



MASENO UNIVERSITY UNIVERSITY EXAMINATIONS 2024/2025

THIRD YEAR FIRST SEMESTER EXAMINATION FOR THE
DEGREE OF BACHELOR OF SCIENCE IN COMPUTER
SCIENCE, BACHELOR OF SCIENCE COMPUTER
TECHNOLOGY, BACHELOR OF SCIENCE IN
MATHEMATICS & COMPUTER SCIENCE AND
BACHELOR OF EDUCATION SCIENCE

MAIN CAMPUS

CIR 205: OBJECT ORIENTED PROGRAMMING II

Date: 31st January, 2025

Time: 12.00 - 3.00pm

INSTRUCTIONS:

- Do not write anywhere on this Question paper
- Answer Question ONE and any other TWO.

Question 1 (30 Marks)

- (a) Explain the following terms as used in Object Analysis and Design and give an example:
- Instance.
 - Message.
 - Polymorphism
 - Object
- (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

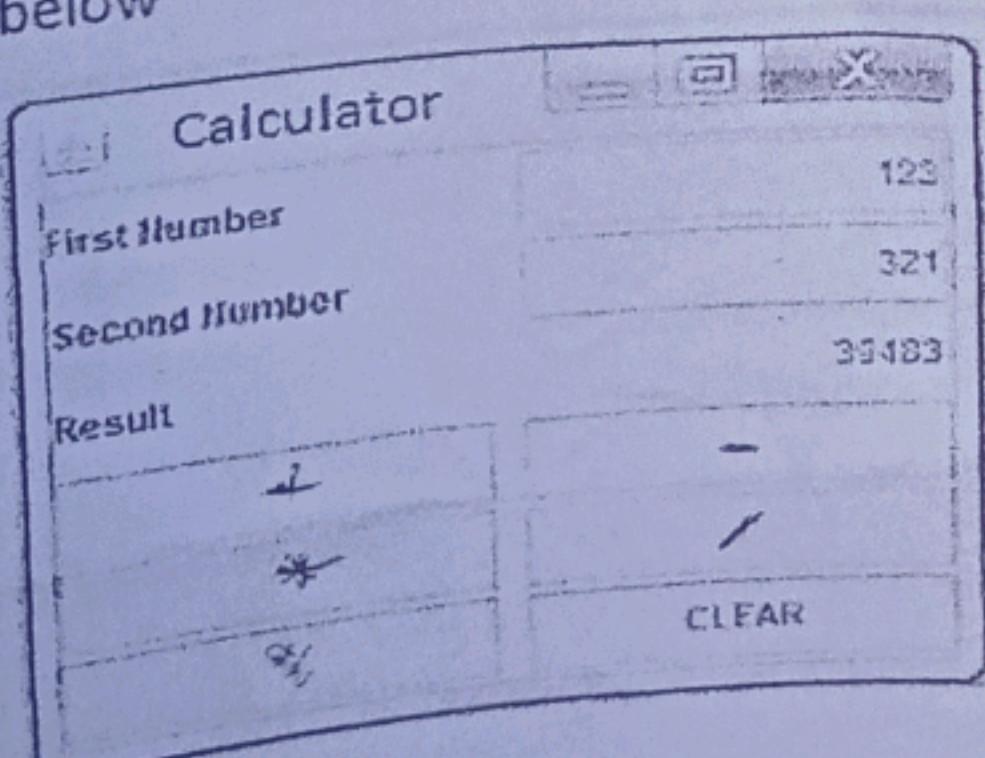
First Number:	<input type="text"/>
Second Number:	<input type="text"/>
Result:	<input type="text"/>
	<input type="button" value="Add"/>
	<input type="button" value="Clear"/>

- QUESTION 2**
- Explain in detail why the following lines are included at the beginning of the program (3mks)
- import java.awt.* → tells java to import all the classes in the package ("Awt");
 - import java.awt.event.* → imports all classes from java.awt.event package which contains event - handling classes of GUI component programming ("Event");
 - import javax.swing.* → imports all classes from the javax.swing package which contains modern GUI component for Java application.
- Explain the following key concepts of the following in event classes in object oriented programming (6marks)
- i. Event Handler → It is a mechanism that controls event and decides what should happen if an event occurs.
 - ii. Event Sources → is an object on which that an event occurs. It is responsible for providing information of occurred event to its handler.
 - iii. Event Listeners → responsible for generating response to event that hand occurs once it is received by listener.
- 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 → This is event generated when button is clicked or first item of list is double clicked.
  - ii. Mouse Event → This is event that is generated when mouse occurs in a component.
  - iii. Key Event → Event is generated when a key character is pressed.
  - iv. Item Event → Event generated when an item is selected or deselected.
  - v. Text Event → Event generated when text in a GUI component changes.
  - vi. Window Event → An event class that changes state of window.
- 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)

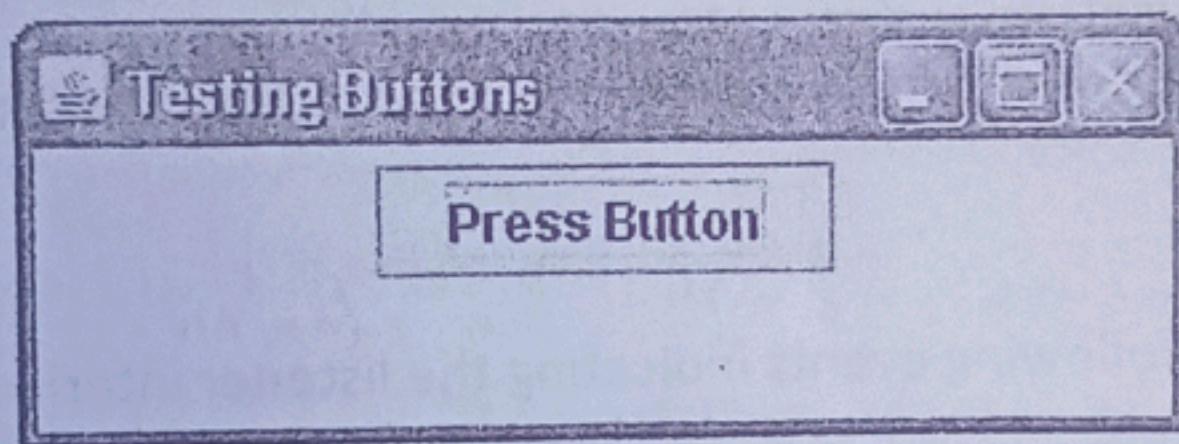


#### QUESTION 4

- 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)

