

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2024****Subject Code: 3154202****Date:18-05-2024****Subject Name: Fundamentals 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.

	Marks
Q.1 (a) Define Intelligence and Artificial Intelligence.	03
(b) Describe various application fields of AI.	04
(c) Enlist and explain roots of AI in detail.	07
Q.2 (a) Differentiate informed & uninformed search.	03
(b) Discuss branch and bound search algorithm.	04
(c) What is A* search? Explain various stages of A* search with an example.	07
OR	
(c) Explain AO* algorithm with a suitable example. State the limitations in the algorithm?	07
Q.3 (a) What are the limitations in using propositional logic to represent the knowledge base?	03
(b) Explain forward reasoning versus backward reasoning.	04
(c) Explain alpha-beta pruning algorithm and the minmax game playing algorithm with example?	07
OR	
Q.3 (a) Illustrate the use of first order logic to represent knowledge.	03
(b) Explain non-monotonic reasoning.	04
(c) Define a problem and its components. Explain how a problem solving agent works?	07
Q.4 (a) Explain the different operations of fuzzy set.	03
(b) Describe the different membership functions in fuzzy set.	04
(c) Write a short note on: dempster-shafer theory.	07
OR	
Q.4 (a) Explain de-fuzzification.	03
(b) Differentiate between crisp set and fuzzy set.	04
(c) Write a short note on: rule based system.	07
Q.5 (a) Describe the different types of learning.	03
(b) Explain steps of natural language processing.	04
(c) Explain decision tree learning algorithm in detail.	07
OR	
Q.5 (a) What are the different types of activation functions used in neural network?	03
(b) Explain various blind search strategies.	04
(c) Explain back-propagation neural networks.	07
