CBCS SCHEME

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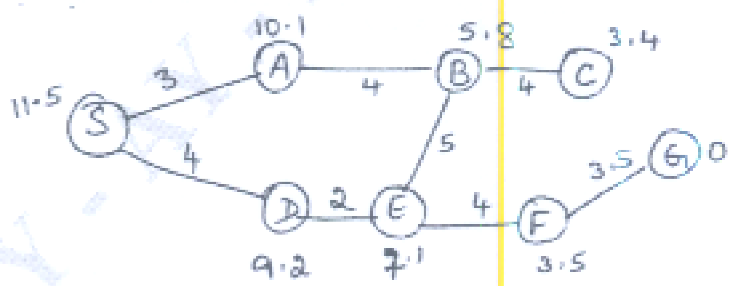
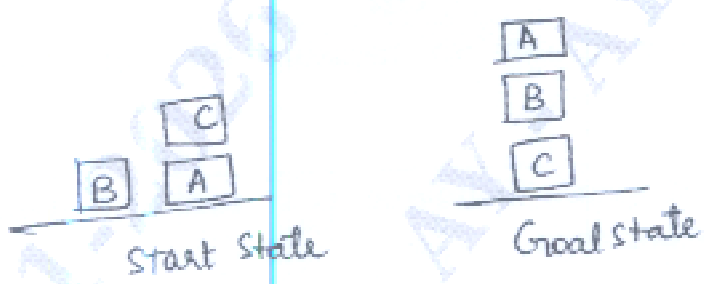
BCS515B

Fifth Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026
Artificial Intelligence

Time: 3 hrs. Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
Q.1	a.	Explain Alan Turing's significant contribution to artificial intelligence and give a brief introduction to the Turing Test in AI.	10	L2	CO1
	b.	Define agent, agent function and agent program. Explain with a neat diagram how agent interacts with environment through sensors and actuators.	10	L1	CO1
		OR			
Q.2	a.	List the types of Agents. Explain Goal Based and utility based agent with neat diagram.	10	L2	CO1
	b.	Compare and contrast between i) Deterministic and Stochastic ii) Static and Dynamic iii) Episodic and Sequential iv) Fully observable and partially observable. Give example for each of the nature of environment given above.	10	L2	CO1
		Module – 2			
Q.3	a.	Explain the tree search and graph search algorithms.	10	L2	CO2
	b.	Explain problems solving agents along with algorithm and illustrate the incremental formulation of 8-Queens problem.	10	L2	CO2
		OR			
Q.4	a.	List and explain the criteria to measure the performance of search strategies.	10	L2	CO2
	b.	Explain Breadth first search technique as a problem solving strategy with its benefits and shortcomings.	10	L2	CO2
		Module – 3			
Q.5	a.	Explain A* algorithm for shortest path and apply the same for the below graph.  Fig Q5(a)	10	L3	CO3

	b.	Apply heuristic search algorithm on the given 8 puzzle problem to reach the goal state from the initial state Start state: 1 2 3 _ 4 6 7 5 8 Goal state: 1 2 3 4 5 6 7 8 _	10	L3	CO3
		OR			
Q.6	a.	Define knowledge based agent. Outline the knowledge based agent program.	10	L1	CO3
	b.	Define Propositional Logic. Explain syntax and semantics.	10	L1	CO3
		Module – 4			
Q.7	a.	Explain first order logic with its syntax in BNF form.	10	L2	CO4
	b.	Explain Quantifiers. Differentiate between Universal and Existential Quantifier.	10	L2	CO4
		OR			
Q.8	a.	Illustrate Kinship Domain with an example.	10	L2	CO4
	b.	Illustrate unification algorithm used for reasoning with example.	10	L2	CO4
		Module – 5			
Q.9	a.	Outline the backward chaining algorithm for definite clauses. Construct a proof tree to prove that "west is a criminal".	10	L2	CO5
	b.	Apply Resolution for "west is a criminal" and "curiosity killed the cat" example.	10	L3	CO5
		OR			
Q.10	a.	Define Planning. Explain block world problem for the following start state and End state. 	10	L2	CO5
	b.	Illustrate how planning graph data structure can be used to give a better heuristic for a planning problem.	10	L2	CO5

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