Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (NEW) EXAMINATION – SUMMER 2024

Subject Code:3144301 Date:18-07-2024

Subject Name: Data Science for Humanity

Time:10:30 AM TO 01:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

Q.1	**(a)**	Define business analytics and explain the use of it	**03**
	(b)	Define Following Terms: 1.Entropy 2.Percentile 3.Population 4.Quartiles	**04**
	(c)	Compare and Contrast Descriptive Analytics, Diagnostic, Analytics, Predictive Analytics, and Prescriptive Analytics withsuitable examples.	**07**
Q.2	**(a)**	Differentiate between Parameter and Statistic. What is the role ofinferential statistics?	**03**
	(b)	What is the relationship between PDF and CDF of a continuous random Variable?	**04**
	(c)	For what purpose analytics process is used? Explain various types of Analytical techniques with examples.	**07**
		OR	
	(c)	Demonstrate the Logistic Regression Model's diagnostics in terms of Classification Table, Sensitivity, and Specificity.	**07**
Q.3	**(a)**	How do you find the standard error of a point estimate?	**03**
	(b)	What does the central limit theorem say? Where is it applicable?	**04**
	(c)	What are various means for measures of position and measures of variability. Explain three of each.	**07**
		OR	
Q.3	**(a)**	Explain following terms: 1. Cumulative Distribution Function (CDF) 2. Normal Distribution 3. Probability Mass Function	**03**
	(b)	Differentiate Stratified Sampling and Cluster Sampling	**04**
	(c)	Explain Binomial Distribution and Poisson Distribution.	**07**
Q.4	**(a)**	How are the correlations and relationships related to each other?	**03**
	(b)	What are the advantages and disadvantages of regression models?	**04**
	(c)	Explain a case study for classification using a decision tree.	**07**
		OR	
Q.4	**(a)**	What is Weight and Bias Tradeoff in Linear Regression?	**03**
	(b)	How do you calculate maximum likelihood estimation?	**04**
	(c)	Explain Random Forest method.	**07**
Q.5	**(a)**	What is sampling distribution and why is it important?	**03**
	(b)	Explain the least squares and the fitted model in concern of a linear regression.	**04**
	(c)	How to Build Decision Tree, given a dataset?	**07**
		OR	
Q.5	**(a)**	Discuss the term Bagging	**03**
	(b)	Compare linear regression vs. Logistic regression.	**04**
	(c)	Explain Accuracy, Precision , Recall, F1-Score using any Confusion Matrix	**07**

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