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| **SESSION** | **APRIL 2025** |
| **PROGRAM** | **BACHELOR OF COMPUTER APPLICATIONS (BCA)** |
| **SEMESTER** | **4** |
| **COURSE CODE & NAME** | **DCA2202** |
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**Set-I**

**Q1. Explain any five features of Java. 10**

**Ans 1.**

**Five Features of Java**

Java is one of the most widely used programming languages in the world. It is known for its simplicity, reliability, and cross-platform capabilities. Developed by Sun Microsystems in the mid-1990s, Java is designed to be a general-purpose language that is class-based and object-oriented. Over the years, it has become popular for developing desktop applications, mobile apps, web-based software, enterprise systems, and more.

**1. Platform Independence**

Java is a platform-independent language, which means that the same Java program can run on any operating system without modification. This is made possible by the Java Virtual Machine

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**Q2. What are the different types of operators used in Java?**

**Ans 2.**

**Operators in Java**

In Java, **operators** are special symbols used to perform operations on variables and values. They play a crucial role in manipulating data and controlling the flow of programs. Java supports a wide range of operators, categorized based on their functionality. Understanding these operators is fundamental to writing effective and efficient Java programs.

**1. Arithmetic Operators**

Arithmetic operators are used to perform mathematical calculations such as addition, subtraction,

**Q3. What do you mean by Threads in java? Explain with an example. 10**

**Ans 3.**

**Threads in Java**

A thread in Java is a lightweight process that allows multiple tasks to run concurrently within a program. Java’s multithreading capability enables better resource utilization and responsiveness, especially in applications like games, multimedia processing, real-time simulations, and servers.

Java provides a built-in support for multithreading through the Thread class and the Runnable interface. Each thread represents an independent path of execution. Multiple threads in a

**Set-II**

**Q4. What is the difference between errors and exceptions? 10**

**Ans 4.**

**Errors in Java**

In Java, an Error refers to a serious problem that a program should not try to handle. Errors are generally caused by problems external to the application, such as hardware failure, JVM crashes, memory leaks, or other serious system-level issues. They are represented by the java.lang.Error class and its subclasses. Since these are typically beyond the control of the program, they are not intended to be caught using try-catch blocks.

For example, a StackOverflowError occurs when a method recurses too deeply, and a

**Q5. Explain the Synchronization of Threads. 10**

**Ans 5.**

**Thread Synchronization**

In Java, thread synchronization is a mechanism used to control access to shared resources by multiple threads. When multiple threads access a shared object or variable, and at least one thread modifies it, the program can produce inconsistent or unpredictable results. This is known as a race condition, and synchronization is the solution to prevent such issues.

Synchronization ensures that only one thread accesses a critical section of code at a time. This is

**Q6. Explain the life cycle of a Servlet 10**

**Ans 6.**

**Servlets**

A Servlet is a Java-based server-side component used to handle requests and responses in a web application. Servlets run on a web server or application server and act as a bridge between client browsers and server-side resources. They are commonly used to process form data, manage session information, and dynamically generate web content like HTML or XML.

The life cycle of a servlet is defined by the javax.servlet.Servlet interface and is managed by the Servlet container (like Apache Tomcat). The container is responsible for creating, initializing,