

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VIII (NEW) EXAMINATION – WINTER 2021****Subject Code:2180703****Date:29/11/2021****Subject Name:Artificial Intelligence****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) What is the significance of the “Turing Test” in AI? Explain how it is performed. **03**
- (b) Differentiate between Breadth First Search and Depth First Search. **04**
- (c) Explain application of AI. **07**
- Q.2** (a) What is meant by “control strategy”? State the requirements of a good control strategy. **03**
- (b) Explain mean-end analysis approach to solve AI problems. **04**
- (c) Explain the State Space with the use of 8 Puzzle Problem. **07**
- OR**
- (c) What do you mean by constraint satisfaction problems? Explain constraint propagation algorithm using suitable example. **07**
- Q.3** (a) Define the following terms. **03**
- 1) Local Maximum 2) Plateau 3) Ridge
- (b) Differentiate between declarative and procedural representation of knowledge. **04**
- (c) Explain the algorithm of resolution in predicate logic. **07**
- OR**
- Q.3** (a) Differentiate between Forward Reasoning and Backward Reasoning. **03**
- (b) Explain the algorithm of resolution in propositional logic. **04**
- (c) Explain the different approaches to knowledge representation. **07**
- Q.4** (a) Explain Probability and Bay’s Theorem. **03**
- (b) Explain Semantic Net and Frame with example. **04**
- (c) Explain Minmax procedure for game playing with an example. **07**
- OR**
- Q.4** (a) What is understanding? What makes understanding hard? **03**
- (b) Discuss the concept of goal stack planning. **04**
- (c) Explain Non- Monotonic Reasoning. **07**
- Q.5** (a) Explain following terms with reference to Prolog programming language. **03**
- 1) Clauses 2) Predicates 3) Domains
- (b) Write a short note on: Hopfield Networks **04**
- (c) List the phases of natural language processing. Describe the role of each phase in brief. **07**

OR

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| Q.5 | (a) | Discuss supervised and unsupervised learning. | 03 |
| | (b) | Describe briefly the applications of Neural Networks. | 04 |
| | (c) | Write following prolog programs. | 07 |
| | | 1) Checking membership of an element in a given list. | |
| | | 2) To find nth element of list. | |
