(Knowledge for Development)

KIBABII UNIVERSITY

(KIBU)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

END OF SEMESTER EXAMINATION

2021/2022 ACADEMIC YEAR

SECOND YEAR SECOND SEMESTER EXAMINATION

FOR THE DIPLOMA IN

(INFORMATION TECHNOLOGY)

COURSE CODE: DIT 077

COURSE TITLE: OBJECT ORIENTED PROGRAMING

DATE: 12/05/2022   TIME: 2.00 P.M. – 4.00 P.M.   2HRS

INSTRUCTIONS TO CANDIDATES:

ANSWER QUESTION ONE AND ANY OTHER TWO.

QUESTION ONE (COMPULSORY) [24 MARKS]

a) Name four primitive data types in Java.   [4 marks]

b. The table below shows some data that can be manipulated by a Java program. Identify the most suitable data type for each data.   [4 marks]

Data	Data type
Jambo kenya	
A	
3.142	
2016	

c. Define each of the following Java terms: [4 marks]
    i.   **Class**
    ii.   **Object**
    iii. **Method**
    iv. **constructor**

d. What is the difference between a super class and a sub class?   [2 marks]

e. Differentiate between *System.out.print* and *System.out.println* as used in java. [2 marks]

f. Name the different types of *access modifiers* used in java.   [3 marks]

g. Write a java program to display "I am a Java programmer".   [3 marks]

h. State any two features of Java programming language.   [2 marks]

QUESTION TWO [18 MARKS]

a) Discus the characteristics of object-oriented programming.   [6 marks]

b) Explain the different ways of including comments in any java program.   [4 marks]

c) List the rules that should be followed when naming variables in java.   [4 marks]

d) Briefly explain why java is a platform independent programming language.   [4 marks]

QUESTION THREE [18 MARKS]

a) Explain the key differences between the following scopes of variables.   [6 marks]
    i.   Local variables
    ii. Class variables
    iii. Instance variables

b) Define a java class with the main method to accomplish each of the following tasks: **[12 marks]**

   i.   Create a Scanner that reads values from the standard input.

   ii.   Declare the variables L, W and A to be of type int.

   iii.   Read the first integer from the user and store it in the variable L.

   iv.   Read the second integer from the user and store it in the variable W.

   v.   Compute the product of the two integers contained in variables L and W, and assign the result to the variable A.

   vi.   Display the message "Area is" followed by the value of the variable A.

QUESTION FOUR [18 MARKS]

a. Define a class called `Time`, which models a time instance with hour, minute and second, It contains the following members: **[10 marks]**

   i.   3 `private` instance variables `hour`, `minute`, and `second`.

   ii.   Constructors, getters and setters.

   iii.   Methods to set and get `hour`, `minute` and `second`.

   iv.   A method to display time in the format: "`hh:mm:ss`"

b. Write a driver class called TimeDriver and write a code segment that creates an instance of the Time class above and calls the methods on the object. **[8 marks]**

QUESTION FIVE [18 MARKS]

a) Explain using sample code the basic structure of a java driver class. **[4 marks]**

b) Discuss benefits of object-oriented programming. **[4 marks]**

c) What is the output of the following Java program **[10 marks]**

```java
public class Numbers {
    public static void main(String[] args) {
        int a=10;
        int b=20;
        int c=3;
        System.out.println("a+b="+(a+b));
        System.out.println("axb="+(a*b));
        System.out.println("a-c="+(a-c));
        System.out.println("a==b="+(a==b));
        System.out.println("b/a="+(b/a));
        System.out.println("a%c="+(a%c));
        System.out.println("a++="+(a++));
        System.out.println("--b="+(--b));
        System.out.println("c<a&&b>a="+(c<a&&b>a));
        System.out.println("!c<a&&b>a="+!(c<a&&b>a));
    }
}
```