**19AI602**

**FOUNDATIONS OF ARTIFICIAL INTELLIGENCE**

**3-0-1-4**

**Unit I:**

Problem Solving:

AI Problems,

AI Techniques and Types –

The Level of the Model,

Criteria for Success –

Defining the Problem as a State Space Search –

Problem Characteristics

Uninformed Search,

Heuristic Search Techniques:

* Generate-And- Test,
* Hill Climbing –
* Constraint Satisfaction Problem–
* game trees –

Adversarial Search:

* Minimax algorithm –
* Alpha beta pruning –
* Game playing.

**Unit II:**

Automated Reasoning:

Logic Agent –

* Knowledge Representation
* Propositional logic
* First-Order Predicate Logic
* Inferences in First-Order Logic
  + Forward Chaining
  + Backward Chaining
* Natural Deduction – Representing Knowledge using rules –Techniques – Matching Techniques.

**Unit III:**

* Quantifying Uncertainty
* Probabilistic Reasoning
* Probabilistic Reasoning over Time

Planning with state-space search – Partial-order planning – planning graphs – planning and acting in the real world –

Learning from observation

Inductive learning

Decision trees

Explanation based learning

Statistical Learning methods

Reinforcement Learning

**Text Books/References:**

1. Russell and P. Norvig, Artificial Intelligence: A Modern Approach, Prentice Hall, Third Edition, 2009.
2. I. Bratko, ―Prolog: Programming for Artificial Intelligence, Fourth edition, Addison-Wesley Educational Publishers Inc, 2011.
3. KishanMehrotra, “Elements of ANN”, IIEdition, Pen ram International Publishing (I)Pvt. Ltd.Unit.
4. M.Tim Jones, ―Artificial Intelligence: A Systems Approach (Computer Science), Jones and Bartlett Publishers, Inc.; 1 edition, 2008
5. Nils J. Nilsson, ―The Quest for Artificial Intelligence, Cambridge University Press, 2009.