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

**E Reg. No. :**

**Question Paper Code: 57P33**

Ph.D COURSE WORK DEGREE EXAMINATION, JAN 2018

Elective

Computer Science and Engineering

15PCS520 - MULTI OBJECTIVE OPTIMIZATION TECHNIQUES

 (Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. | (a) | Discuss various classical methods for handling multi objective optimization problems. | CO1- U | (20) |
|  |  | Or |  |  |
|  | (b) | State the fundamental difference between single objective and multi objective optimization problem. What are the different approaches of evolution strategies in optimization problem? | CO1- U | (20) |
|  |  |  |  |  |
| 2. | (a) | Compare and contrast Constrained tournament method and Ray-Tai-Seow's method. Also write advantages and disadvantages. | CO2-Ana | (20) |
|  |  | Or |  |  |
|  | (b) | Discuss various MOEA algorithms such as PAES, SPEA2, MOMGA, And micro GA with their advantages and disadvantages and applications.  | CO2-Ana | (10) |
|  |  |  |  |  |
| 3. | (a) | Explain various MOEA theoretical issues such as Fitness Landscapes, Fitness Functions, Pareto Ranking, Pareto Niching and Fitness Sharing, Recombination Operators and Mating Restriction.  | CO3-U | (10) |
|  |  | Or |  |  |
|  | (b) | Discuss the importance of scalability in the context of MOEA validation. | CO3-U | (20) |
|  |  |  |  |  |
| 4. | (a) | Discuss about the parallelization strategies for clustering techniques with MOEA  | CO4- U | (20) |
|  |  | Or |  |  |
|  | (b) | Explain various MOEA local search techniques.  | CO4- U | (20) |
|  |  |  |  |  |
| 5. | (a) | Describe the PSO (Particle Swarm Optimization) algorithm with the expressions for movement of particles with respect to global, local and personal best solutions.  | CO5- U | (10) |
|  |  | Or |  |  |
|  | (b) | Explain how MOEA algorithms are used in various engineering applications.  | CO5- U | (20) |
|  |  |  |  |  |