LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

UNIT V – QUESTION BANK

Subject: Object-Oriented Programming with Java (23CS05)

Part A: Short Answer Questions (2 Marks)

15 Questions × 2 Marks = 30 Marks

Q. No.	Question	Bloom's Level
1	Define multithreading and state two advantages of using multiple threads in Java.	K1 – Remember
2	Explain the purpose of the Thread class and identify two ways to create a thread in Java.	K2 – Understand
3	List the different states in the Java thread life cycle.	K1 – Remember
4	Differentiate between thread synchronization and inter-thread communication.	K2 – Understand
5	Describe the role of the wait(), notify(), and notifyAll() methods in Java.	K2 – Understand
6	Define the Java Collections Framework and state its purpose.	K1 – Remember
7	Differentiate between the List and Set interfaces with suitable examples.	K2 – Understand
8	Compare the ArrayList and LinkedList classes based on their basic characteristics.	K2 – Understand
9	Explain the purpose of the Iterator interface and mention any two methods it provides.	K2 – Understand
10	Differentiate between the List, Set, and Map interfaces in Java Collections.	K2 – Understand
11	Describe the purpose of JavaFX Scene Builder and state one advantage of using it.	K2 – Understand
12	Compare AWT, Swing, and JavaFX with respect to GUI development.	K2 – Understand
13	Identify the major components of a JavaFX application window and state their purposes.	K1 – Remember
14	Explain event handling in JavaFX and identify one event handler used to respond to user actions.	K2 – Understand
15	Describe the scene graph in JavaFX and explain the purpose of layout panes.	K2 – Understand

Part B: Descriptive Questions (5 Marks)

15 Questions × 5 Marks = 75 Marks

Section I – Conceptual and Descriptive Questions

Q. No.	Question	Bloom's Level
1	Explain the need for multithreading in Java and describe how multithreaded programming can improve the utilization of multicore processors.	K2 – Understand
2	Illustrate the Java thread life cycle and explain thread creation, thread priorities, and the different methods used to control thread execution.	K2 – Understand
3	Analyze the importance of synchronization in multithreaded programming and explain the producer-consumer problem using inter-thread communication.	K4 – Analyze
4	Explain the hierarchy of the Java Collections Framework and describe the major methods defined in the Collection interface and the role of the Iterator interface.	K2 – Understand
5	Compare the List, Set, and Map interfaces and explain the characteristics and applications of their commonly used implementation classes.	K2 – Understand
6	Compare AWT, Swing, and JavaFX based on architecture, platform independence, UI components, styling, and limitations.	K2 – Understand
7	Explain the structure of a JavaFX application, including Stage, Scene, nodes, and layout panes. Illustrate how text and images are displayed in a scene.	K2 – Understand
8	Describe event handling in JavaFX and explain how action events and mouse events are handled using event handlers.	K2 – Understand

Section II – Programming Questions

Q. No.	Programming Question	Bloom's Level
9	Develop a Java program to create two threads: one thread displays even numbers from 2 to 20, while the other displays odd numbers from 1 to 19. Create the threads using the Thread class or the Runnable interface.	K3 – Apply
10	Implement a Java program to demonstrate synchronization by creating multiple threads that access a shared bank account. Ensure that deposit and withdrawal operations maintain a consistent account balance.	K3 – Apply
11	Construct a Java program to implement the producer-consumer problem using a shared buffer and inter-thread communication with wait() and notify(). Ensure that the producer waits when the buffer is full and the consumer waits when it is empty.	K3 – Apply
12	Develop a Java program using ArrayList to store student names, insert a new name, remove a name, search for a name, and display all names using an Iterator.	K3 – Apply
13	Create a Java program using HashMap to store student roll numbers and names. Implement operations to add, retrieve, update, remove, and display student records.	K3 – Apply
14	Design a JavaFX application that displays a label, a text field, a button, and an image. When the user clicks the button, display the text entered in the text field in the label.	K3 – Apply
15	Develop a JavaFX application with a layout pane containing multiple buttons. Implement mouse event handlers to change a label's text when the mouse enters, exits, or clicks a button.	K3 – Apply