

ST. XAVIER'S COLLEGE [AUTONOMOUS], KOLKATA
Department of Computer Science

Paper Code: HCSCR2032T	Programming in JAVA (Theory)	Marks: 60
Sl. No.	Topic	No. of Periods
1	Introduction to Java - Java Architecture and Features, Understanding the semantic and syntax differences between C++ and Java, Compiling and Executing a Java Program, Variables, Constants, Keywords Data Types, Operators (Arithmetic, Logical and Bitwise) and Expressions, Comments, Doing Basic Program Output, Decision Making Constructs (conditional statements and loops) and Nesting, Java Methods (Defining, Scope, Passing and Returning Arguments, Type Conversion and Type and Checking, Built-in Java Class Methods).	5
2	Arrays, Strings and I/O - Creating & Using Arrays (One Dimension and Multi-dimensional), Referencing Arrays Dynamically, Java Strings: The Java String class, Creating & Using String Objects, Manipulating Strings, String Immutability & Equality, Passing Strings To & From Methods, String Buffer Classes. Simple I/O using System.out and the Scanner class, Byte and Character streams, Reading/Writing from console and files.	8
3	Object-Oriented Programming Overview - Principles of Object-Oriented Programming, Defining & Using Classes, Controlling Access to Class Members, Class Constructors, Method Overloading, Class Variables & Methods, Objects as parameters, final classes, Object class, Garbage Collection. 3. Inheritance, Interfaces, Packages, Enumerations, Autoboxing and Metadata (14 lectures) Inheritance: (Single Level and Multilevel, Method Overriding, Dynamic Method Dispatch, Abstract Classes), Interfaces and Packages, Extending interfaces and packages, Package and Class Visibility, Using Standard Java Packages (util, lang, io, net), Wrapper Classes, Autoboxing/Unboxing, Enumerations and Metadata.	5
4	Exception Handling, Threading - Exception types, uncaught exceptions, throw, built-in exceptions, Creating your own exceptions; Multi-threading: The Thread class and Runnable interface, creating single and multiple threads, Thread prioritization, synchronization and communication, suspending/resuming threads.	11
5	File Handling in Java - Opening a sequential file, Writing data on a file, reading data from a file, Use of classes to open file in input mode or in write mode, To open file in Random Access mode, To move file identifier from one byte position to another byte position in dynamic fashion, To read and write data in basic data type mode such as int, float, double, etc.	6
6	Applets and Event Handling - Java Applets: Introduction to Applets, Writing Java Applets, Working with Graphics, Incorporating Images & Sounds. Event Handling Mechanisms, Listener Interfaces, Adapter and Inner Classes.	11
7	Advanced Topics - Graphic objects for drawing figures such as lines, rectangles, ovals, using different fonts. Overview of JSP and servlets.	6
Total		52
Books and References: <ol style="list-style-type: none"> 1. "Head First Java", Orielly Media Inc. 2nd Edition, 2005. 2. E. Balaguruswamy, "Programming with Java", 4th Edition, McGraw Hill, 2009. 3. Paul Deitel, Harvey Deitel, "Java: How to Program", 10th Edition, Prentice Hall, 2011. 4. Herbert Schildt, "Java The Complete Reference", Oracle Press, Seventh Edition, 2017. 		
Paper Code: HCSCR2032P	Problem Solving Using JAVA (Practical)	Marks: 40