

Q 8307

M.E. DEGREE EXAMINATION, MAY/JUNE 2006.

Elective

Control and Instrumentation

PS 1671 — INTELLIGENT CONTROL

(Common to M.E. (Power Electronics and Drives))

(Regulation 2005)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Distinguish between symbolic reasoning system and rule base system.
2. How knowledge is represented in Neural Networks and Fuzzy logic?
3. What are wavelets? Explain.
4. Distinguish between Adaline and Madaline.
5. What is the basic concept of Genetic Algorithm (GA)? What are the issues in GA?
6. What do you understand by Crossover rate and Mutation rate?
7. Mention different methods of defuzzification.
8. What is Fuzzy Logic? Distinguish between crisp sets and fuzzy sets.
9. What is Recurrent Neural Network? Draw its architecture. What type of problem this Neural Network is used.
10. What are the advantages of Intelligent Controllers?

PART B — (5 × 16 = 80 marks)

11. (i) How back propagation algorithm is used for pattern recognition problems? Explain with reference to a problem, generation of patterns, training and testing.

(ii) How Stability of Fuzzy Controller is to be determined? Explain.

12. (a) What do you understand by Intelligent Control? Explain different methods of Intelligent controls.

Or

(b) Explain in detail Expert System and its application to a particular problem.

13. (a) Draw the flow chart and explain Hopfield Neural Network Algorithm. Mention its limitations and applications.

Or

(b) Explain Kohonen Self-Organizing Neural Network. Discuss training and testing of the Network.

14. (a) Discuss different operators of Genetic Algorithm? Explain operation of GA.

Or

(b) Explain ant-colony search technique for solving optimization problem.

15. (a) Explain self-organizing fuzzy logic control. How it is different from conventional fuzzy logic?

Or

(b) How fuzzy logic is used for the Non-linear time-delay system? Explain.