

**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**
- Explain the term Artificial Intelligence.
  - Describe the role of Computer Vision in Artificial Intelligence.
  - What do you mean by Agent Program? How do you assure that an agent program is an Intelligent Agent Program?
  - Discuss the role of Machine Intelligence in game playing.
  - What is Modus Ponens Rule in Propositional Logic?
  - What is Turing Test?
  - Write short note on state of the art of Artificial Intelligence.
  - What is Pattern Recognition?
  - Discuss Supervised & Unsupervised learning.
  - 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**
- What is Production System? Explain the various types of production system.
  - What is Probabilistic Reasoning? Also describe the role HMM in probabilistic reasoning.
  - What is Clustering? Describe K-Means Clustering Algorithm.
  - Explain Learning with complete data i.e. Naive Bayes Model and learning with hidden data i.e. EM algorithm.
  - Describe A\* Search Technique. Prove that A\* is complete and optimal.
  - Derive the expressions for time and space complexity of Breadth-First and Depth-First Search strategies.
  - 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".
  - 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:**
- John likes all kind of food.
  - Apples are food.
  - Chicken is food.
  - Anything any one eats and is not killed by is food.
  - Bill eats peanuts and is still alive.
  - Sue eats everything Bill eats.
- 5 **Write short notes on following:**
- Linear Discriminant Analysis
  - Support Vector Machine
  - Game Search