

Total No. of Questions : 8]

SEAT No. :

P7558

[6180]-70

[Total No. of Pages : 2

T.E. (Artificial Intelligence and Data Science)
ARTIFICIAL NEURAL NETWORK
(2019 Pattern) (Semester - II) (317531)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Attempt Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume Suitable data if necessary.

- Q1) a)** What do you understand by associative memory? Also mention characteristics and applications for the same. **[5]**
- b)** Write short Notes on the following. **[5]**
- i) State transition diagram
 - ii) False minima problem
- c)** Illustrate the architecture of Boltzmann machine and its learning also its applications. **[8]**

OR

- Q2) a)** Explain Boltzmann machine How does it differ from Hopfield net? **[8]**
- b)** How does simulated annealing algorithm work? **[5]**
- c)** Write short notes on the following. **[5]**
- i) Applications of Hopfield Network for Travelling sales man problem
 - ii) Associative Memory

- Q3) a)** What is competitive learning in neural networks? **[5]**
- b)** Consider an ART-I network with input vector [1,1,0,0], [0,0,1,0], [1,1,1,0] and [1,1,1,1], want to produce clustering with following data, number of inputs $n = 4$, clusters to be formed $m = 3$ and vigilance parameter $\rho = 0.5$, Compute the result of the first iteration and comment on clustering. **[8]**
- c)** Draw the network architecture of ART network. Explain the algorithm for designing the weights of ART network. **[5]**

OR

P.T.O.

- Q4) a)** Explain ART under the following headings : [5]
- Architecture
 - Working
 - Training
 - Implementation
- b) Draw the architecture of Kohonen Network and explain the algorithm for training the weights of the Network. [5]
- c) Define following : [8]
- Learning vector quantization
 - Adaptive pattern classification

- Q5) a)** Illustrate with example convolution and max pooling? [6]
- b) What frameworks are used in deep learning? Define any seven. [5]
- c) Explain the softmax regression with respect to hypothesis and cost function and write down its properties. [6]

OR

- Q6) a)** Exemplify convolution over volume with convolution on RGB images. Also illustrate multiple filters used in it. [6]
- b) Consider a LeNet-5 a convolutional neural network, we want to perform the classification of digits, Write down the complete procedure followed in its architecture. [5]
- c) What is transfer learning models for image classification? What are the 5 types of transfer learning? [6]

- Q7) a)** Which device recognize a pattern of handwritten or printed characters? And also illustrate it's working. [7]
- b) Explain texture classification using convolution neural network. [5]
- c) Write short notes on the following: [5]
- NET Talk
 - Texture classification
 - Pattern classification

OR

- Q8) a)** You have been asked to develop a model of recognizing hand written digits. What are the chosen steps for activity? Explain each with detail. [7]
- b) What is automatic translation? How does it work? What are its benefits? [5]
- c) What is neocognitron neural network and how it is trained? [5]

