**18EE601**

**Hall Ticket Number:**

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| **III/IV B.Tech. (Regular) DEGREE EXAMINATION** | | | |
| **July, 2021** | **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) |

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

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