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No. of Printed Pages : 3

**BICSE-004**

**B. TECH.-VIEP-COMPUTER SCIENCE  
AND ENGINEERING (BTCSVI)**

**Term-End Examination**

**June, 2019**

**BICSE-004 : FUZZY SYSTEMS**

*Time : 3 Hours*

*Maximum Marks : 70*

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

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1. What are Fuzzy Propositions ? How are deductive interferences made through conditional fuzzy propositions ? Discuss with the help of a suitable example. 10
  
2. (a) Explain Fuzzy automata and languages in detail. 5
  
- (b) What is Fuzzy decision making ? What are its steps ? 5

3. (a) Discuss the concept of Fuzzy classification. 5
- (b) Explain multistage decision-making with the help of suitable example. 5
4. (a) Explain Rule based structure identification in detail. 5
- (b) With the help of block diagram explain fuzzy logic controller. 5
5. (a) Discuss four major steps in Fuzzy role based model. 5
- (b) How multivalued logic and fuzzy logic are related ? Give brief description of : 5
- (i) Unconditional and unqualified fuzzy proposition.
- (ii) Conditional and unqualified fuzzy proposition.
6. (a) Explain direct methods of fuzzy construction. 5
- (b) Discuss the different steps for designing a fuzzy controller. 5
7. (a) Explain the concept of binary relations on a single set. 5

- (b) Describe the concept of fuzzy equivalence relations. 5
8. (a) What are crisp sets ? How do crisp sets differ from fuzzy sets ? Give suitable examples for both. 5
- (b) Write axioms of fuzzy intersection in  $t$ -norm. Prove that the standard fuzzy intersection is the only idempotent  $t$ -norm. 5
9. How is information related to uncertainty ? Also discuss about the uncertainty principle. 10
10. (a) Write short note on fuzzy measures. 5
- (b) How is genetic algorithm used in fuzzy systems ? Describe with some example. 5