

I M.Tech-I Semester-Regular Examinations-February 2018

**SOFT COMPUTING TECHNIQUES IN POWER
SYSTEMS
(POWER SYSTEM & CONTROL)**

Duration: 3 hours

Max. Marks: 60

Answer the following questions.

- 1.a) What is biological neuron? Perform basic logic operations NAND by selecting weights and threshold values appropriately. 7 M
- b) Distinguish supervised and unsupervised learning algorithms with examples. 8 M
- (OR)
- 2.a) Compare and contrast a biological neuron and an artificial neuron. 5 M
- b) Explain Mc. Culloch-Pits Neuron model. 5 M
- c) What is the significance of initial weight and learning rate in training of ANN? 5 M
- 3.a) Define i) Linguistic Variables
- ii) Membership functions. 5 M
- b) Explain fuzzification and Defuzzification methods in detail. 10 M

(OR)

- 4.a) Explain the operations on crisp sets by using Venn diagram. 5 M
- b) Explain Basic Fuzzy set operations with example. 10 M
- 5.a) Discuss different genetic algorithm operators. 5 M
- b) Explain Boltzmann selection technique in genetic algorithms with an example. 10 M
- (OR)
- 6.a) Define coding in genetic algorithm. Find the value of x represented by 110011001101, a string of 12 binary digits. Value of x lies between 2.5 to 10.0. 5 M
- b) Discuss genetic algorithm solution based on Roulette-wheel selection. 10 M
- 7.a) How particle swarm optimisation technique is inspired from nature? 5 M
- b) Draw and explain the flowchart for particle swarm optimisation technique. 10 M
- (OR)
- 8.a) Compare particle swarm optimisation (PSO) method with genetic algorithm. 5 M
- b) Discuss velocity update and position update equations in PSO with an example. 10 M