Shiv Nadar University Chennai

Mid Semester Examinations 2024-2025 Odd

Question Paper

Name of the Program: BTech AI & DS	Semester: 3
Course Code & Name: CS2009 Exploratory Data Analysis and Data Visualization	
Regulation 2021	
Time: 2 Hours	Answer All Questions	Maximum: 50 Marks

Q.No.		Questions	Marks	CO	KL
1	a	Write the python program to apply KNNImputer (number of neighbors=2). on the matrix [[1, 2, np.nan], [3, 4, 3], [np.nan, 6, 5], [8, 8, 7]]. Here np is numpy. What is the corresponding output of the code?	4+2=6	CO1	KL3
	b	Explain the transformation function of formula applied by Standardscaler on a dataset. Write the code and expected output to apply standardscaler on the matrix [[0, 0], [0, 0], [1, 1], [1, 1]]	2.5+3+2.5=8	CO1	KL3
	c	Write the code and expected output for applying OrdinalEncoder to the given matrix [['male', 'from US', 'uses Safari'], ['female', 'from Europe', 'uses Firefox']]	4+2=6	CO1	KL3
2	a	Explain the concept of violin plot. Draw a comparison between the boxplots and violin plots of a bimodal distribution, uniform distribution and normal distribution.	2+3=5	CO2	KL2
	b	Define machine learning. What is the difference between supervised learning and reinforcement learning.	2+3=5	CO4	KL2
	c	Explain the assumptions of linear regression.	5	CO4	KL1
3	a	While classifying few images, the predicted output and actual output was obtained as follows: Index 1 2 3 4 5 6 7 8 9 10 Actual: Dog, Dog, Dog, Not Dog, Dog, Not Dog, Dog, Dog, Not Dog, Not Dog Predicted: Dog, Not Dog, Dog, Not Dog, Dog, Dog, Dog, Dog, Not Dog, Not Dog Draw the corresponding confusion matrix. Calculate the accuracy, precision, recall and F1-score for the same.	2.5+2.5=5	CO4	KL4
	b	Draw and explain the logistic function. Explain why do we need ridge regression in some cases instead of OLS linear regression.	2+4=6	CO4	KL2

	c	What is the curse of dimensionality? Explain how dimensionality can be reduced with a specific technique for the same.	2+2=4	CO4	KL2

KL – Bloom's Taxonomy Levels
(KL1: Remembering, KL2: Understanding, KL3: Applying, KL4: Analyzing, KL5: Evaluating, KL6: Creating)
CO – Course Outcomes