

## BE2-R4: ARTIFICIAL INTELLIGENCE & NEURAL NETWORKS

### NOTE:

1. Answer question 1 and any FOUR from questions 2 to 7.
2. Parts of the same question should be answered together and in the same sequence.

Time: 3 Hours

Total Marks: 100

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 Johnny.
  - e) Explain Fuzzy Logic Systems Architecture.
  - f) Discuss supervised learning, unsupervised learning and reinforced learning in neural networks.
  - g) Explain the term Linearly Separable Patterns and explain the XOR problem in the context of linearly separability.

**(7x4)**
  
2.
  - a) Explain the State Space Search of The water jug problem.
  - b) Explain Travelling Salesman Problem.

**(9+9)**
  
3.
  - a) Describe Unification Algorithm with an example.
  - b) What do you mean by Knowledge Engineering?
  - c) Compare Expert Systems and Conventional Computers.
  - d) Explain the Expert System Architecture.

**(7+4+3+4)**
  
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.

**(6+6+6)**
  
5.
  - a) What is Credit assignment problem?
  - b) Explain Backpropagation learning algorithm of ANN.

**(6+12)**
  
6. Explain following types of learning rules:
  - a) Hebbian Learning Rule
  - b) Delta Learning Rule

**(9+9)**
  
7. Write short notes on the following:
  - a) Backtracking
  - b) Baye's Theorem

**(9+9)**