



Academic year 2022-2023 (Odd Semester)

**DEPARTMENTS OF COMPUTER SCIENCE/ INFORMATION SCIENCE AND  
ENGINEERING**

Date	March 2023	Maximum Marks	10+50
Course Code	21MCE1A1T	Duration	120 Min
Sem	I	CIE - I	
<b>ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING</b>			

SL No.	Part A- Quiz	M	BT	CO
1	Rationalist approach in AI involves a combination of _____and _____.	1	L2	CO1
2	Name the theory, which combines probability theory with utility theory?	1	L2	CO1
3	_____ is the study of the nervous system, particularly the brain	1	L1	CO2
4	Write three key steps of a knowledge-based agent:	2	L3	CO3
5	Give the BFS and DFS tree traversal for the following tree. Assuming A is the start node and F is the goal node.  	2	L3	CO2
6	Define Greedy best first search algorithm?	2	L2	CO4
7	Define heuristic function with proper notations.	1	L2	CO2

SL No.	Part B -Test	M	BT	CO
1.a	Illustrate intelligent agents with examples and their PEAS descriptions.	10	L2	CO2
2.a	Use the example of a vacuum cleaning agent and discuss the components of problem formulation.	5	L2	CO2
2.b	Describe briefly Informed(Heuristic) Search Strategies?	5	L1	CO3



Academic year 2022-2023 (Odd Semester)

---

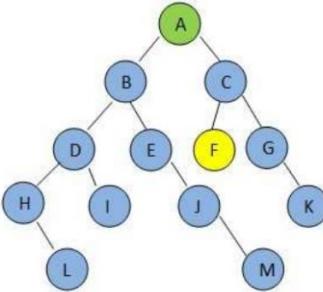
3.a	Discuss the four metrics involved in evaluating an algorithms performance with examples.	5	L3	CO4
3.b	Illustrate with examples the typical AI Applications and challenges of AI	5	L3	CO2
4	Explain with the help of pseudocode and diagrams, Model-based reflex agents and Goal-based agents	10	L2	CO2
5a	Discuss the working of A* algorithm used in path finding and graph traversals.	5	L3	CO3
b	“Depth-first search always expands DEPTH-FIRST the deepest node in the current frontier of the search tree.” Justify by giving working of greedy best first search algorithm as an example.	5	L4	CO4



Academic year 2022-2023 (Odd Semester)

**DEPARTMENT OF COMPUTER SCIENCE/ INFORMATION SCIENCE AND  
ENGINEERING**

Date	March 2023	Maximum Marks	10+50
Course Code	21MCE1A1T	Duration	120 Min
Sem	I	CIE - I	
<b>ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING</b>			

SL No.	Part A- Quiz	M	BT	CO
1	An agent's _____ is the complete history of everything that the agent has perceived.	1	L2	CO1
2	The depth limited search can solve the _____ problem	1	L2	CO1
3	The process of deciding what actions and states to consider, given the goal is called _____	1	L1	CO2
4	Write the PEAS description of the Part Picking Robot.	2	L3	CO3
5	Give the BFS and DFS tree traversal for the following tree. Assuming A is the start node and F is the goal node.  	2	L3	CO2
6	Define Greedy best first search algorithm?	2	L2	CO4
7	Define heuristic function with proper notations.	1	L2	CO2

SL No.	Part B -Test	M	BT	CO
1.a	What is a rational agent ? What are the factors on which “what is rational” at any given time depends on ?	5	L2	CO2
1.b	Use the example of a vacuum cleaning agent and discuss the components of problem formulation.	5	L3	CO1



**Academic year 2022-2023 (Odd Semester)**

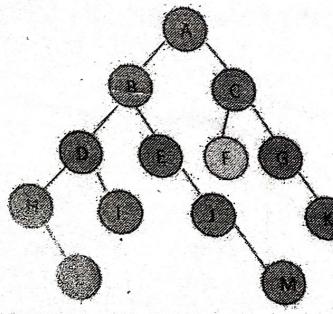
2.a	Explain the properties of task environments?	5	L2	CO2
2.b	Describe briefly Informed(Heuristic) Search Strategies?	5	L1	CO3
3.a	Discuss the four metrics involved in evaluating an algorithms performance with examples.	5	L3	CO4
3.b	Illustrate with examples the typical AI Applications and challenges of AI	5	L3	CO2
4	Explain with the help of pseudocode and diagrams, Model-based reflex agents and Goal-based agents	10	L2	CO2
5	<p>Perform alpha beta pruning on the below given tree and show the final and step by step results</p>	10	L3	CO3



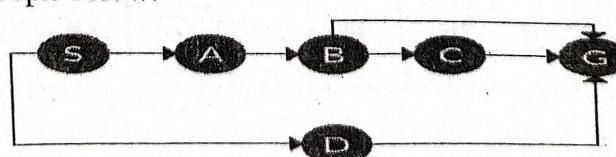
Academic year 2023-2024 (Odd Semester)

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING/  
INFORMATION SCIENCE AND ENGINEERING**

Date	19 March 2024	Maximum Marks	10+50
Course Code	22MCEA1A1T	Duration	120 Min
Sem	I	CIE - I	
<b>ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING</b>			

SL No.	Part A-Quiz	M	BT	CO
1.	Blind Search is best suitable for _____ situation.	1	L2	CO1
2.	Write the PEAS description of the automated taxi driving mechanism.	2	L3	CO3
3.	The depth limited search can solve the _____ problem .	1	L2	CO1
4.	Solve the BFS tree traversal for the following tree. Assuming A is the start node and F is the goal node.	2	L3	CO2
				
5.	Alpha-beta pruning with good node ordering reduces time complexity to _____ compared to _____ in minmax.	2	L2	CO2
6.	Define Backtrack searching algorithm.	2	L2	CO4

SL No.	Part B-Test Questions	M	BT	CO
1.a	Explain Model-based reflex agents and Goal-based agents with pseudocodes and diagrams.	10	L2	CO2
2.a	Discuss the three ways to represent the states and transition between them	5	L2	CO1
2.b	Consider the graph below.	5	L3	CO4





# RV College of Engineering®

Mysore Road, RV Vidyaniketan Post,  
Bengaluru - 560059, Karnataka, India

Academic year 2023-2024 (Odd Semester)

	Draw the equivalent search tree and find out which solution would BFS find to move from node S to node G if run on the graph below?		
3.a	List the properties of task environments.	5	L1
3.b	Illustrate the greedy best first search for the following problem:	5	L3
	<p>A represents the start state and G represents goal state.</p>		
4.a	With a neat diagram, describe the conceptual components of a learning agent.	6	L2
4.b	Demonstrate the node consistency and arc consistency with suitable examples.	4	L3
5.	Perform the alpha-beta pruning for the below tree. Demonstrate the step-by-step result.	10	L3

## Course Outcomes: After completing the course, the students will be able to:-

CO 1	Explore the fundamentals of Artificial intelligence technology and Machine learning algorithms
CO 2	Apply the working of various searching algorithms, games, pruning, inferencing, etc. with suitable examples.
CO 3	Analyze and determine appropriate algorithms and techniques for AI and ML applications.
CO 4	Evaluate AI and ML based solutions for classical problems

## BT-Blooms Taxonomy, CO-Course Outcomes, M-Marks

Marks Distribution	Particulars		CO1	CO2	CO3	CO4	L1	L2	L3	L4	L5	L6
	Test	Max Marks	13	19	17	11	27	30	28	-	-	-



## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Date	April 2023	Maximum Marks	10+50
Course Code	21MCE1A1T	Duration	120 Min
Sem	I	CIE - II	

**ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING**

SL No	Part A- Quiz	M	B T	CO
1	What are the components of a constraint satisfaction problem ? Use standard notations	2	L2	CO4
2	Give the full specification of a Bayesian Network	2	L2	CO1
3	Define Optimal decision in games	2	L3	CO2
4	Give the equation for chain rule for conditional probability ?	2	L1	CO3
5	Give examples for adversarial search problems?	1	L1	CO2
6	List best methods to represent the knowledge in uncertain domains	1	L2	CO1

SL No	Part B -Test	M	B T	CO
1a	Illustrate with an example, backtracking search for CSPs?	5+5	L3 L2	CO2 CO1
1b	Discuss the Alpha -Beta Pruning techniques with an example			
2	Discuss in detail adversarial search problems? Why are they referred as games? How do you solve such problems.	10	L3	CO2
3a	Define knowledge representation? Illustrate different types of knowledge representation in AI with a help of a sketch.	5	L2	CO3
3b	Explain the relationship between knowledge and intelligence? How do you represent?	5	L2	CO3
4 a	Illustrate with clear steps constraint satisfaction problems, notations, components involved in CSPs with examples	5	L3	CO4
4 b	Interpret inference in Bayesian networks	5	L3	CO2
5a	Discuss in detail Knowledge based agents and their usage?	5	L2	CO2
5b	Illustrate the concept of backtracking with an example	5	L3	CO3