

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (NEW) EXAMINATION – WINTER 2023

Subject Code:2180703

Date:04-12-2023

Subject Name: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.

	MARKS
Q.1 (a) What is meant by “control strategy”? State the requirements of a good control strategy.	03
(b) Explain task domain of artificial intelligence.	04
(c) In the missionaries and cannibals problem, three missionaries and three cannibals must cross a river using a boat which can carry at most two people, under the constraint that, number of cannibals lesser then the missionaries on either side. Boat cannot cross the river by itself with no people in boat. For the above mentioned problem, describe state space representation, actions, start and end state.	07
Q.2 (a) Discuss limitation of hill climbing method.	03
(b) Explain means-end analysis approach to solve AI problems.	04
(c) Explain A* algorithm.	07
OR	
(c) Explain forward verses backward reasoning.	07
Q.3 (a) Define Propositional and predicate logic.	03
(b) Explain inheritable knowledge.	04
(c) Consider the following sentence: 1. Tennis is a game. Chess is a game. 2. John and Steve are students. 3. John plays tennis. 4. Steve plays everything that John plays. 5. Students, who play tennis, do not play chess. Translate the above sentence into formulas in Predicate logic. Prove using resolution that “Steve does not play Chess.	07
OR	
Q.3 (a) Explain procedural knowledge.	03
(b) Explain non-monotonic reasoning.	04
(c) Explain steps in Natural Language processing.	07
Q.4 (a) Discuss Bay’s theorem.	03
(b) Write short note on Semantic Net.	04
(c) Explain Demster-Shafer theory.	07

OR

- | | | | |
|------------|------------|-----------------------------------|-----------|
| Q.4 | (a) | Explain Fuzzy logic. | 03 |
| | (b) | Discuss Goal Stack Planning. | 04 |
| | (c) | Explain MINIMAX search procedure. | 07 |

- | | | | |
|------------|------------|--|-----------|
| Q.5 | (a) | Explain following terms with reference to Prolog programming language.
1). Clauses 2). Predicates 3). Domains | 03 |
| | (b) | Write short note on : Hopfield Networks. | 04 |
| | (c) | Write prolog programs to perform following with LIST:
1). Delete an element from a list.
2). Concatenating of two lists. | 07 |

OR

- | | | | |
|------------|------------|--|-----------|
| Q.5 | (a) | Discuss supervised and unsupervised learning. | 03 |
| | (b) | Explain recurrent neural network. | 04 |
| | (c) | Write following prolog programs.
1). Checking membership of an element in a given list.
2). To find n^{th} element of list. | 07 |
