

ARTIFICIAL INTELLIGENCE (2180703)

Question Bank

Chapter – 1

1. What is AI? Discuss its various application of AI.
2. Explain various types of AI tasks.
3. Explain various AI's assumptions.

Chapter – 2

1. Give state space representation of following problem.
 - Chess Hill Climbing
 - Water jug
 - 8-puzzle
 - Traveling salesman
 - Missionaries and cannibals
 - Tower of Hanoi
 - Monkey and bananas
2. Solve Water Jug Problem using production rule.
3. Explain production system characteristics.
4. Discuss the issues in the design of search programs.

Chapter – 3

1. Explain Steepest Hill Climbing Algorithm.
2. Explain and Compare DFS & BFS Algorithm.
3. Explain Best-First-Search / Greedy Search Procedure with a suitable example.
4. Explain A* Algorithm.
5. Explain AO* Algorithm.
6. Discuss Constrain Satisfaction Problem.
7. Explain Means-End Analysis Approach to solve AI Problems.

Chapter – 4

1. What is knowledge representation in AI? Discuss mapping between facts and representation of AI.
2. Describe various approaches to knowledge representation of AI.

Chapter – 5

1. How to represent the simple facts in logic ?
2. Give representation of instances and Isa relationship.
3. Explain computable functions and predicates.
4. Consider the following sentences and Answer a, b, c given below:
 1. Rama likes all kinds of vegetarian food.
 2. Oranges are food.
 3. Mutton is food.
 4. Anything anyone eats and is not killed by is food.
 5. Likex eats peanuts and is still alive.
 6. Lovex eats everything Likex eats.
 - (a) Translate these sentences into formulas in Predicate Logic.
 - (b) Prove that Rama likes peanuts using Backward Chaining.
 - (c) Prove Rama likes peanuts using Resolution.
5. Assume the following facts.
 - a) Steve only likes easy courses.
 - b) Science courses are hard.
 - c) All the courses in the basket weaving department are easy.
 - d) BK301 is a basket weaving course.

Use Resolution to answer the question, “What course would Steve like?”

6. Explain the algorithm of predicate logic resolution.

Chapter – 6

1. Explain non monotonic reasoning.
2. Explain monotonic reasoning.
3. Write a short note on
 - a) Default Reasoning
 - b) Minimalist Reasoning

Unit: 7

1. Explain the Bayesian Networks and its application.
2. Explain Bay's theorem.
3. Write a short note on
 - a. Probability and Bay's theorem
 - b. Dempster – Shafer theory
4. Explain certainty factor.
5. Differentiate: fuzzy logic and crisp logic.
6. Discuss various defuzzification methods.
7. What do you understand by the term fuzzy logic? How is a fuzzy set denoted mathematically?

Unit: 8

1. Define frames. Draw semantic net for following sentence:
 - a. Every kid likes candy.
 - b. Every school going kid likes candy.
2. Construct the partitioned semantic net representations for the following:
 - i. Every batter hit a ball.
 - ii. All the batters like the pitcher.
3. Write a short note on semantic nets. **or** describe the component of semantic net.
4. Explain weak slot and filler structures.

Unit: 9

1. Explain theory of Conceptual Dependency with the help of example.
2. Define scripts. Write conceptual dependency for following statements.
 - a. John flew to new York.
 - b. John shot mary.
 - c. John ate eggs.

Chapter – 10

1. What is planning? Why it is required?
2. Explain Minimax algorithm. Also describe Minimax optimizations.
3. Explain Classical planning.
4. Explain Goal stack planning with example.
5. Explain STRIPS method with example.
6. Explain Hierarchical Planning.
7. Explain HTN planning with example.

Unit: 11

1. Discuss with example: Constraint satisfaction problem.

Chapter – 12

1. What are components of natural language understanding process?
2. Explain various steps in NLP.
3. List applications of NLP.
4. Explain Syntactic analysis in NLP.
5. Explain Semantic analysis in NLP.

Chapter – 13

1. What do you mean by neural network? Explain approaches of neural network.
2. What do you mean by neural network? What are the applications of Neural Network?
3. Explain Hopfield network in detail.
4. Explain different types of learning in neural network. (Difference between supervised learning and un-supervised learning).
5. Explain recurrent network in detail.
6. Differentiate symbolism and connectionism AI.

Unit: 14

(Prolog)

1. What are the Applications, Features and Limitations of Prolog?
2. Justify using an example that prolog uses backward chaining to prove or
3. answer any goal.
4. Explain the procedure to convert well-formed formula to clause form with the help of example.
5. Discuss how the following list function can be implemented in prolog.
(a) Append (b) Reverse
6. Explain following terms with respect to programming language: Clauses, Predicates, Domain.
7. Discuss cut and fail in prolog with example.
8. Explain how list is used in prolog. How following list function can be implemented in prolog.
 - a) Checking membership of an element in a given list.
 - b) Concatenating two lists.
 - c) Deleting an element from a given list.
9. Write a Prolog program to solve Tower of Hanoi Problem.
10. Write a prolog program to count vowels in a list of characters.
11. Write a prolog program to find the sum of elements of a List.
12. Write a prolog program to compute factorial of a given number.
13. Write a prolog program to find the sum of first N natural number.
14. Write a prolog program to find maximum no. from a list.
15. Write a prolog program to find GCD of two numbers.
16. Write following programs:
 - a) To find the nth element of a given list.
 - b) To append LIST2 to LIST1 and bind the result to LIST3.