



PAC INSTITUTE OF TECHNOLOGY AND SOCIAL STUDIES MAY – JULY 2025 ASSESSMENT

FORMATIVE ASSESSMENT

Qualification / Course : COMPUTER SCIENCE LEVEL 6

Unit of Competency : COMPUTER NETWORKING AD DISTRIBUTED SYSTEMS

WRITTEN ASSESSMENT

TIME: 3 HOURS

INSTRUCTIONS TO CANDIDATE:

- 1. Read all the instructions carefully before attempting the question*
- 2. This paper consists of two sections, A and B*
- 3. You are allowed 2 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 in this question paper*

SECTION A

Answer all question

1. Outline the six phases of program development. (4 marks)
2. Differentiate between the following terms (use at least one example in each):
 - a. Source code vs Object code
 - b. Compiler vs Interpreter (4 marks)
3. Explain the term 'algorithm' and describe its significance in programming. (4 marks)
4. List any four features of the Java programming language. (4 marks)
5. Describe the steps involved in setting up the Java Development Kit (JDK) on a Windows machine. (4 marks)
6. State any four Java keywords and briefly explain their use. (4 marks)
7. Explain the difference between a local variable and an instance variable. (4 marks)
8. Identify and describe any four types of constants used in Java. (4 marks)
9. Describe the structure and purpose of the `public static void main(String[] args)` method in Java. (4 marks)
10. Define object instantiation and explain how it relates to object-oriented programming. (4 marks)

SECTION B 60 MARKS

Answer any three questions.

11. You are a software trainee tasked with introducing Java to high school students in a coding bootcamp.

a. Describe the process of installing Java and setting up Eclipse IDE on a new Windows PC. (6 marks)

b. State and explain **any five syntax rules** a beginner must follow to avoid errors in a Java program. (5 marks)

c. Write a complete Java program that reads the radius of a circle and calculates its area. (Use $\pi = 3.1416$). (9 marks)

12. A teacher needs a program to help students understand mathematical operations in Java.

a. Describe the different **types of variables** in Java and give an example for each. (6 marks)

b. Write a Java program that takes coefficients a , b , and c as input and solves the quadratic equation:

$$ax^2+bx+c=0 \quad ax^2 + bx + c = 0 \quad ax^2+bx+c=0$$

(Assume the discriminant is non-negative). (10 marks)

c. Explain the purpose of declaration, expression, and control-flow statements in Java. (4 marks)

13. You are designing a system that models a `Student` as an object.

a. Briefly explain the four fundamental principles of Object-Oriented Programming and how they would apply to a `Student` object. (8 marks)

b. Create a Java class `Student` with the following attributes: `name`, `regNumber`, and `course`. Include a constructor and a method `displayDetails()` that prints the student's details. (8 marks)

c. Describe the role of a constructor in object instantiation. (4 marks)

14. You are reviewing a student's Java program that contains several syntax errors.

a. Explain five common syntax mistakes in Java and how to correct them. (5 marks)

b. Declare and initialize the following constants in Java:

- An integer value of 100
- A float value of 3.14
- A character 'X'
- A string "Java Exam" (4 marks)

c. Write a Java method that calculates the compound interest: (11 marks)