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BME-022

B.Tech. MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

01080

Term-End Examination

June, 2014

BME-022 : SOFT COMPUTING IN CIM

Time : 3 hours *Maximum Marks : 70*

Note : *Answer any **five** of the following questions.*

1. (a) What is process planning ? How is training of neural networks done ? Explain.

(b) What is fuzzy membership function ? Discuss the advantages of fuzzy logic in CIM. 7+7

2. (a) Discuss the implementation procedure of genetic algorithm in process planning problem.

(b) What are the parameters to be taken care of while implementing Tabu-Search algorithm in any combinatorial optimisation problem ? Explain. 7+7

3. (a) What is the basic principle involved in Ant Colony Optimisation algorithm ? Also explain, what kind of problems can be solved by ACO.

(b) Discuss the basic steps required to be taken while implementing the basic particle swarm optimisation in travelling salesman problem. 7+7

4. (a) Explain the mechanism of proliferation and maturation in artificial immune system.

(b) How can artificial immune system be implemented in pattern recognition problem ? Explain. 7+7

5. (a) What are the relative advantages and disadvantages of expert system over human expert ?

(b) Explain the application of neural networks for quality control, quality assurance and fault diagnosis of manufacturing system. 7+7

6. (a) What is meant by system modeling ? What are the merits and demerits of Classical Petri Net modeling ? Explain.

(b) Discuss the various steps involved in the calculation of system imbalance and throughput in machine loading problem. 7+7

7. (a) Discuss the various components of human immune system. Describe clearly the antibody-antigen interaction mechanism.

(b) Describe the steps in solving a machine loading problem in a flexible manufacturing system using a clonal algorithm. 7+7