CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS
MAIN/EMBU/IGEMBE CAMPUS

FIRST YEAR EXAMINATION FOR THE AWARD OF DIPLOMA IN COMPUTER SCIENCE

COSC 0244: FUNDAMENTALS OF OBJECT ORIENTED PROGRAMMING

STREAMS: DIP COMP SCI Y2S2   **TIME: 2 HOURS**

DAY/DATE: WEDNESDAY 07/07/2021   **8.30 A.M. – 10.30 A.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 in this section)

QUESTION ONE (30 Marks)

a. Define OOP/Object Oriented Programming Language: (2 Marks)

b. Define the following concepts in object-oriented programming:
i. Polymorphism   (2 Marks)
ii. Abstraction   (2 Marks)
iii. Inheritance   (2 Marks)
iv. Encapsulation   (2 Marks)

c) Distinguish between each of the following object-oriented programming concepts:

i. Class and Objects   (2 Marks)
ii. Pseudocode and Algorithm   (2 Marks)

d) Explain any three types for errors encountered in programming.   (6 marks)

e) Discuss THREE advantages of object oriented programming paradigm over procedural programming. (6 Marks)

f) State any Four Object-Oriented Programming Languages you are familiar with (4 marks)

SECTION B (Answer any TWO questions)

QUESTION TWO (20 Marks)
  a) Define and explain the role of an interface in a JAVA program (6 Marks)
  b) Write JAVA syntax to illustrate each of the following program controls (10 Marks)
    I. While
    II. If … Else
    III. Nested IF
    IV. For
    V. Switch
  c) List FOUR primitive data types (4 Marks)

QUESTION THREE (20 Marks)

  a) Define the following OOP Concepts (4 Marks)

    I. Source Files

    II. Packages

    III. Class Libraries

    IV. Operators

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

  c) State and explain the difference between procedural programming and object oriented programming (10 marks)

QUESTION FOUR (20 Marks)

  a) State The Advantages of OOP (5 Marks)

  b) Explain any 5 declaration rules used in OOP (5 Marks)

  c) 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'

QUESTION FIVE (20 Marks)

a) Distinguish between each of the following object-oriented programming concepts

(6 Marks)

     i.   Generalization and Specialization

    ii.   Polymorphism and Dynamic Binding

   iii.   Classification and Exemplification

b) Provide THREE examples of Java packages and their functions   (6 Marks)

c) Discuss the basic syntax rules of a JAVA program   (8 Marks)

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