B.TECH SEM – VIII (2007 COURSE) (ELECTRONICS ENGG.)
: WINTER - 2017
SUBJECT: FUZZY LOGIC AND NEURAL NETWORK

Day: **Tuesday** Time: **02.30 PM TO 05.30 PM**
Date: **21/11/2017** **W-2017-2676** Max. Marks: 80

N.B.:

1) Q. No.**1** and Q. No. **5** are **COMPULSORY.** Out of remaining questions attempt **ANY TWO** questions from each section.
2) Answer to both the sections should be written in **SEPARATE** answer book.
3) Draw neat and labeled diagram **WHEREVER** necessary.
4) Assume suitable data if necessary.

SECTION-I

Q.1 **a)** Define prepositional logic and its properties. **(05)**

b) Express linguistic variable with example. **(05)**

c) Comment on role of Genetic algorithm in soft computing area. **(04)**

Q.2 **a)** Define fuzzyness Vs randomness. Illustrate the representation of fuzzy set with membership function and fuzzy set boundary. **(07)**

b) Write short note on distance between fuzzy set. Also comment on t-norms and t-conorms. **(06)**

Q.3 **a)** Discuss different design steps occurred in fuzzy logic based application. Discuss washing machine application with fuzzy logic controller. **(07)**

b) What is necessity of extension principle? Comment on inter-valued fuzzy logic. **(06)**

Q.4 **a)** Compare crisp relation with fuzzy relation. Also discuss composition (max-min) of fuzzy relation. **(07)**

b) Write short note on: **(06)**
i) Fuzzy-neural nets
ii) Fuzzy optimization

SECTION-II

Q.5 **a)** Draw single layer perceptron model. **(05)**

b) Explain gradient descent learning. **(05)**

c) Define generalized delta rule. **(04)**

Q.6 **a)** Explain structure view point and mapping view point in ANN. **(07)**

b) Explain different learning approaches in ANN. Give one example for each learning approach. **(06)**

Q.7 **a)** Compare biological neural network with Artificial neural network with respect to: **(07)**
i) Scalability ii) Complexity iii) Speed
iv) Cells v) Architecture
vi) Information processing

b) Compare Adeline and Madeline networks. Also design X-OR function with Adeline algorithm. **(06)**

Q.8 **a)** Explain the training algorithm used in back propagation network. **(07)**

b) What is cascade correlations architecture? Explain in brief. **(06)**

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