Code: 15A02604 **R15**

B.Tech III Year II Semester (R15) Supplementary Examinations December/January 2018/19

NEURAL NETWORKS & FUZZY LOGIC

(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) What are the advantages of artificial intelligence?
(b) Why do you prefer an expert system?
(c) State the significance of a multiplayer feed-forward network.
(d) Compare supervised learning with unsupervised learning.
(e) Write the significance of ANN to electrical systems.
(f) Define. System identification.
(g) List various properties of fuzzy logic.
(h) Give any two types of fuzzification methods.
(i) How do you fix the I-O constraints for fuzzy logic based switched reluctance motor control?
(j) Comment on fuzzy excitation control systems.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 Explain different architectures of an artificial intelligence along with symbolic reasoning system with its neat block diagram.

OR

3 Draw and describe the architecture of an expert system.

UNIT – II

4 Explain the structure and functioning of ADALINE model with its neat diagram.

OR

5 With a neat architecture, write the training and testing algorithm used in back propagation network?

UNIT – III

6 How do you solve an electrical load forecasting problem with the help of neural networks?

OR

7 How do you apply neural computing for pattern recognition? Explain.

UNIT – IV

8 Consider an amplifier capacity on a normalized universe, say [0, 100], can be described linguistically by the following fuzzy variables:

$'Powerful' = \left\{\frac{0}{1} + \frac{0.4}{10} + \frac{0.8}{50} + \frac{1.0}{100}\right\}$; $'Weak' = \left\{\frac{1}{1} + \frac{0.9}{10} + \frac{0.3}{50} + \frac{0}{100}\right\}$.

Find the membership function for the following linguistic phases used to describe the capacity of various amplifiers: (i) Powerful and or weak. (ii) Very powerful or weak. (iii) Very, very powerful and not weak. (iv) Very powerful and very weak.

OR

9 With a neat block diagram, explain the functioning of building blocks of a fuzzy logic controller.

UNIT – V

10 Explain the role of fuzzy logic towards induction motor control.

OR

11 How do you apply fuzzy logic for 18 bus bar system? Explain with necessary membership functions.