

Code: 20CS4501D

**III B.Tech - I Semester – Regular / Supplementary Examinations
NOVEMBER 2024**

**ARTIFICIAL INTELLIGENCE
(COMPUTER SCIENCE & ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

BL – Blooms Level

CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	Explain the working principle of an artificial intelligence enabled machine with a schematic diagram.	L2	CO1	7 M
	b)	Explain PEAS parameters of an autonomous driving car.	L2	CO1	7 M
OR					
2	a)	Sketch the structure of a learning agent with a neat diagram.	L2	CO1	7 M
	b)	Explain the properties of the environment for a medical diagnosis system.	L2	CO1	7 M
UNIT-II					
3	a)	Identify the search space for an agent to solve N-queen problem using uninformed search technique.	L3	CO2	7 M

	b)	Demonstrate your solution model using breadth first search technique.	L3	CO2	7 M
OR					
4	a)	Explain the structure of a constraint satisfaction problem. Illustrate with a suitable example.	L2	CO1	7 M
	b)	Describe the use of alpha beta pruning. Explain with a suitable example.	L2	CO1	7 M
UNIT-III					
5	a)	Define conjunctive normal form. Explain the steps to convert any composite sentence to conjunctive normal form.	L2	CO1	7 M
	b)	Do you think all the sentences of knowledge base can be represented using propositional logic? Justify your answer.	L3	CO2	7 M
OR					
6	a)	Prove or disprove the following statement with associated rules. $A \Leftrightarrow B \models \neg A \vee B$.	L3	CO2	6 M
	b)	Prove or disprove the following statement with associated rules. $(A \vee B) \wedge (\neg C \vee \neg D \vee E) \models (A \vee B \vee C) \wedge (B \wedge C \wedge D \Rightarrow E)$.	L3	CO2	8 M
UNIT-IV					
7	a)	Distinguish the differences and similarities between problem solving and planning.	L4	CO4	7 M
	b)	Explain hierarchical planning.	L2	CO3	7 M

OR

8	a)	Explain the Wumpus world problem.	L2	CO3	7 M
	b)	Demonstrate planning with propositional logic to find the solution for the Wumpus world problem.	L4	CO4	7 M

UNIT-V

9	a)	Describe different phases of reinforcement learning agents.	L2	CO1	7 M
	b)	Demonstrate logical formulation of learning with a suitable example.	L4	CO4	7 M

OR

10	Consider the knowledgebase for a student will play golf or not as follows.					L3	CO3	14 M	
	SL	Outlook	Temperature	Humidity	Windy				Play Golf
	0	Rainy	Hot	High	False				No
	1	Rainy	Hot	High	True				No
	2	Overcast	Hot	High	False				Yes
	3	Sunny	Mild	High	False				Yes
	4	Sunny	Cool	Normal	False				Yes
	5	Sunny	Cool	Normal	True				No
	6	Overcast	Cool	Normal	True				Yes
	7	Rainy	Mild	High	False				No
	8	Rainy	Cool	Normal	False				Yes
	9	Sunny	Mild	Normal	False				Yes
	10	Rainy	Mild	Normal	True				Yes
	11	Overcast	Mild	High	True				Yes
	12	Overcast	Hot	Normal	False				Yes
13	Sunny	Mild	High	True	No				

	<p>Design a probabilistic model to learn whether a student will play in a particular new environment or not. Predict the student will play or not given that Outlook = Rainy, Temperature = Hot, Humidity = High, and Windy = False.</p>			
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