Roll No. | | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 08

M.Tech. (CSE) (2018 Batch) (Sem3)

OPTIMIZATION TECHNIQUES

Subject Code : MTCS-304-18

M.Code : 76511

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTIONS TO CANDIDATES :

1.Attempt any FIVE questions out of EIGHT questions.

2.Each question carries TWELVE marks.

1. Enlist the applications of Optimization in relevance to Computer Science and Engineering.

2. Explain the General structure of an optimization algorithm. Also explain how convergence is checked?

3. Using Graphical method, solve the following optimization problem :

$$\text{Minimize } f(x) = x_1^2 + x_2^2 - 4x_1 + 4$$

$$\text{Subject to : } c_1(x) = x_1 - 2x_2 + 6 \geq 0$$

$$c_2(x) = -x_1^2 + x_2 - 1 \geq 0$$

$$c_3(x) = x_1 \geq 0$$

$$c_4(x) = x_2 \geq 0$$

4. Solve the following quadratic programming using Wolfe's Method :

$$\text{Max } f(x) = x_2 - x_1^2$$

$$\text{Subject to } x_1 + x_2 \leq 1$$

$$x_1, x_2 \geq 0$$

5. Enlist the steps in Asynchronous Particle Swarm Optimization Algorithm.

6. What are the various applications of Ant Colony Optimization?

7. Solve using Branch and Bound

$$\text{Minimize } Z = 4x_1 + 3x_2$$

$$\text{Subject to } 5x_1 + 3x_2 \geq 30$$

$$x_1 \leq 4$$

$$x_2 \leq 6$$

$$x_1, x_2 \geq 0 \text{ and are integers}$$

8. Describe Simplex algorithm to solve Linear Programming Problem.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.