G 6438

M.E. DEGREE EXAMINATION, MAY/JUNE 2007.

Elective

Power Electronics and Drives/Control and Instrumentation

PS 1671 — INTELLIGENT CONTROL

(Regulation 2005)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What do you understand by Intelligent Control? Explain.
2. Mention different approaches of Intelligent Control.
3. Draw and Discuss McCulloch Pits Neuron Model
4. Explain Wavelet Transformations. Mention its advantages.
5. Discuss basic concepts of Genetic Algorithm.
6. What are the advantages and limitations of Genetic Algorithm?
7. Define Fuzzy Logic? How it is different from Neural Networks.
8. List out different methods of Defuzzification.
9. Fuzzy Logic is most suitable to what type of problems?
10. Mention advantages and disadvantages of using MATLAB Tool Boxes of Neural Networks and Fuzzy Logic.

PART B — (5 × 16 = 80 marks)

11. (a) Explain the architecture of Intelligent Control.

Or

(b) Discuss Symbolic reasoning system, rule based systems and Al approach.

12. (a) What are recurrent Neural Networks? Explain the algorithm of any one type of Recurrent Neural Network.

Or

(b) Draw the Self-Organizing Neural Network and explain step by step algorithm.

13. (a) Explain "Tabu Search" algorithm for solving optimization problem.

Or

(b) Discuss ant-colony search technique for solving optimization problem. How it is different from Genetic Algorithm.

14. (a) Explain Self-Organizing Fuzzy Logic Control.

Or

(b) Explain different modules of Fuzzy Logic Controller (FLC). What are the advantages and limitations of FLC?

15. (a) Discuss how a control problem can be implemented using MATLAB Fuzzy Logic Tool Box and discuss stability analysis of Fuzzy Logic Control.

Or

(b) Explain how Identification of Non-linear dynamic system problem can be implemented using MATLAB Neural Network Tool Box. And discuss stability analysis of Recurrent Neural Network.
