

Elective - I : Fuzzy Logic and Neural Networks

P. Pages : 2

Time : Three Hours



TKN/KS/16/7542

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
 2. Solve Question 1 OR Questions No. 2.
 3. Solve Question 3 OR Questions No. 4.
 4. Solve Question 5 OR Questions No. 6.
 5. Solve Question 7 OR Questions No. 8.
 6. Solve Question 9 OR Questions No. 10.
 7. Solve Question 11 OR Questions No. 12.
 8. Assume suitable data whenever necessary.
 9. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Explain the concept of Artificial neural network. 7
b) Explain the learning and adaptation concept in neural processing. 4
c) Develop a two input perception algorithm for AND gate. 3

OR

2. a) List various learning processes of neural networks. Explain any one of them. 7
b) How the multilayer perception is able to classify input samples into complex regions. 7
3. a) Explain Delta learning rule for multilayer perception. 7
b) Write short notes on feedforward recall and error back propagation training. 6

OR

4. a) Explain the limitations of single layer perception in linearly non separable pattern classification. 7
b) Explain the importance of learning factors. 6
5. a) Explain in brief the applications of Neural network used in biomedical field. 7
b) With mathematical foundation. Explain Hopfield network. 6

OR

6. a) Design a neural network based system for refrigerator. Assume atleast three inputs and output to control the timing for switching (on & off) the compressor. 13
7. a) Explain the concept of Fuzzy set with daily life example. 7

- b) With neat sketch, explain the classical set & fuzzy set. 6

OR

8. a) Consider the fuzzy set A & B for union & intersection operation. 6

$$\tilde{A} = \left\{ \frac{0.1}{1} + \frac{0.3}{2} + \frac{0.6}{3} + \frac{0.9}{4} \right\}$$

$$\tilde{B} = \left\{ \frac{0.2}{1} + \frac{0.4}{2} + \frac{0.7}{3} + \frac{1}{4} \right\}$$

- b) Write difference between classical and fuzzy relations. 7

9. a) Explain with example the concept of extension principle. 7

- b) What is the use of lambda cuts in fuzzy logic. 7

OR

10. a) Enlist the different methods of defuzzification. Explain any one in brief. 7

- b) Explain different methods of membership assignment. 7

11. Explain the fuzzy logic controller used in signal processing operations. 13

OR

12. How fuzzy logic controller can be used in image processing operations. 13
