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Code: 9A02709R09B. Tech IV Year I Semester (R09) Supplementary Examinations, May 2013
OPTIMIZATION TECHNIQUES
(Electrical and Electronics Engineering)Time: 3 hoursMax. Marks: 70
Answer any FIVE questions
All questions carry equal marks
*****1 (a) Explain the difference between constraint surface and a composite constraint surface.
(b) State and explain the linear programming problem in a standard form.2Solve the following problem using Kuhn-tucker conditions:
Maximize
$$f(x_1, x_2) = 2x_1 + x_2 - x_1^2$$

Subject to
 $2x_1 + 3x_2 \leq 6$
 $2x_1 + x_2 = 4$
 $x_1, x_2 \geq 0$ 3Solve the following L.P. problem using simplex method;
Maximize $Z = 3x_1 + 5x_2 + 4x_3$
Subject to
 $2x_1 + x_2 = 4$
 $2x_2 + 5x_3 \leq 10$
 $3x_1 + 2x_2 + 4x_3 \leq 15$
 $x_1, x_2, x_3 \geq 0$ 4Determine the optimal solution for the following transportation problem:To
Supply

	10				Supp
5	5	2	4	3	22
From	4	8	1	6	15
	4	6	7	5	8
Demand	7	12	17	9	

- Find the minimum of the function $f=\lambda^5-5\lambda^3-20\lambda+5$ by the Fibonacci method in 5 the interval (0, 5).
- Minimize $f = 2x_1^2 + x_2^2$ from the starting point (1, 2) using the univariate method (two 6 iterations only).
- 7 Consider the problem:

Maximize $f(x_1, x_2) = \frac{1}{3} (x_1 + 1)^3 + x_2$ Subject to $g_1(x_1, x_2) = 1 - x_1 \leq 0$ $g_2(x_1, x_2) = -x_2 \leq 0$ Construct the Φ_k function according to the interior penalty function approach and

complete the minimization of Φ_k .

8 Explain the computational procedure used in dynamic programming.