

6. (a) What are Recurrent Neural Networks? Draw a simple diagram illustrating a RNN! Where are they used? (6)
- (b) Define the terms Axon, Synapse, Dendrites. What are their equivalents in ANNs? (6)
- (c) Explain Genetic Algorithm. What are its application areas in the field of computation? (6)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 7918

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Unique Paper Code : 2514000016

Name of the Paper : Neural Networks

Name of the Course : **Generic Elective (GE)**

Semester : V

Duration : 3 Hours

Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt five questions in all, including Q. No. 1 which is compulsory.

1. (a) What are Biological Neurons? How are they significant in creating Artificial Neural Network (ANN) Models? (3)

(b) What is Hebbian Learning Rule in ANNs?

(3)

- (c) What role does the Threshold function have in ANNs? (3)
 - (d) What are the different architectures of Hopfield Network? (3)
 - (e) Explain why weights need to be initialized in ANNs? (3)
 - (f) Define Fuzziness in computational problems: (3)
2. (a) What is a Neural Network? Explain its importance in Machine Learning. (6)
- (b) List the various Learning rules in NNs . Explain any one of them in detail. (6)
- (c) Define and Discuss ReLU . How does it affect the performance of a Neural Network? (6)
3. (a) Discuss Supervised Learning and Unsupervised Learning in NNs. (6)
- (b) What are Multilayer Feed Forward Networks? Explain with a diagram. (6)

- (c) Describe Delta Learning rule in NNs. (6)
4. (a) What is LMS algorithm in NNs? Write about LLS filter and its features. (6)
- (b) Discuss the step-by-step procedure of back propagation learning algorithm. How does it solve the XOR problem? (6)
- (c) Explain the Learning Rate Annealing Technique in NNs. How does it help in optimization of the output? (6)
5. (a) Explain the importance of fuzzy logic control in various fields. With the help of a neat sketch discuss the major components of fuzzy controller. (6)
- (b) Discuss the concept of Pattern storage and retrieval in connection with Neural Networks. (6)
- (c) Write short notes on Boltzmann Machines. (6)