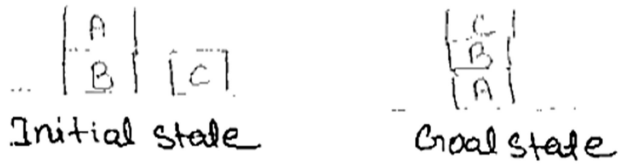
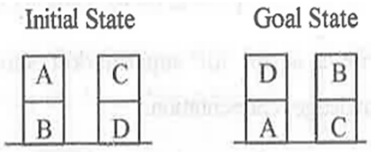
Unit-3

1. Define the term parsing.
2. What is block world?
3. What is planning agent?
4. What is NLP? Why there is a need for NLP? Explain two major methods of NLP analysis.
5. What do you mean by Recursive Transition Nets (RTN). Explain with suitable example.
6. What do you mean by Parsing? Explain top-down and bottom-up parsing with example.
7. Explain Augmented Transition Nets (ATN) with suitable example.
8. Differentiate between ATN and RTN parsers.
9. What do you mean by planning system? Explain its components.
10. What do you mean by linear and non-linear planning? Explain Goal Stack Planning with suitable example.
11. Illustrate SUSSMAN ANOMALY with classical Block-World problem.
12. Explain block world problem.
13. Discuss the concept and components of planning system.
14. What are the different levels of analysis of the NLP.
15. Consider the statement given below:
    "The big tree shades the old house by the stream".
    Describe how a recursive transition network recognizes the above statement.
16. Solve the following block world problem:



17. Give a block world problem scenario:



    A robot arm is given to move the blocks Represent the problem and give a planning scheme using STRIPSs language.
18. Write short notes on:
    a. Semantic analysis
    b. Machine translation

Unit-4

1. Differentiate between supervised and unsupervised training. Explain with suitable example.
2. Explain the concept of Probability Approximation Correct Learning.
3. What is machine learning? Explain different perspectives and issues in machine learning.
4. Discuss learning model with neat diagram and also explain paradigm of machine learning.

5. How is machine learning distinguished from general acquisition?
6. Explain sources and types of uncertainty. Also state Bayes Theorem.
7. Explain the features of Bayesian Learning Methods.
8. List five applications of machine learning.
9. Prove that how maximum likelihood (Bayesian Learning) can be used in any learning algorithm that are used to minimize the squared error between actual output hypothesis and predicted output hypothesis.
10. Write short notes relating to Bayesian Decision theory:
    a. Losses
    b. Risks
    c. Discriminant Functions
    d. Utility theory
11. What do you mean by bias and variance discuss the types with example.
12. Write short notes on:
    a. Bayes estimator
    b. Parametric Classification

Unit-5

1. What do you mean by multivariate data? Explain multivariate data analysis techniques with example.
2. Write short notes on:
    a. MANOVA
    b. Cluster Analysis
    c. Factor Analysis
    d. Parameter Estimation
3. What is Dimensionality Reduction? Describe various approaches of dimension reduction.
4. Write short notes on:
    a. Principal component analysis
    b. Random forest
    c. Backward Elimination
    d. High correlation filter
5. Explain multivariate regression analysis with example.
6. Define K-means clustering. How does the K-means Algorithm work?
7. Explain the derivation of K-means algorithm.
8. Define Decision tree. Construct the decision tree to represent the following Boolean functions:

   i) $A \wedge \neg B$ ii) $A \vee [B \wedge C]$ iii) A XOR B

9. Explain the concept of decision tree learning. Discuss the necessary measure required to select the attributes for building a decision tree using ID3 algorithm.
10. Explain Multivariate tree with example.
11. Explain the following with example:
    a. Decision Tree
    b. Decision Tree Learning
    c. Decision Tree representation