**18EE601**

**Hall Ticket Number:**

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

| **IV/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| --- | --- | --- | --- |
| **July, 2021** | **Electrical & Electronics Engineering** | | |
| **Sixth Semester** | **AI Techniques in Electrical Engineering** | | |
| **Time:** Three Hours | | **Maximum:**50 Marks | |
| ***Answer question 1 compulsory.*** | | | **(10X1 = 10Marks)** |
| ***Answer one question from each unit.*** | | | **(4X10=40Marks)** |

|  |  |  | CO | BL | M |
| --- | --- | --- | --- | --- | --- |
| 1 | a) | Draw the biological neuron model. | CO1 | L1 | 1M |
|  | b) | What are the types of RBF functions? | CO1 | L1 | 1M |
|  | c) | Give various learning methods in ANN. | CO1 | L1 | 1M |
|  | d) | Describe the mean of maxima in defuzzification. | CO2 | L1 | 1M |
|  | e) | Define fuzzy set. | CO2 | L1 | 1M |
|  | f) | Mention the types of membership functions. | CO2 | L1 | 1M |
|  | g) | What do you mean by optimization? | CO3 | L1 | 1M |
|  | h) | Give the types of crossovers in GA. | CO3 | L1 | 1M |
|  | i) | Illustrate the applications of Fuzzy logic in electrical engineering. | CO3 | L1 | 1M |
|  | j) | What are the different AI techniques used to control speed of AC motor? | CO4 | L1 | 1M |
| **Unit-I** | | | | | |
| 2 | a) | What are the differences between biological neuron and artificial neuron? | CO1 | L2 | 5M |
|  | b) | Explain knowledge representation in ANN. | CO1 | L2 | 5M |
|  |  | **(OR)** |  |  |  |
| 3 | a) | What are the types of radial basis function networks? And explain them with neat sketches. | CO1 | L3 | 5M |
|  | b) | Analyze the error in prediction in case of radial basis function network. | CO1 | L2 | 5M |
| **Unit-II** | | | | | |
| 4 |  | Explain various fuzzy set operations with an example each. | CO2 | L3 | 10M |
| **(OR)** | | | | | |
| 5 | a) | Explain four major steps in fuzzy rule based model. | CO2 | L2 | 5M |
|  | b) | List out some advantages of fuzzy logic systems. | CO2 | L2 | 5M |
| **Unit-III** | | | | | |
| 6 | a) | How genetic algorithm is different from traditional algorithms? Explain. | CO3 | L2 | 5M |
|  | b) | Discuss backtracking search optimization algorithm. | CO3 | L3 | 5M |
| **(OR)** | | | | | |
| 7 | a) | Explain Teaching–learning-based optimization algorithm with its flowchart. Also give its merits and demerits. | CO3 | L2 | 10M |
| **Unit-IV** | | | | | |
| 8 | a) | Explain the application of ANN for frequency control (AGC) in Single area system in detail. | CO4 | L2 | 10M |
| **(OR)** | | | | | |
| 9 | a) | Design fuzzy logic controller for speed control of DC motor and explain. | CO4 | L2 | 10M |

