

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2875

Roll No.

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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 ?

Attempt any **two** parts of the following :—

- (a) Describe different unsupervised learning techniques.
- (b) Illustrate Naïve Bayes model of statistical learning.
- (c) Define the term reinforcement learning. How does the passive reinforcement learning differ than active reinforcement learning ?

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.