Computer Science [Honours]

[CBCS]

B.Sc. Fifth Semester End Examination-2023

(Regular & Supplementary Paper)

PAPER-DSE2T

Machine learning

Full Marks: 40 ***Time: 02 Hrs***

The figures in the right hand margin indicate marks
Candidates are required to give their answers in their own words as far as practicable
Illustrate the answers wherever necessary

Group A

1) Answer any FIVE questions of the following: 5x2= 10

a) What is the role Bias in Artificial Neural Network?

b) Explain the difference between Classification and Regression.

c) What is Binomial Classification and Multinomial Classification.

d) Explain overfitting briefly with suitable example.

e) How supervise learning is different from unsupervised learning?

f) Explain binary step function.

Group B

Answer any FOUR questions of the following: 4x5 = 20

2) What are three stages to build the hypotheses or model in Machine learning? What is 'Training set' and 'Test set'? 2+3

3) What is Artificial Neural Network? Compare between biological and artificial neuron. 2+3

4) Why does a single perceptron cannot simulate simple XOR function? Explain. 5

5) Explain R2 score in case of regression. Calculate the dissimilarity between two data points x1(2,3,4) and x2(4,3,5) Using Euclidian Distance (b) Manhattan Distance 2+3

6) What is the difference between forward propagation and backward propagation?

7) Explain the evaluation metrics in regression of Machine learning algorithm? What is the loss function of linear regression? 4+1

Group C

Answer any ONE question of the following: 1x10 = 10

8) a) Generate frequency table and likelihood table from the table given below and also justify the statement "Players will play if weather is sunny". Is this statement is correct?

Weather	Play
Sunny	No
Overcast	Yes
Rainy	Yes
Sunny	Yes
Sunny	Yes
Overcast	Yes
Rainy	No
Rainy	No
Sunny	Yes
Rainy	Yes
Sunny	No
Overcast	Yes
Overcast	Yes
Rainy	No

b) What do you mean by Gradient Descent? Derive the Gradient Descent Rule. 5+2+3

9) a) What do you mean by feature engineering? Explain different techniques of features extraction and selection.

b) What is the purpose of Activation Function? Explain sigmoid function and its application. 2+3+2+3
