20PE007 - ARTIFICIAL INTELLIGENT SYSTEMS

UNIT – I   **L- 08**
FUNDAMENTALS OF NEURAL NETWORKS :Working of biological neuron, Model of an artificial neuron, Basic concepts of neural networks, Neural network architectures, Characteristics of neural networks, Learning methods, Taxonomy of neural network architectures, Broad application areas in electrical engineering

UNIT – II   **L- 08**
BACKPROPAGATION NETWORKS: Architecture of a backpropagation network, Backpropagation learning, Illustration, Applications, Effect of tuning parameters of the backpropagation neural network, Selection of various parameters in BPN.

UNIT – III   **L- 08**
CLASSICAL AND FUZZY SETS: Introduction to classical sets - Properties, Operations and relations; Fuzzy sets, Membership, Uncertainty, Operations, Properties, Fuzzy relations, Cardinalities, Membership functions.

UNIT – IV   **L- 08**
FUZZY LOGIC SYSTEM COMPONENTS: Fuzzification, Membership value assignment, Development of rule base and decision making system, Defuzzification to crisp sets, Defuzzification methods, Fuzzy logic applications - Fuzzy logic control and fuzzy classification; Application of fuzzy logic in basic problems of electrical engineering.

UNIT – V   **L- 08**
GENETIC ALGORITHMS : History, Basic concepts, Creation of offsprings, Working principle, Encoding, Fitness function, Reproduction, Inheritance operators, Cross over, Inversion and Deletion, Mutation operator, Bit-wise operators, Generational cycle, Convergence application of GA in power systems and power electronics (Qualitative treatment only).

TEXT BOOKS:

1.   Rajasekharan and Pai, "Neural Networks, Fuzzy logic, and Genetic algorithms: Synthesis
      and Applications", 1st edition, Prentice Hall of India Publication, 2009.
2.   Jacek M. Zurada, "Introduction to Artificial Neural Systems", 1st edition, Jaico Publishing House, 2006.

REFERENCES:
1   James A Freeman and Davis Skapura, "Neural Networks", 1st edition, Pearson, 2008.
2.   Simon Haykins, "Neural Networks", 2nd edition, Pearson Education, 2009.
3.   Bork Kosko, "Neural Networks and Fuzzy Logic System" 1st edition, Prentice Hall of India Publications, 2009.