



# **PAC INSTITUTE OF TECHNOLOGY AND SOCIAL STUDIES**

## **MAY – AUGUST 2025 ASSESSMENT**

### **FORMATIVE ASSESSMENT**

Qualification / Course : COMPUTER SCIENCE LEVEL 6

Unit of Competency : ARTIFICIAL INTELLIGENCE

### **WRITTEN ASSESSMENT**

TIME: 3 HOURS

### **INSTRUCTIONS TO THE CANDIDATE:**

- 1. Read all the instructions carefully before attempting the questions.*
- 2. This paper consists of two sections, A & B.*
- 3. You are allowed 3 Hours to Answer the questions.*
- 4. Marks for each question are indicated in brackets.*
- 5. Write your responses in the Separate Answer booklet provided.*
- 6. Do not write anything on this question paper.*

## SECTION A: (40 MARKS)

*Answer ALL questions in this section.*

1. Differentiate between Artificial Intelligence and traditional computer programming.  
(4 marks)
2. Identify any four disciplines that serve as the foundation of Artificial Intelligence.  
(4 marks)
3. Briefly explain any two real-life applications of Artificial Intelligence. (4 marks)
4. Define the term *intelligent agent* and give one example. (4 marks)
5. Explain the roles of logical operators AND, OR, and NOT in problem solving. (4 marks)
6. Distinguish between *propositional logic* and *predicate logic*. (4 marks)
7. Identify and describe two types of inferencing used in AI-based problem solving.  
(4 marks)
8. Differentiate between supervised and unsupervised machine learning, giving one example of each. (4 marks)
9. State four data types in Python and provide a valid example for each. (4 marks)
10. Explain the difference between built-in and user-defined functions in Python. (4 marks)

## SECTION B: (60 MARKS)

*Answer any **THREE** questions in this section.*

11. You have been hired by a startup to identify opportunities where Artificial Intelligence can be applied in a local health facility.

- a) Describe how expert systems and machine learning can improve service delivery in the health sector. (6 marks)
- b) Explain how understanding the foundations of AI (e.g., decision theory and neurology) contributes to building smart systems. (6 marks)
- c) Identify any four real-life AI-powered tools or applications used in hospitals. (4 marks)
- d) Define *computer vision* and describe one way it can be applied in a hospital setting. (4 marks)

12. You are tasked with designing an AI system to assist students in selecting appropriate courses based on their grades and interests.

- a) Illustrate how logical operators (AND, OR, NOT) can be used in decision rules. (6 marks)
- b) Compare single and multiple inferencing techniques and provide examples of each in the course selection system. (6 marks)
- c) Explain case-based reasoning and how it might apply to matching students with previous success cases. (4 marks)
- d) Suggest a machine learning approach that would best suit this problem and justify your choice. (4 marks)

13. You are developing a Python-based application that performs basic statistical analysis on student marks.

- a) Outline the steps involved in installing and setting up Python. (4 marks)
- b) Write a Python function that takes a list of marks and returns the average. (6 marks)
- c) Explain how you would use control structures (if-else and loops) to assign a grade based on the average. (4 marks)
- d) Identify two Python libraries used for data manipulation and visualization, and explain how they would be useful in this case. (6 marks)

14. You are building a Python class-based system for managing inventory in a retail shop.

- a) Define a class named `Product` with attributes: name, price, and quantity. Include a method to display product details. (6 marks)
- b) Differentiate between class variables and instance variables with examples. (4 marks)

c) Describe how lambda functions can be used for quick calculations within the program.

(4

marks)

d) Write a code snippet using *Pandas* or *NumPy* to load and analyze product data. (6 marks)