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

B.Tech

SEM: II - THEORY EXAMINATION (2025- 2026)

Subject: Fundamentals of Artificial Intelligence

Time: 2 Hours

Max. Marks: 50

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) | Among the following who is widely considered the 'father' of Artificial Intelligence for his foundational work on computability and machine intelligence?(CO1,K3) | 1 |
| | <ul style="list-style-type: none"> (a) John McCarthy (b) Marvin Minsky (c) Alan Turing (d) Claude Shannon | |
| (1.2) | Knowledge is:(CO2,K2) | 1 |
| | <ul style="list-style-type: none"> (a) Random facts (b) Actionable understanding derived from information (c) Just storing data (d) Memory capacity | |
| (1.3) | The result of the expression 15 // 4 in Python is:(CO3,K3) | 1 |
| | <ul style="list-style-type: none"> (a) 3.75 (b) 3 (c) 4 (d) 1 | |
| (1.4) | Fraud detection AI helps banks by:(CO4,K3) | 1 |
| | <ul style="list-style-type: none"> (a) Confusing users (b) Tracking suspicious patterns (c) Locking all accounts (d) Removing ATMs | |

- (1.5) Robots in warehouses improve operations by:(CO4,K3) 1
- (a) Moving faster and reducing errors
 - (b) Stopping inventory
 - (c) Taking breaks
 - (d) Hiding products

2. Attempt all parts:-

- (2.1) State one difference between Machine Learning and Deep Learning.(CO1,K3) 2
- (2.2) Differentiate between descriptive and inferential data? Give an example.(CO2,K2) 2
- (2.3) List four Arithmetic operators in Python.(CO3,K3) 2
- (2.4) Describe the function of the Matplotlib library in the context of data analysis.(CO4,K3) 2
- (2.5) State the reason behind, why AI-based dynamic pricing more effective than fixed pricing?(CO4,K3) 2

SECTION-B

15

3. Answer any three of the following:-

- (3.1) Compare goal-based agents and utility-based agents with examples.(CO1,K3) 5
- (3.2) Show the DIKW hierarchy (Data, Information, Knowledge, and Wisdom) with diagram in detail.Discuss each level with clear definitions, real-world examples of it.(CO2,K3) 5
- (3.3) Solve for mean, mode and median of the following dataset:
12,5,8,10,14,7.(CO3,K3) 5
- (3.4) Demonstrate a Python script that asks the user to input a password. If the password is "password123", print "Access Granted"; otherwise, print "Access Denied" using a conditional statement.(CO4,K3) 5
- (3.5) Analyze the role of reinforcement learning in autonomous vehicles. Why is it more effective than rule-based navigation?(CO4,K2) 5

SECTION-C

20

4. Answer any five of the following:-

- (4.1) Recommend suitable storage solutions for structured, unstructured, and semi-structured data in a large retail company.(CO1,K3) 4
- (4.2) Explain the concepts of Data Collection and Data Processing. Discuss their importance in generating accurate and effective information for decision-making.(CO1,K3) 4
- (4.3) Describe the purpose of Natural Language Processing (NLP) in financial services with any two examples.(CO2,K2) 4
- (4.4) Explain the two generative AI tools.(CO2,K2) 4
- (4.5) Explain the difference between the / (division) and // (floor division) operators in Python. Provide a code example showing the output of each for a given pair of numbers.(CO3,K3) 4
- (4.6) Distinguish between Weak AI and Strong AI.Define Kaggle Kernel? Explain its features and how it is useful for data analysis, machine learning, and collaborative coding.(CO3,K2) 4

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|-------|---|---|
| (4.7) | List four domains of AI and give one example for each.(CO4,K2) | 4 |
| (4.8) | Explain the role of Artificial Intelligence (AI) in Healthcare, Finance, Agriculture, and Transportation. Analyze how AI improves efficiency, decision-making, and automation in these sectors.(CO4,K3) | 4 |

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