Total number of printed pages: 1

Programme: PG/2th /MCE2101

2025

Optimization Techniques in 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:

   a) $Z = - x_1^2 - x_2^2 - 4x_1 - 8$ 10

   b) $Z = x_1^2 + x_2^2 - 4x_1 - 2x_2 + 5$ 10

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

   $Z= -2x_1^2 - 4x_2^2 + 5x_1x_2 + 18x_1$; Subject To $x_1+x_2 \leq 7$ 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:

   $f(x) = = x_1^2 + x_2^2 - 4x_1 - 4x_2 + 8$; Subject To, $-x_1 - 2x_2 + 4 \geq 0$; $2x_1 + x_2 \leq 5$ 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