

**MCA-14-41****PROGRAMMING IN JAVA**

Maximum marks: 100 (External: 80, Internal: 20)

Time: 3 hours

Note: Examiner will be required to set NINE questions in all. Question Number 1 will consist of objective type/short-answer type questions covering the entire syllabus. In addition to question no. 1, the examiner is required to set eight more questions selecting two from each unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

**UNIT – I**

Features of Java, Data types, operators & expressions, control structures, arrays, Classes, objects & methods, constructors, garbage collection, access qualifiers, string handling – string operations, character extraction, string comparison, searching and modifying strings, StringBuffer, packages and interfaces, Wrapper classes.

**UNIT – II**

Inheritance: single and multilevel inheritance, method overriding, abstract class, use of super and final keywords.

Exception Handling: Exception types, uncaught exceptions, multiple catch clauses, nested try statements, built-in exceptions, creating your own exceptions.

Multithreading: Java thread model, creating multiple threads, thread priorities, synchronization, interthread communication, suspending, resuming and stopping threads.

**UNIT – III**

Applets: Local & Remote Applets, Applet Architecture, Passing Parameters to Applets, Applet Graphics, Adapter Class.

I/O Streams: Console I/O – reading console input, writing console output, Files I/O – Byte Streams, Character Streams, Collection Interfaces & Classes, Delegation Event Model

**UNIT – IV**

AWT Classes: Window fundamentals, working with graphics, working with color & fonts. AWT controls, layout managers & working with menus, JFrames.

Swing Classes, Java Beans, Servlet classes & Life Cycle.

**Text Books:**

1. Herbert Schildt, The Complete Reference Java 2, Fourth Edition, Tata McGraw Hill-2001
2. Liang Y.Daniel, Introduction to Java Programming (7<sup>th</sup> Edition), 2009, Pearson Education.

**Reference Books:**

1. Steven Holzner, Java 1.2, BPB-1998
2. E. Balaguruswami, Programming with Java - Second Edition, Tata McGraw Hill-1998.
3. Mughal K.A., Rasmussen R.W., A Programmer's Guide to Java Certification, Addison-Wesley, 2000