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Printed Page:-4 **Subject Code:- BMBABA0311**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)
MBA
SEM: III - THEORY EXAMINATION (2025 - 2026)
Subject: Introduction to Data Science

Time: 3 Hours **Max. Marks: 100**

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*

1. *This Question paper comprises of* ***three Sections -A, B, & C.*** *It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.*

2. *Maximum marks for each question are indicated on right -hand side of each question.*

3. *Illustrate your answers with neat sketches wherever necessary.*

4. *Assume suitable data if necessary.*

5. *Preferably, write the answers in sequential order.*

6. *No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.*

SECTION-A 20

1. Attempt all parts:-

1-a. The idea of Data Science gains meaning through its role in solving real-world problems (CO1 K2) 1

(a) A field focused only on coding
(b) A domain blending data, math, and decisions
(c) A marketing method
(d) A hardware technology

1-b. The need for Data Science becomes clear when organisations aim to make decisions using evidence (CO1 K2) 1

(a) Personal hobby skills
(b) Random guessing
(c) Pure intuition
(d) Data-driven insight

1-c. Data viewed as the raw input for analysis tasks (CO2 K4) 1

(a) Processed facts
(b) Unorganized facts
(c) Final reports
(d) Predictive models

1-d. A label assigned to identify data based on shared features (CO2 K4) 1

(a) Data cleaning
(b) Data merging
(c) Data mapping
(d) Data classification

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1-e. Meaning of data preprocessing can be recognised as the set of steps that prepare raw data for analytics. (CO3 K3) 1

(a) Yes
(b) No
(c) Partially
(d) None

1-f. Need for data preprocessing becomes clear when datasets contain noise, missing values or inconsistencies. (CO3 K3) 1

(a) Never needed
(b) Required in many cases
(c) Rarely useful
(d) Only for images

1-g. Insights drawn from EDA mainly help analysts judge patterns before modeling. (CO4 K5) 1

(a) TRUE
(b) FALSE
(c) Depends on algorithm
(d) None

1-h. PCA mainly pushes data into new axes to maximise variance. (CO4 K5) 1

(a) Minimises variance
(b) Maximises variance
(c) Removes only noise
(d) Performs clustering

1-i. Visual best suited for comparing sales across product categories (CO5 K3) 1

(a) Bar plot
(b) Line plot
(c) Heat map
(d) QQ plot

1-j. Visual best suited for showing distribution of exam scores (CO5 K3) 1

(a) Pie chart
(b) Box plot
(c) Histogram
(d) Map plot

2. Attempt all parts:-

2.a. Brief clarity on the idea of Data Science and its growing relevance. (CO1 K2) 2

2.b. Key idea behind categorical data summarised in simple terms. (CO2 K4) 2

2.c. Describe the role of preprocessing steps in turning raw datasets into usable analytical inputs. (CO3 K3) 2

2.d. Discuss the role of PCA when reducing complex data into meaningful components. (CO4, K5) 2

2.e. Patterns that box plots help detect in distribution-based evaluations (CO5 K3) 2

SECTION-B 30

3. Attempt all parts:-

3.a. Answer any one of the following:-

3.a.(i)	Detailed narration on the rise of Data Science and its influence on modern decision-making. (CO1 K2)	6
3.a.(ii)	Insightful account of essential skill sets expected from a Data Science professional. (CO1 K2)	6

3.b. Answer any one of the following:-

3.b.(i)	Critical examination of structured, semi-structured, and unstructured data in practical contexts. (CO2 K4)	6
3.b.(ii)	Analytical breakdown of the role played by data characteristics in organisational decision systems. (CO2 K4)	6

3.c. Answer any one of the following:-

3.c.(i)	Step-wise narration describing the essence and forms of Data Preprocessing. (CO3 K3)	6
3.c.(ii)	Explanation of the need for preprocessing before applying predictive models. (CO3 K3)	6

3.d. Answer any one of the following:-

3.d.(i)	Critical interpretation of the purpose and impact of Exploratory Data Analysis (EDA). (CO4 K5)	6
3.d.(ii)	Evaluation of PCA as a dimension-reduction tool and its practical advantages. (CO4 K5)	6

3.e. Answer any one of the following:-

3.e.(i)	Depiction of bar charts and their appropriate use cases. (CO5 K3)	6
3.e.(ii)	Depiction of histograms highlighting distribution patterns. (CO5 K3)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	Discuss the foundational ideas shaping the rise of Data Science in modern business ecosystems. (CO1 K2)	10
4-b.	Give a structured understanding of the Big Data ecosystem and its components. (CO1 K2)	10

5. Answer any one of the following:-

5-a.	Evaluate different data types and their suitability for analytical objectives. (CO2 K4)	10
5-b.	Assess the major methods of job analysis applied across industries. (CO2 K4)	10

6. Answer any one of the following:-

6-a.	Present a structured explanation of the meaning and importance of data preprocessing. (CO3 K3)	10
6-b.	Describe the KDD process with emphasis on each sequential step. (CO3 K3)	10

7. Answer any one of the following:-

7-a.	Appraise the core purpose of Exploratory Data Analysis for deeper pattern	10

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discovery. (CO4 K5)

7-b. Analyze the structure of univariate EDA with data-driven illustrations. (CO4 K5) 10

8. Answer any one of the following:-

8-a. Provide a structured note on heat maps for visualizing intensity patterns. (CO5 K3) 10

8-b. Illustrate the relevance of map visualization for geographic insights. (CO5 K3) 10