

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF
SCIENCE IN APPLIED STATISTICS**

ACSC 221: OBJECT ORIENTED PROGRAMMING I (JAVA)

STREAMS: BSC. APPLIED. STAT.

TIME: 2 HOURS

DAY/DATE: MONDAY 14/04/2025

11.30 A.M. – 1.30 P.M.

INSTRUCTIONS

- **Answer Question ONE and Any other TWO Questions**

QUESTION ONE (30 MARKS)

- Define the following terms
 - Class (1 mark)
 - Object (1 mark)
 - Object-oriented programming (1 mark)
 - Polymorphism (1 mark)
- Differentiate between algorithms, data structures and programs as used in programming (3 marks)
- A basic JAVA program code has specific schema.
 - Describe the five basic parts of the Method definitions in a JAVA program code (8 marks).
 - Specify and interpret each of the parts with reference to the code below (5 marks)

```
public class Example {  
    // Method definition  
    public int add(int a, int b) {  
        return a + b;  
    }  
    public static void main(String[] args) {
```

```
Example example = new Example();  
int result = example.add(5, 3);  
System.out.println("The result is: " + result);  
    }  
}
```

- d. Distinguish between `while` loop and `do...while` loop as used in JAVA programming (4 marks).
- e. Discuss any three principles of Object-Oriented Programming (6 marks)

QUESTION TWO (20 MARKS)

- a. Discuss the six benefits of OOP (12 marks)
- b. Explore three basic types of control structures in Java (6 marks)
- c. Distinguish between Overloading and Overriding methods (2 marks)

QUESTION THREE (20 MARKS)

- a. Explore any four areas of application of java programming (4 marks)
- b. Distinguish between run-time and compile-time polymorphism as used in programming (4 marks)
- c. Explore the three main components of a JAVA environment (6 Marks)
- d. Differentiate between short and byte integer types (4 marks)
- e. Define the term Java Database Connectivity (2 marks)

QUESTION FOUR (20 MARKS)

- a. Contrast between primitive data structures and non-primitive data structures as used in OOP with examples (4 marks)
- b. Discuss any six elements that define the structure of a Java program. (12 marks)
- c. You are given the following data of ages of six students. Write a Java algorithm for mean ages of students (4 marks)

Ages: 22, 23, 21, 28, 24, 20

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