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May 2024 (ENDSEM) EXAM

F.Y.B. TECH. (SEMESTER - II)

COURSE NAME: **Programming & Problem Solving - II** **Branch:** **Information Technology** **COURSE CODE:** **IT12234**

(PATTERN 2023)

Time: [1Hr. 30 Min] **[Max. Marks: 40]**

(*) Instructions to candidates:

1) **Figures to the right indicate full marks.**
2) **Use of scientific calculator is allowed**
3) **Use suitable data wherever required**
4) **All questions are compulsory. Solve any one sub question from each Question 1 and 2 and any three sub questions each from Questions 3 and 4.**

Q. No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a) What are the three main components of the Java development environment, and what are their respective roles in Java programming?	[5]	CO 1	1
	b) Explain the significance of Java's platform independence. How does it differ from traditional programming languages like C and C++, and what benefits does it offer to developers?	[5]	CO 1	2
Q2	a) Explain the difference between compile-time polymorphism and run-time polymorphism in Java. Provide examples for each type and discuss their respective advantages in program design.	[5]	CO 2	1
	b) Identify and describe three types of inheritance supported in Java. For each type, provide a brief explanation and an example illustrating its usage in a real-world scenario.	[5]	CO2	2
Q.3	a) Explain the concept of event-driven programming in the context of Java Swing applications. Describe how event listeners and event handling mechanisms work together to respond to user interactions with GUI components..	[5]	CO 3	3
	b) Discuss the advantages of using Swing components over AWT components for building graphical user interfaces in Java applications. Highlight key features and design considerations that make Swing a preferred choice for modern GUI development.	[5]	CO 3	3

	c) How would you demonstrate the use of a JButton component in a Java Swing application to trigger an action when clicked?	[5]	CO 3	3
	d) Evaluate the role of layout managers in Java Swing applications. Discuss different types of layout managers (e.g., BorderLayout, GridLayout, GridBagLayout) and their suitability for organizing GUI components in various scenario	[5]	CO3	3
Q.4	a) Imagine you are tasked with designing a Java application for a small retail business that needs to manage its inventory using a MySQL database. Explain how you would apply JDBC concepts to establish connectivity with the database and implement CRUD operations (Create, Read, Update, Delete) for managing inventory items.	[5]	CO 3	3
	b) Consider a scenario where you need to develop a Java program for a university administration system that connects to an Oracle database to manage student enrollment. Describe how you would apply JDBC principles to handle the enrollment process. Discuss the role of error handling and transaction management in ensuring data consistency and reliability.	[5]	CO3	3
	c) Suppose you are developing a Java application for a financial institution that connects to an Access database to manage customer accounts. Explain how you would apply JDBC techniques to implement transaction processing functionality?	[5]	CO 3	3
	d) Consider a scenario where you are tasked with developing a Java application for an online bookstore that connects to a MySQL database. Discuss how you would apply JDBC principles to implement features such as searching for books	[5]	CO3	3