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BICSE-004

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

Term-End Examination

00113

June, 2018

BICSE-004 : FUZZY SYSTEMS

Time : 3 hours *Maximum Marks : 70*

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

1. (a) Describe the extension principle for fuzzy sets. *5*

(b) Prove that the properties of symmetry, reflexivity and transitivity are preserved under inversion, for both crisp and fuzzy relations. *5*

2. (a) Compare and contrast t-norms and t-conorms, in the context of fuzzy sets. What is the practical utility of determining t-norm and t-conorm ? *5*

(b) Discuss the term fuzzy equations with the help of suitable example. *5*

3. (a) What are binary fuzzy relations ? Briefly discuss the role of binary fuzzy relations in fuzzy expert systems. *5*

(b) Give Inf-compositions of fuzzy relations. Support the submitted Inf-compositions with suitable examples. *5*

4. Differentiate between the inference from qualified proposition and inference from quantified proposition. Give suitable example for both. *10*

5. (a) How does classical logic differ from multivalued logic ? Give suitable example for both. *5*

(b) What is the significance of using genetic algorithms in fuzzy systems ? Give a suitable example in support of your answer. *5*

6. Write short notes on any ***two*** of the following (Give suitable example for each) : *5+5*

(a) Fuzzy Morphism

(b) Linguistic Hedges

(c) Fuzzy Controllers

7. (a) What are fuzzy ordering relations ? What are the properties of fuzzy ordering relations ? *5*

(b) What are fuzzy expert systems ? How do they differ from non-fuzzy expert systems ? *5*

8. Give a brief overview of any ***two*** of the following : *5+5*

(a) Binary relations on a single set

(b) Fuzzy sets and Possibility theory

(c) Principles of Uncertainty

9. What are fuzzy databases ? How do fuzzy databases differ from traditional databases ? Discuss the role of fuzzy databases in decision making. *10*

10. Discuss any ***two*** of the following with suitable examples : *5+5=10*

(a) Multicriteria decision making

(b) Multistage decision making

(c) Selection of fuzzy implications
