

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION MO/SP20**)**

**CLASS: MCA
BRANCH: MCA**

**SEMESTER III
SESSION : MO/2022**

SUBJECT: CA515 SOFT COMPUTING

TIME: 03 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates
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| Q.1(a) | Distinguish between Hard Computing and Soft Computing. (CO1) (BT-4) | [2] |
| Q.1(b) | Differentiate Genetic Algorithm from traditional optimization techniques. (CO1) (BT-4) | [3] |
| Q.1(c) | Identify and illustrate five areas where neural network has good scope.(CO1)(BT-3) | [5] |
| Q.2(a) | Analyze the significance of linguistic variables using suitable example. (CO2) (BT-4) | [2] |
| Q.2(b) | Illustrate Max-Min Composition using suitable example. (CO2) (BT-2) | [3] |
| Q.2(c) | Distinguish between the 'Centroid method' and 'Centre of Sums method' of Defuzzification using suitable graphical interpretations. (CO2) (BT-4) | [5] |
| Q.3(a) | Analyze the nature of Evolutionary computing algorithms. (CO3) (BT-4) | [2] |
| Q.3(b) | Construct a flow-chart for Simple Genetic Algorithm (CO3) (BT-3) | [3] |
| Q.3(c) | Solve a suitable GA Selection problem using Roulette Wheel method. Also analyze it using diagram. (CO3) (BT-3) | [5] |
| Q.4(a) | Show the functioning of biological neurons using diagram. (CO4) (BT-2) | [2] |
| Q.4(b) | Interpret various Sigmoidal Functions for Activation using graphs (CO4) (BT-5) | [3] |
| Q.4(c) | Build and explain an architecture for Multi-layer recurrent network. (CO4) (BT-3_) | [5] |
| Q.5(a) | Draw an architecture of a Perceptron network. (CO5) (BT-3) | [2] |
| Q.5(b) | Analyze through numerical example to show how the values of weights and threshold are determined in M-P neuron architecture. (CO5) (BT-4) | [3] |
| Q.5(c) | Illustrate the functioning of Back-Propagation Neural Network using suitable example inputs. (CO5) (BT-2) | [5] |

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