No. of Printed Pages : 3

BME-022

B.Tech. MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

00765

Term-End Examination

December, 2014

BME-022 : SOFT COMPUTING IN CIM

Time : 3 hours *Maximum Marks : 70*

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

1. (a) Define expert system. What do you understand by the role of expert system in manufacturing ? 7

(b) What is back propagation ? Discuss the use of back propagation in neural networks. 7

2. (a) Differentiate between fuzzy sets and crisp sets. Discuss the various applications of fuzzy logic with examples. 7

(b) What do you mean by fuzzy IF-THEN rules ? Explain the fuzzy rule based system. 7

3. (a) What parameters should be considered while implementing Tabu search algorithm in any combinatorial optimisation problem ? 7

(b) Write the code of Tabu search algorithm in the context of outsourcing problem in C++ and thereafter compare the results with other conventional algorithms. 7

4. (a) Describe the various factors involved in robot control using an expert system. 7

(b) Explain the applications of neural networks for modelling and design of manufacturing system. 7

5. (a) Discuss the operation planning problems and FMS scheduling. 7

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

6. (a) Describe in brief the effect of pheromone evaporation on performance of Ant Colony optimisation algorithm. 7

(b) What is the practical relevance of different need theories mentioned in Maslow's Hierarchy ? 7

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

(a) Expert System Shells

(b) Process Planning

(c) Advantages of Fuzzy Logic

(d) Advantages of FMS

(e) Natural Immune System

(f) Genetic Operators