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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.