

CHUKA



UNIVERSITY

RESIT/ SPECIAL EXAMINATIONS

**THIRD YEAR EXAMINATION FOR THE AWARD OF DEGREE OF
BACHELOR OF SCIENCE IN APPLIED COMPUTER SCIENCE**

ACMP 343: DESKTOP APPLICATION AND DEVELOPMENT

STREAMS:

TIME: 2 HOURS

DAY/DATE: THURSDAY 26/7/2018

8.30 AM – 10.30 AM

INSTRUCTIONS:

- **Answer Question ONE and any other TWO questions.**
- **Electronic, non-programmable calculators may be used**

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

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

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

[4mks]

```
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]:

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

QUESTION THREE [20 MKS]

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

- (i) Inheritance [5mks]
 (ii) Polymorphism [5mks]
 (iii) Encapsulation [5mks]
 (iv) 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 is Palindrome () which takes a string argument. This method should return True if the argument is a palindrome and False otherwise. [10 marks]

QUESTION 5 [20 MKS]

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

```
Public class BankAccount{  
  
    Intinterest_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 `BankAccount` called `StudentAccount`. Every `StudentAccount` 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 mks]