Code No: 157HR **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, December-2023/January-2024
REINFORCEMENT LEARNING
(Computer Science and Engineering - Artificial Intelligence and Machine Learning)

Time: 3 Hours **Max. Marks: 75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A (25 Marks)

1.a)	Define stochastic process.	[2]
b)	What is Markov Process?	[3]
c)	What is prediction in reinforcement learning?	[2]
d)	Define double learning.	[3]
e)	What is Poly gradient?	[2]
f)	Write the limitations of Bandit frame work.	[3]
g)	Define Value function.	[2]
h)	Give the advantages of Model based learning.	[3]
i)	Give the application of temporal difference learning.	[2]
j)	Explain function approximation with an example.	[3]

PART – B (50 Marks)

2.a)	Explain conditional probability and expectation.	
b)	Describe Upper Confidence Bound algorithm.	[5+5]
	OR	
3.a)	Explain the objectives of Reinforce learning.	
b)	Discuss asymptotical optimal of Upper Confidence Bound.	[5+5]
4.a)	Explain Markov Reward Process with examples.	
b)	Discuss Bellman Optimal Equation for Markov Reward Process.	[5+5]
	OR	
5.a)	Explain policies of Markov Decision Process.	
b)	Describe models of optimal Bellman.	[5+5]
6.a)	Explain reinforcement learning and its elements.	
b)	Describe Model based reinforcement learning and its advantages.	[5+5]
	OR	
7.a)	Discuss the cycle of model base reinforcement learning.	
b)	Explain Monto Carlo Prediction model in detail.	[5+5]

8.a) Explain Temporal Difference Prediction and write its advantages.
b) Describe State Action Reward State Action (SARSA). [5+5]

OR

9.a) What is Adaptive of TD learning? Explain.
b) Compare Monto Carlo Method Vs TD learning. [5+5]

10.a) Describe n- stop SARSA algorithm.
b) Explain poly gradient algorithm in detail. [5+5]

OR

11.a) What is Tile code? Explain its representation and applications.
b) Give a detailed note on Q-iteration algorithm. [5+5]

---ooOoo---