Reg. No. : | | | | | | | | | | | | |

Question Paper Code:U6D03

B.E./B.Tech. DEGREE EXAMINATION, APRIL / MAY 2025

Sixth Semester

Computer Science and Business Systems

21UCB603– ARTIFICIAL INTELLIGENCE TECHNIQUES

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

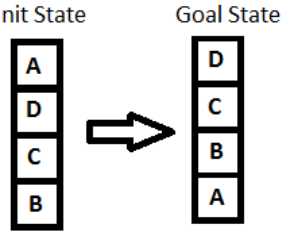
PART A - (10 x 2 = 20 Marks)

1.	Outline the schematic diagram of Utility based agent.	CO1- U	
2.	What is the state space search in AI?	CO1-U	
3.	List the various Uninformed search strategies.	CO1- U	
4.	What are the drawbacks of hill climbing process?	CO1- U	
5.	Define Alpha beta pruning.	CO1- U	
6.	Outline the structure of expert system.	CO1- U	
7.	Define First order logic.	CO1- U	
8.	Identify the issues in knowledge representation.	CO1- U	
9.	What is the concept of strip representation?	CO1-U	
10.	Distinguish between supervised and unsupervised learning.	CO1- U	

PART – B (5 x 16= 80 Marks)

11.	(a)	Explain in detail about the types of task environment.	CO1- U	(16)
		Or		
	(b)	Illustrate the following	CO1- U	(4)
		i) Simple reflex agent		(4)
		ii) Model based agent		(4)
		iii) Utility based agent		(4)
		iv) Goal based agent		

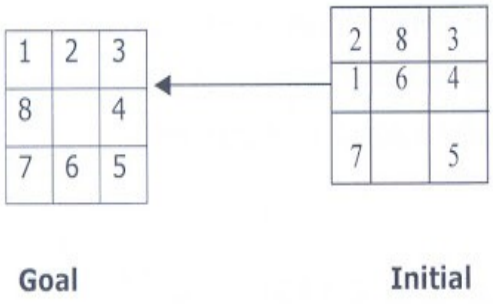
12. (a) Consider the blocks world problem with four blocks A,B,C and D with the start and goal states given below — CO3- App — (16)



Assume the following two operations: Pick and a block and put it on table, pick up a block and put it on another block. Solve the above problem using Hill climbing algorithm and a suitable heuristic function. Show the intermediate decisions and states

Or

(b) Construct the Depth First search algorithm to solve the 8 puzzle problem consists of eight numbered, movable tiles set in a 3x3 frame. One cell of the frame is always empty thus making it possible to move an adjacent numbered tile into the empty cell. Such a puzzle is illustrated in following diagram. — CO2- App — (16)



13. (a) Explain Backtrack searching for Constraint Satisfaction Problem for Map Coloring Problem. — CO1 - U — (16)

Or

(b) Discuss in detail about Expert system and give a brief note on MYCIN. — CO1 - U — (16)

14. (a) Compare and contrast forward chaining and backward chaining in detail. — CO1- U — (16)

Or

(b) Discuss the problems in resolution using prepositional logic and illustrate predicate logic with suitable example. — CO1- U — (16)

15.	(a)	Difference between Reinforcement Learning and Supervised Learning.	CO1- U	(16)
		Or		
	(b)	Discuss in detail about Strips with suitable example.	CO1- U	(16)