END TERM EXAMINATION [JULY-2023]
EIGHT SEMESTER [B.TECH]
SOFT COMPUTING [ETIT-410]

Time: 3 Hrs. Max. Marks: 75

Note: Attempt five questions in all including Q. No. 1 which is compulsory.

Q.1. Attempt five questions:

Q.1. (a) Draw an architecture of Neural Network and Explain?

Ans. Refer to Q.1 (b) End Term Examination 2018 (Pg. No. 1-2018).

Q.1. (b) Differentiate Between Hard and Soft Computing.

Ans. Refer to Q.1 (a) End Term Examination 2018 (Pg. No. 1-2018).

Q.1. (c) Explain the error correction process and gradient decent Rule?

Q.1. (d) Explain the algorithm to store and recall a set of bipolar patterns in Hopfield Network.

Q.1. (e) Differentiate between Feed Forward and Feed Backward Neural Networks?

Ans. Refer to Q.1 (a) End Term Examination 2017 (Pg. No. 2-2017).

Q.1. (f) Explain about Fuzzy logic and its applications.

Ans. Refer to Q.1 (b) End Term Examination 2017 (Pg. No. 2-2017).

Q.1. (g) Define Uncertainly and its usefulness in Soft computing.

Ans. Refer to Q.1 (c) End Term Examination 2017 (Pg. No. 3-2017).

Q.1. (h) Explain extension principle using suitable example.

Q.1. (i) How Genetic algorithm is useful over simple Traditional algorithms. Why these algorithms are known as Genetic Algorithm?

Ans. Refer to Q.1 (d) End Term Examination 2017 (Pg. No. 3-2017).

Q.1. (j) Explain Perception Model with the help of Example.

Ans. Refer to Q.1 (e) End Term Examination 2017 (Pg. No. 4-2017).

Q.2. (a) Explain the significance of hidden layer. How it is useful in pattern recognition and control Problem? **(6)**

Ans. Refer to Q.2 (b) End Term Examination 2017 (Pg. No. 4-2017).

Q.2. (b) Describe McCulloch-Pitts Neuron. Implement "AND" Function using McCulloch-Pitts Neuron. **(6.5)**

Ans. Refer to Q.2 (b) End Term Examination 2018 (Pg. No. 4-2018).

Q.3. (a) What are activation Function? What is the necessity of activation Function? Differentiate between Binary Sigmodial and Bipolar Sigmodial Function. **(6)**

Ans. Refer to Q.3 (a) End Term Examination 2018 (Pg. No. 6-2018).

Q.3. (b) Draw and explain discrete Hopfield network architecture and also state the testing algorithm used in discrete Hopfield network?

Ans. Refer to Q.1 (c) End Term Examination 2018 (Pg. No. 2-2018).

Q.4. (a) What are Fuzzy Set? Enlist and explain various operations on Fuzzy Set. What do you mean by Lambda-Cut? **(6)**

Ans. Refer to Q.4 (a) End Term Examination 2018 (Pg. No. 7-2018).

Q.4. (b) With the suitable example, explain how membership assignment is performed using intuition and genetic algorithm? **(6.5)**

Ans. Refer to Q.5 (b) End Term Examination 2017 (Pg. No. 18-2017). (Neuro fuzzy system)

Q.5. (a) Find the weight required to perform the following classification using perception network. The vectors (1, 1, 1, 1) and (–1, 1, –1, –1) are belonging to the class (so have target value 1), vectors (1, 1, 1, –1) and (1, –1, –1, 1) are not belonging to the class (so have target value – 1). Assume learning rate as 1 and initial weight as 0. (6)

Q.5. (b) With a suitable case study, demonstrate the canonical rule formation, aggregation of the Fuzzy rules and decomposition of the compound rule formed. (6.5)

Q.6. (a) Define defuzzification. What are the different methods of defuzzification? Which of these techniques of defuzzification is best? (7.5)

Ans. Refer to Q.1 (b) First Term Examination 2019 (Neuro & fuzzy system (Pg. No. 2-2019).

Q.6. (b) Compare and contrast multi-objective decision making and multi-attribute decision making. (5

Q.7. (a) Explain the associative memory and its functioning using neat diagram.

Ans. Refer to Q.1 (g) End Term Examination 2017 (Pg. No. 5-2017) (Neuro & fuzzy system).

Q.7. (b) Explain following terms associated with associative memory: (6.5)

(i) Association

(ii) Heteroassociation

Ans. Refer to Q.1 (c) End Term Examination 2019 (Pg. No. 4-2019) (Neuro & fuzz system).

(iii) Learning

(iv) Retrieval

(v) Reliability of the answer

Q.8. (a) Explain with the help of neat diagram the architecture of neur fuzzy network. Also explain its application in medicine and economics. (8.5)

Q.8. (b) Explain the operation of genetic programming a neat flowchar How Mutation, Selection and Crossover works in genetic algorithms? (

Ans. Refer to Q.1 (f) & (h) End Term Examination 2018 (Pg. No. 10,11-2018) (Neu fuzzy system).

Q.9. Write short note on

Q.9. (a) Linguistic variables.

Ans. Refer to Q.3 (a) End Term Examination 2019 (Pg. No. 2-2019) (Neuro fu system).

Q.9. (b) Applications of ANN.

Ans. Refer to Q.3 (b) End Term Examination 2017 (Pg. No. 10-2017) (Neuro fu system).

Q.9. (c) Fitness Function.

Ans. Refer to Q.1 (h) End Term Examination 2019 (Pg. No. 5-2019) (Neuro fu system).

Q.9. (d) Kohonen Self-Organising Feature Maps.

Ans. Refer to Q.2 (a) III Part End Term Examination 2018 (Pg. No. 14-2018) (Ne fuzzy system).