

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2024****Subject Code: 3171105****Date: 30-05-2024****Subject Name: Introduction of Artificial Intelligence****Time: 02:30 PM TO 05:00 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 an Artificial Intelligence (AI) technique? **03**
(b) Discuss production systems. **04**
(c) Explain how the components of agent programs work. **07**
- Q.2** (a) Define: (i) Intelligence (ii) Rationality (iii) Logical reasoning. **03**
(b) What are problem solving agents? State their features? **04**
(c) Explain breadth first strategy using suitable example. **07**
- OR**
- (c) Explain depth first strategy using suitable example. **07**
- Q.3** (a) When would best first search be worse than simple breadth first search? **03**
(b) Show how means-ends analysis could be used to solve the problem of getting from one place to another. Assume that the available operators are walk, drive, take the bus, take a cab, and fly. **04**
(c) Write short note on Hill Climbing search technique. **07**
- OR**
- Q.3** (a) List and explain things needed to build a system to solve a particular problem. **03**
(b) What do you mean by constraint satisfaction? **04**
(c) Write short note on Best-first search technique. **07**
- Q.4** (a) Define planning. Distinguish planning and doing with respect to computer problem solving behavior. **03**
(b) Discuss the components of planning system. **04**
(c) What are heuristic functions? Explain the A* algorithm with an example? **07**
- OR**
- Q.4** (a) Write advantages and disadvantages of Brute force algorithm. **03**
(b) Why does the search in game playing programs always proceed forward from the current position rather than backward from a goal state? **04**
(c) Explain goal stack planning using simple blocks world problem. **07**
- Q.5** (a) What do you mean by natural language processing? Why it is important? **03**
(b) Enlist all spell checking techniques. Explain any one spell checking techniques in brief. **04**
(c) Using suitable example, explain the minimax search procedure. **07**
- OR**
- Q.5** (a) What is forward pruning? **03**
(b) Briefly explain parsing technique. **04**
(c) Explain semantic analysis using suitable example. **07**
