PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

MAKE UP END TERM EXAMINATION

Semester: 2022 - 23

Course Code: MEC 3013

Course Name: Soft Computing Techniques

Program & Sem: B.Tech – MECH

Date: 24-01-2023

Time: 01:00 PM to 04:00 PM

Max Marks: 100

Weightage:50%

Instructions:
(i) Read all the questions carefully and answer accordingly.
(ii) Scientific calculators are permitted
(iii) You are not permitted to share dictionaries, calculators or any other materials during the examination.

Part A [Memory Recall Questions]

Answer all the Questions. Each question carries five marks.   **(6Qx 5M= 30M)**

1. Write the classification of Soft Computing.   (C.O.No.1) [Knowledge]
2. What are fuzzy numbers. Explain with examples.   (C.O.No.1) [Knowledge]
3. What do you mean by Genetic Algorithm?   (C.O.No.2) [Knowledge]
4. What do you mean by Artificial Intelligence?   (C.O.No.3) [Knowledge]
5. What is the architecture of Fuzzy logic.   (C.O.No.4) [Knowledge]
6. What are the application of ANNs.   (C.O.No.3) [Knowledge]

Part B [Thought Provoking Questions]

Answer all the Questions. Each question carries ten marks.   **(4Qx10M=40M)**

7. A sigmoid function is a mathematical function having a characteristic "S"-shaped curve or sigmoid curve. Examine the various aspects of sigmoidal activation function. List the drawbacks.
(C.O.No.2) [Comprehension]
8. The activation function decides whether a neuron should be activated or not by calculating the weighted sum and further adding bias to it. List any four activation functions with their equations and graphs.   (C.O.No.1) [Comprehension]
9. Explain the working of back propagation neural network with neat architecture and flowchart.
(C.O.No.4) [Comprehension]
10. With a neat sketch explain the operation (Training and Testing) of recurrent neural network.
(C.O.No.3) [Comprehension]

Part C [Problem Solving Questions]

Answer all the Questions. Each question carries fifteen marks. **(2Qx15M=30M)**

11. Explain in detail the Biological Neuron and the Artificial Neuron. What are the similarities and differences between them? (C.O.No.3) [Application]

12. (a) Briefly explain the use of GA assuming an application in daily life.
    (b) Using MATLAB Neural Network Tool Box, discuss how will you identify and control the linear and non-linear dynamic system. (C.O.No.4) [Application]