

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS:
MTECH
BRANCH:EEE**

**SEMESTER : II
SESSION : SP/22**

SUBJECT: EE571, OFT COMPUTING TECHNIQUES IN ELECTRICAL ENGINEERING

TIME:

FULL MARKS: 50

INSTRUCTIONS:

1. Answer any 5 questions that contains 6 questions each of 10 marks and total marks is 50.
 2. The missing data, if any, may be assumed suitably.
 3. Before attempting the question paper, be sure that you have got the correct question paper.
 4. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
-

- Q.1(a) Compare biological neural network and artificial neural network. Explain basic models of ANN. Explain Single layer, multi-layer and functional link artificial neural network with suitable diagram. [5]
CO-1, PO-1
- Q.1(b) Write the weight updating formula in least mean square and back propagation algorithm. What are the factors that improve the convergence of learning ? [5]
CO-1, PO-1
- Q.2(a) Explain linearly and non-linearly separable problems. Write MATLAB codes to implement AND function using single layer and multilayer neural network. [5]
CO-2, PO-2
- Q.2(b) Write short notes on (i) Unsupervised learning (ii) Activation function (iii) Recurrent Neural Network. [5]
CO-2, PO-2
- Q.3(a) Define the basic terminology used in single and multiobjective optimization. Explain the procedure to solve any single objective optimization using genetic algorithm. [5]
CO-4, PO-3
- Q.3(b) Draw the flow chat to forecast electrical load consumption in a particular area, using Genetic algorithm or particle swarm optimization based artificial neural network. Write MATLAB code with proper comment in each line. [5]
CO-3, PO-3
- Q.4(a) With suitable example differentiate between crisp set and fuzzy set Explain the extension principle. By taking suitable example explain fuzzy relation. Draw the membership function of composite linguistic term young but not very young. [5]
CO-3, PO-3
- Q.4(b) Draw the flow chat for noise cancellation/system identification using Genetic algorithm based artificial neural network. Write MATLAB code with proper comment in each line. [5]
CO-4, PO-3
- Q.5.(a) What are the advantages fuzzy knowledge based controller (FKBC)/ Fuzzy Logic Controller ? Discuss the approach to design of an adaptive FKBC. [5]
CO-5, PO-5
- Q.5.(b) Explain hybridization of artificial neural network with fuzzy logic. With suitable example explain one of the application. [5]
CO-5, PO-5
- Q.6(a) By considering suitable example of fuzzy reasoning graphically explain for multiple rules with multiple antecedents. [5]
CO-5, PO-5
- Q.6(b) What are the methods to assign membership function to fuzzy variables ? Describe various defuzzification procedures. [5]
CO-3, PO-4