

Total No. of Questions : 8]

SEAT No. :

P453

[Total No. of Pages : 2

[6003]-558

T.E. (Artificial Intelligence and Machine Learning)

ARTIFICIAL NEURAL NETWORKS

(2019 Pattern) (Semester - II) (318554)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.*
- 2) *Neat diagram must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Assume suitable data if necessary.*

- Q1)** a) Explain the architecture of a multilayer perception (MLP). How it differs from a single-layer perception? [6]
b) Explain in detail Error Back Propagation Algorithm. [6]
c) Explain stochastic Gradient Descent with example. [6]

OR

- Q2)** a) Write Applications of Feed forward Neural Networks. [6]
b) Explain how multilayer perception can be used in image classification tasks. [8]
c) Explain Sigmoid Neurons with example. [4]

- Q3)** a) Describe the architecture of a recurrent neural network (RNN). What are some advantages and limitations of RNNs in sequence modeling tasks? [7]
b) What are Hopfield networks and Boltzmann machines, and what are some applications of these models? [10]

OR

- Q4)** a) What is the Simulated Annealing. Write an algorithm for it. How it is useful in ANN. [7]
b) Explain Pattern Storage Networks. [10]

- Q5)** a) Explain the components of competitive learning and how they are used to classify input patterns. Example with example. [8]
b) Explain Semantic Networks in competitive learning. [6]
c) Write an applications of Self-Organizing Maps. [4]

OR

- Q6)** a) Explain Feature Mapping Network and its role in pattern recognition. [10]
b) Explain application of Adaptive Resonance Theory. [8]

P.T.O.

- Q7)** a) Describe the architecture of Deep Learning Networks, including input layer, hidden layers and output layer. Explain with example. [7]
b) Explain with diagram Long short-term memory (LSTM) Networks. [10]

OR

- Q8)** a) Explain the challenges faced in training Deep Learning Networks, including overfitting vanishing gradients, and exploding gradients. [8]
b) Explain convolutional networks (CNN). State it's application with examples. [9]

