Code No.: MCA 205 **L T C**
Paper: Java Programming (Core & Advance Java) **3 1 4**

INSTRUCTIONS TO PAPER SETTERS:

1. Question No. 1 should be compulsory and cover the entire syllabus. There should be 10 questions of short answer type of 2 marks each, having at least 2 questions from each unit.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions to evaluate analytical/technical skills of candidate. However, student may be asked to attempt only 1 question from each unit. Each question should be 10 marks including subparts, if any.

OBJECTIVE: *In this course student will become familiar with features of Java language, they will learn how to write Java code according to Object-Oriented Programming principles, how to design GUI applications and Applets using AWT, how to develop multithreaded and Networking applications and how to create dynamic pages.*

PRE-REQUISITES:

- Basic Object Oriented Programming Concepts

UNIT – I

Importance and features of Java, *Language Construct of java including* Keywords, constants, variables and looping and decision making construct, Classes and their implementation, Introduction to JVM and its architecture including set of instructions. Overview of JVM Programming . Internal and detailed explanation of a valid .class file format. Instrumentation of a .class file, Byte code engineering libraries, Overview of class loaders and Sandbox model of security.

Introducing classes, objects and methods: defining a class, adding variables and methods, creating objects, constructors, class inheritance. Arrays and String: Creating an array, one and two dimensional arrays, string array and methods, Classes: String and String Buffer classes, Wrapper classes: Basics types, using super, Multilevel hierarchy abstract and final classes, Object class, Packages and interfaces, Access protection, Extending Interfaces, packages.

[No. of Hrs.: 12]

UNIT – II

Exception Handling: Fundamentals exception types, uncaught exceptions, throw, throw, final, built in exception, creating your own exceptions,

Multithreaded Programming: Fundamentals, Java thread model: priorities, synchronization, messaging, thread classes, Runnable interface, inter thread Communication, suspending, resuming and stopping threads.

Input/Output Programming: Basics, Streams, Byte and Character Stream, predefined streams, Reading and writing from console and files.

Using Standard Java Packages (lang, util, io, net). Networking: Basics, networking classes and interfaces, using java.net package, doing TCP/IP and Data-gram Programming, RMI (Remote Method Invocation). **[No. of Hrs.: 10]**

UNIT – III

Event Handling: Different Mechanism, the Delegation Event Model, Event Classes, Event Listener Interfaces, Adapter and Inner Classes, Working with windows, Graphics and Text, using AWT controls, Layout managers and menus, handling Image, animation, sound and video, Java Applet.

The Collection Framework: The Collection Interface, Collection Classes, Working with Maps & Sets

JDBC: Introduction to DBMS & RDBMS, DBC API, JDBC Application Architecture, Obtaining a Connection, JDBC Models: Two Tier and Three Tier Model, ResultSet, Prepared Statement, Callable Statement. **[No. of Hrs: 09]**

UNIT – IV

RMI (Remote Method Invocation): Introduction, Steps in creating a Remote Object, Generating Stub & Skeleton, RMI Architecture, RMI packages.

Java Bean: Introduction, Bean Architecture, Using the Bean Development Kit, Creating simple bean-properties, methods and events, Packing beans- the manifest & the jar, Java bean package, Introduction to NetBean.

Swing : Introduction to JFC (Java Foundation Classes), Features of Swing, Comparison with AWT, Advanced Control. **[No. of Hrs.: 11]**

TEXT BOOKS:

1. Patrick Naughton and Herbertz Schildt, "Java-2: The Complete Reference", TMH, 1999.
2. Bill Vanners, "Inside Java Virtual Machine", TMH, 2nd Ed.
3. Rick Dranell, "HTML 4 unleashed", Techmedia Publication, 2000
4. Shelley Powers, "Dynamic Web Publishing", 2nd Ed., Techmedia, 1998.
5. Paul Dietel and Harvey Deitel, "Java How to Program", PHI, 8th Ed., 2010.

REFERENCES:

1. E. Balaguruswamy, "Programming with Java: A Primer", TMH, 1998.
2. Horstmann, "Computing Concepts with Java 2 Essentials", John Wiley.
3. Decker and Hirshfield, "Programming Java: A Introduction to Programming Using JAVA", Vikas Publication, 2000.
4. N.P Gopalan and J. Akilandeswari, "Web Technology- A Developer's Perspective", PHI, 2007.
5. Eric Jendrock, Jennfer Ball and Debbei Carson, "The Java #EE5 Tutorial", Pearson, 3rd Ed., 2007.
6. Daniel Liang, "Introduction to Java Programming", Pearson, 7th Ed., 2010.