MTC-402

M. Sc. (Fourth Semester) Examination, 2020

(CBCS Course)

MATHEMATICS

Paper : Second

(Fuzzy Sets Theory and Their Applications)

Maximum Marks : 60

Note : *Attempt all questions. All questions carry equal marks.*

1. Let

$$X = \{1, 2, 3, 4, 5\}$$

$$\tilde{A} = \{(2, \cdot 4), (3, \cdot 6), (4, \cdot 8), (5, 1)\}$$

(a) Find the height of $\tilde{A}$

(b) State whether $\tilde{A}$ in normal or subnormal.

(c) Find $\alpha\,\tilde{A}$ for $\alpha = \cdot 6$.

2. Let $X = \{1, 2, 3, 4, 5\}$

$$\tilde{A} = \{(1, \cdot 3), (2, \cdot 5), (3, \cdot 8), (4, 1), (5, \cdot 8)\}$$

$$\tilde{B} = \{(1, \cdot 4), (2, \cdot 8), (3, \cdot 5), (4, \cdot 6), (5, \cdot 4)\}$$

find $\tilde{A} \cup \tilde{B}$, $\tilde{A} \cap \tilde{B}$ and $\tilde{A}^c \cap \tilde{B}^c$.

3. Define product and power of fuzzy set with example.

4. Let $\tilde{A}_i \in F(X)$ for all $i \in I$, where I is an index set. Then

$$\bigcup_{i \in I}^{\alpha} \tilde{A}_i \subseteq {}^{\alpha}\left(\bigcup_{i \in I} \tilde{A}_i\right)$$

5. Define with an example :

(a) Cartesian product of two fuzzy sets

(b) Intuitionistic fuzzy sets