



# PRESIDENCY UNIVERSITY

BENGALURU

Roll No.														
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## End - Term Examinations – MAY 2025

Date: 27-05-2025

Time: 09:30 am – 12:30 pm

School: SOCSE	Program: B. Tech (CSD)	
Course Code: CSE3036	Course Name: Predictive Analytics	
Semester: VI	Max Marks: 100	Weightage: 50%

CO - Levels	C01	C02	C03	C04
Marks	26	26	24	24

### Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.

### Part A

Answer ALL the Questions. Each question carries 2marks.

10Q x 2M=20M

1.	Define analytics and explain its importance in modern business.	2 Marks	L1	C01
2.	List four applications of predictive analytics across different industries.	2 Marks	L1	C01
3.	What are the key challenges faced in implementing analytics solutions?	2 Marks	L1	C01
4.	Define propensity models and mention their key applications.	2 Marks	L1	C02
5.	What is collaborative filtering and where is it commonly used?	2 Marks	L1	C02
6.	Differentiate between univariate and multivariate statistical analysis.	2 Marks	L2	C02
7.	Differentiate between supervised and unsupervised learning methods.	2 Marks	L2	C03
8.	What is cross-validation and why is it important?	2 Marks	L1	C03
9.	Define time series analysis and its main components.	2 Marks	L1	C04
10.	What is the difference between ARMA and ARIMA models?	2 Marks	L1	C04

## Part B

### Answer the Questions.

**Total Marks 80M**

11.	a.	Explain the concept of analytics, its importance in today's business environment, and discuss how it aids in strategic decision-making with relevant examples.	10 Marks	L2	CO1
	b.	Describe the various applications of predictive analytics across different industry sectors. Provide detailed case studies to illustrate successful implementations.	10 Marks	L2	CO1
<b>Or</b>					
12.	a.	Illustrate the major challenges faced by organizations in implementing analytics solutions and suggest approaches to overcome these challenges.	10 Marks	L3	CO1
	b.	Demonstrate the evolution of analytics as a field and explain why it has gained such popularity among businesses in the past decade. Include industry experts' perspectives in your answer.	10 Marks	L3	CO1
13.	a.	Explain the concept of propensity models in detail, discussing their types, applications, and methodology for development with appropriate examples.	10 Marks	L2	CO2
	b.	Illustrate the working principles of collaborative filtering systems. Compare and contrast user-based and item-based collaborative filtering approaches with examples.	10 Marks	L3	CO2
<b>Or</b>					
14.	a.	Describe the complete process of cluster modeling, including different algorithms, evaluation methods, and business applications. Illustrate with a case study.	10 Marks	L2	CO2
	b.	Explain univariate and multivariate statistical analysis techniques. Compare their methodologies, applications, and limitations in the context of predictive analytics.	10 Marks	L2	CO2
15.	a.	Compare and contrast supervised and unsupervised learning methods in detail, providing examples of algorithms from each category and their appropriate applications.	10 Marks	L2	CO3
	b.	Discuss the importance of cross-validation in model selection. <b>Explain</b> different cross-validation techniques and how they help in building robust predictive models.	10 Marks	L2	CO3
<b>Or</b>					
16.	a.	Apply the bias-variance trade-off in predictive modeling. How does this concept influence model complexity and what strategies can be employed to find the optimal balance?	10 Marks	L3	CO3
	b.	Explain the various performance metrics used for evaluating regression models. Discuss their calculations, interpretations, and situations where each would be most appropriate.	10 Marks	L2	CO3
17.	a.	Demonstrate a comprehensive explanation of ARMA, ARIMA, and ARFIMA models, including their mathematical formulations, assumptions, and applications in predictive analytics.	10 Marks	L3	CO4
	b.	Apply the Box-Jenkins methodology for time series modeling. Discuss each step in detail with examples of practical implementation.	10 Marks	L3	CO4

**Or**

<b>18.</b>	<b>a.</b>	Demonstrate the python program for predicting house price using machine learning method.	<b>10 Marks</b>	<b>L3</b>	<b>C04</b>
	<b>b.</b>	Demonstrate the python program for predicting buying behavior for people interested in buying in car and whether or not they bought the car.	<b>10 Marks</b>	<b>L3</b>	<b>C04</b>