



*(Knowledge for Development)*

**KIBABII UNIVERSITY**

**(KIBU)**

**UNIVERSITY EXAMINATIONS  
2022/2023 ACADEMIC YEAR**

**END OF SEMESTER EXAMINATIONS  
YEAR ONE SEMESTER TWO EXAMINATIONS**

**FOR THE DEGREE OF BACHELORS OF  
SCIENCE**

**(INFORMATION TECHNOLOGY)**

**COURSE CODE: BIT 122**

**COURSE TITLE: OBJECT – ORIENTED PROGRAMMING 1**

**DATE: 19/04/2023      TIME: 9.00A.M.-11.00A.M**

**INSTRUCTIONS**

**ANSWER QUESTIONS ONE AND ANY OTHER TWO.**

This Paper Consist of 5 printed pages ➡ Turn Over

## QUESTION ONE (COMPULSORY) [30 MARKS]

a. Consider the following variable names. Determine whether they are illegal or legal or legal identifiers of variables in java programming. Justify your answer for each case.

- i. Strong\_place [1 mark]
- ii. \_studentName [1 mark]
- iii. :-staffmember [1 mark]

b. Briefly explain the meaning of the following java programming concepts:

- i. Java Compiler [2 marks]
- ii. Java runtime environment [2 marks]

c. Write comments explaining what each statement of the following java code does. [3 marks]

```
int position = 0;
position+=2;
System.out.println(position+2);
```

d. Write java code statements to accomplish the following.

- i. If the variable “num” is not equal to 7, print “value not 7” [2 marks]
- ii. Print the message “Welcome to Kibabii University” [1 mark]

e. Using one statement for each and some explanation, illustrate how the following string functions are implemented. Write a java code excerpt to illustrate how each function can be used.

- i. equals () [2 marks]
- ii. charAt () [2 marks]

f. Consider the following array declaration.

```
Data_Type amount [] = {200.00, 300.00,220.00,340.00,450.00};
```

- i. state the appropriate data type for the above array. [2 marks]
- ii. What is the size and name of the Array? [2 marks]
- iii. Declare and initialize the above array objects using the “new” keyword [2 marks]

g. Write a sample java code excerpt that converts the string “Welcome to Java Programming” to capital letters. [2 marks]

- h. Using appropriate java code excerpts, demonstrate the difference between constructor overloading, method overriding and operator overloading as used to demonstrate polymorphism in java [3 marks]
- i. Write the signature of the import statement that would be used when capturing input from the user in java. [2 marks]

### QUESTION TWO [20 MARKS]

- a. Write a java program that implements the following pseudocode. [6 marks]

```
if student's grade is greater than or equal to 70
print "A"
else
if student's grade is greater than or equal to 60
print "B"
else
if student's grade is greater than or equal to 50
print "C"
else
if student's grade is greater than or equal to 40
print "D"
else
print "F"
```

- b. What is the role of the following as used in object-oriented programming?
- i. Constructor overloading [2 marks]
  - ii. Super key word in the child class [2 marks]
  - iii. Inheritance [2 marks]
- c. Java supports a number of control structures. The commonly used are the decision making constructs and loop constructs.
- i. Draw a flow chart for a do—while loop. [2 marks]
  - ii. Using a do---while loop, write a java program that prints the following menu on the terminal screen. [6 marks]



**Hotel Menu**

1. Breakfast
2. Lunch
3. Dinner
4. Exit

**QUESTION THREE [20 MARKS]**

- a. Write a java code that would:
- i. Create a class called Employee [1 mark]
  - ii. Define two instance variables name, and designation, both of type String. [2 mark]
  - iii. create two constructors, default and parameterized, for the class. [2 marks]
  - iv. create two accessor and two mutator methods for the two instance variables. [4 marks]
  - v. Create a method called "display" with return type void that displays the employee name and designation when invoked. [2 marks]
  - vi. Create a driver program for the class Employee and display employee information as follows: [6 marks]

**Employee Information****Name: Abshi Abdulrazik****Designation: Senior Software Developer**

- b. Draw a UML diagram for the scenario in 3 (a) above [3 marks]

**QUESTION FOUR [20 MARKS]**

- a. What is the effect of the final keyword on a:
- i. Variable. [1mark]
  - ii. Method. [1 mark]
  - iii. Class. [1 mark]
- b. Explain the difference in scope of the following types of variables as used in java:
- i. Local variable [1 mark]
  - ii. Class variable [1 mark]
  - iii. Instance variable [1 mark]

- c. To read in inputs from the keyboard, we use the java object Scanner. You have to use an import statement to access the class java. util. Scanner.
- i. Write a signature to create and initialize a Scanner object. **[2 marks]**
  - ii. You were to read in the next String and next Double and store the read data on variables x and y respectively, give signatures to implement these. **[4 marks]**
- d. What is the implication of a static key word on a variable? **[2 marks]**
- e. Describe three types of access modifiers in java. **[6 marks]**

#### **QUESTION FIVE [20 MARKS]**

- a. Highlight two differences between algorithmic decomposition and object-oriented decomposition **[2 marks]**
- b. Differentiate between late binding and early binding as used in OOP. **[2 marks]**
- c. What is the difference between object-oriented design and object-oriented analysis **[2 marks]**
- d. Why is java popular? **[2 marks]**
- e. Write a java program that would:
- i. create a two-dimensional array of called marks, that stores marks for two students in three subjects **[3 marks]**
  - ii. Prompt the user to enter scores for the 3 subjects for the two students and store the scores in the array. **[4 marks]**
  - iii. Calculate the total score for each student **[2 marks]**
  - iv. Get the mean score for each student and compute the best score of the two average scores. **[3 marks]**