**Reg. No. \_\_\_\_\_\_\_\_**

**Karunya University**

**(Karunya Institute of Technology and Sciences)**

(Declared as Deemed to be University under Sec.3 of the UGC Act, 1956)

**Supplementary Examination - June 2011**

**Subject Title: OPTIMIZATION TECHNIQUES Time: 3 hours**

**Subject Code: 10EE301 Maximum Marks: 100**

**Answer ALL questions (5 x 20 = 100 Marks)**

1. **Compulsory**:

a. Write the generalized mathematical formulation of an optimization problem. (5)

b. A tin with open top has square bottom. The height of the tin is not same as the side of the square bottom. The tin has to be made with a sheet metal such that its volume is 256 m3. Formulate the problem as an optimization problem to minimize the sheet metal required and solve it with a suitable technique. (15)

2. Maximize by simplex algorithm.

Constraints:

(OR)

3. What is the necessity for two-phase simplex method? Explain the two-phase simplex method with a flow chart.

4. Find the minimum of in the interval [0, 3] within 5% of the exact value by Fibonacci method.

(OR)

5. a. Give the procedural steps of Nelder-Meed simplex method for unconstrained MVO problems. (5)

b. Minimize by BFGS method with the starting point. (15)

6. Explain the sequential linear programming technique for unconstrained MVO problems.

(OR)

7. Explain Zoutendijk’s method of feasible directions.

8. a. Mention the significance of crossover and mutation operations of GA. (5)

b. Explain the optimization procedure through simulated annealing. (15)

(OR)

9. Formulate the selective harmonic elimination of PWM AC/AC Voltage Controller as an optimization problem and outline the procedure to solve it using evolutionary programming.