

QP Code : 31392

(3 Hours)

[Total Marks : 80



N.B. 1. Question no. 1 is compulsory.

2. Solve any THREE out of FIVE remaining questions.

1. a. Define soft computing? Distinguish between soft computing and hard computing. 5
- b. Explain Mc Culloch Pitts neuron model with the help of an example.
- c. Determine (alfa) α -level sets and strong α -level sets for the following fuzzy set.
 $A = \{(1,0.2), (2,0.5), (3,0.8), (4,1), (5,0.7), (6,0.3)\}$ 5
- d. Explain linear separable and non-linearly separable pattern with example. 5
2. a. What is learning in neural networks? Differentiate between supervised and unsupervised learning. 10
- b. Explain any four defuzzification methods with suitable example. 10
3. a. Explain error back propagation training algorithm with the help of a flowchart. 10
- b. Explain genetic algorithm with the help of an example. 10
4. a. Prove the following identities: 10
- (i) For unipolar continuous activation function $f'(net) = o(1-o)$.
- (ii) For bipolar continuous activation function $f'(net) = o(1-o^2) / 2$.
- b. Explain perceptron learning with the help of an example. 10
5. a. Explain ANFIS architecture with neat diagram. 10
- b. Explain Mamdani type of fuzzy inference systems in detail. 10
6. Write note on any two of the following. 20
- a. Winner take all learning rule.
- b. Learning vector quantization.
- c. Character recognition using neural network.