M.Sc. S.Y. (Electronics) (CBCS Pattern) Semester - III

PSELT302 / PSCELET302-Core 10-Paper-II : Fuzzy Logic and Artificial Neural Networks

P. Pages : 2 **GUG/S/23/11253**

Time : Three Hours * 1 4 2 9 * Max. Marks : 80

Notes : 1. All questions are compulsory and carry equal marks.
2. Draw well labeled diagrams wherever necessary.
3. Use of log table/calculator is allowed.

Either:

1. a) What is fuzzy set? Define it and explain with an example. **8**

b) State and explain two operations which can be performed on the fuzzy sets. **8**

OR

c) With examples explain crisp relation. **8**

d) Define membership function in fuzzy logic? Explain at least three membership functions of fuzzy logic systems. **8**

Either:

2. a) Explain the following components of fuzzy logic system? **8**
i) Fuzzification.
ii) Rule base.

b) What are the basic components of a fuzzy logic system? Explain each of them. **8**

OR

c) Explain applications of fuzzy logic in control system with one example. **8**

d) Explain Fuzzy c-means clustering. **8**

Either:

3. a) Explain the operation of artificial neural network. **8**

b) What is perceptron. **8**
Explain : i) Perceptron learning rule, and (ii) perceptron function.

OR

c) Explain back propagation algorithm. What are the limitations of back propagation learning? **8**

d) Explain feed forward networks. **8**

Either:

4. a) What is associative memory? Explain their types. **8**

b) Explain working of associative memory. **8**

OR

c) Explain adoptive resonance theory. **8**

d) Explain the counter-propagation network. **8**

5. Attempt the following.

a) Explain defuzzification. **4**

b) Explain the operation of fuzzy sets with a suitable example. **4**

c) Explain a model of artificial neural network. **4**

d) Explain bidirectional associative memory (BAM). **4**

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