JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2024

M.Tech-I Semester (CSE)

COURSE CODE (CREDITS): 22M1WCI235   MAX. MARKS: 15

COURSE NAME: Reinforcement Learning

COURSE INSTRUCTORS: DHA   MAX. TIME: 1 Hour

Note: (a) All questions are compulsory.

(b) Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

---

Q1. What are fully observable and partially observable environments?   [CO-3, Marks: 3]

Q2. 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. What is $P(10 < X \leq 15)$?   [CO-2, Marks: 2]

Q3 I rolled a fair die. Let A be the event that the outcome is an odd number, i.e., A={1,3,5}. Also let B be the event that the outcome is less than or equal to 3, i.e., B={1,2,3}. What is the probability of A, P(A)? What is the probability of A given B, P(A|B)?   [CO-3, Marks: 2]

Q4. 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 a) What is Reinforcement Learning? Explain the tradeoff between Exploration and Exploitation with example.

b) Differentiate between Supervised and Reinforcement Learning?

c) What is Markov State? Explain with an example   [CO-1, Marks: 2+2+1]