

**B. TECH.**  
**(SEM VII) THEORY EXAMINATION 2018-19**  
**ARTIFICIAL INTELLIGENCE**

**Time: 3 Hours**

**Total Marks: 100**

**Note: 1.** Attempt all Sections. If require any missing data; then choose suitably.

**SECTION A**

**1. Attempt all questions in brief.**

**2 x 10 = 20**

- a. Define learning agent with the help of architecture.
- b. What is Computer vision?
- c. Write down the time and space complexity of DFS search strategies.
- d. State soundness property of Inference.
- e. Design the PEAS measure for "Satellite Agent".
- f. List out the application area of machine learning.
- g. Define Supervised and Unsupervised Learning in machine learning?
- h. What is decision tree?
- i. Differentiate between classification and regression?
- j. Discuss the features of Support vector machine.

**SECTION B**

**2. Attempt any three of the following:**

**10 x 3 = 30**

- a. State the various properties of environment.
- b. What is the role of NLP in AI? Illustrate the various phases in NLP.
- c. Discuss the problems of Hill climbing algorithm?
- d. Apply K-means algorithm for clustering data with the help of example.
- e. Analysis the various feature extraction and selection methods in pattern recognition.

**SECTION C**

**3. Attempt any one part of the following:**

**10 x 1**

- (a) Describe briefly the evolution of artificial intelligence.
- (b) List the criteria to measure the performance of different search strategies.

**4. Attempt any one part of the following:**

**10 x 1**

- (a) Differentiate between forward and backward chaining of Inference with the help of an example.
- (b) What is heuristic function? Differentiate Blind search and Heuristic Search strategies.

**5. Attempt any one part of the following:**

**10 x 1**

- (a) What is propositional logic? Define the various inference rules with the help of example.
- (b) What is reinforcement learning? Differentiate between active and passive reinforcement learning.

**6. Attempt any one part of the following:**

**10 x 1**

- (a) What do you understand by Information Gain? How it is calculated?
- (b) What is regression? Compare between linear regression and non-linear regression?

7. Attempt any *one* part of the following: 10 x 1
- (a) What do you mean by dimension reduction? Discuss principal component analysis (PCA) for dimension reduction.
  - (b) What is Bayesian Theory? Explain the role of prior probability and posterior probability in Bayesian Classification?

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