

# Class XI – Artificial Intelligence

Instructor: Saptarshi Jana

Assignment 7-11

*Due date: 14.07.2025*

*Full Marks: 50*

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## Assignment 7

### Types of Data: Identification, Acquiring, Exploring

- Q1. Define structured, semi-structured, and unstructured data with one example each.
- Q2. Explain the process of data acquisition in AI systems. Mention two commonly used data sources.
- Q3. What is meant by data exploration? Describe any two basic techniques used during exploration.
- Q4. Identify the type of data in the following: (i) Patient medical records (ii) Social media posts (iii) Student database table (iv) Sensor readings from IoT devices.
- Q5. Describe how data identification and exploration help improve the performance of an AI model.

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## Assignment 8

### Unstructured Data and Its Processing

- Q1. Define unstructured data. Give three examples of real-life unstructured datasets.
- Q2. Differentiate between structured and unstructured data in a tabular format.
- Q3. What are some challenges in processing unstructured data? Mention two solutions.
- Q4. Explain how AI techniques like NLP and computer vision help in understanding unstructured data.
- Q5. Describe the steps involved in converting unstructured data into a structured format for analysis.

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## Assignment 9

### Natural Language Processing (NLP)

- Q1. Define Natural Language Processing (NLP). Why is it important in AI?
- Q2. List and explain any three key techniques used in NLP.
- Q3. Describe any two common applications of NLP in everyday life.

- Q4.** Explain the difference between **text generation** and **text understanding**.
- Q5.** How does NLP contribute to language translation and chatbots? Give one example of each.

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### Assignment 10

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#### Potential Uses of AI

- Q1.** Explain how AI assists in medical decision-making and patient diagnosis.
- Q2.** Describe the role of AI in remote patient monitoring systems.
- Q3.** Discuss how AI is used for large-scale data analysis and prediction.
- Q4.** Provide two examples of how AI helps solve complex real-world problems.
- Q5.** Compare human decision-making and AI-based decision-making in terms of speed, consistency, and accuracy.

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### Assignment 11

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#### Binary Logic System and Conditional Gates

- Q1.** What is the binary logic system? Why is it important in computing and AI?
- Q2.** Write the truth tables for AND, OR, and NOT gates.
- Q3.** Explain the difference between NAND and NOR gates with suitable truth tables.
- Q4.** Design a logical circuit that outputs 1 only when both inputs are different (use XOR gate).
- Q5.** Give one real-world example of how conditional logic (using gates) is applied in AI or robotics.

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— Until Next —