PRACTICE SET
End Semester Examination, Spring- 2026

Program: BCA
Semester: VI
Subject: Data Analytics
Subject Code: 3CCC306

Course Outcome:
On the completion of the Course, the students will be able to:

Course Outcomes	Description
CO1	Explain different types of data analytics, distinguish between structured and unstructured data, and outline the data analytics lifecycle and data collection methods.
CO2	Apply data cleaning, preprocessing, and exploratory data analysis techniques using tools such as Excel and Python (Pandas, Matplot lib / Seaborn).
CO3	Perform basic statistical analysis including measures of central tendency and dispersion, and apply correlation, regression, and hypothesis testing concepts. .
CO4	Create dashboards and visualize data effectively using Power BI/Tableau, and interpret insights through case-based storytelling.

1. **Section A : 10 Marks Question covering All units (Total No. of questions 30)**
2. **Section B : 20 Marks Question covering All units (Total No. of questions 10)**

UNIT I
Section A (10 marks)

1. Define Data Analytics. Explain its importance in modern decision-making with suitable examples. **(COI, Remember)**
2. List and describe the different types of Data Analytics. Provide one example for each type. **(COI, Remember)**
3. What is Structured Data? Explain its characteristics and give examples from real-world applications. **(CO1, Remember)**
4. What is Unstructured Data? Discuss its features and challenges in analysis. **(CO1, Remember)**

5. List various sources of data collection and briefly explain each. **(CO 1, Remember)**
6. Explain Descriptive and Diagnostic Analytics in detail. Highlight their differences with examples. **(COI, Understand)**
7. Differentiate between Structured and Unstructured Data with a comparison table and examples. **(COI, Understand)**
8. Explain Predictive Analytics and describe how it helps organizations make future decisions. **(COI, Understand)**
9. Discuss various applications of Data Analytics in business, healthcare, and social media. **(COI, Understand)**
10. Explain the Data Analytics Lifecycle. Describe each stage with a neat diagram. **(COI, Understand)**

Section B (20 marks)

11. A company collects customer data from multiple sources. Classify the data as structured or unstructured and justify your answer with examples. **(CO1, Apply)**
12. Apply the Data Analytics Lifecycle to analyze social media trends and explain each stage with an example. **(CO1, Apply)**
13. Design a data collection strategy for a student feedback system using files, APIs, forms, and surveys. Justify your choices. **(CO1, Apply)**
14. Explain how predictive analytics can be applied in healthcare to improve patient outcomes. Illustrate with a practical example. **(CO1, Apply)**

UNIT II

Section A (10 marks)

15. Define Data Cleaning and explain its importance in data analysis. **(CO2, Remember)**
16. List different techniques used in data preprocessing. Briefly explain each. **(CO2, Remember)**
17. What is missing data? List different types of missing data. **(CO2, Remember)**
18. Define Exploratory Data Analysis (EDA) and list its key components. **(CO2, Remember)**
19. Explain various methods of handling missing data with suitable examples. **(CO2, Understand)**
20. Discuss the process of duplicate data removal and its importance in data preprocessing. **(CO2, Understand)**
21. Explain encoding techniques and normalization in detail with examples. **(CO2, Understand)**
22. Explain summary statistics used in EDA (mean, median, standard deviation, etc.) and their significance. **(CO2, Understand)**
23. Describe different types of data visualization techniques. **(CO2, Understand)**

Section B (20 marks)

24. Demonstrate how missing data can be handled using Excel or Python (Pandas) with an example. **(CO2, Apply)**
25. Apply duplicate removal and normalization techniques on a given dataset and explain the steps involved. **(CO2, Apply)**

ID	Name	Email	Phone	City
1	Rahul Sharma	rahul@gmail.com	9876543210	Ranchi
2	rahul sharma	RAHUL@gmail.com	9876543210	ranchi
3	Anjali Singh	anjali@gmail.com	9123456780	Jamshedpur
4	ANJALI SINGH	anjali@gmail.com	9123456780	jamshedpur
5	Vikash Kumar	vikash@gmail.com	9988776655	Dhanbad
6	Vikash Kumar	vikash123@gmail.com	9988776655	Dhanbad
7	Pooja Verma	pooja@gmail.com	9001122334	Bokaro
8	Pooja Verma	pooja@gmail.com	9001122334	Bokaro
9	Amit Das	amit@gmail.com	8899776655	Ranchi
10	Amit Das	amit@gmail.com	8899776655	Ranchi

26. Using Python (Pandas), perform encoding of categorical data and explain the process with an example. **(CO2, Apply)**

UNIT III
Section A (10 marks)

27. Define Mean, Median, and Mode. Explain each with suitable examples. **(CO3, Remember)**
28. What is Standard Deviation? Write its formula and explain its significance in data analysis. **(CO3, Remember)**
29. Define Hypothesis Testing. What are Null Hypothesis and Alternative Hypothesis? **(CO3, Remember)**
30. Explain the differences between Mean, Median, and Mode. When is each measure most appropriate? **(CO3, Understand)**
31. Explain the concept of Standard Deviation and how it reflects the variability of a dataset. **(CO3, Understand)**
32. Describe the steps involved in Hypothesis Testing with a suitable example. **(CO3, Understand)**
33. Explain the concept of Correlation. Differentiate between positive, negative, and zero correlation with examples. **(CO3, Understand)**

Section B (20 marks)

34. Calculate Mean, Median, and Mode for a given dataset and interpret the results. **(CO3, Apply)**

    Dataset 1: **45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 75, 80, 75**

    Dataset II: **Monthly Income (₹):**
    15000, 18000, 20000, 22000, 25000, 30000, 30000, 32000, 35000, 40000

35. Given a dataset, compute the Standard Deviation and explain what the result indicates about data dispersion. **(CO3, Apply)**

    Test Scores out of 100
    60, 65, 70, 70, 75, 80, 85, 90, 95, 100

36. Apply Hypothesis Testing to determine whether a new teaching method improves student performance. Clearly state assumptions and conclusions. **(CO3, Apply)**
37. Explain Regression analysis and analyze how it can be used to predict outcomes in real-world scenarios. **(CO3, Analyze)**

UNIT IV
Section A (10 marks)

38. Explain the fundamentals of Data Visualization and discuss the importance of dashboarding in decision-making. Illustrate with a neat diagram. **(CO4, Understand)**
39. Describe the features and working of tools like Power BI and Tableau. Compare their advantages and limitations in data reporting. **(CO4, Analyze)**

Section B (20 marks)

40. Analyze a retail dataset and explain how dashboards can be used to identify trends, patterns, and business insights. **(CO4, Analyze)**

Summary Sheet

CO Wise

CO	Q. No	Marks
CO1	1,2,3,4,5,6,7,8,9,10,11,12,13,14	180
CO2	15,16,17,18,19,20,21,22,23,24,25,26	150
CO3	27,28,29,30,31,32,33,34,35,36,37	150
CO4	38,39,40	40
Total		**520**

Unit Wise

Unit	Q. No	Marks
Unit 1	1,2,3,4,5,6,7,8,9,10,11,12,13,14	180
Unit 2	15,16,17,18,19,20,21,22,23,24,25,26	150
Unit 3	27,28,29,30,31,32,33,34,35,36,37	150
Unit 4	38,39,40	40
Total		**520**

Blooms Taxonomy Level (BTL) Wise

BTL	Q. No	Marks
LOT	1,2,3,4,5,6,7,8,9,10,11,12,13,14.15.16.17.18.19.20.21.22. 23.24.25.26.27.28.29.30.31.32.33.34.35.36.38	460
HOT	37,39,40	60
Total		

Prepared By: Dr. Binod Kumar

Disclaimer: -This is a Practice set. The Question in End term examination will differ from the Practice set. This Practice set is meant for practice only.