

### Question 1 (30 Marks)

- (a) Explain the following terms as used in Object Analysis and Design and give an example:
- Instance.
  - Message.
  - Polymorphism
  - Object
- (4 marks)
- (b) Using a suitable example, explain the difference between abstract and concrete class (2 marks)
- (c) Identify four Event Listeners you can use when writing Java programs. (4 marks)
- (d) Explain four benefits of Object Oriented system development. (2 marks)
- (e) The gross salary of employees at West lands merchants is based on basic salary and commission earned from sale of various products in the store. The table shows the monthly sales target and possible commissions to be earned .Use it to generate a Java program and use the input and message dialogue boxes to capture and display the results from your program (5marks)

Monthly Sales	Commission rate
Above 40000	20%
Between 20000 and 40000	15%
Below 20000	10%

- (f) Discuss the at least four types of layout managers and show how each is used (8marks)
- (g) Write a Java GUI program that generates the form shown below. The program should compute and display the results of two numbers entered on clicking the "Add" button. (5 Marks)

Number Addition

First Number:

Second Number:

Result:

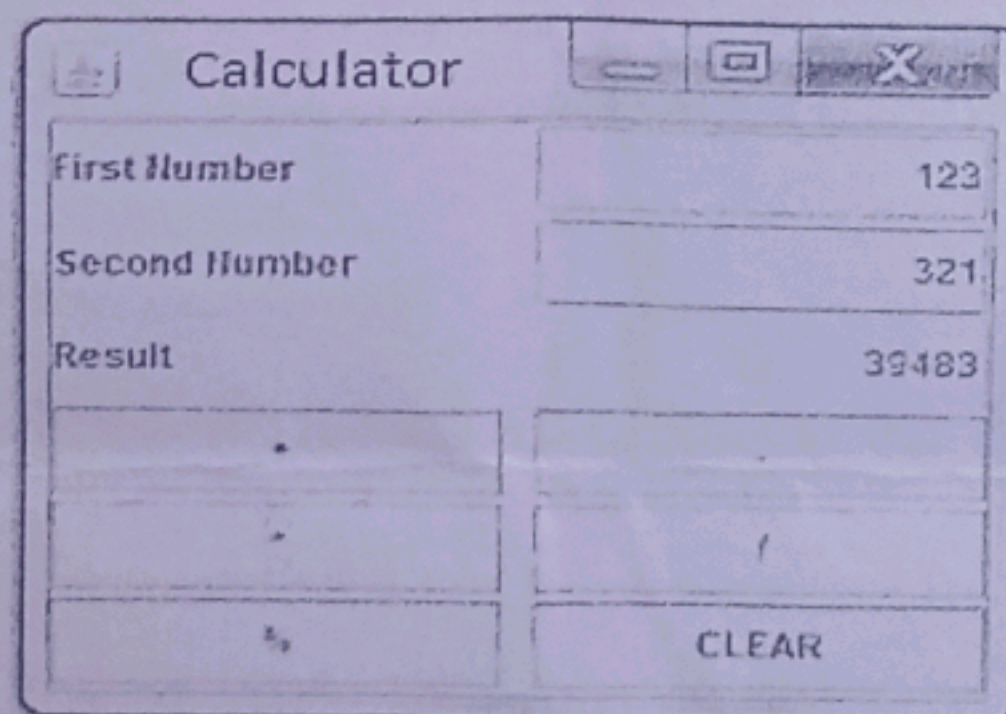


## QUESTION 2

- a. Explain in detail why the following lines are included at the beginning of the program (3mks)
- awt
- i. `import java.awt.*`
  - ii. `import java.awt.event.*`,
  - iii. `import javax.swing.*`
- b. Explain the following key concepts of the following in event classes in object oriented programming (6marks)
- i. Event Handler
  - ii. Event Sources
  - iii. Event Listeners
- c. Explain the meaning of the following functions as used in a piece of the code (6mks)
- i) `label2.setToolTipText( "This is label2" )`
  - ii) `label3.setText( "Label with icon and text at bottom" );`
  - iii) `label3.setIcon( bug );`
  - iv) `label3.setHorizontalTextPosition( SwingConstants.CENTER );`
  - v) `container.add( label3 );`
  - vi) `f.addMouseListener(new MouseAdapter())`
- d. Write a program to calculate area of circle and display results in text field (5 marks)

## QUESTION 3

- a. Describe the following events indicating the listener interface for each of them (12 marks)
- i. Action Event
  - ii. Mouse Event
  - iii. Key Event
  - iv. Item Event
  - v. Text Event
  - vi. Window event
- b. Write a sample calculator consisting of addition button, subtraction button, multiplication button, two text fields and a label such that a user enters numbers in the two text field and when he clicks either of the buttons the result is displayed in the label. Sample guiding interface is shown below (8 marks)



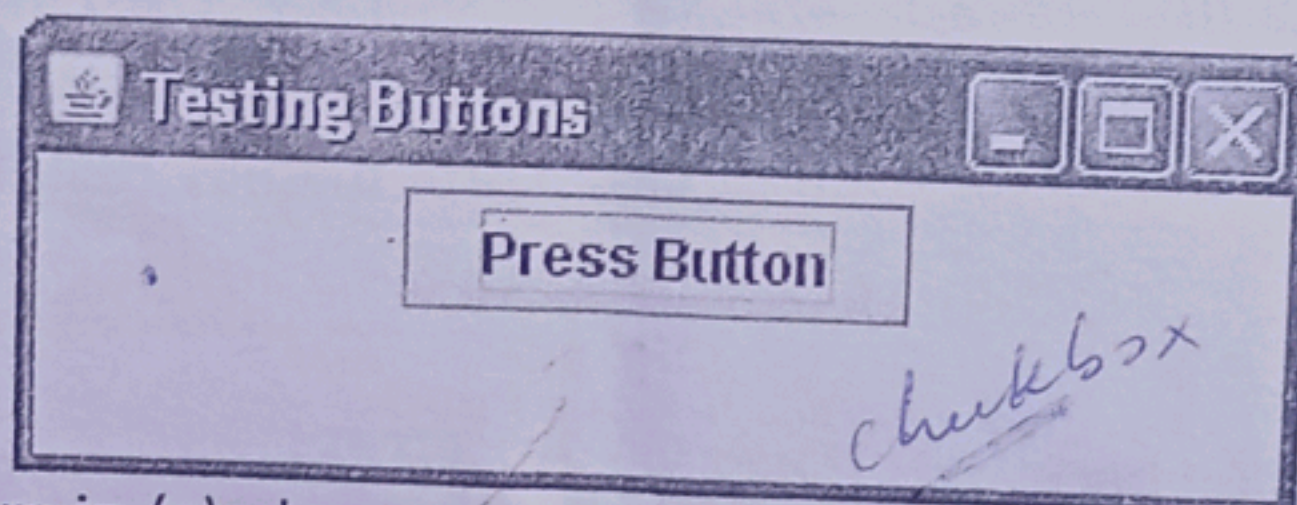


#### QUESTION 4

- a. Define the term GUI (1mark)✓
- b. State at least two advantages of GUI (2marks)✓
- c. With aid of examples, explain how **super** keyword is used (2 marks)
- d. Define java package and outline the benefits of packages. (3 Marks)
- e. Using appropriate examples outline THREE control structures used when writing java programs. (6 Marks)
- f. With Aid of an example show how the following functions are used in GUI (6 Marks)
  - i. setVisible()
  - ii. setSize()
  - iii. setEditable-

#### QUESTION 5

- a. Define the term Layout manager (2 marks)✓
- b. Write a java program that will display at least three JLabels a (6marks)✓
- c. Write a program that will display the figure bellow ( 6marks)



- d. Modify the program in (c) above such that when the button is clicked a dialog box below is displayed (6marks)

