**Printed Pages : 1** **Roll No.** | | | | | | | | | | | **ECS801**

**B.TECH.**

**THEORY EXAMINATION (SEM–VIII) 2016-17**

**ARTIFICIAL INTELLIGENCE**

***Time : 3 Hours*** ***Max. Marks : 100***

***Note :*** *Be precise in your answer. In case of numerical problem assume data wherever not provided.*

**SECTION – A**

**1. Explain the following: 10 x 2 = 20**

**(a)** Explain the term Artificial Intelligence.

**(b)** Describe the role of Computer Vision in Artificial Intelligence.

**(c)** What do you mean by Agent Program? How do you assure that an agent program is an Intelligent Agent Program?

**(d)** Discuss the role of Machine Intelligence in game playing.

**(e)** What is Modus Pones Rule in Prepositional Logic?

**(f)** What is Turing Test?

**(g)** Write short note on state of the art of Artificial Intelligence.

**(h)** What is Pattern Recognition?

**(i)** Discuss Supervised & Unsupervised learning.

**(j)** Describe the role of Artificial Intelligence in Natural Language Processing.

**SECTION – B**

**2. Attempt any five parts of the following questions: 5 x 10 = 50**

**(a)** What is Production System? Explain the various types of production system.

**(b)** What is Probabilistic Reasoning? Also describe the role HMM in probabilistic reasoning.

**(c)** What is Clustering? Describe K-Means Clustering Algorithm.

**(d)** Explain Learning with complete data i.e. Naive Bayes Model and learning with hidden data i.e. EM algorithm.

**(e)** Describe A* Search Technique. Prove that A* is complete and optimal.

**(f)** Derive the expressions for time and space complexity of Breadth-First and Depth-First Search strategies.

**(g)** 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".

**(h)** Describe Bayesian Network technique of Knowledge Representation. How does it useful in representing uncertainty knowledge?

**SECTION – C**

**Attempt any two parts of the following questions: 2 x 15 = 30**

**3** Explain how PCA is used in Pattern Recognition. Describe Parameter Estimation methods in Pattern Recognition.

**4** **Translate the following sentences into formulas in Predicate Logic and Clausal Form:**

(i) John likes all kind of food.

(ii) Apples are food.

(iii) Chicken is food.

(iv) Bill eats peanuts and is still alive.

(v) Sue eats everything Bill eats.

(vi) Anything any one eats and is not killed by is food.

**5** **Write short notes on following:**

i. Linear Discriminant Analysis

ii. Support Vector Machine

iii. Game Search