

6E7107

Total No. of Questions : 22

Total No. of Pages : 04

Roll No. :

6E7107

B.Tech. VI-Sem. (Main/Back) Exam. - 2025

ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

6AID5-11 Artificial Neural Network

AID, CAI, CDS

Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates :

Attempt all ten questions from Part-A, five questions out of seven questions from Part-B and three questions out of five questions from Part-C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used / calculated must be stated clearly.

Use of following supporting materials is permitted during examination.

(Mentioned in Form No. 205)

ersahilkagyan.com

1.

2.

PART-A

[10x2=20]

(Answer should be given up to 25 words only)

All questions are compulsory

Q.1. What is the model of a neuron in a neural network?

- Q.2. What is Boltzmann Learning?
- Q.3. What are linear least square filters in neural networks?
- Q.4. What is the relation between the Perceptron and Bayes classifier for a Gaussian Environment?
- Q.5. What is Cross-validation in neural network training?
- Q.6. What are the limitations of Back Propagation learning?
- Q.7. What is the SOM algorithm?
- Q.8. Explain learning vector quantization.
- Q.9. What are Neurodynamical models?
- Q.10. Explain Hopfield model.

PART-B

[5x4=20]

(Analytical/Problem solving questions)

Attempt any five questions

- Q.1. What is a Neural Network?
- Q.2. Explain Hebbian learning in Neural Networks.
- Q.3. Explain Perceptron convergence theorem.
- Q.4. How does the XOR problem demonstrate the need for multilayer perceptrons?
- Q.5. Explain Hessian matrix in neural networks.
- Q.6. Define supervised learning in neural networks.
- Q.7. What are the two basic feature mapping models in Neural Networks?

PART-C

[3x10=30]

(Descriptive/Analytical/Problem Solving/Design questions)

Attempt any three questions

- Q.1. What is memory based learning, and how it differs from other learning techniques?**
- Q.2. What are Learning Rate Annealing Techniques? How do they improve perceptron learning?**
- Q.3. How does pruning help optimize deep neural networks for deployment?**
- Q.4. Compare Self-Organizing Maps (SOM) with other clustering techniques like K-means.**
- Q.5. Explain the concept of dynamical systems in the context of neural networks and describe their significance in modeling neural activity.**

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