

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- Dec 2017

M.Tech III Semester/ Ph.D.

COURSE CODE: 17M1WEC332

MAX. MARKS:35

COURSE NAME: COMPUTATIONAL INTELLIGENCE AND APPLICATIONS

MAX. TIME: 2:00 Hr

COURSE CREDITS: 3

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

Q1 a) What is learning?. Write any two learning techniques and in each case give the expression for weight- updating [3]

b) What is Winner –take- all algorithm? Detail components of Competitive Learning network [4]

Q2 a) Discuss the approaches to Clustering in Unsupervised learning [3]

b) Explain Defuzzification, and detail any method employed for converting fuzzy into crisp form. [4]

Q3. a) What is GA? Explain how genetic algorithms are influenced by knowledge based techniques. Explain how genetic algorithms work, in English or in pseudocode. [3]

(b) Discuss the reproduction operators of Genetic Algorithm focusing on Crossover and Mutation techniques. [4]

Q4. What are Evolutionary algorithms? Elaborate the main characteristics of Evolutionary algorithms. [5]

Q5. “In the particle swarm optimization process, the velocity of each particle is iteratively adjusted so that the particle stochastically oscillates around p_{best} and p_{gbest} locations”. Keeping this statement intact, discuss the algorithm of PSO and how does PSO conduct optimization. [5]

Q6. With reference to Ant Colony Optimisation (ACO) describe these algorithmic elements. [6]

- a. Pheromone Trails
- b. Evaporation
- c. Stigmergy
- d. Transition Probability