

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

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

**ACSC 231: USER INTERFACE PROGRAMMING**

**STREAMS: BSC. APPLIED COMPUTER SCIENCE (Y2S2)**

**TIME: 2 HOURS**

**DAY/DATE: FRIDAY 15/4/2019**

**2.30 P.M. – 4.30 P.M.**

**INSTRUCTIONS:**

- **Answer question 1 and any other TWO**
- **Do not write on the question paper**

**Question One (30 Marks)**

- a) Write the code snippet required to do each of the following:
- i) Construct a panel container and add it to a frame. (Choose appropriate names for the panel and frame). [3 marks]
  - ii) Construct a CheckboxGroup object called Languages with the check boxes English, Swahili, German and French. [2 marks]
  - iii) An anonymous label called Anonymous. [2 marks]
- b) Differentiate between the *setVisible* (*argument*) and the *pack* ()Frame methods as used in GUI programming. [6 marks]
- c) Write a listener class for a button that implements the *ActionListener* that changes a frame's background color between Blue and Black. (Nb: Write the listener class only not whole program). [5 marks]
- d) Describe the *subscribe-publish* also called *observable-observer* design pattern as used in handling events. [3 Marks]
- e) Consider the code snippet below.

```
public class WindowEventDemo extends Frame
implements ActionListener, WindowListener {
```

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- i. What is the purpose of the class defined above? [2 Marks]
  - ii. What does “Java only supports single inheritance” imply? [2 Marks]
- f) With the aid of a well labeled diagram, discuss the MVC design pattern. [5 Marks]

### SECTION B (Answer any TWO questions from this section)

#### Question Two (20 marks)

- a) Give TWO differences between Swing and AWT (abstract window toolkit) [4 marks]
- b) Illustrate the border layout by writing an AWT program that adds Five Button labeled in accordance to their respective region of placement. [5 marks]
- c) Outline the properties of a nested class. [5 marks]
- d) Discuss the top-level containers in a swing application. [6 marks]

#### Question Three (20 marks)

- a) Outline the steps followed in event handling. [4 marks]
- b) Using code, show how you can implement the windows adapter classes. [6 marks]
- c) Describe the constructors for a Frame’s FlowLayout() [6 Marks]
- d) Labels should be created with anonymous instances. Explain. [4 Marks]

#### Question Four (20 marks)

- a) Write a program that adds an ActionListener to a Button. When the button is clicked, the text “**Don’t Click Me Again**” is displayed on a text box. [6 marks]
- b) Write a program that implements the AWT KeyListener interface. The program adds three buttons to a frame. The buttons are labeled “New”, “Edit” and “Exit”. A label below the buttons indicates the button clicked when either button is clicked. (e.g. “Exit button clicked”). [8 marks]
- c) Describe the three core activities in User Interface Design. [6 marks]

#### Question Five (20 marks)

- a) Write a program that allows the user to select one of any FIVE Kenyan cities from a choice box. The selected city is then displayed on a label beneath the choice box in bold. [8 marks]
- b) Describe FOUR layout managers mostly used in GUI development [8 Marks]
- c) Give TWO differences between Swing and AWT (abstract window toolkit) [4 Marks]