(Knowledge for Development)

KIBABII UNIVERSITY
(KIBU)

UNIVERSITY EXAMINATIONS
2016/2017 ACADEMIC YEAR

SPECIAL/SUPPLEMENTARY EXAMINATIONS
YEAR TWO SEMESTER TWO EXAMINATIONS

FOR DIPLOMA
(INFORMATION TECHNOLOGY)

COURSE CODE   :   DIT 077

COURSE TITLE   :   OBJECT ORIENTED PROGRAMMING

DATE: 29/09/2017   TIME: 8.00A.M. – 10.00A.M.

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTIONS ONE and ANY OTHER TWO.

QUESTION ONE [24 MARKS]

a. Define the following terms.   **[4 Marks]**
   i.   Object.

   ii. Inheritance.

   iii. Polymorphism.

   iv. Encapsulation.

b. With examples, describe any **THREE** types of comments used in Java. **[3 Marks]**

c. Describe **THREE** types of errors commonly made by programmers.   **[3 Marks]**

d. Write a Java program that returns the sum of the integers 1 through 10. **[2 Marks]**

e. Explain the **THREE** types of variables in Java. Illustrate your answer using Java code
   excerpts.   **[6 Marks]**

f. Write a full Java program that uses a recursive method to calculate factorial of a non-
   negative integer.   **[3 Marks]**

g. Explain the basic difference between *while* loop and the *do...while* loop. **[1 Marks]**

h. A class variable is declared as *double age*. Write a method that initializes the variable *age*
   and another method that returns the value stored in the variable *age*. **[2 Marks]**

QUESTION TWO [18 MARKS]

a. Differentiate between method overriding and method overloading.   **[3 Marks]**

b. Compare and contrast the following programming paradigms.   **[15 Marks]**
   i.   Object oriented programming.

   ii. Procedural programming.

   iii. Structured programming.

QUESTION THREE [18 MARKS]

a. Using illustrations differentiate between parameters and arguments as used in Java.

                                                                           [2 Marks]

b. Explain the difference between *private* and *protected* access modifiers. **[2 Marks]**

c. Write a method that receives an array with marks of five students in one subject and
   calculates the average of these marks. The method should display average and marks for
   all students.   **[2 Marks]**

d. With help of an example, describe an abstract method.   **[2 Marks]**

e. Using a control structure of your choice, write a Java method that calculates the Greatest
   Common Divisor (GCD) of its two integer arguments.   **[4 Marks]**

f. Write the output of the following Java expressions.   **[2 Marks]**
   i. 6 + 4 * 5 / (8 - 3)

   ii. 9 – 4 / 2 * 2 + (17 % 5)

g. Write a Java program that reads the radius of a circle from the user and calculates the
   circumference and area of the circle. The radius must be an integer.   **[4 Marks]**

QUESTION FOUR [18 MARKS]

a. Explain the difference between *public* and *default* access modifies. **[2 Marks]**

b. Write the following Java code excerpt as a *for* loop.   **[4 Marks]**
   int i = 1;

```
while (i <= 10){
    if(i<5 && i !=2)
        println("x");
    i++
}
```

c. Write the output of the code in d above. **[3 Marks]**

d. Using Java code excerpts differentiate between *while* and *do...while* control structures.

[6 Marks]

e. Explain what is meant by the keyword *final* in Java. **[3 Marks]**

QUESTION FIVE [18 MARKS]

a. What is a constructor? **[2 Marks]**

b. Distinguish between the following concepts:-

   i.   An abstract class and an interface. **[2 Marks]**

   ii.   An array and a Linked list. **[2 Marks]**

c. Using a loop construct of your choice, write a code excerpt that will give the output below.

[4 Marks]

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
1 2 3 4 5 6
```

d. An array is declared as *int marks[4][5];*

   i.   How many elements can be stored in this array?   *20* **[1 Mark]**

   ii.   What is the name of the first element in the array? **[1 Mark]**

   iii.   What is the name of the tenth element in the array? **[1 Mark]**

   iv.   What is the name of the last element in the array? **[1 Mark]**

   v.   Using a control structure of your choice, write a Java code excerpt that displays all the elements of *the marks[4][5]* array and their sum. **[2 Marks]**

e. Explain the difference between ++x and x++ operations on a variable x. **[2 Marks]**