**18EE601**

**Hall Ticket Number:**

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

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **III/IV B.Tech. (Regular/Supplementary) DEGREE EXAMINATION** | | | | | | | | | |
| **June,2022** | | | | **Electrical and Electronics Engineering** | | | | | |
| **Sixth Semester** | | | | **AI Techniques in Electrical Engineering** | | | | | |
| **Time:** Three Hours | | | | | **Maximum: 5**0 Marks | | | | |
| *Answer Question No. 1 Compulsorily.* | | | | | | (10X1 = 10 Marks) | | | |
| *Answer* ***ANY ONE*** *question from each Unit.* | | | | | | (4X10=40 Marks) | | | |
|  | | | | | |  | | | |
| 1. | a) | Define artificial intelligence. | | | | CO1 | |  |
|  | b) | What are the types of neural network architectures? | | | | CO1 | |  |
|  | c) | Give various learning methods in ANN. | | | | CO1 | |  |
|  | d) | Describe the process of defuzzification. | | | | CO2 | |  |
|  | e) | Define crisp set. | | | | CO2 | |  |
|  | f) | List some fuzzy operations. | | | | CO2 | |  |
|  | g) | What do you mean by meta heuristic techniques? | | | | CO3 | |  |
|  | h) | What are the various selection methods in GA. | | | | CO3 | |  |
|  | i) | Illustrate the applications of Neural Networks in electrical engineering. | | | | CO4 | |  |
|  | j) | What are the different AI techniques used to control speed of DC motor? | | | | CO4 | |  |
| **Unit – I** | | | | | | | | |
| 2. | a) | Explain the biological neuron with its architecture. | | | | CO1 | **5M** | |
|  | b) | Write down the advantages and disadvantages of ANN. | | | | CO1 | **5M** | |
|  |  | **(OR)** | | | |  |  | |
| 3. | a) | What are the types of radial basis function networks? And explain them with neat sketches. | | | | CO1 | **5M** | |
|  | b) | Explain reinforcement learning in detail. | | | | CO1 | **5M** | |
| **Unit – II** | | | | | | | | |
| 4. |  | Explain various fuzzy membership functions with their neat sketch. | | | | CO2 | **10M** | |
|  |  | **(OR)** | | | |  |  | |
| 5. | a) | List some advantages of fuzzy logic systems. | | | | CO2 | **4M** | |
|  | b) | With a neat sketch explain the working of Fuzzy interface system. | | | | CO2 | **6M** | |
| **Unit – III** | | | | | | | | |
| 6. | a) | Give the flowchart of Genetic Algorithm and explain. | | | | CO3 | **5M** | |
|  | b) | Describe backtracking search optimization algorithm. | | | | CO3 | **5M** | |
|  |  | **(OR)** | | | |  |  | |
| 7. |  | Explain Particle swarm optimization algorithm with its flowchart. Also give its merits and demerits. | | | | CO3 | **10M** | |
| **Unit – IV** | | | | | | | | |
| 8. |  | Explain the Meta Heuristic applications to Economic load dispatch in detail. | | | | CO4 | **10M** | |
|  |  | **(OR)** | | | |  |  | |
| 9. |  | Design fuzzy logic controller for speed control of AC motor and explain. | | | | CO4 | **10M** | |

****