# 35243 – OBJECT ORIENTED PROGRAMMING WITH JAVA

DIPLOMA M-SCHEME DETAILED SYLLABUS

## UNIT I INTRODUCTION TO OOPS AND JAVA

1.1 **Introduction to OOPS**: Paradigms of Programming Languages – Basic concepts of Object-Oriented Programming – Differences between Procedure Oriented Programming and Object-Oriented programming - Objects and Classes – Data abstraction and Encapsulation, Inheritance, Polymorphism, Dynamic binding, Message communication – Benefits of OOP – Application of OOPs.
1.2 **Java:** History – Java features – Java Environment – JDK – API.
1.3 **Introduction to Java:** Types of java program – Creating and Executing a Java program – Java Tokens: Keywords, Character set, Identifiers, Literals, Separator – Java Virtual Machine (JVM) – Command Line Arguments – Comments in Java program

## UNIT II CONTROL STRUCTURES, ARRAYS, AND VECTORS

2.1 Elements: Constants – Variables – Data types - Scope of variables – Type casting – Operators: Special operators – Expressions – Evaluation of Expressions

2.2 Decision making and Branching: Simple if statement – if – else statement – Nesting if – else – else if Ladder – switch statement – Decision making and Looping: While loop – do – While loop - for loop – break – labeled loop – continue Statement.

2.3 Arrays: One Dimensional Array – Creating an array – Array processing – Multidimensional Array – Vectors – Array List – Advantages of Array List over Array Wrapper classes

## UNIT III STRINGS, CLASSES AND INTERFACES

3.1 Strings: String Array – String Methods – String Buffer Class 3 Hrs
3.2 Class and objects: Defining a class – Methods – Creating objects – Accessing class members – Constructors – Method overloading – Static members – Nesting of Methods - – this keyword – Command line input

3.3 Inheritance: Defining a subclass – Deriving a sub class – Single Inheritance – Multilevel Inheritance – Hierarchical Inheritance – Overriding methods – Final variables and methods – Final classes – Final methods - Abstract methods and classes – Visibility Control: Public access, Private access, friend, protected. Interfaces: Multiple Inheritance - - Defining interface – Extending interface - Implementing Interface - Accessing interface variables

## UNIT IV PACKAGES, APPLETS AND AWT CONTROLS

4.1 **Packages:** Java API Packages – System Packages – Naming Conventions – Creating & Accessing a Package – Adding Class to a Package – Hiding Classes

4.2 **Applets:** Introduction – Applet Life cycle – Creating & Executing an Applet – Applet tags in HTML – Parameter tag – Aligning the display - Graphics Class: Drawing and filling lines – Rectangles – Polygon – Circles – Arcs – Line Graphs – Drawing Bar charts

4.3 **AWT Components and Even Handlers:** Abstract window tool kit – Event Handlers – Event Listeners – AWT Controls and Event Handling: Labels – Text Component – Action Event – Buttons – Check Boxes – Item Event – Choice – Scrollbars – Layout Managers- Input Events – Menus

## UNIT–V EXCEPTION HANDLING, MULTITHREADS AND I/O STREAMS

**Exception Handling:** Limitations of Error handling – Advantages of Exception Handling - Types of Errors – Basics of Exception Handling – try blocks – throwing an exception – catching an exception – finally statement

5.2 **Multithreading:** Creating Threads – Life of a Thread – Defining & Running Thread – Thread Methods – Thread Priority – Synchronization – Implementing Runnable interface – Thread Scheduling.

5.3 **I/O Streams:** File – Streams – Advantages - The stream classes – Byte streams Character streams

## TEXT BOOKS

1 Programming with Java E. Balagurusamy TataMc-Graw Hill, New Delhi 5th Edition
2 Java, A Beginner's Guide Herbert Schildt Oracle Press 6th Edition