B. Tech.
(SEM. VIII) THEORY EXAMINATION 2011-12

ARTIFICIAL INTELLIGENCE

Time: 3 Hours
Total Marks: 100

Note:— Attempt all questions.

1. Attempt any four parts of the following:—
   (a) Define the term artificial intelligence in your words.
   (b) Define the role of intelligent agents in the problem solving.
   (c) Write a short note on the foundations of artificial intelligence.
   (d) What is an agent program? Describe a general model of learning agents.
   (e) Describe the role of artificial intelligence in natural language processing.
   (f) Prepare a short note on the state-of-the-art of artificial intelligence.

2. Attempt any two parts of the following:—
   (a) What are the different parameters which are used to evaluate a search technique?
   (b) Describe breadth first search technique. Show that it is complete and optimal for unit step costs.
c) Describe A* search technique. Prove that A* is complete and optimal.

Attempt any two parts of the following:—

(a) Determine whether the following argument is valid:
   "If a baby is hungry, then the baby cries. If the baby is not mad, then he does not cry. If a baby is mad, then his face looks abnormal. Therefore, if a baby is hungry, then his face looks abnormal."

(b) Describe the role of Hidden Markov Model (HMM) in probabilistic reasoning.

(c) What is a Bayesian network? How is the Bayesian network used in representing the uncertainty about knowledge?

5. Write short notes on any four of the following:—

(a) Statistical pattern recognition
(b) Nearest neighbor rule
(c) Clustering techniques
(d) Parametric estimation techniques
(e) Support vectors
(f) Probabilistic Learning.