



Faculty of Computing and Technology

Department of Computer Science

Bachelor of Honors in Computer Science | Software Engineering | Information Technology

Batch 01 – Semester 02

End Examination

Year 2023

CS 1209, SE 1209, IT 1209 - Object Oriented Programming (Theory)

Duration: 2 Hours

Instructions to the candidates:

1. Duration of the paper is 2 (Two) Hours.
2. The medium of instructions and questions in English.
3. Paper Contains 4 (Four) Questions under 3 (Three) Pages.
4. Answer **ALL 4 (FOUR)** questions.
5. Illustrate your answers with clear diagrams/source codes whenever applied.
6. Clear handwriting is required.
7. The paper is marked out of 100 Marks.
8. Electronic devices capable of storing and retrieving text, including electronic dictionaries, mobile phones, smart watches are **NOT** allowed.
9. If a page or part of this question paper is not printed, please inform the supervisor immediately.

Question 01

- ✓ a. Define **FIVE (05)** concepts of Object Orientation. (5 Marks)
- ✓ b. State what is an **Object** and a **Class** in the context of Object-Oriented Programming. (4 Marks)
- ⑧ ✓ c. Identify what is the purpose of a **Constructor**? (3 Marks)
- d. Outline **THREE (03)** characteristics of a **constructor** in Java. (3 Marks)
- ✓ e. In the context of Constructors in Java, explain what is meant by **Default Constructor**? (4 Marks)
- ⑧ ✓ f. Using a suitable java code, explain the concept of **Constructor Overloading**. *multiple constructors have* (6 Marks)

[Total = 25 marks]

Question 2

- ✓ a. Define what is meant by **Encapsulation**. (3 Marks)
- ✓ b. In the context of java, list **FOUR (04)** types of visibility scopes. (4 Marks)
- ✓ c. Describe **TWO (02)** types of the visibilities listed in Part b. (4 Marks)
- ✓ d. Compare the difference between a **Getter** method and a **Setter** method. (4 Marks)

- e) Using suitable java class, explain how to make a private variable **read-only** and **write-only**.

(10 Marks)

[Total = 25 marks]

Question 3

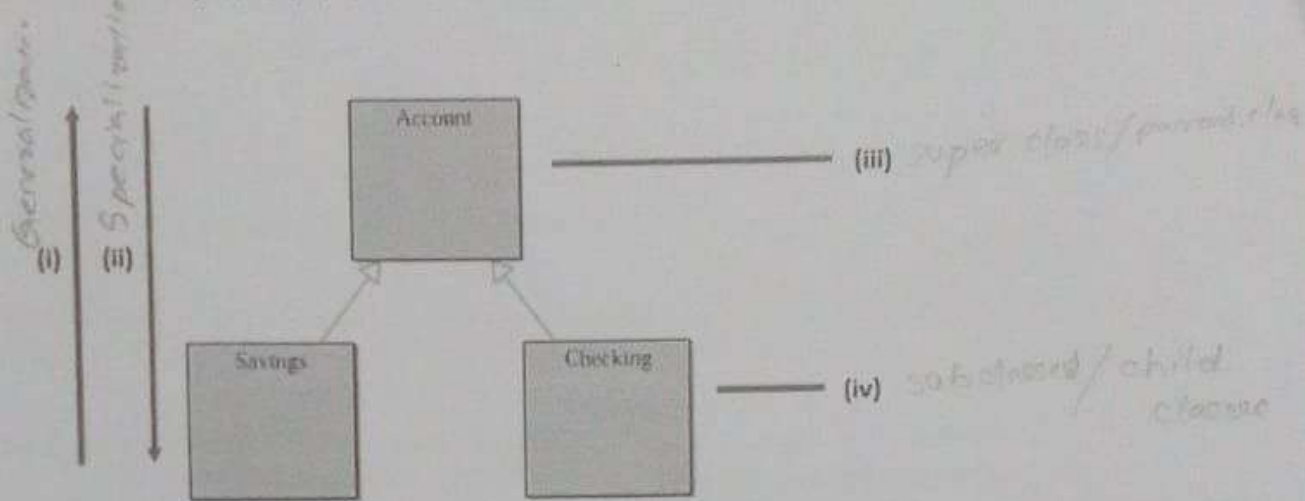
- a. In the context of Object Orientation, define what is meant by **Polymorphism**.
(3 Marks)
- b. Identify in Java, how the **Compile-time polymorphism** and **Run-time Polymorphism** implemented.
(6 Marks)
- c. List **TWO (02)** advantages and **TWO (02)** disadvantages of Polymorphism.
(4 Marks)
- d. In the context of Object-Oriented Programming in Java, express the application of following keywords
- this
 - super
 - abstract
 - final

(12 Marks)

[Total = 25 marks]

Question 4

- a. In the context of inheritance terminology of Object Orientation, identify the terms labeled by (i), (ii), (iii) and (iv) in the diagram.



(6 Marks)

- b. List **THREE** (03) types of inheritance.

(3 Marks)

- c. Explain with reasons whether the following statements **TRUE** or **FALSE** in the context of Object-Oriented Programming in Java.

- One Cannot define a no-args constructor in a subclass, when there are no constructors defined in the superclass.
- A class can inherit several parent classes but only one subclass.
- It is essential to define every abstract method in an abstract class using the keyword "abstract".
- When an initializer block and a constructor is defined inside a class, initializer block calls before the constructor call.

(16 Marks)

[Total = 25 marks]

***** END OF THE PAPER *****