

BE2-R4: ARTIFICIAL INTELLIGENCE AND 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) Define term: AI. List and explain various AI task domains in brief.
- b) What is Production System? Explain with example.
- c) Explain Generate and Test Heuristic Search technique.
- d) How predicate logic is differing from propositional logic?
- e) How Fuzzy logic is related with Probability? What is difference between Membership value and Probability value?
- f) Define terms: Activation Function and Output function with respect to ANN.
- g) What is Knowledge? How it is differ from intelligence? Explain types of Knowledge.

(7x4)

2.

- a) Explain Turing Test and Chinese Room Test for Intelligence of AI system.
- b) What is purpose of Control strategy? Differentiate Forward Chaining and Backward Chaining, control Strategies.
- c) Explain steps of A* algorithm.

(6+8+4)

3.

- a) Explain Dempster-Shafer theory.
- b) What is Horn Clauses? Explain with example.
- c) Explain Resolution Principle, What is significance of Unification in Resolution. Take suitable example to explain Resolution and Unification.

(6+4+8)

4.

- a) Explain Water Jug problem. Design Rules to solve Water Jug problem and write PROLOG program to solve this problem.
- b) What is Expert System? Explain architecture of Expert System in detail.

(9+9)

5.

- a) Explain Fuzzy Rule based system with example of application.
- b) What is learning? Explain Hebb's rule and Delta Rule of Learning with example.
- c) Explain Self Organizing Network. How it is differ from Multi layer Perceptron?

(6+6+6)

6.

- a) Explain feed forward back propagation ANN.
- b) Discuss activation function of ANN in detail.
- c) Explain various layers in ANN. Also describe significance of Hidden layer. How to select number of neurons in each layer of ANN?

(6+6+6)

7.

- a) Write PROLOG program structure. Write PROLOG program to implement Family tree.
- b) Explain following concept in PROLOG with example: Backtracking, Recursion
- c) Explain Biological Neuron.

(6+6+6)