Roll No. | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (IT) (Sem.–5)

ARTIFICIAL INTELLIGENCE

Subject Code : BTIT-3511-18

M.Code : 78265

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Write briefly :

1) Are there agent functions that cannot be implemented by any agent program?

2) List the criteria to measure the performance of different search strategies.

3) What is heuristic search?

4) What is a rational agent?

5) What is utility function?

6) What is Reinforcement learning?

7) What is conditional probability?

8) What is uncertainty?

9) List the factors that make reinforcement learning difficult.

10) What is a partially observable markov decision process?

SECTION-B

11) The *n*-queens problem is to place n queens on an *n*-by-*n* chessboard, such that no queen attacks another, as per chess rules. Pose the problem as a search problem.

12) Differentiate tree-based breadth-first and depth-first search strategies based on completeness, time and space complexities.

13) Using the axioms of probability, prove that any probability distribution on a discrete random variable must sum to 1.

14) Explain the process of decision-making using utility functions.

15) What is meant by passive and active reinforcement learning and how do we compare the two?

SECTION-C

16) What is Artificial Intelligence? Explain how an AI system is different from a conventional computing system? Discuss application areas of AI.

17) Explain the A* search algorithm with the help of an example and also give the proof of optimality of A*.

18) What is Bayesian-Network? Briefly discuss how a Bayesian Network is constructed and how inference is accomplished in a Bayesian Network.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.