

B.TECH.
(SEM VII) THEORY EXAMINATION 2022-23
ARTIFICIAL INTELLIGENCE

Time: 3 Hours**Total Marks: 70****Note:** Attempt all Sections. If require any missing data; then choose suitably.**SECTION A****1. Attempt any Seven questions in brief.****2 x7 = 14**

- (a) Explain the term computer vision in AI.
- (b) Discuss the term heuristic search.
- (c) Define the term Inference engine.
- (d) What is a Search graph of a state space?
- (e) Define natural language processing.
- (f) Define conditional probability.
- (g) List down some of the uninformed search techniques in state space search.
- (h) Discuss applications of support vector machine in artificial intelligence.
- (i) Differentiate between classification and regression technique.
- (j) Explain the need of probabilistic reasoning in artificial intelligence.

SECTION B**2. Attempt any three of the following:****7x3=21**

- (a) What do you mean by AI? Explain the use of AI in various fields.
- (b) Explain Hill Climbing algorithm in detail along with its limitations.
- (c) What is propositional logic? Define the various inference rules with the help of example.
- (d) Define conditional probability and explain Naïve Bayes rule in detail.
- (e) Explain the concept of pattern recognition along with suitable example.

SECTION C**3. Attempt any one part of the following:****7x1=7**

- (a) Discuss the elements of an agent and explain the characteristics of intelligent agent.
- (b) What is the role of AI in the natural language processing? Illustrate the various phases in natural language processing.

4. Attempt any one part of the following:**7x1=7**

- (a) Discuss various searching techniques in AI.
- (b) Explain the term heuristic function along with its benefits/uses in the field of AI.

5. Attempt any one part of the following:**7x1=7**

- (a) Elaborate the term regression along with comparison between linear regression and non-linear regression.
- (b) Define the term reinforcement learning. Explain how passive reinforcement learning differ from active reinforcement learning.

6. Attempt any one part of the following:**7x1=7**

- (a) Explain the EM algorithm along with suitable example.
- (b) Describe Bayesian networks and explain how Bayesian networks are a powerful representation for uncertainty knowledge.

7. Attempt any one part of the following:**7x1=7**

- (a) Explain k-means clustering with the help of suitable example in the field of pattern recognition.
- (b) Explain the concept of Principle component analysis (PCA) in dimension reduction along with suitable example.