

Total No. of Questions : 4]

SEAT No. :

PB-390

[Total No. of Pages : 2

[6270]-202

B.E. (Artificial Intelligence and Data Science) (Insem)

REINFORCEMENT LEARNING

(2019 Pattern) (Semester - VIII) (417533(D)) (Elective - VI)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

- 1) *Answer Q1 or Q2, Q3 or Q4.*
- 2) *Figures to the right indicate full marks.*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Assume suitable data if necessary.*

Q1) a) What is reinforcement learning? Compare RL with other ML techniques. [6]

b) How has reinforcement learning evolved over time, from its early theoretical roots to practical applications in various domains? [5]

c) Explain limitation of reinforcement learning. [4]

OR

Q2) a) What is reinforcement learning? Explain one practical example. [6]

b) Explain how reinforcement learning influenced robotics and autonomous systems development? [5]

c) Explain various practical applications of reinforcement learning. [4]

Q3) a) What are the key components of a Markov decision process (MDP), and how do they formalize a reinforcement learning problem? [6]

b) Discuss the difference between policy evaluation and policy improvement in the context of Markov decision process (MDP). [5]

c) Explain the concept of infinite horizons in reinforcement learning. [4]

OR

- Q4)** a) Describe the Bellman equation for both the state-value function and the action-value function in MDPs, and discuss their significance in reinforcement learning algorithms. [6]
- b) Explain sequence of rewards assumption in reinforcement learning. [5]
- c) Discuss the Markov Properties. [4]
