

(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.
3. 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 ?
4. 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.