

7. FUZZY LOGIC AND FUZZY SETS

UNIT-1: CRISP SETS AND FUZZY SETS:

The Notion of Fuzzy Sets-basic concepts of Fuzzy sets –Fuzzy complement-Fuzzy Union-Fuzzy intersection – Combination of operations – general aggregation of operations.

UNIT-2: FUZZY RELATIONS:

Crisp and Fuzzy relations – Binary relations – Binary relations on a single set – Equivalence and similarity relations – Compatibility on Tolerance Relations-Orderings – Morphism – Fuzzy relations Equations.

UNIT-3: FUZZY MEASURES:

Belief and plausibility Measures –Probability measures – Possibility and Necessity measures.

UNIT-4: UNCERTAINTY AND INFORMATION:

Types of Uncertainty – Measures of Fuzziness-Classical Measures of Uncertainty-Hartley information – Shannon entropy– Measures of Dissonance- Measures of Non-Specificity.

UNIT-5: APPLICATIONS:

Natural, life and Social Sciences - Engineering - Medicine - Management and decision making.

Text Book:

1. George J. Klir and Tina A. Folger, Fuzzy Sets, Uncertainty and Information, Prentice-Hall of India Private Limited-Fourth printing-June 1995

Unit:1 Chapter 1,2 Sec 1.3,1.4,2.2-2.6

Unit:2 Chapter 3 Sec 3.1-3.8

Unit:3 Chapter 4 Sec 4.2-4.5

Unit:4 Chapter 5 Sec 5.1-5.4, 5.6

Unit:5 Chapter 6 Sec 6.2-6.5

Reference Book:

1. George J. Klir and Boyuan, Fuzzy Sets and Fuzzy Logic-Theory and Applications, Prentice-Hall of India Private Limited.