Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2022

Subject Code:3170716 Date:05-01-2023

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.**

			Marks
Q.1	**(a)**	Explain Turing test.	**03**
	(b)	What is production system? Discuss the component of production system.	**04**
	(c)	What is artificial intelligence? Explain application of AI.	**07**
Q.2	**(a)**	Write an algorithm for the breadth first search.	**03**
	(b)	Why hill climbing is better than generate and test? Write algorithm for simple hill climbing.	**04**
	(c)	Explain the state space search with the use of 8 Puzzle Problem	**07**
		OR	
	(c)	Explain AI Problem characteristics in detail.	**07**
Q.3	**(a)**	What is heuristic search? Discuss with an example.	**03**
	(b)	Explain Problem Reduction using "AND-OR" graph.	**04**
	(c)	What do you mean by constraint satisfaction problems? Explain constraint propagation algorithm using suitable example.	**07**
		OR	
Q.3	**(a)**	Differentiate procedural and declarative knowledge.	**03**
	(b)	Write a short note on non monotonic reasoning.	**04**
	(c)	Write and explain algorithm for resolution in propositional logic with suitable example.	**07**
Q.4	**(a)**	Explain forward and backward reasoning.	**03**
	(b)	Demonstrate the use of Repeat Predicate in Prolog with example.	**04**
	(c)	Explain the various method of knowledge representation with suitable example.	**07**
		OR	
Q.4	**(a)**	Briefly explain perceptron.	**03**
	(b)	Explain morphological and syntax analysis phases of NLP.	**04**
	(c)	Explain the architecture of expert system with suitable sketch.	**07**
Q.5	**(a)**	Explain Probability and Bay's Theorem.	**03**
	(b)	Explain the components of planning system.	**04**
	(c)	Explain the MiniMax search procedure for Game Playing. Also explain alpha and Beta cut-offs to improve the performance of MinMax procedure.	**07**
		OR	
Q.5	**(a)**	Explain supervised and unsupervised learning.	**03**
	(b)	Explain about the basic operators in genetic algorithms.	**04**
	(c)	Write following prolog programs: 1) To find factorial of a given number. 2) To find the n^{th} element of a given list.	**07**

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