# Java Automation Test Engineer – Full Learning Index

## 1. Java Fundamentals

1.1 Data Types and Variables

1.2 Operators and Expressions

1.3 Control Statements (if, switch, loops)

1.4 Arrays and Strings

1.5 Exception Handling

1.6 Object-Oriented Programming

- Classes and Objects

- Inheritance

- Polymorphism

- Abstraction and Interfaces

- Encapsulation

## 2. Collections Framework

2.1 List, Set, Map Interfaces

2.2 ArrayList, LinkedList, HashSet, TreeSet

2.3 HashMap, TreeMap, LinkedHashMap

2.4 Iterator and ListIterator

2.5 Comparable vs Comparator

2.6 Streams and Lambda Expressions (Java 8+)

## 3. File Handling and I/O

3.1 FileReader / FileWriter

3.2 BufferedReader / BufferedWriter

3.3 Java NIO

3.4 Reading/Writing Excel files (Apache POI)

## 4. Java + Selenium WebDriver

4.1 Selenium Architecture

4.2 Browser Drivers Setup

4.3 Locators – XPath, CSS, ID, etc.

4.4 WebElement Commands

4.5 Waits – Implicit, Explicit, Fluent

4.6 Handling Alerts, Windows, Frames

4.7 Dropdowns, Tables, Mouse Actions

4.8 Screenshots and Page Load Handling

4.9 Headless Browser Testing

4.10 Working with JavaScriptExecutor

## 5. TestNG Framework

5.1 TestNG Annotations

5.2 Assertions and Reporting

5.3 DataProvider

5.4 Parameterization

5.5 Parallel Test Execution

5.6 Dependency and Grouping

5.7 Retry Mechanism

5.8 Listeners and Reporters

## 6. Page Object Model (POM)

6.1 PageFactory

6.2 Base Class Implementation

6.3 Utility Classes

6.4 Common Actions Layer

## 7. Maven & Build Management

7.1 Project Structure

7.2 pom.xml Basics

7.3 Adding Dependencies

7.4 Build and Run Tests using Maven

## 8. Git & GitHub

8.1 Git Basics and Commands

8.2 Branching and Merging

8.3 Pushing Code to GitHub

8.4 Version Control in Automation

## 9. Jenkins – CI Integration

9.1 Installing Jenkins

9.2 Creating and Scheduling Jobs

9.3 Running Selenium Tests from Jenkins

9.4 Git + Maven + Jenkins Integration

## 10. Logging and Reporting

10.1 Log4j / SLF4J

10.2 Generating Extent Reports

10.3 Allure Reports (optional)

## 11. Advanced Topics

11.1 API Testing with REST Assured

11.2 Database Validation using JDBC

11.3 Docker Basics for Automation

11.4 Parallel Execution with Grid / Docker

11.5 BDD with Cucumber (Gherkin + Java)

## 12. Resume Building and Interview Q&A

12.1 Sample Resume Format

12.2 Key Projects to Showcase

12.3 Top 50 Interview Questions with Answers

12.4 Real-Time Scenario-Based Questions