



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

**PAPER ID : 110801**

Roll No.

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## B. Tech.

### (SEM. VIII) THEORY EXAMINATION, 2014-15 ARTIFICIAL INTELLIGENCE

Time : 3 Hours]

[Total Marks : 100

**Note:** Attempt all questions.

1 Attempt **any four** parts of the following: **5×4=20**

- (a) Explain the term artificial intelligence. How does it differ from general intelligence?
- (b) Describe the role of different disciplines in the emergence of artificial intelligence as a new science.
- (c) What is an agent program? Describe the structure of a typical agent program.
- (d) List some of the state-of-the-art applications of the artificial intelligence.
- (e) Describe the role of artificial intelligence in computer vision.
- (f) How does a language processing system work.

2 Attempt **any two** parts of the following: **10×2=20**

- (a) Describe the role of artificial intelligence in search. Illustrate your answer using 8-queens problem.
- (b) Explain BFS and DFS search techniques in detail.
- (c) Describe A\* search technique. Prove that A\* is complete and optimal.

3 Attempt **any two** parts of the following: **10×2=20**

- (a) Determine whether the following argument is valid.  
"If I work whole night on this problem, then I can solve it. If I solve the problem, then I will understand the topic. Therefore, I will work whole night on this problem, then I will understand the topic."
- (b) Define Hidden Markov Model (HMM). Illustrate how HMMs are used for speech recognition.
- (c) Describe Bayesian networks. How does the Bayesian networks are the powerful representation for uncertainty knowledge?

4 Attempt **any two** parts of the following: **10×2=20**

- (a) What do mean by machine learning? Illustrate any two supervised learning techniques.
- (b) Explain decision trees learning technique using a suitable example.
- (c) Elaborate Naive Bayes model in detail.

**5** Write short notes on **any four** of the following: **5×4=20**

- (a) Pattern Recognition System
  - (b) Principle Component analysis
  - (c) Discriminant Component Analysis
  - (d) Clustering
  - (e) Support vector machine
  - (f) Artificial neural networks
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