

**B.Tech. – VIEP – COMPUTER SCIENCE AND  
ENGINEERING (BTCSVI)**

**Term-End Examination  
June, 2014**

00581

**BICSE-004 : FUZZY SYSTEMS**

*Time : 3 hours*

*Maximum Marks : 70*

**Note :** Answer any **seven** questions. All questions carry equal marks. Assume the missing data, if any.

1. (a) Why do we need fuzzy set theory ? Explain. 2  
 (b) If a  $C$  is a continuous fuzzy complement, then  $C$  has a unique equilibrium. Prove it. 3  
 (c) Write down the theorem of first characterization of fuzzy complements. 5
2. (a) Prove that  $0 \in A-A$  and  $|\in A|A$  for  $0 \notin A$ , where  $A$  is a closed interval. 5  
 (b) Write short notes on 5  
 (i) Fuzzy Complements  
 (ii) Fuzzy Numbers
3. (a) Let  $R$  be a reflexive fuzzy relation on  $X^2$ , where  $|x| = n \geq 2$ . Then prove that  $R_{T(i)} = R^{(n-1)}$ . 5  
 (b) Prove that for any fuzzy relation  $R$  on  $X^2$ , the fuzzy relation  $R_{T(i)} = \bigcup_{n=1}^{\infty} R^{(n)}$  is the  $i$ -transitive closure of  $R$ . 5

4. (a) Define partial ordering. What are the fundamental concepts and properties associated with partial ordering? 5
- (b) What is fuzzy morphism? Explain with suitable diagrams. 5
5. (a) Describe the concept of fuzzy sets and possibility theory. 5
- (b) What is fuzzy propositions? What are the types in fuzzy propositions? Explain. 5
6. (a) What is inference from conditional fuzzy propositions? Explain the compositional inference with example diagrams. 5
- (b) What are the steps in inference qualified propositions? 5
7. (a) What is fuzzy expert system? Explain the architecture of an expert system with neat diagram. 5
- (b) How will the fuzzy be implemented? Explain any one theorem in fuzzy implications. 5
8. (a) Describe the schema of multiconditional approximate reasoning form. What are the steps in interpolation? 5
- (b) Prove the theorem  $B'_2 \subseteq B'_4 \subseteq B'_1 = B'_3$ . 3
- (c) Write a short note on fuzzy dynamic systems. 2

- 9.** (a) Briefly explain the fuzzy information retrieval based on the fuzzy sets. 5
- (b) Write the decision making components and explain them. 5
- 10.** (a) What is Multiperson Decision Making model ? Explain. 5
- (b) How is the genetic algorithm used in fuzzy systems ? Describe with some examples. 5
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