

**CHUKA**



**UNIVERSITY**

## **UNIVERSITY EXAMINATIONS**

### **EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN COMPUTER SCIENCE**

#### **ACMP 343: DESKTOP APPLICATION AND DEVELOPMENT**

**STREAMS:**

**TIME: 2 HOURS**

**DAY/DATE:TUESDAY 5/12/2017**

**2.30 P.M- 4.30 P.M**

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#### **INSTRUCTIONS:**

- **Answer Question ONE and any other TWO questions.**
- **Diagrams should be used whenever they are relevant to support an answer.**
- **Sketch maps and diagrams may be used whenever they help to illustrate your answer**
- **Do not write anything on the question paper**
- **This is a closed book exam, No reference materials are allowed in the examination room**
- **There will be No use of mobile phones or any other unauthorized materials**
- **Write your answers legibly and use your time wisely**
- **Electronic, non-programmable calculators may be used**

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#### **QUESTION ONE (COMPULSORY): 30 MARKS[ATTEMPT ALL QUESTIONS IN THIS SECTION**

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- a. Briefly describe Java Foundation classes? [4marks]
- b. Programmers developing desktop applications would prefer to use swing components over java AWT components, Discuss. [4marks]
- c. Discuss Spring Rich's capabilities as a desktop application framework. [2marks]
- d. Discuss the concept of layering when building large software applications. [6marks]
- e. Use a sample java program to demonstrate the concept of polymorphism [4marks]

f. Analyze the following block of code and give the appropriate output

[4marks]

```
for(int i=1; i < 5; i++)
{
    if(i % 2 == 0)
        System.out.println("Hello World: "+i);
}
```

g. A sales man travels from city to city supplying goods and services to customers. He is paid a monthly salary of Ksh. 100,000. He is also paid a 10% commission for total goods sold and another 20% commission for sales which exceeds Ksh. 1000 000.

Explain how you would develop a complete java desktop application to calculate the amount payable to the sales man when he meets all the conditions. [6 marks]

## SECTION B: CHOOSE ANY TWO QUESTIONS

### QUESTION TWO [20MKS]:

- Discuss the principle concepts are of object oriented programming? [8 marks]
- Differentiate between encapsulation and abstraction [4marks]
- Discuss the different forms of polymorphism. [8marks]

### QUESTION THREE [ 20 MKS]

With use of examples, demonstrate how each of the following is implemented in java.

- Inheritance [5mks]
- Polymorphism [5mks]
- Encapsulation [5mks]
- Abstraction [5mks]

### QUESTION FOUR [20 MKS]

A palindromic word is one that reads the same backwards as forwards. Hence the words hello and peel are not palindromes, but the words peep, deed, and aibohphobia(fear of palindromes) are palindromes.

a) Define a class called Palindrome, with its constructor. [4 marks]

b) In your Palindrome class, create a method called reverse () which takes a string argument. Your method should return the reverse of the argument as a string. For example, if the argument is `_Foobar_` then your method should return `_rabooF_`.

[8 marks]

c) Create a second method in Palindrome called isPalindrome() which takes a string argument. This method should return True if the argument is a palindrome and False otherwise.

[10 marks]

**QUESTION 5 [20 MARKS]**

1. Consider the following code in Object Oriented Programming. it defines the start of a class to represent bank accounts:

```
Public class BankAccount{  
  
    Int interest_rate = 0.3  
    Public BankAccount(String name, int number, double balance){  
        this.name = name;  
        this.number = number;  
        this.balance = balance;  
  
        return 0; }  
}
```

a) Add instance methods called deposit() and withdraw() which increase and decrease the balance of the account. Make sure the withdraw() method doesn't allow the account to go into overdraft. Add a third method called add\_interest() which adds interest to the balance (the interest should be the interest rate multiplied by the current balance).

[10 marks]

b) Create a subclass of Bank Account called Student Account. Every Student Account should have an overdraft limit of Kshs 1000. Write a constructor for the new class. Override the withdraw() method to make sure that students can withdraw money up to their overdraft limits.

[10 marks]