

**Total number of printed pages:2      Programme(U)/3<sup>rd</sup> Semester/UCSE303**

**2024**

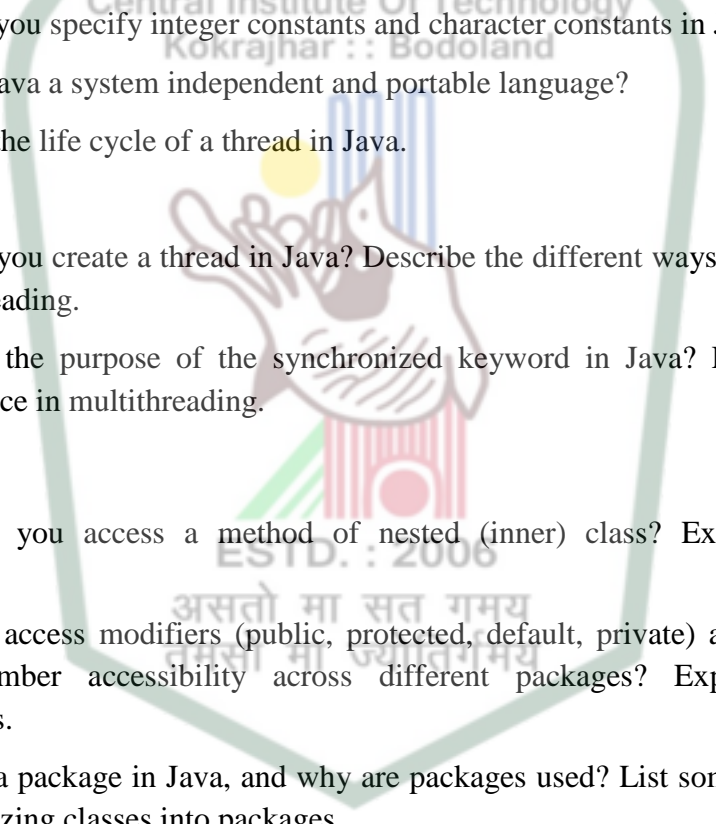
**Object Oriented Programming using Java**

*Full Marks : 100*

**Time : Three hours**

***The figures in the margin indicate full marks for the questions.***

*Answer any five questions.*

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1. a) How do you specify integer constants and character constants in Java? 6  
b) How is Java a system independent and portable language? 4  
c) Explain the life cycle of a thread in Java. 10
2. a) How do you create a thread in Java? Describe the different ways to achieve multithreading. 10  
b) What is the purpose of the synchronized keyword in Java? Explain its importance in multithreading. 10
3. a) How do you access a method of nested (inner) class? Explain with example. 5  
b) How do access modifiers (public, protected, default, private) affect class and member accessibility across different packages? Explain with examples. 10  
c) What is a package in Java, and why are packages used? List some benefits of organizing classes into packages. 5
4. a) What is the default access level of methods and variables declared in an interface? 2  
b) Explain the purpose of the default and static methods in Java interfaces. How are they different from abstract methods? 4  
c) Can a Java interface extend another interface? How is multiple inheritance achieved in Java through interfaces? 3+6

- d) What happens if a class implements two interfaces that contain a method with the same signature? 5
5. a) What is the purpose of the try, catch, finally, and throw keywords in Java exception handling? Explain with examples. 10
- b) What are some of the most commonly used exception classes in Java? Explain their usage. 10
6. Write a simple client-server application wherein the client sends some text to the server. The server receives the text and counts the number of digits present in the text and sends back to the client. The client displays the result on the console. 20
7. Write short notes on 20
- a) Command Line Arguments
  - b) String Class
  - c) Wrapper Class
  - d) Varargs

