M00581 | BME-022 |

B.Tech. MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

Term-End Examination,

December 2019

BME-022 : SOFT COMPUTING IN CIM

Time : 3 Hours] [*Maximum Marks : 70*

Note : (i) *Attempt any five questions.*

(ii) *All questions carry equal marks.*

1. a) What do you understand by planning in FMS? How is training of neural networks done? Explain. 7

   b) What is fuzzy membership function? Discuss the advantages of fuzzy logic in CIM. 7

2. 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

3. a) What is the effect of pheromone evaporation on the performance of ACO algorithm? 7

   b) What is the practical significance of hypermutation in artificial immune system? With the help of a flow chart, illustrate the psycho-clonal algorithm. 7

4. a) Define FPN. Can FPN deal with compound production rule? Explain. 7

    b) Enlist the basic principles of hopfield neural network. Illustrate the basic elements of group technology and cellular manufacturing. 7

5. a) What is simple genetic algorithm? Describe the application of the genetic algorithm in process planning problems. 7

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

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

    b) What is a situation conflict? Represent it using a part of petri net. 7

7. a) Discuss the various components of human immune system. Describe clearly the antibody - antigen interaction mechanism. 7

    b) Explain with suitable example various parameters that need to be optimized in CIM. 7

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