

(Fifth Semester)
Branch - **SOFTWARE SYSTEMS (five years Integrated)**
ARTIFICIAL INTELLIGENCE

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	The foundations of Artificial Intelligence include a) Mathematics, Philosophy, and Computer Science b) Only programming languages c) Hardware architecture only d) Network protocols	K1	CO1
	2	A rational agent is one that a) Always acts emotionally b) Selects actions to maximize utility c) Never makes mistakes d) Works without sensors	K2	CO1
2	3	A heuristic function in search algorithms is a) An exact cost measure b) An estimated cost from current state to goal c) A random value d) The actual path cost	K1	CO2
	4	Alpha-Beta pruning is primarily used in a) Database searching b) Game tree search to reduce nodes explored c) Sorting algorithms d) Graph coloring	K2	CO2
3	5	Inference in knowledge-based systems is used for a) Storing data only b) Deriving new knowledge from existing knowledge c) Deleting information d) Compressing files	K1	CO3
	6	The main difference between syntax and semantics in logic is a) Syntax is form, semantics is meaning b) They are identical c) Syntax is meaning, semantics is form d) Neither deals with logic	K2	CO3
4	7	Probabilistic reasoning deals with a) Certain knowledge only b) Reasoning under uncertainty using probabilities c) Deterministic outcomes d) Boolean logic only	K1	CO4
	8	Inference in temporal models can be classified as a) Forward and backward only b) Filtering, prediction, smoothing, and likelihood c) Random inference d) Static inference only	K2	CO4
5	9	Sequential decision problems consist of a) Single decision only b) States, actions, transition model, and rewards c) Only rewards d) Only actions	K1	CO5
	10	Game theory in AI is used for: a) Video game design only b) Analyzing strategic interactions between agents c) Computer graphics d) Database management	K2	CO5

Cont...

SECTION - B (35 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Describe the various types of intelligent agents with examples.	K2	CO1
		(OR)		
	11.b.	Explain the characteristics and properties of agent-based systems.		
2	12.a.	Demonstrate the Genetic Algorithm approach for optimization problems.	K3	CO2
		(OR)		
	12.b.	Illustrate the backtracking search method for constraint satisfaction problems.		
3	13.a.	Apply Propositional Logic to represent and solve a real-world problem.	K3	CO3
		(OR)		
	13.b.	Examine the inference mechanisms in First Order Logic with examples.		
4	14.a.	Analyze the working of Hidden Markov Models in temporal reasoning.	K4	CO4
		(OR)		
	14.b.	Compare probabilistic reasoning techniques in Dynamic Bayesian Networks.		
5	15.a.	Infer value iteration and policy iteration algorithms for decision-making.	K4	CO5
		(OR)		
	15.b.	Analyze mechanism design principles in multi-agent systems.		

SECTION -C (30 Marks)Answer **ANY THREE** questions**ALL** questions carry **EQUAL** Marks

(3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Critically evaluate the historical development of AI and analyze how intelligent agents have evolved over time.	K4	CO1
2	17	Analyze the differences between uninformed search (BFS, DFS) and informed search (A*, Best-First).	K4	CO2
3	18	Compare Forward Chaining and Backward Chaining inference methods with suitable problem scenarios.	K4	CO3
4	19	Evaluate exact and approximate inference methods in Bayesian networks and their applications in real-world scenarios.	K4	CO4
5	20	Analyze the role of game theory in multi-agent environments with practical examples.	K4	CO5

Z-Z-Z

END