PAPER ID-310905

Subject Code: KOE036

Roll No: | | | | | | | | | | | | | |

**B TECH**
**(SEM-III) THEORY EXAMINATION 2020-21**
**INTRODUCTION TO SOFT COMPUTING**

***Time: 3 Hours*** ***Total Marks: 100***

**Note: 1.** Attempt all Sections. If require any missing data; then choose suitably.

**SECTION A**

**1. Attempt *all* questions in brief. 2 x 10 = 20**

| Qno. | Question | Marks | CO |
|---|---|---|---|
| a. | What do you understand by Artificial Intelligence? | 2 | 1 |
| b. | What is Single layer perception? | 2 | 1 |
| c. | Explain Fuzzy sets. | 2 | 2 |
| d. | Differentiate soft computing and hard computing. | 2 | 2 |
| e. | Discuss analog simulation. | 2 | 3 |
| f. | What do you understand by Neuro Fuzzy controls? | 2 | 3 |
| g. | What is need of mutation in Genetic Algorithm? | 2 | 4 |
| h. | Explain Fitness Computations. | 2 | 4 |
| i. | What do you understand by Genetic Algo? | 2 | 5 |
| j. | What does MATLAB stand for? | 2 | 5 |

**SECTION B**

**2. Attempt any *three* of the following: 10 x 3 = 30**

| Qno. | Question | Marks | CO |
|---|---|---|---|
| a. | What do you understand by Artificial Neuron model? Discuss with the help of any suitable Example. | 10 | 1 |
| b. | Discuss Fuzzy relation and fuzzy sets in detail. | 10 | 2 |
| c. | What is role of classification and regression tress in Neuro– Fuzzy modeling? Discuss. | 10 | 3 |
| d. | What is Rank method? Discuss in detail. | 10 | 4 |
| e. | Discuss five feature of MATLAB and explain why it is more popular. | 10 | 5 |

**SECTION C**

**3. Attempt any *one* part of the following: 10 x 1 = 10**

| **Qno.** | **Question** | **Marks** | **CO** |
|---|---|---|---|
| a. | Discuss the Hopfield Network in detail with the help of example. | 10 | 1 |
| b. | What is Self Organizing Map algorithm? Explain Kohonen's networks in detail | 10 | 1 |

**4. Attempt any *one* part of the following: 10 x 1 = 10**

| Qno. | Question | Marks | CO |
|---|---|---|---|
| a. | What are Fuzzy functions? Discuss the different type of fuzzy functions. | 10 | 2 |
| b. | What is fuzzy approach? Discuss the fuzzy decision approach in detail. | 10 | 2 |

**5. Attempt any *one* part of the following: 10 x 1 = 10**

| Qno. | Question | Marks | CO |
|---|---|---|---|
| a. | What do you understand by Clustering? Discuss K–Means algo in detail with the help of suitable example. | 10 | 3 |
| b. | What is Neuro Fuzzy Control? What are the drawbacks of fuzzy logic and neural networks? | 10 | 3 |

**6. Attempt any *one* part of the following: 10 x 1 = 10**

| Qno. | Question | Marks | CO |
|---|---|---|---|
| a. | How will you say that Genetic Algorithms perform better result as compared to traditional approaches? Discuss in detail. | 10 | 4 |
| b. | How do you define fitness function and how do you calculate fitness value? | 10 | 4 |

**7. Attempt any *one* part of the following: 10 x 1 = 10**

| Qno. | Question | Marks | CO |
|---|---|---|---|
| a. | What do you understand by Genetic representations? Discuss in detail with some example. | 10 | 5 |
| b. | Explain briefly: (i) Genetic algorithm-based internet search technique. (ii) Hybrid fuzzy Controller | 10 | 5 |