

Roll No. ....

**3453**

**B. Tech. 5th Semester (CSE-AI & ML)  
Examination – December, 2022  
NEURAL NETWORKS FUNDAMENTALS**

Paper : PCC-AI-301-G

Time : Three hours ]

[ Maximum Marks : 75

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt five questions in all, selecting one question from each Unit. Question Number 1 is compulsory.

1. Write a short note on :
  - (a) What is structure of biological neuron ? Explain. 2.5
  - (b) What is the difference between supervised and unsupervised learning ? 2.5
  - (c) How Auto associative memory is different from Hetro-associative memory ? Explain. 2.5
  - (d) What is Hebb rule ? Explain. 2.5

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- (c) How Feed forward network is different from Feed backward Network ? Explain. 2.5
- (f) Explain bidirectional memory. 2.5

#### UNIT - I

2. What is Artificial Neural Network ? Explain the structure of Biological Neuron in detail. Also discuss various applications of Neural Network. 15
3. What is activation function ? Explain the following activation function in detail with diagram : 15
- (a) Sigmoid function
  - (b) Stochastic function
  - (c) Stochastic function

#### UNIT - II

4. What is MCP model ? Explain its architecture and solution of AND, OR function using MCP model. 15
5. (a) What do you mean by discrete perception ? Explain the use of discrete perception in single layer perceptron model. 10
- (b) Explain the linearly separable classification. 5

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- #### UNIT - III
6. What is Back Propagation Network ? Explain its architecture and variations in detail. 15

7. What is Adaptive Resonance Theory ? What is ART Task & Structure ? Explain the ART Learning Process. 15

#### UNIT - IV

8. Explain the architecture of associative memory in detail. Also discuss its retrieval algorithm. 15
9. Write a short note on following : 15
- (a) Storage capacity of associative memory
  - (b) Hebb rule and Outer Product rule

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