Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2021

Subject Code:3170716 Date:13/12/2021

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 is a "control strategy" and what are its characteristics?	**03**
	(b)	Describe in brief how Min-Max search procedure works.	**04**
	(c)	Enlist and discuss major task domains of Artificial Intelligence.	**07**
Q.2	**(a)**	Discuss briefly backward reasoning with example.	**03**
	(b)	Explain with example how recursive predicate is defined in Prolog?	**04**
	(c)	State Water Jug problem. Give its state space representation	**07**
		OR	
	(c)	Explain A^* algorithm. What happens if h' underestimates h and overestimates h?	**07**
Q.3	**(a)**	Explain local maxima, plateau and ridge in brief	**03**
	(b)	Discuss the approaches to knowledge representation	**04**
	(c)	Demonstrate briefly the steps to convert given wff into clause form	**07**
		OR	
Q.3	**(a)**	Differentiate Informed & Uninformed search. Give examples.	**03**
	(b)	Explain best first search algorithm.	**04**
	(c)	Consider the following facts: * Hemant only likes easy courses. * Science courses are hard. * All the courses in basketweaving department are easy. * BK301 is a basketweaving course. Use resolution to answer the question,"What course would Hemant like?"	**07**
Q.4	**(a)**	What is certainty factor?	**03**
	(b)	Discuss Bayesian network and its application.	**04**
	(c)	Explain connectionist models. What is perceptron? What is the concept of back propagation for ANNs?	**07**
		OR	
Q.4	**(a)**	What do you mean by Expert Systems? List out its four applications.	**03**
	(b)	Discuss Goal Stack planning	**04**
	(c)	Write about various defuzzification methods	**07**
Q.5	**(a)**	Discuss cut and fail predicate in prolog	**03**
	(b)	Describe working principle of Genetic Algorithm	**04**
	(c)	What is nonmonotonic reasoning? Explain logics for nonmonotonic reasoning.	**07**
		OR	
Q.5	**(a)**	Write a prolog program to append two given lists into third	**03**
	(b)	List out the genetic operators. Describe them briefly	**04**
	(c)	Write a note on Natural Language Processing	**07**