

Jaypee University of Engineering & Technology, Guna**T-1 (Odd Semester 2023)****18B14CI853 - REINFORCEMENT LEARNING**

Maximum Duration: 1 Hour

Maximum Marks: 15

Notes:

1. This question paper has 4 questions.
2. Write relevant answers only.
3. Do not write anything on question paper.

		Marks	CO No.
Q1.	For each of the following activities, give a PEAS description of the task environment and characterize it in terms of the properties:	[03]	CO2
	(a). Shopping for used AI books on the Internet.		
	(b). Bidding on an item at an auction.		
	(c). Playing soccer.		
Q2.	Described four distinct program modules that represent the central components in many learning systems.	[03]	CO1
Q3.	A computer program is said to learn from experience E with respect to some class of tasks T and performance measure P, if its performance at tasks in T, as measured by P, improves with experience E. Identity these three features (E,T,P) for the following tasks:	[03]	CO3
	(a). A checkers learning problem		
	(b). A handwriting recognition learning problem		
	(c). A robot driving learning problem		
Q4.	Implement an exploring reinforcement learning agent that uses direct utility estimation. Make two versions—one with a tabular representation and one using the function approximation Equation: $U_{\theta}(x, y) = \theta_0 + \theta_1 x + \theta_2 y$ Compare their performance in following three environments:	[06]	CO3
	(a). The 4×3 world.		
	(b). A 10×10 world with no obstacles and a +1 reward at (10,10).		
	(c). A 10×10 world with no obstacles and a +1 reward at (5,5).		