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**KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY  
UNIVERSITY EXAMINATIONS, 2019/2020 ACADEMIC YEAR  
SECOND YEAR, FIRST SEMESTER EXAMINATIONS  
FOR THE DEGREE OF BACHELOR OF SCIENCE  
(COMPUTER SCIENCE)**

**KCS 200 - OBJECT ORIENTED PROGRAMMING II**

Date: 9<sup>th</sup> April, 2019  
Time: 2.30pm – 4.30pm

**INSTRUCTIONS TO CANDIDATES**

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**ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS**

**QUESTION ONE COMPULSORY (30 MARKS)**

- a) Describe three non-access modifiers with examples as used in the Java programming language. (6 Marks)
- b) Explain the various control structures needed to implement a program in Java with the help of appropriate flow diagrams and syntax? (8 Marks)
- c) Write a program in Java that calculates the volume of a cone? (8 Marks)
- d) Write a program that calculates the factorial of a number using the concept of recursion. (8 Marks)

**QUESTION TWO (20 MARKS)**

- a) Distinguish between:
  - i) Primitive and Reference data types (2 Marks)
  - ii) Early and late binding. (2 Marks)
- b) Explain the major types of inheritance that are possible to implement in the Java programming language. (6 Marks)
- c) Write a program in Java that uses three keywords in exception handling to detect and handle an Input Mismatch error. (10 Marks)

### **QUESTION THREE (20 MARKS)**

- a) Distinguish between iteration and recursion. (4 Marks)
- b) Write a simple program that demonstrates the concept of inheritance. (8 Marks)
- c) Using various code snippets, distinguish between the concepts of encapsulation and abstraction and how they are achieved in java. (8 Marks)

### **QUESTION FOUR (20 MARKS)**

- a) Describe the difference between
  - i) Enhanced for statement and Counter-controlled for statement. (2 Marks)
  - ii) The do...while and the while loop. (2 Marks)
- b) Write a simple program that demonstrates the switch...case control statement. (8 Marks)
- c) Write the source code in Java that satisfies the following statements
  - i) Create an abstract class called **Student**
  - ii) The class Student should contain two methods called **University()** and **Course()**.
  - iii) Create another concrete class **Test** that extends the class **Student**(8 Marks)

### **QUESTION FIVE (20 MARKS)**

- a) Distinguish between:
  - i) Overloading and Overriding (2 Marks)
  - ii) Abstract class and Concrete class (2 Marks)
- b) Write the code for a program that prompts the user for input and uses it to calculate the volume of a cylinder. (8 Marks)
- c) Write a program in Java language that demonstrates the concept of method overloading. (8 Marks)