**(Pages:2) Reg. No……………**

**Name………………**

**M.TECH DEGREE EXAMINATION**

**Model Question Paper**

**First semester**

**Branch: Electrical and Electronics Engineering;**

**Specialization: Power Systems**

**MEEPS 102 OPTIMIZATION OF POWER SYSTEM OPERATION**

**(2013 admission onwards)**

**[Regular/ Supplementary]**

***Answer all questions***

**Time: Three hours Maximum: 100 marks**

1. (a) Explain Fibonacci method for one dimensional minimization (10 marks)

(b) Find the minimum of function f=λ5 – 5 λ3 \_20 λ + 5 by golden section method in the interval (0, 5) (15 marks)

**OR**

1. (a) Explain univariate method (10 marks)

(b) Minimize f=2x1 2+x2 2 by using the steepest descent method with the starting point (1,2) (15marks)

1. (a) Explain lagrangian method (10 marks)

(b) Minimize f(x)=x12 - x1 x2+3 x22- 4x2+4

subject to x1 + x2≤1

x1 , x2 ≥ 0 (15marks)

**OR**

1. (a) Explain genetic operators (12 marks)

(b) Maximize z= 7 x1 + 9 x2

subject to - x1 + 3 x2<6;

7x1 + x2≤35

where x1 , x2 ≥ 0 and are integers (13 marks)

**Turn over**

1. (a) Discuss economic dispatch by base point and participation factors (10 marks)

(b) Explain take or pay fuel supply contract. Explain the procedure for obtaining composite cost curve (15 marks)

**OR**

1. (a) Explain how scheduling of energy can be done using gradient search technique if there is limited supply of fuel (13 marks)

(b) The fuel cost functions for three thermal plants in Rs/hr and generator constraints are given by

C1=510+7.2P1+0.0014 P1 150≤ P1 ≤600

C2=300+7.5P2+0.0016 P2 100≤ P2≤400

C3=80+7.8P3+0.0048 P3 50≤ P3≤200

Where P1, P2 and P3 are in MW. The total load PD is 850 MW. Neglecting losses determine the economic operating point. (12 marks)

1. (a) Explain scheduling of energy (12 marks)

(b) Explain various constraints in unit commitment (13 marks)

**OR**

8. (a) Discuss pumped storage hydro plant (18 marks)

(b) Explain long range and short range hydro scheduling (7 marks)

[4x25=100 marks]