JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

MID SEM JANUARY EXAMINATIONS-2023

B.TECH-VIII SEMESTER (CS/IT)

COURSE CODE: 19B1WCI837 MAX. MARKS: 15

COURSE NAME: REINFORCEMENT LEARNING

COURSE CREDITS: 3 MAX. TIME: 1 Hour

Note: *All questions are compulsory. Marks are indicated against each question in square brackets.*

Q1 What makes reinforcement learning different from other machine learning paradigms? **[CO-1, Marks: 2]**

Q2. Explain the tradeoff between the exploration and exploitation scheme in reinforcement learning. **[CO-1, Marks: 2]**

Q3. What is the role of the Discount Factor in Reinforcement Learning? **[CO-3, Marks: 2]**

Q4. Explain utility of bellman equation to approximate MDP. Give the bellman equations for state value function $V_\pi(s)$ and action value function $q_\pi(s, a)$ in a MDP. **[CO-3, Marks: 3]**

Q5. How is Markov Reward Process different from Markov Decision Process? **[CO-3, Marks: 1]**

Q6. You toss a fair coin three times: **[CO-2, Marks: 3]**

a) What is the probability of three heads, HHH?
b) What is the probability that you observe exactly one heads?
c) Given that you have observed at least one heads, what is the probability that you observe at least two heads?

Q7 The number of customers arriving at a grocery store is a Poisson random variable. On average 10 customers arrive per hour. Let X be the number of customers arriving from 10am to 11:30am11:30. What is $P(10 < X \leq 15)$? **[CO-2, Marks: 2]**

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