

Paper Code(s): CIC-212	L	P	C
Paper: Programming in Java	4	-	4

Marking Scheme:												
1. Teachers Continuous Evaluation: 25 marks												
2. Term end Theory Examinations: 75 marks												
Instructions for paper setter:												
1. There should be 9 questions in the term end examinations question paper.												
2. The first (1 st) question should be compulsory and cover the entire syllabus. This question should be objective, single line answers or short answer type question of total 15 marks.												
3. Apart from question 1 which is compulsory, rest of the paper shall consist of 4 units as per the syllabus. Every unit shall have two questions covering the corresponding unit of the syllabus. However, the student shall be asked to attempt only one of the two questions in the unit. Individual questions may contain upto 5 sub-parts / sub-questions. Each Unit shall have a marks weightage of 15.												
4. The questions are to be framed keeping in view the learning outcomes of the course / paper. The standard / level of the questions to be asked should be at the level of the prescribed textbook.												
5. The requirement of (scientific) calculators / log-tables / data – tables may be specified if required.												
Course Objectives :												
1.	To understand and gain knowledge of characteristics of Java, JVM, instruction set, control flow, programming and the sandbox model.											
2.	To learn the Java programming, use of exceptional handling and inheritance.											
3.	To understand threads, thread synchronization, AWT components and event handling mechanism.											
4.	To understand the concepts of I/O streams, JDBC, object serialization, sockets, RMI, JNI, Collection API interfaces, Vector, Stack, Hash table classes, list etc.											
Course Outcomes (CO)												
CO 1	Ability to understand the compilation process of Java, role of JVM as an emulator and various types of instructions.											
CO 2	Ability to learn and apply concepts of Java programming, exceptional handling and inheritance.											
CO 3	Ability to understand the use of multi-threading, AWT components and event handling mechanism in Java.											
CO 4	Ability to understand the concepts of I/O streams, JDBC, object serialization, sockets, RMI, JNI, Collection API interfaces, Vector, Stack, Hash table classes, list etc.											
Course Outcomes (CO) to Programme Outcomes (PO) mapping (scale 1: low, 2: Medium, 3: High)												
	PO01	PO02	PO03	PO04	PO05	PO06	PO07	PO08	PO09	PO10	PO11	PO12
CO 1	3	2	2	2	3	-	-	-	3	2	2	3
CO 2	3	2	2	2	3	-	-	-	3	2	2	3
CO 3	3	2	2	2	3	-	-	-	3	2	2	3
CO 4	3	2	2	2	3	-	-	-	3	2	2	3
UNIT - I												
Overview and characteristics of Java, Java program Compilation and Execution Process Organization of the Java Virtual Machine, JVM as an interpreter and emulator, Instruction Set, class File Format, Verification, Class Area, Java Stack, Heap, Garbage Collection. Security Promises of the JVM, Security Architecture and Security Policy. Class loaders and security aspects, sandbox model												
UNIT - II												
Java Fundamentals, Data Types & Literals Variables, Wrapper Classes, Arrays, Arithmetic Operators, Logical Operators, Control of Flow, Classes and Instances, Class Member Modifiers Anonymous Inner Class Interfaces and Abstract Classes, inheritance, throw and throws clauses, user defined Exceptions, The String Buffer Class, tokenizer, applets, Life cycle of applet and Security concerns.												

UNIT - III

Threads: Creating Threads, Thread Priority, Blocked States, Extending Thread Class, Runnable Interface, Starting Threads, Thread Synchronization, Synchronize Threads, Sync Code Block, Overriding Synced Methods, Thread Communication, wait, notify and notify all.

AWT Components, Component Class, Container Class, Layout Manager Interface Default Layouts, Insets and Dimensions, Border Layout, Flow Layout, Grid Layout, Card Layout Grid Bag Layout AWT Events, Event Models, Listeners, Class Listener, Adapters, Action Event Methods Focus Event Key Event, Mouse Events, Window Event

UNIT - IV

Input/Output Stream, Stream Filters, Buffered Streams, Data input and Output Stream, Print Stream Random Access File, JDBC (Database connectivity with MS-Access, Oracle, MS-SQL Server), Object serialization, Sockets, development of client Server applications, design of multithreaded server. Remote Method invocation, Java Native interfaces, Development of a JNI based application.

Collection API Interfaces, Vector, stack, Hashtable classes, enumerations, set, List, Map, Iterators.

Textbook(s):

1. Patrick Naughton and Herbertz Schidt, "Java-2 the Complete Reference",TMH

References:

1. E. Balaguruswamy, "Programming with Java", TMH
2. Horstmann, "Computing Concepts with Java 2 Essentials", John Wiley.
3. Decker & Hirshfield, "Programming Java", Vikas Publication.