

**B.Tech. MECHANICAL ENGINEERING
(COMPUTER INTEGRATED
MANUFACTURING)**

**Term-End Examination
December, 2015**

BME-022 : SOFT COMPUTING IN CIM

Time : 3 hours

Maximum Marks : 70

*Note : Answer any **five** questions. All questions carry equal marks. Assume suitable data, if missing.*

1. (a) Briefly describe the basic elements of an expert system, with the help of a flow chart. Describe the development stages of an expert system. 7
- (b) What is the most popular algorithm for training a neural network ? What is its principle ? 7
2. (a) What is fuzzy logic ? What are fuzzy relations and does fuzzy logic support them ? 7
- (b) With the help of a flow chart, describe the basic steps involved in genetic algorithm. Describe the role of penalty function. 7

3. (a) What is petri nets ? Describe the merits and demerits of classical petri nets. List the application of petri nets. 7
- (b) How can constraints be handled by PSO ? Can we implement PSO algorithm in knapsack problem ? If yes, how ? 7
4. (a) Discuss the role of expert system in a semi-automated assembly. 7
- (b) Illustrate the stepwise procedures to implement model based system and case based system. 7
5. (a) Illustrate the hierarchy of neural network application for process modelling, planning and scheduling. 7
- (b) Define FPN. Can FPN deal with compound production rule ? 7
6. (a) Describe the approach for solving the loading problem using genetic algorithm. 7
- (b) Describe the steps in solving a machine loading problem in a flexible manufacturing system using CLONALG. 7
7. (a) Make a petri net model having two traffic lights which do not turn green at the same time. 7
- (b) Define the composed conjunctive rule and composed disjunctive rule. 7