

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV EXAMINATION – SUMMER 2025****Subject Code:3145201****Date:17-05-2025****Subject Name: Introduction of 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.

MARKS

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|------------|--|-----------|
| Q.1 | (a) What is AI? | 03 |
| | (b) Define search and search algorithm. | 04 |
| | (c) Differentiate Uninformed Search (Blind search) and Informed Search. | 07 |
| Q.2 | (a) Discuss Recursive Best-first Search (RBFS). | 03 |
| | (b) Write short note on simulated annealing search. | 04 |
| | (c) Explain A* algorithm in detail. | 07 |
| OR | | |
| | (c) Discuss with examples: AI Problem Characteristic. | 07 |
| Q.3 | (a) What is Constraint Satisfaction Problem? | 03 |
| | (b) Differentiate declarative and procedural knowledge. | 04 |
| | (c) Explain the Example for Constraint Satisfaction Problem. | 07 |
| OR | | |
| Q.3 | (a) Explain The minimax algorithm. | 03 |
| | (b) Explain Existential quantifiers with an example. | 04 |
| | (c) Explain Alpha-Beta cutoff procedure in game playing with example. | 07 |
| Q.4 | (a) Write a short note on Backward state space planning. | 03 |
| | (b) What is Ontological Engineering? | 04 |
| | (c) Discuss various areas where Artificial Intelligence is used. | 07 |
| OR | | |
| Q.4 | (a) Explain local maxima, plateau, and ridge in brief. | 03 |
| | (b) Briefly explain any one application of Natural Language Processing. | 04 |
| | (c) Describe the components of a general heuristic search problem. | 07 |
| Q.5 | (a) Suggest an admissible heuristic that could be used when applying A* search to solving a planning problem in the state-variable representation. Show that it is admissible | 03 |
| | (b) Explain Hierarchical Planning. | 04 |
| | (c) Differentiate supervised and unsupervised learning. | 07 |
| OR | | |
| Q.5 | (a) Enlist Parsing techniques | 03 |
| | (b) Differentiate forward chaining and backward chaining. | 04 |
| | (c) What is forward chaining? Explain with an example. | 07 |
