No. of Printed Pages : 3

BME-022

B.Tech. MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

Term-End Examination

June, 2015

00013

BME-022 : SOFT COMPUTING IN CIM

Time : 3 hours *Maximum Marks : 70*

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

1. (a) What are the elements of Expert systems and Knowledge Representation ? 7

(b) Briefly explain the role of expert system for Semi-Automated Assembly. 7

2. (a) Describe genetic algorithm. Discuss the role of genetic operators in exploring the search space. 7

(b) How can a combinational problem be solved using Ant Colony Optimization algorithm ? 7

3. (a) Define the fuzzy neural petri nets. Draw a fuzzy neural petri net model representing three AND rules. 7

(b) What is group technology ? Describe the various elements of group technology. 7

4. (a) Explain Genetic Algorithm in the context of Travelling Salesman problem. 7

(b) Describe the various types of 'Random Search Optimization Techniques' (RSOPT). 7

5. (a) Describe the steps in solving a machine loading problem in a flexible manufacturing system using CLONALG. 7

(b) What are the merits and demerits of classical petri nets ? 7

6. (a) Briefly describe the planning problem in FMS with a suitable example. 7

(b) Write the code of 'Tabu search algorithm' in the context of outsourcing problem in C^{++}. 7

7. Write short notes on any ***four*** of the following : $4 \times 3\frac{1}{2} = 14$

(a) Back Propagation

(b) Fuzzy Sets and Crisp Sets

(c) Part Routing Problem

(d) Typical characteristics of a Manufacturing System

(e) Simulated Annealing

(f) Reachability Graph