CS7641 ML Practice Quiz

Module RL 4: Game Theory Continued

Created by Kyle Nakamura with the help of ChatGPT

Question 1

In the iterated prisoner's dilemma, if the number of rounds is known and finite, what is the rational strategy for players in each round?

A. Always cooperate.
B. Always defect.
C. Alternate between cooperating and defecting.
D. Cooperate in the first half, defect in the second half.
E. Defect in the first half, cooperate in the second half.

Question 2

In the context of uncertain ending in game theory, what does the gamma (γ) represent in a game where after each round, a coin is flipped to decide if the game ends or continues?

A. The probability of the game ending after each round.
B. The probability of the game continuing after each round.
C. The expected number of rounds in the game.
D. The total reward accumulated by the end of the game.
E. The discount factor for future rewards.

Question 3

What is the primary strategy of the "tit for tat" approach in the iterated prisoner's dilemma?

A. Start by defecting and then copy the opponent's last move.
B. Always cooperate regardless of the opponent's move.
C. Start by cooperating and then copy the opponent's last move.
D. Alternate between cooperating and defecting every round.
E. Defect whenever the opponent cooperates.

Question 4

In the context of facing the tit for tat strategy, under what condition is it more favorable to always cooperate rather than always defect?

A. When the discount factor gamma (γ) is less than 1/6.
B. When the discount factor gamma (γ) is greater than 1/6.
C. When the number of rounds in the game is known.
D. When the opponent has a higher probability of defecting.
E. When the game is zero-sum.

Question 5

What does the Folk Theorem in game theory state about repeated games?

A. Any feasible payoff profile that is better than the minimum security level can be achieved as a Nash equilibrium payoff profile.
B. The best strategy in repeated games is to always cooperate.
C. Repeated games always result in both players defecting.
D. The outcome of repeated games is always unpredictable.
E. Cooperation is never a stable strategy in repeated games.

Answer Key

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