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B. Tech. EXAMINATION, Dec. 2017

(Eighth Semester)

(Old Scheme) (Re-appear Only)

(CSE)

CSE-416

FUZZY LOGIC

Time : 3 *Hours*] [*Maximum Marks :* 100

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt any *Five* questions. All questions carry equal marks. Answer to the point.

1. Compute the sets of α-cuts for both : **20**

(a) the two fuzzy sets μ_1 and μ_2 given by

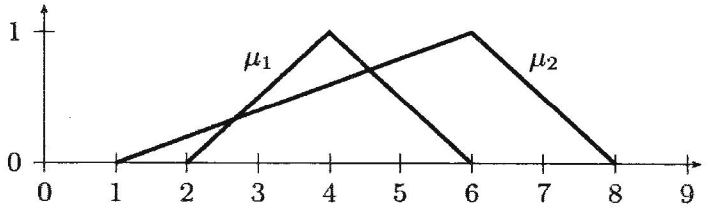
6. Write notes on the following :

Fuzzy Qualifiers and Linguistic Heges. **20**

7. Explain the steps for calculating the fuzziness of fuzzy sets considering a suitable example of your own. **20**

8. List and explain the applications of fuzzy logic in the field of softcomputing. **20**

their graphs as follows



(b) the fuzzy set defined as follows :

$$\mu(x) = \begin{cases} 1-(x-2)^2, & \text{if } 1 \le x \le 3 \\ 0, & \text{otherwise} \end{cases}$$

2. List and explain various fuzzy set operations. **20**

3. (a) Assume you were told that the room temperature is *around* 20ºC. How would you represent this peice of information by :

(i) a set and

(ii) a fuzzy set ?

(b) The middle point of a line segment is, at the same time, close to and for from its extreme points. How would you geometrically depict this idea through :

(i) a set and

(ii) a fuzzy set, both in the unit square.

4. The fuzzy binary relation R is define on set X = {1, 2, ..., 100} and Y = {50, 51, ..., 100} and represents the relation "x is much smallar than y". It is defined by its membership function : **20**

$$R(x, y) = \begin{cases} 1-\dfrac{x}{y}, & \text{if } x \le y \\ 0, & \text{otherwise} \end{cases}$$

where $x \in X$ and $y \in Y$:

(a) What is the domain of R ?

(b) What is the range of R ?

(c) What is the height of R ?

(d) Calculate R^{-1}.

5. Give comparison between probability theory and possibility theory. **20**