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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)

BCA

SEM: IV - THEORY EXAMINATION (2025 - 2026)

Subject: 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:-

(1.1) Programming language used in data science. (CO1, K1)

1

- (a) HTML
- (b) Python
- (c) CSS
- (d) XML

(1.2) Role focused on data interpretation. (CO1, K3)

1

- (a) Data Analyst
- (b) Network Admin
- (c) Designer
- (d) Tester

(1.3) Prescriptive analytics involves _____. (CO2, K2)

1

- (a) Data storage
- (b) Visualization
- (c) Decision making
- (d) Cleaning

(1.4) Median is useful for _____. (CO2, K2)

1

- (a) Symmetric data
- (b) Skewed data
- (c) Small data
- (d) Random data

(1.5) Open source DS framework _____. (CO3, K1)

1

- (a) Windows
 - (b) Excel
 - (c) TensorFlow
 - (d) Paint
- (1.6) Unstructured data requires (CO3, K2) 1
- (a) Preprocessing.
 - (b) Regression
 - (c) Classification
 - (d) Clustering
- (1.7) Algorithm used for classification. (CO4, K3) 1
- (a) Linear regression
 - (b) Decision tree
 - (c) Mean
 - (d) Median
- (1.8) Framework for neural networks. (CO4, K3) 1
- (a) TensorFlow
 - (b) Word
 - (c) Excel
 - (d) Paint
- (1.9) Data Science project components include _____. (CO5, K1) 1
- (a) Hardware only
 - (b) Software only
 - (c) Data, tools, people
 - (d) Network only
- (1.10) Stakeholder responsible for decisions _____. (CO5, K1) 1
- (a) Developer
 - (b) Business manager
 - (c) Clerk
 - (d) Tester

2. Attempt all parts:-

- (2.1) Discuss major challenges encountered in Data Science projects. (CO1, K2) 2
- (2.2) Analyze how visualization improves understanding of complex data. (CO2, K4) 2
- (2.3) Demonstrate the use of bar charts and pie charts in data representation. (CO3, K3) 2
- (2.4) Analyze the differences between traditional machine learning and deep learning. (CO4, K4) 2
- (2.5) Explain the importance of process evaluation in project success. (CO5, K2) 2

SECTION-B

30

Answer any one of the following:-

- (3.1) Describe the basic framework of Data Science with suitable examples. (CO1, K2) 6
- (3.2) Discuss the evolution, history, and development of Data Science with suitable 6

examples. (CO1, K2)

Answer any one of the following:-

(3.3) Differentiate between exploratory and descriptive statistics with examples. (CO2, K4) 6

(3.4) Examine the application of statistical inference in real-world case studies. (CO2, K3) 6

Answer any one of the following:-

(3.5) Explain methods used to convert unstructured data into structured form. (CO3, K2) 6

(3.6) Discuss the advantages and limitations of common visualization tools. (CO3, K2) 6

Answer any one of the following:-

(3.7) Discuss the concept of reinforcement learning with appropriate examples. (CO4, K2) 6

(3.8) Analyze how clustering techniques are applied in unsupervised learning. (CO4, K4) 6

Answer any one of the following:-

(3.9) Illustrate the key components of a Data Science project and their roles. (CO5, K2) 6

(3.10) Describe the comparison between various Data Science project methodologies. (CO5, K2) 6

SECTION-C 50

4. Answer any one of the following:-

(4.1) Discuss the importance and impact of Data Science in modern industries. (CO1, K2) 10

(4.2) Analyze the basic framework and lifecycle of Data Science in detail. (CO1, K4) 10

5. Answer any one of the following:-

(5.1) Explain the concept of statistical inference and its applications in Data Science. (CO2, K2) 10

(5.2) Discuss the role of vectors in Data Science and data representation. (CO2, K4) 10

6. Answer any one of the following:-

(6.1) Elaborate the benefits and challenges of using open-source frameworks. (CO3, K2) 10

(6.2) Examine how machine learning models are applied in real-world problems. (CO3, K4) 10

7. Answer any one of the following:-

(7.1) Contrast the working of regression techniques in Supervised learning. (CO4, K4) 10

(7.2) Explain SVM and its applications in detail. (CO4, K4) 10

8. Answer any one of the following:-

(8.1) Discuss the comparison between various Data Science project methodologies. (CO5, K2) 10

(8.2) Examine the challenges in implementing Data Science project methods in industries. (CO5, K3) 10