B.TECH. COMPUTER SCIENCE AND ENGINEERING (BTCSVI)

Term-End Examination

December, 2013

BICSE-004 : FUZZY SYSTEMS

Time : 3 hours   *Maximum Marks : 70*

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

1. (a) Describe the concept of fuzzy set.   5
    (b) Find some examples of interval-valued fuzzy sets, L-fuzzy sets, level 2 fuzzy sets, and type 2 fuzzy sets.   5

2. (a) State and write axioms in fuzzy intersections in t-NORMS and prove the standard fuzzy intersection is the only idempotent t-norm.   5
    (b) State and write the axioms in fuzzy unions: t-CONORMS and prove that the standard fuzzy union is the only idempotent t-conorm.   5

3. (a) Prove that the properties of symmetry, reflexivity and transitivity are preserved under inversion for both crisp and fuzzy relations.   5
    (b) Prove that the max-min composition and min join are associative operations on binary fuzzy relations.   5

4. (a) Explain the concept of binary relations on a single set ? 5

   (b) Describe the concept of fuzzy equivalence relations ? 5

5. (a) Write a short notes on fuzzy measures. 5

   (b) What is multivalued logic? What are the types of multivalued logic? Explain. 5

6. (a) Define fuzzy quantifiers ? Explain with suitable diagram ? 5

   (b) What is linguistic hedges ? Explain the concept with suitable examples. 5

7. (a) Give the overview of fuzzy controllers and describe the general scheme of a fuzzy controller with diagram. 5

   (b) Write down the different defuzzification methods in fuzzy control. 5

8. (a) Define fuzzy neural networks. What are the basic features of resulting networks ? 5

   (b) Represent the finite fuzzy automation and write down the steps to create a relations. 5

9. (a) Briefly discuss the group decision making model. 5

   (b) Define multistage decision making. Explain the crisp and fuzzified automations. 5

10. (a) Explain the concept of fuzzy databases completely. 5

    (b) Define the multicriteria decision making and explain with suitable example. 5

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