Code:19CS4602A

III B.Tech - II Semester – Regular Examinations – JUNE 2022

NEURAL NETWORKS
(COMPUTER SCIENCE & ENGINEERING)

Duration: 3 hours   Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
      2. Part-A contains 5 short answer questions. Each Question carries 2 Marks.
      3. Part-B contains 5 essay questions with an internal choice from each unit. Each question carries 12 marks.
      4. All parts of Question paper must be answered in one place.

PART – A

1. a) Write various benefits of Neural Networks.
   b) Define Single-layered Artificial Neural Networks.
   c) Why BAM is required?
   d) Discuss the types of ART.
   e) Explain Pattern Classification.

PART – B
UNIT – I

2. a) "Artificial neuron is resembling the functionalities of biological neuron"- Justify this statement in all functional aspects.   6 M
    b) Explain the working principles of single input neuron, multiple inputs neuron and neurons with "R" number of inputs.   6 M

OR

3. a) Why activation function is used in Artificial neuron? Explain different activation functions.   6 M

b) With neat sketch differentiate multilayer feed forward networks and recurrent neural networks. 6 M

UNIT – II

4. a) Write briefly about the following:
   i) Correlation matrix memory.
   ii) Linear Activation Function. 6 M

   b) Illustrate the working principle of perceptron with a pair of linearly separable and a pair of non-linearly separable patterns. 6 M

OR

5. a) Explain how synaptic weights are adapted iteration by iteration using error correction rule in perceptron convergence algorithm. 6 M

   b) Write and explain the derivation of back propagation training algorithm. Explain the role of learning rate coefficient in its convergence. 6 M

UNIT-III

6. a) Explain how character recognition is done in associative memory. 6 M

   b) Explain in detail about BAM along with advantages, disadvantages and its applications. 6 M

OR

7. a) Explain Energy function in BAM. 4 M

   b) Describe the purpose and usage of Wang Multiple training encoding strategy algorithm. 8 M

UNIT – IV

8. a) Write the differences between ART 1 and ART 2. What are the applications of ART?   6 M

   b) Explain Character Recognition using ART1.   6 M

OR

9. Demonstrate ART1 and ART2 architecture with neat sketch.   12 M

UNIT – V

10. a) Explain the applications:
    i) Content addressable memory
    ii) Information retrieval   6 M

    b) Describe Image pattern recall application.   6 M

OR

11. a) Explain atleast 7 applications of Neural Networks.   6 M

    b) What algorithm is used for recognition of hand-writing digits?   6 M