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

MBA (Integrated)

SEM: VIII - THEORY EXAMINATION (2025 - 2026)

Subject: Machine Learning and Artificial Intelligence

Time: 2.5 Hours

Max. Marks: 60

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

15

1. Attempt all parts:-

(1.1) Machine Learning belongs to [CO1, K1]

1

- (a) Data Science
- (b) Artificial Intelligence
- (c) Cloud Computing
- (d) Networking

(1.2) Hill climbing algorithm follows [CO2, K3]

1

- (a) Best local choice
- (b) Random path
- (c) Fixed path
- (d) Reverse search

(1.3) AUC-ROC evaluates [CO3, K3]

1

- (a) Speed
- (b) Memory
- (c) Training data
- (d) Classification performance

(1.4) Logistic regression is used for [CO4, K2]

1

- (a) Prediction
- (b) Clustering
- (c) Classification
- (d) Sorting

(1.5) Larger K value in KNN leads to [CO5, K4]

1

- (a) Smoother decision boundary
- (b) Overfitting
- (c) Noise
- (d) Errors

2. Attempt all parts:-

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|-------|--|---|
| (2.1) | List two applications of AI in business. [CO1, K2] | 2 |
| (2.2) | What is hill climbing algorithm? [CO2, K2] | 2 |
| (2.3) | What is supervised learning? [CO3, K2] | 2 |
| (2.4) | What is pruning in decision trees? [CO4, K2] | 2 |
| (2.5) | How does K-means handle continuous data? [CO5, K2] | 2 |

SECTION-B

15

3. Answer any three of the following:-

- | | | |
|-------|---|---|
| (3.1) | Describe applications of AI in marketing and human resource management. [CO1, K3] | 5 |
| (3.2) | Compare Greedy Best-First Search and A* search. [CO2, K4] | 5 |
| (3.3) | Analyze errors in Machine Learning models. [CO3, K4] | 5 |
| (3.4) | Describe multiple linear regression with suitable example. [CO4, K3] | 5 |
| (3.5) | Explain DBSCAN algorithm and its advantages. [CO5, K3] | 5 |

SECTION-C

30

4. Answer any one of the following:-

- | | | |
|-------|--|---|
| (4.1) | Evaluate the role of AI in transforming modern businesses. [CO1, K5] | 6 |
| (4.2) | Compare traditional systems and AI-based systems in decision-making. [CO1, K4] | 6 |

5. Answer any one of the following:-

- | | | |
|-------|--|---|
| (5.1) | Analyze the advantages and limitations of depth-first search in solving real-world problems. [CO2, K4] | 6 |
| (5.2) | Evaluate heuristic search strategies and their advantages over uninformed search techniques. [CO2, K5] | 6 |

6. Answer any one of the following:-

- | | | |
|-------|---|---|
| (6.1) | Analyze AUC-ROC curve and its significance in model evaluation. [CO3, K4] | 6 |
| (6.2) | Analyze bias and variance trade-off in Machine Learning models. [CO3, K4] | 6 |

7. Answer any one of the following:-

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|-------|---|---|
| (7.1) | Evaluate the effectiveness of logistic regression in classification problems. [CO4, K5] | 6 |
| (7.2) | Analyze decision tree algorithms and their importance in Machine Learning. [CO4, K4] | 6 |

8. Answer any one of the following:-

- | | | |
|-------|---|---|
| (8.1) | Analyze the importance of distance measures in clustering and classification. [CO5, K4] | 6 |
| (8.2) | Analyze real-world applications of clustering in business analytics. [CO5, K4] | 6 |