Question Bank

Course Name: Elective I(A) - Artificial Intelligence

Course Code: CSE10501A

Unit I: Fundamentals of AI 10 Hours Introduction: What is artificial intelligence? The foundations of artificial intelligence, history of artificial intelligence. Intelligent Agents: Agents and environments, good behaviour, the concept of rationality, the nature of environments, the structure of agents. Solving Problems by Searching: Searching for Solutions, Uninformed Search Strategies, Informed (Heuristic) Search Strategies, Heuristic Functions

Unit II: Logical Agents: Knowledge-based agents, WUMPUS world, logic, propositional logic, propositional theorem proving, effective propositional model checking, agents based on propositional logic. First-Order Logic: Representation revisited, syntax and semantics of first-order logic, using first-order logic, knowledge engineering in first-order logic. Inference in First-Order Logic: Propositional vs. first-order inference, unification and lifting, forward chaining, backward chaining.

Sr. No	Questions
1.	Explain artificial intelligence and its key characteristics. How does AI differ from traditional computing?
2.	Discuss the foundational concepts of AI, including machine learning, natural language processing, and robotics.
3.	Explain A*algorithm and write its pseudo code.
4.	Explain different forms of Agent with example
5.	How can an AI agent interpret and classify information to exhibit good behavior?
6.	Discuss the challenges agents face in complex environments.
7.	Illustrate how an intelligent agent could function in a dynamic environment like a smart home.
8.	Compare the effectiveness of informed versus uninformed search strategies in large data sets.
9.	Compare the strengths and weaknesses of depth-first search and A* search.
10.	Apply a breadth-first search algorithm to a tree structure and outline the steps taken to find a solution.
11.	Describe the Wumpus World environment and its significance in studying logical agents.
12.	Explain the concept of percepts in the WUMPUS World

13.	Apply unification to match two logical expressions and show the result.
14.	Compare the expressiveness of first-order logic with propositional logic.
15.	Explain the concept of lifting in the context of inference in first-order logic.
16.	Explain how knowledge-based agents use logical reasoning to make decisions.
17.	Explain the difference between a tautology, contradiction, and contingency in propositional logic.
18.	Apply first-order logic to represent the following statement: "All humans are mortal."
19.	Evaluate the efficiency of forward chaining versus backward chaining in decision-making scenarios.
20.	Describe the forward chaining and backward chaining methods of inference