

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2022****Subject Code:3151608****Date:04-01-2023****Subject Name:Data Science****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.

	MARKS
Q.1 (a) Why business Analytics is important in now a day?	03
(b) Differentiate Cross-Sectional, Time Series, and Panel Data.	04
(c) Explain descriptive, predictive and prescriptive analytics in detail .	07
Q.2 (a) Define with example Nominal Scale, Ordinal Scale and Interval Scale.	03
(b) What are the differences between supervised and unsupervised learning?	04
(c) Explain significance of Histogram, Skewness and Kurtosis in data analytics.	07
OR	
(c) What is Probability Distribution function? Explain Uniform Distribution, Normal Distribution, and Exponential Distribution with suitable scenarios.	07
Q.3 (a) Explain Central Limit Theorem	03
(b) As only 3 students came to attend the class today, find the probability for exactly 4 students to attend the classes tomorrow.	04
(c) Explain Ensemble Method.	07
OR	
Q.3 (a) Give the difference between Probabilistic Sampling and Non-Probability Sampling.	03
(b) If a coin is tossed 5 times, find the probability of:	04
(a) Exactly 2 heads	
(b) At least 4 heads.	
(c) Explain Random Forest method.	07
Q.4 (a) Explain Chi-Square Automatic Interaction Detection (CHAID) in detail.	03
(b) How do you calculate maximum likelihood estimation?	04
(c) Find the least square regression line for the following set of data	07
$\{(-1, 0), (0, 2), (1, 4), (2, 5)\}$	
b) Plot the given points and the regression line in the same rectangular system of axes.	
OR	
Q.4 (a) What is Outlier Analysis explain in detail.	03
(b) Compare linear regression vs. Logistic regression.	04

- (c) Consider the following set of points: $\{(-2, -1), (1, 1), (3, 2)\}$ **07**
a) Find the least square regression line for the given data points.
b) Plot the given points and the regression line in the same rectangular system of axes.
- Q.5** (a) Explain significance of GINI impurities in splitting dataset. **03**
(b) Explain pros and cons of Decision Tree algorithm. **04**
(c) Explain Decision tree algorithm with suitable example. **07**
- OR**
- Q.5** (a) Which classification algorithm is preferable when numbers of records are very large, random forest/ decision tree? Justify your answer. **03**
(b) Which are the different matrices to select best model for Classification Problems? **04**
(c) How decision tree and random forest algorithm can be compared on various performances attributes? **07**
