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BME-022

B.Tech. MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

Term-End Examination

00423

December, 2016

BME-022 : SOFT COMPUTING IN CIM

Time : 3 hours *Maximum Marks : 70*

Note : *Answer any **five** of the following. All questions carry equal marks.*

1. (a) What is an expert system ? Discuss the role of expert system in semi-automated assembly.

(b) What are neural networks ? Explain the use of back propagation in neural networks. 7+7

2. (a) What is fuzzy membership function ? Discuss the advantages of fuzzy logic.

(b) Describe the application of fuzzy logic in a flexible manufacturing system (FMS). 7+7

3. (a) What is simple genetic algorithm ? Describe the application of the genetic algorithm in process planning problems.

(b) Discuss the performance measure of the Tabu based algorithm as compared to the genetic algorithm. 7+7

4. (a) What is Ant Colony Optimization (ACO) problem ? How would you solve a combinatorial optimization problem by ACO ?

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

5. (a) What is the practical significance of hypermutation in artificial immune system ?

(b) Describe the application of Artificial Immune System (AIS) in data analysis. 7+7

6. (a) Describe the role of expert system in various stages of manufacturing.

(b) Explain the applications of neural networks for monitoring and control of manufacturing systems. 7+7

7. (a) Discuss the various types of random search optimization techniques.

(b) What is a situation conflict ? Represent it using a part of a petrinet. 7+7