CHUKA  **UNIVERSITY**

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DIPLOMA IN COMPUTER SCIENCE

COSC 0244: FUNDAMENTALS OF OBJECT ORIENTED PROGRAMMING

STREAMS: DIP. COMP SCI. **TIME: 2 HOURS**

DAY/DATE: TUESDAY 21/09/2021 **2.30 P.M. – 4.30 P.M.**

INSTRUCTIONS:

- Answer question **ONE** and **TWO** other questions
- Do not write anything on the question paper
- This is a **closed book exam**, No reference materials are allowed in the examination room
- There will be **NO** use of mobile phones or any other unauthorized materials
- Write your answers legibly and use your time wisely.
- Marks are awarded for clear and concise answers.

SECTION A (Answer ALL questions)

QUESTION ONE

a. Explain what you understand by the following concepts (10 marks)

(i) Object

(ii) Class

(iii) Package

(iv) Interface

(v) Method

b. Outline the basic structure of a java program (4 marks)

c. Which method begins the execution of java applications? Give its full declarations (3 marks)

d. Differentiate between method overloading and method overriding? (2 marks)

e. Differentiate between Primitive Types and Reference Types as used in Java variables (4 Marks)

f. i) Name the interface used to connect to databases using Java? (1 Mark)
ii) Denote from which package the connection comes from. (1 mark)

g. Explain the importance of abstract classes in java programming (2 Marks)

h. Outline at least three access modifiers you know that are used in Java Programing (3 Marks)

SECTION B – ANSWER ANY TWO QUESTIONS

QUESTION TWO (20 MARKS)

a) Write code to demonstrate the use of an Array in Java Programming. (4 marks)

b) Define constructors and using an example, show why they are useful in Java programming (4 Marks)

c) Explain the following terms in object oriented programming (12 marks)
(i) Inheritance
(ii) Polymorphism
(iii) Encapsulation
(iv) Abstraction

QUESTION THREE (20 MARKS)

a) Write a Java program that calculates the grade of a student based on the marks entered by user in each subject. Program prints the grade based on this logic. (10 Marks)
If the average of marks is >= 80 then prints Grade 'A'
If the average is <80 and >=60 then prints Grade 'B'
If the average is <60 and >=40 then prints Grade 'C'
else prints Grade 'D'

b) Name and Explain three variable types that can be created in an OOP class (6 Marks)

c) State FOUR Advantages of Object Oriented Programming. (4 Marks)

QUESTION FOUR (20 MARKS)

a) Distinguish between repetitive statements and selective statements as used in Java Programming Control Structures. For Each , give at least 2 examples of such statements (6 Marks)

b) Explain the following types of Operators and show an example of how it is applied in Java Programming

i) Increment Operator (3 Marks)

ii) Decrement Operator (3 Marks)

iii) Compound Assignment Operator (3 Marks)

iii) Logical Operator (3 Marks)

c) Define pseudocode as used in Java Programming? (2 Marks)

QUESTION FIVE (20 Marks)

a) Write a Java Program that has an Instance Variable, a set Method and a Get Method (6 Marks)

b) Demonstrate a Java Class that displays all integers from 1 to 10 using the following Counter-controlled repetition statements: (8 Marks).

i) For Loop

ii) While Loop

c) Explain the difference between break and continue Statements as used in Java control structures and write example code for each. (6 Marks)

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