

K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

April – May 2023

(M.Tech.) Program: **Artificial Intelligence** Scheme :**II**

Examination: **FY** Semester: **II**

Course Code: **PCEC201** Course Name: **Deep and Reinforcement Learning**

Date of Exam: **14/6/23**

Duration: 2.5 Hours

Max. Marks: 60

Instructions:

- (1) All questions are compulsory.
- (2) Draw neat diagrams wherever applicable.
- (3) Assume suitable data, if necessary.

		Max. Marks	CO	BT level
Q 1	Solve any six questions out of eight.	12		
i)	What do you mean by Reinforcement Learning?	2	CO1	U
ii)	Explain Adaptive Moment Estimation (ADAM)?	2	CO2	U
iii)	Why do we prefer CNN over ANN for image data?	2	CO3	An
iv)	Define and Explain state action value function?	2	CO4	U
v)	State Bellman Expectation Equation (For MDP)?	2	CO5	U
vi)	Why and when should we use Echo State Networks?	2	CO3	U
vii)	Compare Off-policy learning with On-policy learning?	2	CO5	An
viii)	List the applications of RNN?	2	CO6	U
Q.2	Solve any four questions out of six.	16		
i)	What is a shallow Neural Network? Compare it with Deep Neural Network?	4	CO1	An
ii)	Explain Convolutional Neural Network in detail?	4	CO3	U
iii)	Short Note: L2 regularization?	4	CO2	U
iv)	Explain any two real life applications of Reinforcement Learning?	4	CO6	U
v)	What is Temporal Difference (TD) Learning? Compare and analyze it with Monte Carlo learning?	4	CO5	An
vi)	Explain Markov Decision Process in detail?	4	CO4	U

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Q.3	Solve any two questions out of three.	16		
i)	With suitable examples demonstrate that the Dynamic Programming algorithm solves the RL Planning Problem?	8	CO5	Ap
ii)	What are Recursive-Neural Networks? Differentiate it with RNN?	8	CO3	An
iii)	What is the difference between backpropagation and gradient descent? How do you use gradient descent in backpropagation?	8	CO2	An
Q.4	Solve any two questions out of three.	16		
i)	Explain the 'Frozen Lake' RL Application? Using this RL example, explain the TD Prediction?	8	CO6	U
ii)	Explain Encoder-Decoder Sequence-to-Sequence Architectures with suitable example?	8	CO3	U
iii)	What is Reinforcement Learning? Compare it with other ML types?	8	CO4	U
