

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

B.C.A. Semester – V BCA-501: JAVA Programming

Teaching Scheme (per week)		Teaching Scheme (per semester)		Examination Scheme					
				INT		EXT		TOTAL	
Th. (hours)	Pr. (hours)	Total Hours	Credit	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)	Th. (marks)	Pr. (marks)
4	--	40	4	30	--	70	--	100	--

Unit – I

[18 MARKS]

Fundamentals of Object Oriented Programming:

Basic Concepts of Object-Oriented Programming: Object and Class, Data Abstraction and Encapsulation, Inheritance, Polymorphism, Dynamic Binding, Message Communication. Benefits and Applications of OOP.

Basics of Java.

History of Java, Java Features, JDK and its Components (Various Tools of JDK), Byte code and JVM, JAVA Program Structure.

Building Blocks: Tokens (Keywords, Identifier, Literals, Operators, Separators), Variables, Data Types, Type Conversion and Casting, Command Line Arguments .

Control Statements:

Selection Statement: if – else, nested if-else, else if ladder, switch Statements.

Iteration statements: while, do...while, for Statements

Jump Statements: break, continue.

Arrays: How to create array in java.

Unit-2

[17 MARKS]

Class Fundamentals:

Defining Classes, Creating Objects, Static Members, Methods Overloading, Nesting of Methods

Constructors: Introduction, Default & Parameterized Constructors, Constructor Overloading.

Inheritance: Introduction, Single, Multilevel, Hierarchical Inheritance. Method Overriding, final Variable, final Methods & final Class, abstract Methods and Abstract Class.

Access Modifiers (Visibility Controls) – public, private, default, protected, private protected.

Unit – 3

[18 MARKS]

Interfaces: Defining an Interfaces, Implementing Interfaces, Multiple interface.

Packages: Defining Package, List of Java API Packages and their classes, Creating, Accessing and Using packages ,adding a Class to Package.

Java.lang Package classes (Math, String).

Java.util Package classes (Stack, Vector).

Multithreading : Definition, Life Cycle of Thread (Thread states – Newborn, Runnable, Running, Blocked, Dead), Extending Thread Class, Implementing Runnable Interface, Various Thread Methods like yield(),stop(),sleep(), Thread Priorities.

Unit – 4

[17 MARKS]

Exception Handling : Exception & Exception Handling, Exceptions Types (Java's Built-in Exceptions) – Checked and Unchecked Exceptions, Exception Handling using try, catch, finally, throw, throws etc., Nested try, Multiple catch, Throwing Your own Exception.

Applets : Introduction, Local and Remote Applets, Applet Lifecycle, Creating and executing Applet , Passing Parameters to Applet.

Graphics Class : Various methods of Graphics Class.

TEXT BOOKS:

1. **Programming with JAVA**, E Balagurusamy, Tata McGraw Hill
2. **The Complete Reference JAVA**, Herbert Schildt, Tata McGraw Hill .
3. **Teach Yourself JAVA**. Joseph O'Neil & Herb Schildt, Tata McGraw Hill .

Question Paper Scheme:

University Examination Duration: 3 Hours

Q-1 – Unit -1 (18 Marks)

- A. Objective / Short Questions
- B. Descriptive / Long Questions

Q-2 – Unit -2 (17 Marks)

- A. Objective / Short Questions
- B. Descriptive / Long Questions

Q-3– Unit -3 (18 Marks)

- A. Objective / Short Questions
- B. Descriptive / Long Questions

Q-4 – Unit -4 (17 Marks)

- A. Objective / Short Questions
- B. Descriptive / Long Questions

Note: All Objective/ Short Questions are compulsory, no option will be given.