Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER– VII EXAMINATION – SUMMER 2026

Subject Code:3170319 Date:05-06-2026

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 Artificial Intelligence and its usages.	**03**
	(b)	Discuss the impact of AI on medical technology.	**04**
	(c)	Explain testing of AI systems.	**07**
Q.2	**(a)**	Explain discovery based learning with example.	**03**
	(b)	Enlist the roots of AI. Explain any two.	**04**
	(c)	Explain basic research problem in ML and discuss its Remedies.	**07**
		OR	
	(c)	Discuss various learning methods.	**07**
Q.3	**(a)**	Explain ML model used for Regression.	**03**
	(b)	Differentiate between Reinforced Learning and Inductive learning.	**04**
	(c)	Describe Bayesian reasoning method for forecasting.	**07**
		OR	
Q.3	**(a)**	Write down characteristics of Expert system.	**03**
	(b)	How to manage uncertainty in rule based system.	**04**
	(c)	Explain Forward chaining and backward chaining inference.	**07**
Q.4	**(a)**	Explain and Draw Structure of expert system.	**03**
	(b)	Explain any one supervised learning method.	**04**
	(c)	Discuss role of Knowledge representation in rule based expert system.	**07**
		OR	
Q.4	**(a)**	Give example of Logic Programming.	**03**
	(b)	Explain pattern detection algorithm with example.	**04**
	(c)	Explain mathematical formulation of Support Vector machine with soft margin.	**07**
Q.5	**(a)**	Give difference between fuzzy set and crisp set.	**03**
	(b)	Differentiate between Supervised learning and unsupervised learning.	**04**
	(c)	Write down steps to implement fuzzy control system with inference to control washing machine RPM. Also define membership functions for following parameters. I/P: weight of cloths (3-level), type of water (2-level) O/P: Motor RPM (3-level)	**07**
		OR	
Q.5	**(a)**	Explain any one defuzzification method.	**03**
	(b)	Explain membership function of fuzzy sets.	**04**
	(c)	Write down all Fuzzy set operations along with their examples.	**07**

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