

Enrolment No./Seat No _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (NEW) EXAMINATION – SUMMER 2024

Subject Code:2180703

Date:16-05-2024

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 are AI techniques to solve a problem? Explain briefly about Turing Test to determine whether a machine can think **04**
(b) State and briefly explain the Baye's Theorem **03**
(c) What is state space? Give state space representation of Water Jug problem **07**
- Q.2** (a) Explain briefly backward reasoning with example. **03**
(b) Explain with example how recursive predicate is defined in Prolog? **04**
(c) What is the problem characteristics used to categorize the different class of problems? Explain with example **07**
- OR**
- (c) Write down steepest ascent hill climbing algorithm? Discuss the drawbacks associated with the simple hill climbing method. **07**
- Q.3** (a) Explain in brief different approaches to knowledge representation. **07**
(b) Consider the following facts: **07**
* All Pompeians died when the volcano erupted in 79 A.D.
* No mortal lives longer than 150 years.
* When someone dies, then he is dead at all later times.
* It is now 1991.
Convert the above facts in predicate logic form.
- OR**
- Q.3** (a) What are the issues in knowledge representation? List out the properties of knowledge representation. **04**
(b) What are the factors which make understanding hard? **03**
(c) Explain briefly the steps to convert given wff into clause form **07**
- Q.4** (a) Explain cut predicate with example. **05**
(b) Draw partitioned semantic net for the following sentence **04**
"Every dog in town has bitten the constable"
(c) What are the features Hopfield network? Give basic structure of perceptron. **05**
- Q.4** (a) Write and explain a recursive predicate in prolog to reverse a given string. **05**
Draw semantic net for the following sentence
(b) "Jay has given green flower vase to Bhumika" **04**

- (c) Explain Certainty factor in brief 05
- Q.5** (a) What is minimax search procedure? Explain alpha beta pruning with example. 07
- (b) Describe with example monotonic and nonmonotonic logics? Discuss how reasoning can be done under uncertainty. 07
- OR**
- Q.5** (a) Describe with example various stages of Natural Language Processing. 07
- (b) Explain Iterative deepening algorithm in detail 07
