

Mid Semester Examination

2023

Name of the program: MCA

Name of the course: Machine Learning with Python

Time : 1-1/2 Hour

Note:

Semester: 2

Course Code: TMC-205

Maximum Marks: 50

- i. Answer all the questions by choosing any one of the subquestions.
- ii. Each question carries 10 marks.

Q1.	10 marks	CO1															
(a) Define the Machine Learning concept with a list of any five real-life applications of the Machine Learning. Normalize the following data using min-max normalization technique: $x=[7,12,15,23]$																	
Q2.	10 marks	CO1															
(b) The following grouped frequency distribution gives the annual wages of 200 employees in an engineering firm. Calculate mean, median, mode, Standard Deviation, Co-Variance, Correlation Co-Efficient of annual wages.																	
<table><tr><th>Wages Rs.</th><th>Number of employees</th></tr><tr><td>5000 and less than 5500</td><td>4</td></tr><tr><td>5500 and less than 6000</td><td>26</td></tr><tr><td>6000 and less than 6500</td><td>133</td></tr><tr><td>6500 and less than 7000</td><td>35</td></tr><tr><td>7000 and less than 7500</td><td>2</td></tr></table>			Wages Rs.	Number of employees	5000 and less than 5500	4	5500 and less than 6000	26	6000 and less than 6500	133	6500 and less than 7000	35	7000 and less than 7500	2			
Wages Rs.	Number of employees																
5000 and less than 5500	4																
5500 and less than 6000	26																
6000 and less than 6500	133																
6500 and less than 7000	35																
7000 and less than 7500	2																
Also calculate the Z-test and t-Test score to evaluate the type of dataset given.																	
Q3.	10 marks	CO2															
(a) A Bank wants to decide whether a customer can be given a loan based on the two features related to the monthly salary of the customer and their account balance. So the model is based on two features where inputs range from 0 and 1 and y also has binary output of 0 and 1. Which regression model is best suited here.																	
<table><tr><th>X1</th><th>X2</th><th>Y</th></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>1</td><td>1</td></tr></table>			X1	X2	Y	0	0	0	0	0	1	0	1	0	1	1	1
X1	X2	Y															
0	0	0															
0	0	1															
0	1	0															
1	1	1															
Q4.	10 marks	CO2															
(a) Based on feed Forward Neural Network, predict if it's raining or not when following details have been given : three inputs : x1, x2 and x3 x1 - day/night																	

x2 - temperature x3 - month Let's assume the threshold value to be 25, and if the output is higher than 25 then it will be raining, otherwise it's a sunny day. Given a data tuple with inputs (x1, x2, x3) as (0, 12, 11), initial weights of the feedforward network (w1, w2, w3) as (0.1, 1, 1) and biases as (1, 0, 0).		
Q5.	10 marks	
(a) Briefly describe the KNN. Would you use KNN for large datasets.		CO2