Total number of printed pages:1

PG/2nd/PCEW2111

2024

Optimization Techniques in Water Resources Engineering

Full Marks: 100

Time: 3 hours

The figures in the margin indicate full marks for the questions.

1. Using Non linear programing method find the optimize values for the function below:

   $Z= 2x_1 + x_3 + 3x_2x_3 - x_1^2 - 3x_2^2 - 3x_3^2 + 17$ 20

2. Using Non linear programing method find the optimize values for the function below:

   $Z= 3x_1^2 + x_2^2 + 2x_1x_2 + 6x_1 + 2x_2$; Subject To $2x_1+x_2=4$ 20

3. Using Geometric Programing method find the optimize values for the function below:

   Minimize $f(x)= 15x_1^{-1}x_2^{-1} + 10x_1x_2x_3^{-1} + 25\ x_2x_3 + x_1x_3$; $x_1, x_2, x_3 \geq 0$ 20

4. Using Kuhn Tucker Principle find the optimize values for the function below:

   $f(x) = 2x_1^2 + 3x_2^2 - x_1^2 - 2x_2^2$; Subject To, $x_1 + 3x_2 \leq 6$; $5x_1 + 2x_2 \leq 10$; $x_1, x_2 \geq 0$ 20

5. Using simplex method solve the liner programing problem

   $Z= 2x_1+x_2$; Subject To, $3x_1+x_2 \leq 300$; $4x_1+2x_2 \leq 500$, $x_1,x_2 \leq 0$ 20