



PAN AFRICA CHRISTIAN UNIVERSITY

(BACHELOR OF BUSINESS INFORMATION TECHNOLOGY)

END OF SEMESTER EXAMINATION

DEPARTMENT: COMPUTING & INFORMATION TECHNOLOGY

COURSE CODE: BIT 204

CAMPUS: ROYSAMBU

COURSE TITLE: OBJECT ORIENTED PROGRAMMING

EXAM DATE: TUESDAY, 4TH DECEMBER 2018

TIME: START HOUR – END 09:00-12:00 HRS

INSTRUCTIONS

- This exam script has **TWO (2)** sections.
- Read all questions carefully before attempting.
- Answer All questions in Section **A** and any other Four questions in Section **B**.
- Write only your **student number** on the answer booklet provided.
- None programmable calculators permitted
- Calculators on phones, tablets and computers are NOT permitted in Theory Papers

SECTION A: (Answer ALL questions in this section)

Question 1 :

- I. Distinguish the following terms as used in object oriented programming: instant variable, class variable and class constructor (6 Marks)
- II. Enumerate FIVE advantages of java over other programming languages (5 Marks)
- III. List and briefly explain THREE categories of control structures (6 Marks)
- IV. Write a java program to display **"I am happy today"** five times. (4 Marks)
- V. Identify and briefly explain FOUR different access specifiers in Java (8 Marks)
- VI. Write a program that reads in the radius and length of a cylinder and computes its volume using the following formulas: (8 Marks)

$$\text{area} = \text{radius} * \text{radius} * p$$
$$\text{volume} = \text{area} * \text{length}$$

- VII. Identify and fix the errors in the following code: (3 Marks)

```
public class Test {  
    public void main(string[] args) {  
        int i;  
        int k = 100.0;  
        intj = i + 1;  
  
        System.out.println("j is " + j + " and  
        k is " + k);  
    }  
}
```

SECTION B: (Answer any FOUR (4) questions in this section)

Question 2:

- I. Describe the phrase **Object oriented programming** indicating THREE of its advantages to the programmer (5 Marks)
- II. With the aid of a code snippet, demonstrate your understanding of virtual methods as used in programming (7 Marks)
- III. Using a code snippet, distinguish while loop from do-while loop (3 Marks)

Question 3:

- I. Define the term inheritance. (2 Marks)
- II. Briefly explain any THREE types of inheritance supported in java (3 Marks)
- III. Write a java program with a base class **Student** and derived classes **Diploma_Student** and **Bachelor_Student**. The base class should pass such features like regn0, name and gender to its derived classes and display the results accordingly. (10 Marks)

Question 4:

- I. Distinguish the following terms
 - i. Class and object (2 Marks)
 - ii. Accessor method and mutator method (2 Marks)
 - iii. Next() and NextLine() (2 Marks)
- II. Write a java code segment that declares an array and initializes it with the following values: 56, 43, 51, 49, 31, 53, 20, 34, 62, 23 and thereafter display the values in reverse (2 Marks)
- III. DigitalLife Restaurant wants to automate its Entrance Management System. You have been approached to write a simple program to determine whether the potential client is under age or an adult and give appropriate advice. Write down the probable code that you would provide. (7 Marks)

Question 5:

In XYZ Co. employees are paid according to number of hours worked and grade. For grade A, hourly rate is Kshs. 200, for B hourly rate is 400. Additionally, the pay is taxed as follows;

First 10,000/=	0%
Next 10,000 -	10%
Next 10,000 -	20%
Rest -	30%

Required;

Write a program that will compute the total pay, tax, and net pay. (15 Marks)

Question 6:

- I. Write a program that reads ten numbers and store them in an array, computes their average, and finds out how many numbers are above the average. (7 Marks)
- II. Design a class named Stock that contains: (8 Marks)
 - A string data field named symbol for the stock's symbol.
 - A string data field named name for the stock's name.
 - A double data field named previousClosingPrice that stores the stock price for the previous day.
 - A double data field named currentPrice that stores the stock price for the current time.
 - A constructor that creates a stock with specified symbol and name.
 - The accessor methods for all data fields.

Question 7:

- I. Distinguish constructors from methods (2 Marks)
- II. Write a method that computes Simple Interest given interest rate, principal for a specified number of years. The principal, rate and time are passed as parameters. Call the method within main. The Simple Interest is determined using the formula: **(Principal * rate * time) / 100** (5 Marks)
- III. Describe any FOUR swing top level containers (8 Marks)