|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |

**E Reg. No. :**

**Question Paper Code: 57P14**

Ph.D. COURSE WORK DEGREE EXAMINATION, NOV 2017

Elective

CAD / CAM

15PCD526 – ADVANCED OPTIMIZATION TECHNIQUES

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. | (a) | Obtain necessary conditions for the optimum solution  of the following problem :  Minimize f (x1, x2) = 3e(2x 1 +1) + 2*e*(2x 1 +5) | CO1- App | (20) |
|  |  | Or |  |  |
|  | (b) | Explain the function. | CO1- U | (20) |
|  |  |  |  |  |
| 2. | (a) | Obtain the quadratic form for the function | CO2- U | (20) |
|  |  | Or |  |  |
|  | (b) | Explain direct substitution method. | CO2- U | (20) |
|  |  |  |  |  |
| 3. | (a) | Explain why SLP method is called the cutting plane method. | CO3- U | (20) |
|  |  | Or |  |  |
|  | (b) | Use simplex method to solve following linear programming | CO3- Ana | (20) |
|  |  |  |  |  |
| 4. | (a) | Figure below shows two frictionless rigid bodies (carts) A and B connected by three linear elastic springs having spring constants  1 k , 2 k and 3 k . The springs are at their natural positions when the applied force P is zero. Find the optimal solution of displacements 1 x and 2 x under the force P by using the principle of minimum potential energy. | CO4- App | (20) |
|  |  | Or |  |  |
|  | (b) | Explain goal programming method. | CO4- U | (20) |
|  |  |  |  |  |
| 5. | (a) | Explain stochastic linear programming. | CO5- U | (20) |
|  |  | Or |  |  |
|  | (b) | Evaluate ∫+ 6 0 2 1 x dx By using Trapezoidal rule | CO5- E | (20) |
|  |  |  |  |  |