Registration No.:_____

Paper Code:A

Course Code:INT254

Course Title:FUNDAMENTALS OF MACHINE LEARNING

Time Allowed: 01:30hrs. *Max Marks: 40*

Read the following instructions carefully before attempting the question paper

1. *This question paper is divided into two parts A and B.*
2. *Part A contains 5 questions of 2 marks each. All questions are compulsory.*
3. *Part B contains 3 questions of 10 marks each. All questions are compulsory.*
4. *Answer all questions in serial order.*
5. *Do not write or mark anything on the question paper and/or on rough sheet(s) which could be helpful to any student in copying, except your registration number on the designated space.*

Q1.

Part-A

(a)

Suppose that the eigenvalues of matrix A are $1, 2, 4$. The determinant of $(A^{-1})^T$ is _____.

CO1, L1, [2 marks]

(b)

Write a python program to read the data using pandas and drop the column where the 2 null values are present.

CO2, L2, [2 marks]

(c) Visualize the positively correlated and negatively correlated by plotting the correlation Matrix.

CO2, L2, [2 marks]

(d) Write the steps of PCA.

CO2, L2, [2 marks]

(e) What is Dimensionality Reduction? Explain the significance of Dimensionality Reduction.

CO2, L2, [2 marks]

Part-B

Q2) Consider the following simultaneous equations to find the value of x1, x2 and x3 by using Matrices method.

i. x1+x2+x3=3 (ii) x1-x2=1 (iii) x1-x2+x3=1

Find the inverse of A where A will be as above system of equations.

CO1, L1, [10 marks]

Q3)

Explain any two methods to handle missing values and fill the null values of column [A] with the previous value of the same column and column[C] with the coming value of the next column. Explain it with the help of the program.

Dataset

A	B	C	D	E
10	30	5	5	6
6	7	-	8	7
-	0	9	7	7
1	7	5	4	6
-	6	-	7	5
Nan	6	Nan	6	6
3	5	7	8	8
4	6	4	7	9
-	8	8	6	5

Q4) What is the need of PCA explain with examples?

CO2, L2, [10 marks]

CO2, L2, [10 marks]

—End of Question paper—