

Code No: 157HK

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech IV Year I Semester Examinations, December-2023/January-2024****NEURAL NETWORKS AND DEEP LEARNING****(Computer Science and Engineering (Artificial Intelligence and Machine Learning))****Time: 3 Hours****Max. Marks: 75****Note:** i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

**PART – A****(25 Marks)**

- 1.a) Define Hopfield networks. [2]
- b) Mention the merits of Back Propagation Network. [3]
- c) Give the advantage of Adaptive Resonance Theory based neural networks. [2]
- d) Show the Structure of MAXNET neural network [3]
- e) List the historical trends in deep learning? [2]
- f) Discuss about noise robustness. [3]
- g) What is bagging? [2]
- h) Give an example for sparse representation. [3]
- i) Define computer vision. [2]
- j) Mention some applications of natural language processing. [3]

**PART – B****(50 Marks)**

2. With a neat diagram, explain the basic architecture of artificial neural networks. [10]
- OR**
3. Show the step-by-step training algorithm for basic pattern association problem using Hebb rule. [10]
  4. Draw the typical architecture of adaptive resonance theory networks and explain its operation. [10]
- OR**
5. Write the structure of Kohonen's SOFM network and give its algorithmic steps. [10]
  6. Explain in detail about the hidden units in deep learning. [10]
- OR**
7. With a neat sketch and example explain the concept of deep feed-forward networks. [10]
  8. Illustrate in detail about the various parameter typing and parameter sharing. [10]
- OR**
9. Describe the concept of semi supervised learning methods in detail. [10]
  10. List and explain in detail about the various optimization strategies in neural network. [10]
- OR**
11. Elaborate in detail about the various applications of large scale deep learning in detail. [10]