

Paper-IV(1) (MCA-531) : Artificial Intelligence

UNIT- I

General Issues and Overview of AI: The AI problems, what is an AI technique?

Problem Solving, Search and Control Strategies: General problem solving, production systems, control strategies: Forward and backward chaining. Exhaustive searches: Depth and Breadth first search.

UNIT- II

Heuristic Search Techniques: Hill climbing, Branch and Bound technique, Best first search & A* algorithm, AND/ OR graphs, problem reduction & AO* algorithm, constraint satisfaction problems, means ends analysis.

Knowledge Representation: First order predicate calculus, skolemization, resolution principle & unification, interface mechanism, Horn's clauses, semantic networks, frame systems and value inheritance, scripts, conceptual dependency.

UNIT- III

AI Programming Language: PROLOG: Introduction, Clauses: Facts, goals and rules. Prolog unification mechanism, arithmetic operator, list manipulations, Fail and Cut predicates.

UNIT- IV

Natural Language Processing: Parsing techniques, context-free grammar, Case and Logic grammars, Semantic Analysis.

Planning: Overview- An Example Domain: The block world, component of planning systems, goal stack planning (linear planning), non-linear planning using goal sets.

UNIT- V

Handling Uncertainty: Probability theory, Bayes theorem and Bayesian networks, Certainty factor, Fuzzy Logic.

Expert Systems: Introduction to expert system, knowledge acquisition, case studies: MYCIN.

Recommended Books:

1. Elaine Rich and Kelvin Knight: Artificial Intelligence, Tata McGraw Hill.
2. D.W.Patterson: Introduction to Artificial Intelligence and Expert Systems, Prentice Hall of India.
3. Clocksin, W.F and Mellish, C.S: Programming in PROLOG, Narosha Publishing

