Reg. No. | | | | | | | | | | | | |

Question Paper Code : 51401

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Eighth Semester

Electronics and Instrumentation Engineering

CS 2461/CS 812/10133 IC 704 – APPLIED SOFT COMPUTING

(Common to Seventh Semester Instrumentation and Control Engineering)

(Regulations 2008/2010)

Time : Three Hours **Maximum : 100 Marks**

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. Define linear seperability and highlight its usage.
2. When is multilayer feed forward network used? Give any two real time examples.
3. Define fuzzy relation.
4. State the excluded middle laws and De Morgan's laws for classical sets.
5. Define fuzzy set. How is it differ from crisp set?
6. The following figure shows three relations on the universe X = {a, b, c}. Are these relations equivalence relations?
7. Mention the various components of Neuro fuzzy system.
8. What are the functions used in Fuzzy logic control ?
9. Write the disadvantages of gradient search method.
10. What is meant by evolutionary programming ?

PART – B (5 × 16 = 80 Marks)

11. (a) With a neat sketch, illustrate the working of the Back Propagation network and explain any one application of Back Propagation Network. **(16)**

OR

(b) (i) Realize ANDNOT function using Hebb net. Also form the decision boundary separating line. **(8)**

(ii) Discuss memory based learning in detail in neural networks. **(8)**

12. (a) (i) Explain ANN configuration for forward plant identification and plant inverse identification. **(10)**

(ii) Write down the algorithmic steps for Discrete Hopfield network. **(6)**

OR

(b) (i) Discuss the application of ANN for inverted pendulum control. **(10)**

(ii) Describe any one of the neuro control schemes in detail. **(6)**

13. (a) (i) Explain sugeno fuzzy model in detail with neat example. **(8)**

(ii) Explain various de-fuzzification methods in detail. **(8)**

OR

(b) (i) Discuss any two fuzzy membership function in detail. **(8)**

(ii) Develop fuzzy membership function on the real line for the fuzzy number three using the following shapes. Assume your own institution. (Symmetric triangle and Trapezoid) **(8)**

14. (a) Discuss Fuzzy Bayesian Decision Making in detail. **(16)**

OR

(b) (i) With a neat block diagram, explain the architecture of a fuzzy logic controller. **(6)**

(ii) What are the steps involved in designing a fuzzy logic controller ? **(6)**

(iii) Give any four design elements necessary for the design of general fuzzy logic controller. **(4)**

15. (a) Describe the operators and genetic algorithm in search. **(16)**

OR

(b) Explain briefly about the optimization techniques in gradient and non-gradient search. **(16)**