### Question 1

a) Explain Formal tasks, Mundane tasks, and Expert tasks in AI.
b) Describe a Production System in AI.
c) Discuss Strengths and weaknesses of propositional logic.
d) Prepare a semantic net for the following sentence:
   
   John is 72" tall and taller than Johny.

e) Explain Fuzzy Logic Systems Architecture.
g) Explain the term Linearly Separable Patterns and explain the XOR problem in the context of linearly separability.

### Question 2

a) Explain the State Space Search of The water jug problem.
b) Explain Travelling Salesman Problem.

### Question 3

a) Describe Unification Algorithm with an example.
b) What do you mean by Knowledge Engineering?
d) Explain the Expert System Architecture.

### Question 4

a) Prepare a fuzzy system for air conditioning system.
b) Describe the general steps of Natural Language Processing.
c) Write a program in Prolog to count the number of vowels in a list.

### Question 5

a) What is Credit assignment problem?
b) Explain Backpropagation learning algorithm of ANN.

### Question 6

Explain following types of learning rules:

a) Hebbian Learning Rule
b) Delta Learning Rule

### Question 7

Write short notes on the following:

a) Backtracking
b) Baye’s Theorem