M.Sc. (I) (Mathematics) Second Semester Old

0175 - Paper-VII: Fuzzy Mathematics-II

P. Pages : 2 **GUG/W/18/2233**

Time : Three Hours * 1 7 3 0 * Max. Marks : 100

Notes : 1. Solve all the **five** questions.
2. Each questions carries equal marks.

UNIT - I

1. a) Obtain the relations: **10**

$$A_1 \subset A_2 \subset .... \subset A_n \ (=X) \ \& \ \sum_{1}^{n} m(Ai) = 1$$

b) Explain the evidence theory shortly. **10**

OR

c) For every $A \in P(X)$ any necessity measure, Nec, on P(X) & the associated possibility measure, Pos then prove that it satisfies the implications: **10**

i) $Nec(A) > 0 \Rightarrow Pos(A) = 1$

ii) $Pos(A) < 1 \Rightarrow Nec(A) = 0.$

d) Discuss the fuzzy sets & possibility theory. **10**

UNIT - II

2. a) State an example from daily life of each type of fuzzy proposition introduced in fuzzy logic & express the proposition in its canonical form. **10**

b) Solve the problem in above question **10**

(a) by using $A = \cdot 6/x_1 + 1/x_2 + \cdot 9/x_2$

$$B = \cdot 6/y_1 + \frac{1}{y_2} \ \&$$

$$A' = \cdot 5/x_1 + \cdot 9/x_2 + 1/x_2 .$$

OR

c) Discuss the unconditional & qualified propositions. **10**

d) Discuss the quantifier extension principle. **10**

UNIT - III

3. a) Explain the interval valued approximate reasoning. **10**

b) Show that **10**
$B'_2 \subseteq B'_4 \subseteq B'_1 = B'_3$.

OR

c) Explain the 11 steps in algorithmic procedure in indirect method with multiple experts. **10**

d) Describe the fuzzy implications. **10**

UNIT - IV

4. a) Explain the mean of the maxima method. **10**

b) Discuss the fuzzy dynamic system. **10**

OR

c) Describe the fuzzy controller whose control problem is to stabilize an inverted pendulum. **10**

d) Explain shortly the fuzzy systems & neural networks. **10**

5. a) Define: **5**
i) Necessary Measure ii) Possibility measure

b) What are the four types of classification of fuzzy propositions. **5**

c) State the two steps in the method of interpolation. **5**

d) Define centre the maxima method. **5**

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