Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–I&II EXAMINATION – SUMMER 2025

Subject Code:BE02000041 Date:19-06-2025

Subject Name:Fundamental of AI

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)**	Define artificial intelligence and explain its historical origin.	**03**
	(b)	Explain the significance of early expert systems in shaping AI.	**04**
	(c)	Identify real-world applications where early AI principles are still relevant.	**07**
Q.2	**(a)**	Define an agent and an environment in AI systems.	**03**
	(b)	Compare the scope and capabilities of ANI, AGI, and ASI.	**04**
	(c)	Classify real-world AI applications under ANI, AGI, or ASI categories.	**07**
		OR	
	(c)	Demonstrate how AI has evolved from rule-based systems to machine learning.	**07**
Q.3	**(a)**	List the different types of knowledge representation techniques	**03**
	(b)	Explain the difference between syntactic and semantic analysis in NLP.	**04**
	(c)	Implement a simple pattern recognition system for recognizing handwritten digits.	**07**
		OR	
Q.3	**(a)**	Explain the difference between supervised and unsupervised learning with examples.	**03**
	(b)	What are expert systems, and what are their main components?	**04**
	(c)	Apply SVM algorithm for binary classification.	**07**
Q.4	**(a)**	Define linear regression, logistic regression, and Support Vector Machines (SVM).	**03**
	(b)	Illustrate the difference between training and test datasets.	**04**
	(c)	Provide an example where learning from examples can be used to solve a real-world problem.	**07**
		OR	
Q.4	**(a)**	Define deep learning and explain its relationship to machine learning.	**03**
	(b)	Explain the differences between convolutional neural networks and recurrent neural networks.	**04**
	(c)	Demonstrate how deep learning is applied to image recognition tasks	**07**
Q.5	**(a)**	What is a neural network, and what are its main components?	**03**
	(b)	What are Large Language Models (LLMs), and how do they work?	**04**
	(c)	Analyze the role of tools like Bhashini in promoting inclusivity in AI.	**07**

OR

Q.5	**(a)**	What are the current issues facing AI development, such as bias, data privacy, and resource consumption?	**03**
	(b)	Compare the capabilities of deep learning with traditional machine learning approaches.	**04**
	(c)	Use ChatGPT to draft a business email.	**07**

****