Code.No: RR410210 | **RR** | SET-1

IV B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
OPTIMIZATION TECHNIQUES
(ELECTRICAL AND ELECTRONICS ENGINEERING)

Time: 3hours   **Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks
- - -

1. Does the function $F(x_1, x_2) = x_1^3 - 3ax_1x_2 + x_2$ has global minimize for any of 'a'. [16]

2. For the function $F(x_1, x_2) = x_1^3 + x_2^3 + 2x_1^2 + 4x_2^2 + 6$ has extreme points what are they. [16]

3. Solve the following LPP using simplex.

   $Max \quad 3x_1 + 5x_2$

   ST $\quad x_1 + x_2 \geq 100$

   $\qquad 5x_1 + 10x_2 \leq 500$

   $\qquad 6x_1 + 8x_2 \leq 440$

   $\qquad x_1 x_2 \geq 0$. [16]

4. Solve the following transportation problem: [16]

	A	B	C	D	E	Supply
X	15	20	13	19	16	40
Y	18	15	18	20	-	60
Z	20	19	14	21	16	70
Demand	30	40	50	40	60	

5. Max $f(x) = 20x - 3x^2 - x^4$ in the range $(0, 1.406)$ with in 10% accuracy using Fibonacci method. [16]

6. Min $f(x) = x^2 - 10\exp(0.1x)$ using Powell's method. Prefer two iterations. [16]

7. Min $x_1^2 + x_2^2 - 10x_1 + 4x_2 + 2$

   ST $\quad x_1^2 + x_2 - 6 \leq 0$

   $\qquad x_2 \geq x_1$

   $\qquad x_1 \geq 0$. Using Penalty function method. [16]

8. Max $Z = 7x_1 + 6x_2 + \dfrac{5x_2}{2}$

   ST $\qquad x_1 + 2x_2 \leq 10$

   $\qquad\qquad x_1 - 3x_2 \leq 9$

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

   Using dynamics programming problem. [16]

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Code.No: RR410210

RR

SET-2

IV B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
OPTIMIZATION TECHNIQUES
(ELECTRICAL AND ELECTRONICS ENGINEERING)

Time: 3hours   Max.Marks:80

Answer any FIVE questions
All questions carry equal marks
- - -

1.   Solve the following LPP using simplex.

   $Max \quad 3x_1 + 5x_2$

   ST $x_1 + x_2 \geq 100$

   $5x_1 + 10x_2 \leq 500$

   $6x_1 + 8x_2 \leq 440$

   $x_1 x_2 \geq 0$.   [16]

2.   Solve the following transportation problem: [16]

	A	B	C	D	E	Supply
X	15	20	13	19	16	40
Y	18	15	18	20	-	60
Z	20	19	14	21	16	70
Demand	30	40	50	40	60	

3.   Max $f(x) = 20x - 3x^2 - x^4$ in the range (0,1.406) with in 10% accuracy using Fibonacci method.   [16]

4.   Min $f(x) = x^2 - 10\exp(0.1x)$ using Powell's method. Prefer two iterations.   [16]

5.   Min $x_1^2 + x_2^2 - 10x_1 + 4x_2 + 2$

   ST $x_1^2 + x_2 - 6 \leq 0$

   $x_2 \geq x_1$

   $x_1 \geq 0$.   Using Penalty function method.   [16]

6.   Max $Z = 7x_1 + 6x_2 + \dfrac{5x_2}{2}$

   ST $x_1 + 2x_2 \leq 10$

   $x_1 - 3x_2 \leq 9$

   $x_1, x_2 \geq 0$.

   Using dynamics programming problem.   [16]

7.   Does the function $F(x_1, x_2) = x_1^3 - 3ax_1x_2 + x_2$ has global minimize for any of 'a'.
                                                                                                [16]

8.   For the function $F(x_1, x_2) = x_1^3 + x_2^3 + 2x_1^2 + 4x_2^2 + 6$ has extreme points what are they.   [16]

Code.No: RR410210   **RR**   SET-3

IV B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
OPTIMIZATION TECHNIQUES
(ELECTRICAL AND ELECTRONICS ENGINEERING)
Time: 3hours   **Max.Marks:80**
Answer any FIVE questions
All questions carry equal marks
- - -

1.   Max $f(x) = 20x - 3x^2 - x^4$ in the range $(0,1.406)$ with in 10% accuracy using Fibonacci method.   [16]

2.   Min $f(x) = x^2 - 10\exp(0.1x)$ using Powell's method. Prefer two iterations.   [16]

3.   Min $x_1^2 + x_2^2 - 10x_1 + 4x_2 + 2$
      ST $x_1^2 + x_2 - 6 \leq 0$
            $x_2 \geq x_1$
            $x_1 \geq 0$.   Using Penalty function method.   [16]

4.   Max $Z = 7x_1 + 6x_2 + \dfrac{5x_2}{2}$
      ST $x_1 + 2x_2 \leq 10$
                    $x_1 - 3x_2 \leq 9$
                    $x_1, x_2 \geq 0$.
      Using dynamics programming problem.   [16]

5.   Does the function $F(x_1, x_2) = x_1^3 - 3ax_1x_2 + x_2$ has global minimize for any of 'a'.   [16]

6.   For the function $F(x_1, x_2) = x_1^3 + x_2^3 + 2x_1^2 + 4x_2^2 + 6$ has extreme points what are they.   [16]

7.   Solve the following LPP using simplex.
      Max $3x_1 + 5x_2$
      ST $x_1 + x_2 \geq 100$
            $5x_1 + 10x_2 \leq 500$
            $6x_1 + 8x_2 \leq 440$
            $x_1x_2 \geq 0$.   [16]

8.   Solve the following transportation problem: [16]

	A	B	C	D	E	Supply
X	15	20	13	19	16	40
Y	18	15	18	20	-	60
Z	20	19	14	21	16	70
Demand	30	40	50	40	60	

Code.No: RR410210 | RR | SET-4

IV B.TECH – I SEM EXAMINATIONS, NOVEMBER - 2010
OPTIMIZATION TECHNIQUES
(ELECTRICAL AND ELECTRONICS ENGINEERING)

Time: 3hours **Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks
- - -

1. Min $x_1^2 + x_2^2 - 10x_1 + 4x_2 + 2$
   ST $x_1^2 + x_2 - 6 \leq 0$
   $x_2 \geq x_1$
   $x_1 \geq 0$. Using Penalty function method. [16]

2. Max $Z = 7x_1 + 6x_2 + \dfrac{5x_2}{2}$
   ST $x_1 + 2x_2 \leq 10$
   $x_1 - 3x_2 \leq 9$
   $x_1, x_2 \geq 0$.

   Using dynamics programming problem. [16]

3. Does the function $F(x_1, x_2) = x_1^3 - 3ax_1x_2 + x_2$ has global minimize for any of 'a'. [16]

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5. Solve the following LPP using simplex.
   Max $3x_1 + 5x_2$
   ST $x_1 + x_2 \geq 100$
   $5x_1 + 10x_2 \leq 500$
   $6x_1 + 8x_2 \leq 440$
   $x_1 x_2 \geq 0$. [16]

6. Solve the following transportation problem: [16]

	A	B	C	D	E	Supply
X	15	20	13	19	16	40
Y	18	15	18	20	-	60
Z	20	19	14	21	16	70
Demand	30	40	50	40	60	

7. Max $f(x) = 20x - 3x^2 - x^4$ in the range $(0, 1.406)$ with in 10% accuracy using Fibonacci method. [16]

8. Min $f(x) = x^2 - 10 \exp(0.1x)$ using Powell's method. Prefer two iterations. [16]

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