

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

FIRST YEAR EXAMINATIONS FOR THE AWARD OF BACHELOR OF SCIENCE IN APPLIED COMPUTER SCIENCE

ACSC 223: OBJECT ORIENTED PROGRAMMING 1(JAVA)

STREAMS: BSC (COMP SCIENCE) Y1S2

TIME: 2 HOURS

DAY/TIME: THURSDAY 7/12/2017

2.30 P.M – 4.30 P.M

INSTRUCTIONS:

- **Answer Question ONE and any other TWO questions.**
- **Diagrams should be used whenever they are relevant to support an answer.**
- **Sketch maps and diagrams may be used whenever they help to illustrate your answer**
- **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**
- **Electronic, non-programmable calculators may be used**

SECTION A: COMPULSORY TIME

Question one [Compulsory]: 30 Marks

- Explain the purpose of a method parameters and arguments. [2 marks]
- Outline the basic structure of a java program [2 marks]
- Write a sample java program to demonstrate how to compute the area of a circle, [user inputs the radius]. [5 marks]
- Which method begins the execution of java applications? Give its full declarations [3marks]
- Differentiate between method overloading and method overriding? [4 marks]
- What are constructors? Giving an example, show why they are useful in java programming [4 marks]
- Write a java application that prints, on separate lines, you name, your birthday, your hobbies and your favorites books. Label each piece of information in the output. [10 marks]

SECTION B:[Answer any two questions from this section]**QUESTION TWO:**

- a. State the output of the following piece of code:

```
public class Test {
    public static void main(String args[]) {
        int i = 0, j = 5 ;
        for( ; (i < 3) && (j++ < 10) ; i++ ) {
            System.out.print(" " + i + " " + j);
        }
        System.out.print(" " + i + " " + j);
    }
}
```

[10 marks]

- b. Given the following classes:

```
public class Person{
    public void talk(){ System.out.print("I am a Person "); }
}
public class Student extends Person {
    public void talk(){ System.out.print("I am a Student "); }
}
```

Giving reasons, explain what would be the output of this piece of code:

[10 Marks]

```
public class Test{
    public static void main(String args[]){
        Person p = new Student();
        p.talk();
    }
}
```

QUESTION THREE [20 MKS]

Discuss what you understand by object oriented programming and the common characteristics found in object oriented programming. Your discussion should be based on the following:

- (i) Inheritance
- (ii) Polymorphism
- (iii) Encapsulation

QUESTION FOUR 20 MKS

- a. When you compile a program written in the Java programming language, the compiler converts the human-readable source file into platform-independent code that a Java Virtual Machine can understand. What is this platform-independent code called? Explain why this is necessary [5marks]
- b. Referring to the above question, Discuss the role JVM plays and what advantages this presents to programmers [15marks]

QUESTION 5 20 MKS

- a. Explain what you understand by the following concepts [10marks]
 - (i) Object
 - (ii) Class
 - (iii) Package
 - (iv) Interface
 - (v) Method

(b)(i) Demonstrate how you would create classes for the following real-world objects: Person, Bicycle, and Animal. Instantiate each class to create at least one object of the type as class given. [5marks]

(ii) For each new class that you've created above, create an interface that defines its behavior, and then require your class to implement it. [5marks]
