interest considering the goals of multiple agents.
C. It is a framework used for deterministic decision-making with complete information.
D. Game theory is primarily concerned with individual agents working towards aligned goals.
E. It is an approach used to describe linear transformation algorithms in machine learning.

Question 2

In a two-player zero-sum finite deterministic game of perfect information, what does a strategy in game theory represent?
A. A random sequence of actions chosen by a player.
B. The total sum of rewards accumulated by a player.
C. A deterministic mapping of states to actions for each player.
D. The sequence of states that a player will visit during the game.
E. A probabilistic distribution of possible actions for a player.

Question 3

What is the significance of a 'mixed strategy' in game theory?
A. It represents a sequence of deterministic strategies chosen by a player.
B. It is a strategy that involves randomizing between pure strategies with specific probabilities.
C. Mixed strategies are only used in non-deterministic games.
D. It is a strategy where a player chooses the same action repeatedly.
E. Mixed strategies are used to calculate the exact value of the game.

Question 4

In the context of game theory, what is a Nash Equilibrium?
A. A scenario where the sum of all players' rewards is maximized.
B. A state where each player has chosen a strategy that maximizes their utility, given the strategies of other players.
C. The point in the game where all players have the same amount of information.
D. A situation where all players choose to cooperate for the greater good.
E. The outcome where one player's gain is equivalent to another player's loss.

Question 5

What does the Minimax strategy in game theory aim to achieve?
A. To maximize the maximum possible reward for a player.
B. To minimize the risk by choosing the safest strategy.
C. To minimize the worst-case scenario for a player, assuming the opponent is trying to maximize their own reward.
D. To find a middle ground between the best and worst outcomes.
E. To create a balance between the number of wins and losses.

Answer Key

1. B
2. C
3. B
4. B
5. C