BE(ETRX) SEM VIII (REV) May 2013
MMFS —
20/5/13

Con. 8544–13. **(REVISED COURSE)** **GS–3547**

(3 Hours) **[Total Marks : 100**

N.B. (1) Question No. 1 is **compulsory.**
(2) Solve any **four** questions from **remaining** questions.
(3) Assume **suitable** data wherever **required.**

1. (a) Write perceptron training algorithm for several output cases. **5**
   (b) Explain Widrow-Hoff learning rule. **5**
   (c) Distinguish cross-over and mutation. **5**
   (d) What do you understand by BAM ? **5**

2. (a) Explain perceptron convergence algorithm for single layer perceptron. **10**
   (b) Compare steepest descent algorithm with LMS algorithm. **10**

3. (a) What is learning process ? What do you mean by supervised and unsupervised learning ? Explain it with suitable examples. **10**
   (b) Draw the architecture of RBFN and explain the training algorithm with fixed centres. **10**

4. (a) Explain the error back propagation algorithm with the help of flow chart. **10**
   (b) Compare RBFN and MLP in detail. **10**

5. (a) What is Hopfield model of neural network ? Explain flow energy minimization function is used in it. **10**
   (b) Explain any four defuzzification methods with suitable diagrams. **10**

6. (a) If the two fuzzy sets are given as – **10**

$$\underset{\sim}{A} = \left\{\frac{1}{2} + \frac{0\cdot5}{3} + \frac{0\cdot6}{4} + \frac{0\cdot2}{5} + \frac{0\cdot6}{6}\right\} \text{ and}$$

$$\underset{\sim}{B} = \left\{\frac{0\cdot5}{2} + \frac{0\cdot8}{3} + \frac{0\cdot4}{4} + \frac{0\cdot7}{5} + \frac{0\cdot3}{6}\right\}$$

   Find complement, union, intersection, difference and De-Morgan's law.
   (b) Explain Kohonen's self organizing learning algorithm. **10**

7. Write short notes on (any **four**) :— **20**
   (a) Types of activation functions
   (b) Properties of neural networks
   (c) Fuzzy controller to stabilize inverted pendulum
   (d) Storage and retrival in BAM
   (e) Boltzman Machine
   (f) Rate of learning.