U.S.N.										

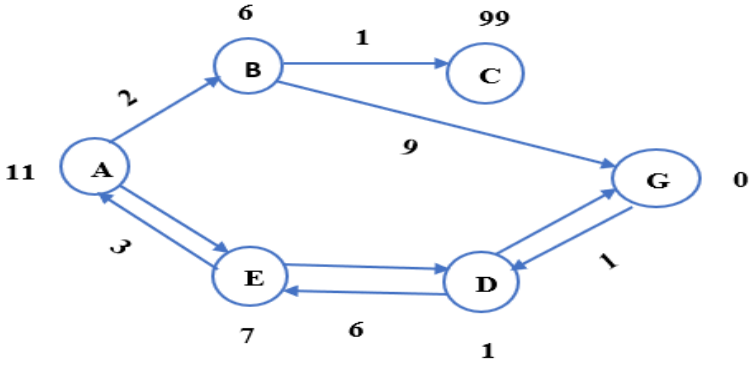
B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

June 2025 Semester End Main Examinations

Programme: B.E. **Semester: V**
Branch: Information Science and Engineering **Duration: 3 hrs.**
Course Code: 23IS5PEAIS / 22IS5PEAIS **Max Marks: 100**
Course: Artificial Intelligence

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

		UNIT - I	CO	PO	Marks
1	a)	Define AI. Explain the working of different types of agents.	CO1	PO1	10
	b)	Describe the structure of intelligent agents and environment in artificial intelligence with an example.	CO1	PO2	10
		OR			
2	a)	Interpret Depth-First Search algorithm with example and mention their advantages.	CO1	PO2	6
	b)	Explain the water jug problems with state space search and find the solution to get exactly 2 litre in 4-gallon jug, when you have given x: 4-gallon jug and y: 3-gallon jug. State representation**: (x, y)** Start state**: (0, 0)** Goal state **(2, n)**	CO1	PO3	8
	c)	Write Breadth First Search Algorithm with example.	CO1	PO2	6
		UNIT - II			
3	a)	Write and explain A* algorithm and apply same to solve the given problem in which Source is A goal is G. The heuristic value is provided next to the nodes. 	CO2	PO3	8

		b)	Write and explain the algorithm for Best-first search with an example.	*CO2*	*PO2*	**6**
		c)	Illustrate with an example Means-Ends Analysis Algorithm and State at least one of its application to real-world problems.	*CO2*	*PO2*	**6**
			OR			
	4	a)	Apply Cryptarithmetic method and encrypt the following expressions S E N D and M O R E to obtain the encrypted expression M O N E Y using the following constraints = {1: values have to be from 0 to 9 2 : every letter should have a unique value } Clearly mentioning the set of variables, Values and the complete assignment.	*CO2*	*PO3*	**10**
		b)	Explicitly illustrate the simple hill climbing algorithm, explain the difference between Difference between simple & steepest-ascent hill climbing and problems with hill climbing.	*CO2*	*PO3*	**10**
			UNIT - III			
	5	a)	Write and describe the syntax and semantics of first order logic.	*CO3*	*PO2*	**10**
		b)	Differentiate along with an example, Procedural versus Declarative representation of knowledge	*CO3*	*PO2*	**10**
			OR			
	6	a)	Write the algorithm for forward chaining. Illustrate with an example.	*CO3*	*PO2*	**10**
		b)	Discuss the syntax & semantics of propositional logic.	*CO3*	*PO2*	**10**
			UNIT - IV			
	7	a)	Explain case based reasoning with example.	*CO4*	*PO2*	**6**
		b)	Discuss explanation based learning with an example.	*CO4*	*PO2*	**7**
		c)	Define hypothesis, hypothesis space and version space.	*CO4*	*PO2*	**7**
			OR			
	8	a)	Explain the steps to choose best representation of learning.	*CO4*	*PO2*	**6**
		b)	Distinguish between case based learning and explanation based learning	*CO4*	*PO2*	**7**
		c)	Illustrate learning under uncertainty with an example.	*CO4*	*PO2*	**7**

			UNIT - V			
	9	a)	Describe Bayes' rule. Illustrate the working of Bayes' rule in combining evidences.	***CO5***	***PO2***	**10**
		b)	Discuss the axioms of probability in detail.	***CO5***	***PO2***	**10**
			OR			
	10	a)	Describe the basic probability notation. Illustrate the working of Bayesian Belief Network with an example.	***CO5***	***PO2***	**10**
		b)	Describe knowledge representation in an uncertain domain. Illustrate with an example	***CO5***	***PO2***	**10**

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