

CHUKA



UNIVERSITY

COLLEGE

UNIVERSITY EXAMINATIONS

**FIRST YEAR EXAMINATION FOR THE AWARD OF DEGREE OF
BACHELOR OF SCIENCE (APPLIED COMPUTER SCIENCE)**

ACMP 121: INTRODUCTION TO PROGRAMMING 1 (JAVA)

STREAM: B.SC (ACMP) Y1S1

TIME: 2 HOURS

DAY/DATE: THURSDAY 20/12/2012

2.30 P.M. – 4.30 P.M.

INSTRUCTIONS:

- Answer QUESTION ONE and any other TWO questions.
- This is a CLOSED BOOK exam. No reference materials are allowed in the exam room.
- No mobile phone allowed in the exam room (*make sure to switch it off and leave it with the invigilator if you carried one*).
- Write your answers legibly and use your time wisely

SECTION A: COMPULSORY

Question one: 30 Marks

- (a) Consider the following code fragments and answer the questions that follows:

```
Object s1 = new String("Hello");  
Object s2 = new String("Hello");  
  
if(s1 == s2) {  
    System.out.println("s1 and s2 are ==");  
}else if (s1.equals(s2)) {  
    System.out.println("s1 and s2 are equals()");  
}  
}
```

- (i) Complete the above program to make it run

[5 marks]

- (ii) Explain how you would save, compile and run the above program [5 marks]
 - (iii) Explain the process your program would undergo before the final execution by the hardware? [5marks]
 - (iv) State the output of the above code after execution? [5marks]
- (b) Write a complete Program that calculates and prints the product of three integers, the program should accept inputs from the keyboard, once all inputs are keyed in, it should then alert the user that the product of the numbers he entered are shown below. [10marks]

QUESTION TWO:

- (a) Given 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);
}
}
```

What will be the result? [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 MARKS)

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 MARKS)

- (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 [15 marks]

QUESTION 5 20 MKS

- (a) Explain what you understand by the following concepts [10 marks]
 - (i) Object
 - (ii) Class
 - (iii) Package
 - (iv) Interface
 - (v) Method
 - (b) (i) Create new classes for the following real-world object: Person, Bicycle, Animal. [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]
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