ARTIFICIAL INTELLIGENCE AND ITS APPLICATIONS

UNIT – I

The AI problems – A1 techniques – problems, problem space & search – Defining the problem as a state Search – Production Systems – Problem characteristics – heuristic search techniques – Generate & test – Hill climbing – Best first search. Problem reduction – constraint satisfaction – means – ends analysis.

UNIT – II

Game Playing: Mini – max procedure – Adding Alpha – Beta cutoffs – Additional refinements – Searching AND / OR Graphs – Iterative deepening. Using Predicate Logic – Representing simple facts & logic – Representing instance & IS a Relationships – Computable functions & Predicates – Use of the predicate calculus in AI – Resolution – natural deduction.

UNIT – III

Representing knowledge using Rules – Procedural verses declarative knowledge logic programming – forward versus backward reasoning – Resolving within AND/OR Graphs matching – Control knowledge- Symbolic Reasoning under uncertainity – non – monotonic reasoning – Implementation Issues – Augmenting a Problem Solver – Implementation of depth first & breadth first search. Statistical reasoning – Bayee's theorem – Certainity factors & Rule based systems – Bayesian Networks – Dempston – Shafer theory – Fuzzy logic.

UNIT – IV

Expert Systems – Architectural Components – Explanation facilities – knowledge acquisition.

UNIT –V

Expert System Development Process – Non-formal representation of knowledge – semantic Networks – Frames – Scripts – Production Systems – Expert Systems tools.

Text Books:

1. For Units – I, II & III : Elaine Rich & Kevin Kaight – Artificial Intelligence – Tata McGraw Hill – Second Edition, 1991 (Chapter 1,2,3,5,6,7,9).
2. For Units – IV & V : David W.Roltson – Principles of Artificial Intelligence & Expert Systems Development – McGraw Hill (Chapters 1,4,7,8,9 and 10).

Reference Book:

Nills J.Nilsson, "Artificial Intelligence", Narosa Publishing House, 1990.