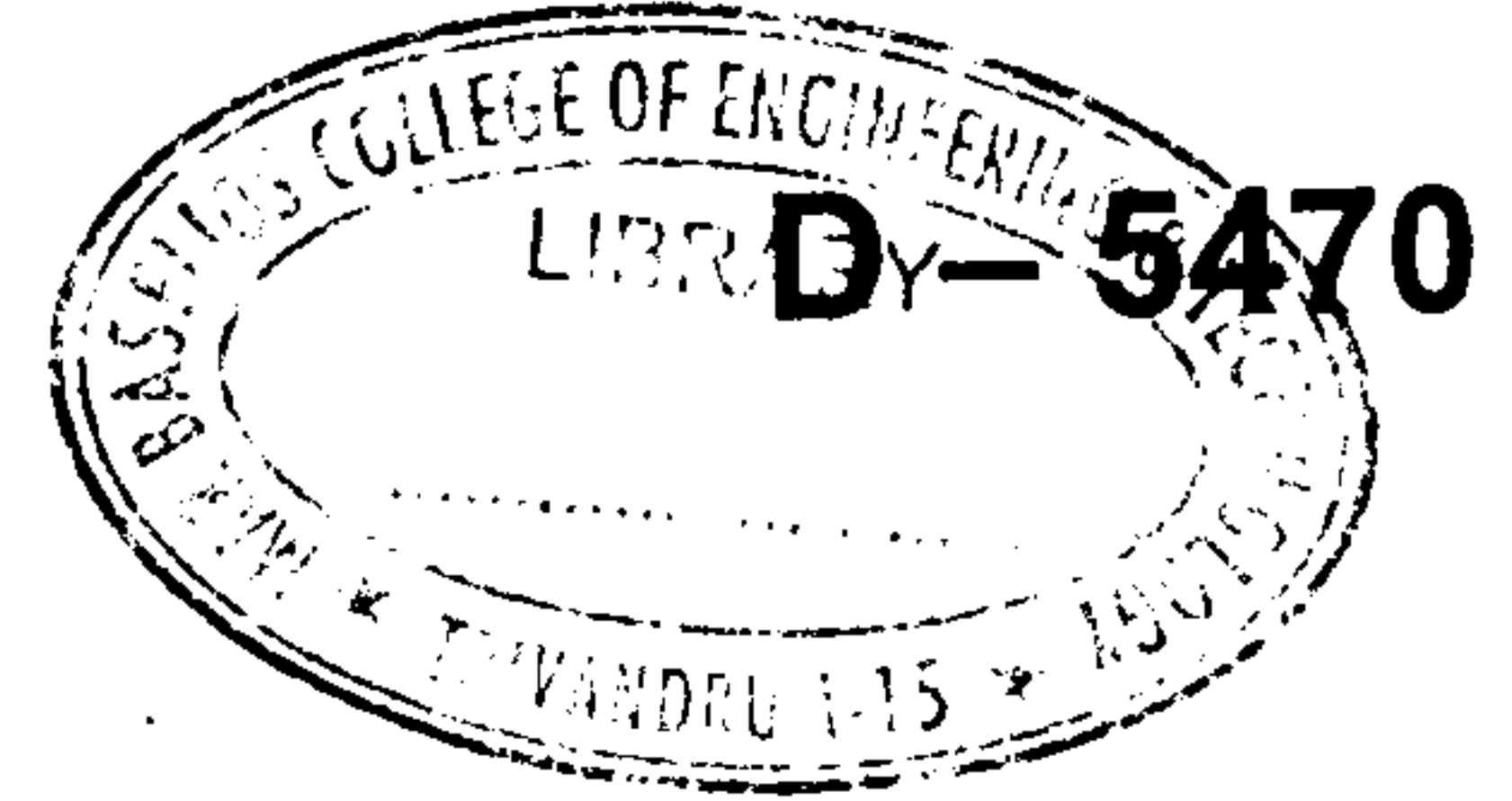




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Reg. No. :

Name :

Second Semester M.Tech. Degree Examination, April 2018

(2013 Scheme)

EDE 2007 : OPTIMIZATION TECHNIQUES FOR POWER CONTROL

(Elective)

Time : 3 Hours

Max. Marks : 60

Instruction : Answer any two full questions from each Module.

MODULE – 1

1. Solve the following problem graphically,

$$\text{Max. } Z = 60x_1 + 40x_2$$

$$2x_1 + x_2 \leq 60$$

$$x_1 \leq 25$$

$$x_2 \leq 35$$

$$x_1 \geq 0, x_2 \geq 0.$$

10

2. Use two phase method to maximize, $z' = -x_1 - x_2$

Subjected to,

$$2x_1 + x_2 \geq 4$$

$$x_1 + 7x_2 \geq 4$$

$$x \geq 0$$

10

3. Using dual simplex method, solve the following :

Maximize $z = -3x_1 - 2x_2$

Subjected to, $x_1 + x_2 \geq 1$

$$x_1 + x_2 \leq 7$$

$$x_1 + 2x_2 \geq 10$$

$$x_2 \leq 3.$$

10

P.T.O.



MODULE - 2

4. Minimize $f(x) = x_1 - x_2 + 2x_1^2 + 2x_1x_2 + x_2^2$ using Newton's method with initial point $X_1 = \{0, 0\}$. 10
5. Find out the definiteness of the following function and hence predict the maxima or minima.
 $f(x) = x_1 + 2x_3 + x_2x_3 - x_1^2 - x_2^2 - x_3^2$. 10
6. Minimize $f(x) = x_1 - x_2 + 2x_1^2 + 2x_1x_2 + x_2^2$ using conjugate gradient method with initial point $X_1 = \{0, 0\}$. 10

MODULE - 3

7. Solve the following problem using KKT conditions.

Maximize $z = -x_1^2 - x_2^2 - x_3^2 + 4x_1 + 6x_2$

Subject to $x_1 + x_2 \leq 2$
 $2x_1 + 3x_2 \leq 12$
 $x_1, x_2 \geq 0$. 10

8. Solve the following quadratic programming problem,

Minimize $f(x) = 2x_1^2 - 6x_1 - 2x_1x_2 + 2x_2^2$

Subject to $x_1 + x_2 \leq 2$
 $x_1, x_2 \geq 0$. 10

9. Explain the basic concept and application of Genetic algorithm. 10
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