

**UNIVERSITY EXAMINATIONS****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:.....****.....****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. (10Marks)
  - If the average of marks is  $\geq 80$  then prints Grade 'A'
  - If the average is  $< 80$  and  $\geq 60$  then prints Grade 'B'
  - If the average is  $< 60$  and  $\geq 40$  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)