**20EE704/JO**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **January, 2024** | **Electrical & Electronics Engineering** | | |
| **Seventh Semester** | **Metaheuristic Techniques to Electrical Engineering** | | |
| **Time:** Three Hours | | **Maximum:** 70 Marks | |
| ***Answer question 1 compulsory.*** | | | **(14X1 = 14Marks)** |
| ***Answer one question from each unit.*** | | | **(4X14=56 Marks)** |

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| 1 | a) | Define single-objective optimization. | CO1 | L2 | 1M |
|  | b) | What are the basic variations of Evolutionary Algorithm? | CO1 | L2 | 1M |
|  | c) | What is soft computing? | CO1 | L2 | 1M |
|  | d) | State the principles of simulated annealing. | CO2 | L2 | 1M |
|  | e) | Describe Population-based metaheuristics | CO2 | L2 | 1M |
|  | f) | Write any Popular examples of P-metaheuristics | CO2 | L2 | 1M |
|  | g) | Define Evolutionary Computation | CO4 | L2 | 1M |
|  | h) | Write Neighborhood and its function. | CO2 | L2 | 1M |
|  | i) | Basic principle of Simulated annealing. | CO3 | L2 | 1M |
|  | j) | State Multiobjective optimization problem. | CO3 | L3 | 1M |
|  | k) | Differentiate Dedicated Versus General-Purpose Computers | CO3 | L2 | 1M |
|  | l) | Write an expression for objective function in the ED problem | CO4 | L2 | 1M |
|  | m) | State Artificial Bee colony algorithm | CO4 | L2 | 1M |
|  | n) | Abbreviate ABC for the OPF Problem. | CO4 | L2 | 1M |
| **Unit-I** | | | | | |
| 2 | a) | What is metaheuristics? Describe the Decision-making steps through classical process. | CO1 | L2 | 7M |
|  | b) | Enumerate Classical Optimization Models, Explain them | CO1 | L3 | 7M |
|  |  | **(OR)** |  |  |  |
| 3 | a) | Explain the Performance analysis of Meta-heuristics calibration | CO1 | L2 | 7M |
|  | b) | Describe major approaches are used for the development of metaheuristics | CO1 | L4 | 7M |
| **Unit-II** | | | | | |
| 4 | a) | Discuss simulated annealing with algorithm template. | CO2 | L4 | 7M |
|  | b) | Write the template for the Tabu search algorithm and describe the main design issues that are specific to a simple TS. | CO2 | L3 | 7M |
| **(OR)** | | | | | |
| 5 | a) | Exchange your views about Iterated Local Search Algorithm with reference frame work. | CO2 | L3 | 7M |
|  | b) | For the designing of an evolutionary algorithm, what are the main search components are required? Explain them. | CO2 | L4 | 7M |
| **Unit-III** | | | | | |
| 6 | a) | Classify the hybrid metaheuristics in terms of design issues with proper representations. | CO3 | L3 | 7M |
|  | b) | Enumerate the Implementation Issues of hybrid metaheuristics | CO3 | L4 | 7M |
| **(OR)** | | | | | |
| 7 | a) | What is meant by mining data? Talk about the traditional tasks in supervised learning for  hybrid metaheuristics. | CO3 | L4 | 7M |
|  | b) | How can knowledge be integrated into metaheuristics? Explain with suitable diagram. | CO3 | L3 | 7M |
| **Unit-IV** | | | | | |
| 8 | a) | Develop unit commitment problem solution using heuristic methods with neat flow chart. | CO4 | L3 | 7M |
|  | b) | Formulate Multi-Objective Model of Active Power Optimization for Wind Power Integrated Systems | CO4 | L3 | 7M |
| **(OR)** | | | | | |
| 9 | a) | Differential evolution in active power multi-objective optimal dispatch | CO4 | L2 | 7M |
|  | b) | Design Flowchart for Genetic Algorithm for solving Economic Load dispatch problem and explain each step. | CO4 | L2 | 7M |

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