U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

July 2023 Semester End Main Examinations

Programme: B.E. **Semester: VI**
Branch: ES – Cluster Elective **Duration: 3 hrs.**
Course Code: 19ET6CE1DS **Max Marks: 100**
Course: Data Science **Date: 19.07.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

			UNIT - I	CO	PO	Marks
1	a)	Define data science. List out various data structures used in python.	*CO2*	*PO1*	**05**
	b)	List the features available in regular expression and explain their use in python with an example code.	*CO2*	*PO1*	**07**
	c)	Demonstrate exception handling in python with respect to the following (a) try (b) except (c) raise (d) finally	*CO2*	*PO1*	**08**
		UNIT - II			
2	a)	Define the central tendency in data distribution. Elaborate on the given parameters giving an example of each. a. Mean b. Median c. Mode d. Quantile	*CO2*	*PO1*	**08**
	b)	What is an outlier? What are the causes for outliers in a dataset? Explain with an Example.	*CO1*		**06**
	c)	Write the Expression of normal distribution and write a python code to implement normal distribution.	*CO4*	*PO3*	**06**
		UNIT - III			
3	a)	What is Gradient Descent? Explain the estimation of gradient using python codes with respect to Partial difference quotient.	*CO3*	*PO2*	**10**
	b)	Demonstrate PCA using a suitable python code.	*CO4*	*PO3*	**10**

			UNIT - IV			
	4	a)	Describe the steps involved in KNN algorithm. What are the Pros and Cons of KNN?	*CO3*	*PO2*	**10**
		b)	Write suitable functions in python to achieve the following parameters in confusion matrix. (i) Accuracy (ii) Precision (iii) Recall (iv) F1 Score	*CO3*	*PO2*	**10**
			OR			
	5	a)	Discuss the working of Naive Bayes classifier with necessary equations.	*CO3*	*PO2*	**10**
		b)	Write a python code to demonstrate simple linear regression.	*CO4*	*PO3*	**10**
			UNIT - V			
	6	a)	Briefly explain Logistic Regression algorithm and illustrate the relation between logit and sigmoid.	*CO4*	*PO3*	**10**
		b)	The (x, y) coordinates of few points in 2 dimensional space belonging to 2 different class groups are as given below. Here x is the point along x axis and y is the point along y axis. Class 1: (1,1), (2,1), (1,-1), (2,-1) Class 2: (4,0), (5,1), (5,-1), (6,0) a. Plot the points on a 2-D plane with different representations for class1 & class2. b. Identify the support vectors c. Estimate the hyper plane coefficients α with respect to each support vector	*CO4*	*PO3*	**10**
			OR			
	7	a)	What is a decision tree? Explain with the help of an example. Also bring out the role of entropy in decision trees.	*CO4*	*PO3*	**10**
		b)	Answer the following with respect to Neural Network: a. Draw the block diagram of ANN and describe how the ANN learns? b. Perceptron Model c. Write a python function to implement a perceptron model.	*CO4*	*PO3*	**10**

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