Graphic Era HILL UNIVERSITY
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University under section 2(f) of UGC Act, 1956

Term Evaluation (Odd) Semester Examination September 2025

Roll no.....

Name of the Course: BCA AI &DS
Semester: III
Name of the Paper: Introduction to Soft Computing
Paper Code: TBD 311

Time: 1.5 hour **Maximum Marks: 50**

Note:
(i) Answer all the questions by choosing any one of the sub-questions
(ii) Each question carries 10 marks.

Q1. (10 Marks)

a. Explain the concept of Soft Computing. How does it differ from traditional computing approaches? Give suitable examples. (CO 1)

OR

b. Justify the need of Soft Computing in modern technological developments. Explain situations where Soft Computing is more effective than conventional computing. (CO 1)

Q2. (10 Marks)

a. Discuss in detail the applications of Soft Computing. (CO 2)

OR

b. Define and explain the following terms in the context of ANN: (CO 2)
(i) Weight
(ii) Bias
(iii) Learning rate
(iv) Epoch

Q3. (10 Marks)

a. Compare a biological neuron with an artificial neuron. Highlight similarities and differences in structure and functioning with a neat diagram. (CO 1)

OR

b. What is the activation function? Explain the several activation functions used in ANNs. (CO 2)

Q4. (10 Marks)

a. Explain the Hebb learning rule for a neural network with the help of a flowchart and training algorithm. (CO 2)

OR

c. What is the Perceptron network? Discuss the key points of the perceptron network. Draw the flow chart for a perceptron network with a single output. Discuss the algorithm of the perceptron network. (CO 2)

Q5. (10 Marks)

a. Explain the McCulloch-Pitts (MP) neuron model with its architecture, working, and limitations. Illustrate with an example of implementing a logical gate. (CO 1)

OR

b. Implement the AND function using perceptron networks for bipolar inputs and targets. (CO 2)