Reg.No.:												

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 130011

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2024
Third Semester
Computer Science and Technology
U23CT302 - ARTIFICIAL INTELLIGENCE
(Regulation 2023)

Time: Three Hours | Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Compare between systems that think like humans and systems that think rationally?	2	K2	CO1
2.	Recall Strong AI? Give some examples.	2	K1	CO1
3.	Show that DFS is neither complete nor optimal search.	2	K2	CO2
4.	Write the time & space complexity associated with depth limited search.	2	K4	CO2
5.	Summarize problem decomposition?	2	K2	CO3
6.	Interpret credit assignment problem?	2	K2	CO3
7.	Relate procedural knowledge and declarative knowledge in AI?	2	K1	CO4
8.	Express "A car without wheels is not valuable" in predicate logic.	2	K1	CO4
9.	Write down the characteristics of Bayes rule.	2	K2	CO5
10.	Write down the future scope of expert systems.	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.			Questions	Marks	KL	CO
11.	a)	i.	How searching is used to provide solutions in AI and also describe some real world problems.	8	K2	CO1
		ii.	Discuss state space approach for water jug problem.	5		
			(OR)			
	b)	i.	Explain Goal Based Agent and Utility based Agent architecture with proper diagram.	8	K2	CO1
		ii.	Discuss advantage and disadvantages of AI.	5	K1	
12.	a)		Explain the following problems. What types of control strategy is used in the following problems? i. The Tower of Hanoi ii. Monkey and banana problem iii. Tic-Tac-Toe problems iv. 8-puzzle problem	13	K3	CO2
			(OR)			
	b)		Explain A* searching technique in detail with example. Discuss conditions for the optimality of this technique.	13	K2	CO2
13.	a)		Describe Alpha-Beta pruning and it's effectiveness.	13	K3	CO3
			(OR)			
	b)		State the role of alliances in multiplayer games? Explain Bounded Look-ahead Strategy.	4+9	K3	CO3
14.	a)		Discuss the steps needed to convert a well-formed formula (wff) in predicate logic into clause form with suitable example.	13	K2	CO4
			(OR)			
	b)	i.	How does the inference engine contribute to learning?	3	K2	CO4
		ii.	"As per the law, it is a crime for an American to sell weapons to hostile nations. Country A, an enemy of America, has some missiles, and all the missiles were sold to it by Robert, who is an American citizen." Justify "Robert is criminal." By applying- Forward-chaining algorithm or Backward- chaining algorithm.	10	K3	
15.	a)		What is expert system? Define list of shells and explain its tools.	13	K2	CO5
			(OR)			

b)	Explain the belief function in Dempster-Shafer theory. How Al handles reasoning under uncertainty? Explain with example.	3+10	K4	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	i. Give the loopholes of the Hill Climbing search technique? Write the Steepest Ascent Hill Climbing algorithm.	9	K2	CO2
		ii. You are on the bank of a river with a boat, a cabbage, a goat, and a wolf. Your task is to get everything to the other side. Restrictions: a. only you can handle the boat b. when you're in the boat, there is only space for one more item c. you can't leave the goat alone with the wolf, nor with the cabbage (or something will be eaten). With the help of state-space diagram, find a solution.	6	K3	
		(OR)			
	b)	Explain the constraint satisfaction procedure to solve the crypt arithmetic problem. Solve the crypt arithmetic Problem: S O M E + T I M E S P E N T	15	K2	CO2