Important Questions

Chapter 1. What is AI?

1. Define AI ? Explain the characteristics of AI problem.
2. Discuss Turing test.

Chapter 2. Problems ,State Space Search & Heuristic Search Techniques

1. Explain the state space with the use of water jug problem .
2. Differentiate the DFS and BFS with merits and demerits .
3. What are the problem characteristic of Artificial Intelligence ?
4. Solve 8 puzzle problem by any AI technique.
5. Solve Travelling Salesman Problem using any AI technique.
6. Discuss iterative deepening search. Also give one example to explain.
7. Discuss and analyze Tower of Hanoi problem .
8. Explain A* algorithm in detail.
9. Solve the following crypt arithmetic problem:

```
    C   R   O   S   S
+   R   O   A   D   S
-----------------------------
D   A   N   G   E   R
```


10. Solve the following crypt arithmetic problem:

```
    B   A   S   E
+   B   A   L   L
-----------------------------
G   A   M   E   S
```

11. What is hill Climbing ? Explain Simple Hill Climbing and Steepest – ascent hill climbing.
12. Explain AO* algorithm with example.
13. Discuss Simulated Annealing method of search.
14. Explain Best First Search method.

Chapter 3. Knowledge Representation Issues

1. Explain the different issues in knowledge representation.
2. Explain different approaches of knowledge representation.
3. Differentiate with example representation of "Instance" and "Isa" relationships.
4. Explain property inheritance algorithm with example.

Chapter 4. Using Predicate Logic

1. Translate these sentences into formulas in predicate ogic.
    - John likes all kinds of food.
    - Apples are food.
    - Chicken is food.
    - Anything anyone eats and isn't killed – by is food.
    - Bill eats peanuts and is still alive.
    - Sue eats everything Bill eats.
2. Convert the formulas derived in above question into clauses ,prove that john likes peanuts using resolution.

Chapter 5. Representing Knowledge using Rules

1. Differentiate between declarative and procedural representation of knowledge.
2. Explain the forward and backward reasoning.

Chapter 6. Symbolic Reasoning Under Uncertainty

1. Explain the non-monotonic reasoning. Explain different subtypes of non-monotonic reasoning.
2. Explain abductive reasoning using example.

Chapter 7. Statistical Reasoning

1. Explain the Bayesian networks and its application.
2. Explain probability and Bay's theorem.
3. Define 'certainty factor'. How does certainty factor help in dealing with uncertainty? Explain with reference to rule based system.

Chapter 8. Weak slot-and-filler structure

1. Explain semantic net and frames with proper example.
2. Explain Partitioned semantic net with example.

Chapter 9. Strong Slot and Filler Structures

1. Define Scripts. Write conceptual dependency for following statements.
    - John flew to New York
    - John Shot Mary
    - John ate eggs

Chapter 10. Game Playing: Overview and Example Domain

1. Explain alpha-beta cut off search with an example. State a case when to do alpha pruning.
2. Explain Min – max search procedure with an example.
3. Explain goal stack planning using suitable example.

Chapter 11. Natural Language Processing

1. Explain each steps of Natural Language Processing.

Chapter 12. Connectionist Models

1. Write a short note on : Hopfield Networks.
2. Discuss perceptron learning algorithm.
3. Explain Artificial Neural Network.
4. Describe briefly the applications of Neural Networks.
5. Explain the algorithm for back propagation in neural networks.

Chapter 13. Introduction to Prolog

1. Explain Cut, Fail and Repeat predicates in Prolog.
2. Write a prolog program to compute factorial of a given number.
3. Write a prolog program to solve Tower of Hanoi problem.
4. Write a prolog program to find the sum of elements of list.