BACHELOR OF TECHNOLOGY IN MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

Term-End Examination

December, 2013

BME-022 : SOFT COMPUTING IN CIM

Time : 3 hours *Maximum Marks : 70*

Note : Answer any five of the following questions.

1. (a) What is expert system ? Discuss the role of expert system in Semi-Automated assembly. 7+7

   (b) What are the basic constituents of neural networks. Discuss the scope of implementation of neural networks in CIM.

2. (a) How fuzzy membership function is determined by neural network approach' explain ? 7+7

   (b) What is the physical significance of fuzzy IF-THEN rules ? Explain using a CIM case.

3. (a) What is the anology between the ant colony optimization (ACO) algorithm and biological process ? Explain. 7+7

   (b) How would you solve a combinatorial optimization problem by ACO ?

4. (a) What is the similarity between particle swarm optimisation and ant colony optimisation ? Explain 7+7

(b) What is the practical relevance of different need theories in C.I.M. mentioned in Maslow Hierarchy ? Explain.

5. (a) Describe in brief the different steps of artificial immune system based data analysis learning algorithm. 7+7

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

6. (a) What is meant by generalised stochastic petri net ? List the three basic properties of petri nets ? 7+7

(b) Define fuzzy neural petrinets (FNPN). Draw a FNPN model representing three AND rules.

7. (a) Write a short note on different parameters that out to be optimised in CIM. 7+7

(b) Describe the different parameters that play crucial roles in artificial immune system.