



PAC INSTITUTE OF TECHNOLOGY AND SOCIAL STUDIES JANUARY – APRIL 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. Define Artificial Intelligence.(2 Marks)
2. Briefly describe the role of Mathematics in the foundations of Artificial Intelligence.(4 Marks)
3. List **FOUR** applications of Artificial Intelligence. (4 Marks)
4. Differentiate between expert systems and artificial neural networks.(4 Marks)
5. Explain the function of logical operators in problem-solving. (4 Marks)
6. Describe the purpose of control structures in Python and name its two main types.(3 Marks)
7. State the difference between propositional logic and predicate logic. (4 Marks)
8. Define Machine Learning and name its main types.(3 Marks)
9. Explain the significance of the Zen of Python in Python programming. (4 Marks)
10. List four data types in Python and provide an example of each. (4 Marks)
11. Explain the purpose of Sci-Kit Learn in AI programming (4 Marks)

SECTION B: (60 MARKS)

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

12. a) Discuss the history and evolution of Artificial Intelligence, highlighting key milestones. (10 Marks)
b) Explain in detail the different types of inferencing in problem-solving, providing examples where necessary.(10 Marks)
13. a) You are a software developer for company XYZ you are tasked to develop a system to solve a problem in your organization. Write a Python program that demonstrates the use of loops and selection statements in solving a real-life problem. (12 Marks)
b) Explain the mathematical principles behind the K-Nearest Neighbours algorithm and demonstrate how it can be used to make predictions. (8 Marks)
14. a) Describe the Naïve Bayes Algorithm and illustrate its application in Machine Learning with an example. (12 Marks)
b) Compare and contrast Supervised and Unsupervised Machine Learning. Provide examples of real-world applications for each.(8 Marks)
15. a) In your company you are migrating from the traditional problem solving methods d you have decided to use python programming as tool. Explain the process of installing Python, including the necessary steps to set up the Python environment on a computer. (10 Marks)
b) Describe Object-Oriented Programming (OOP) in Python and explain its key concepts with examples.(10 Marks)