AQ – 2896

First Semester M. E. (CS and IT) Examination

EXPERT SYSTEM DESIGN AND INTELLIGENT SYSTEM

Elective – I

1 RNME 5

P. Pages : 3

Time : Three Hours] [Max. Marks : 80

Note : (1) Due credit will be given to neatness and adequate dimensions.
(2) Assume suitable data wherever necessary.
(3) Illustrate your answer wherever necessary with the help of neat sketches.
(4) Use pen of Blue/Black ink/refill only for writing the answer book.

1. (a) Define Expert System. What are the characteristics of expert system ? 7

(b) Explain state space search with example. 7

OR

2. (a) Explain concepts related to TMS's keeping work of dependency.

(i) Relaxation in N/W.

(ii) Beling Revision. 7

(b) Explain principles and techniques evaluating and comparising Expert System. 7

3. (a) Explain knowledge Acquisition in expert system. Give reason why productivity is poor. 7

(b) Explain the syntax of Rules in production system ? 6

OR

4. (a) Explain object-oriented analysis and design for expert system. 7

(b) Explain frame system for representing real-world knowledge. 6

5. (a) Define the Fuzzy set theory. How Fuzzy sets are different from crisp sets? Give at least two examples. 7

(b) Draw and explain the basic structure of a Fuzzy controller. 6

OR

6. (a) What do you mean by Defuzzification? Explain the following methods of defuzzification.

(i) Centroid Method.

(ii) Weighted Average Method. 7

(b) Explain the basic properties of Fuzzy sets. 6

7. (a) Define Artificial neuron model and activation function. 3

(b) Mention three types of supervised learning. 4

(c) Explain cascade correlation neural networks in detail. 7

OR

8. (a) What is the role of the hidden layers in a neural network ? 3

(b) What is unsupervised and reinforcement learning ? 3

(c) Describe back-propagation algorithm in detail. 7

9. (a) What are different types of binary cross-over operation ? Explain with an example. 7

(b) Using an example, show why is it important to have a mutation operator in a genetic algorithm. 6

OR

10. (a) Explain the working of Genetic Algorithm with suitable example. 6

(b) Explain the structure of an evolutionary programming algorithm with diagram. 7

11. (a) State the various types of Ant Colony models and explain ACO algorithm for the travelling salesman problem. 7

(b) Explain various principles in swarm intell-igence. 7

OR

12. (a) With reference to Ant Colony Optimization (ACO) describe these algorithmic elements.

(i) Evaporation. 2

(ii) Visibility. 5

(b) Explain Particle Swarm Intelligent System in detail. 7