Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VII (NEW) EXAMINATION – WINTER 2024

Subject Code:3171105 Date:11-12-2024

Subject Name: Introduction of 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)**	Define Artificial Intelligence (AI). How AI different from natural intelligence?	**03**
	(b)	List and explain major applications of AI.	**04**
	(c)	Describe Turing test. If the Turing test is passed, does this show that computes exhibit intelligence? State your reasons.	**07**
Q.2	**(a)**	What do you mean by AI problems and AI technique?	**03**
	(b)	How do we define a problem as state space? Discus with example.	**04**
	(c)	Explain what is meant by "Production System" with respect to AI. Discuss the components of a Production System.	**07**
		OR	
	(c)	Define the term "agent". Explain how agent interacts with its environment using suitable example,	**07**
Q.3	**(a)**	List and explain components of problem definition.	**03**
	(b)	Discuss difficulties of Hill climbing method.	**04**
	(c)	Explain Breadth First Search (BFS) technique using suitable example.	**07**
		OR	
Q.3	**(a)**	Give an example of multi-agent system.	**03**
	(b)	"Iterative Deepening Depth First Search (DFS) technique is hybrid of BFS and DFS techniques". Justify the statement using suitable example.	**04**
	(c)	Explain Best-First Search technique using suitable example.	**07**
Q.4	**(a)**	What is pruning? Why it is important in Game tree search.	**03**
	(b)	Explain Alpha-Beta pruning using suitable example.	**04**
	(c)	Is A* algorithm guaranteed to find an optimal goal if one exists. Explain giving example.	**07**
		OR	
Q.4	**(a)**	What is optimal search in AI?	**03**
	(b)	Briefly explain horizon effect in Mini-Max search technique.	**04**
	(c)	Describe how Branch and Bound technique could be used to find the shortest solution to a travelling salesman.	**07**
Q.5	**(a)**	Define refinement in planning problem.	**03**
	(b)	Differentiate Forward state space planning and Backward state space planning.	**04**
	(c)	Write short note on Hierarchical planning.	**07**
		OR	
Q.5	**(a)**	What are the major advantages of natural language processing?	**03**
	(b)	Discuss the Component of a Planning system.	**04**
	(c)	What is parsing? Explain TOP-DOWN and BOTTOM-UP parsing in detail.	**07**

****