

(2½ Hours)

[Total Marks: 75]

- N.B. 1) All questions are compulsory.
 2) Figures to the right indicate marks.
 3) Illustrations, in-depth answers and diagrams will be appreciated.
 4) Mixing of sub-questions is not allowed.

Q. 1 Attempt All(Each of 5Marks)**(15M)****(a) Multiple Choice Questions:**

- (i) Which keyword must be used to inherit a class:
 (A) super (B) extends
 (C) implements (D) this
- (ii) Which keyword is used by method to refer to the object that invoked it:
 (A) this (B) import
 (C) final (D) static
- (iii) Name the process of writing the state of an object to a byte stream:
 (A) externalization (B) writeobject
 (C) filtering (D) serialization
- (iv) Which class provides a mechanism for the server program to listen for clients and establish connections with them:
 (A) ServerSocket (B) Socket
 (C) UrlConnection (D) Url
- (v) Name the package containing all the Collection Framework classes:
 (A) java.math (B) java.awt
 (C) java.util (D) java.lang

(b) Fill in the blanks:

(anonymous, static, bind, method overriding, accept, method overloading, final, type casting)

- (i) The process of converting one data type into another is called _____.
- (ii) A symbolic constant in Java is declared using the _____ keyword.
- (iii) Defining a method in subclass having the same name and type signature as a method in its superclass is called _____.
- (iv) The _____ method of ServerSocket class waits until a client connects to the server on the given port.
- (v) An inner class that has no name and is used to override method of a class is called as _____.

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(c) **Answer in ONE or TWO sentences:**

- (i) What is a constructor?
- (ii) Define a class?
- (iii) What is an exception?
- (iv) What is a thread?
- (v) What is meant by an event?

Q. 2 Attempt the following (Any THREE)

(15M)

- (a) What do you understand by tokens? Briefly explain various types of tokens available in Java.
- (b) What is meant by method overloading? Illustrate with a suitable example.
- (c) What is an interface? Explain the syntax of creating an interface. How are interfaces implemented in a class?
- (d) Explain the concept of abstract classes and methods.
- (e) Create a class **Circle**. Add a constant for storing the value of **PI**. Add a data member(field) for storing the **radius**. Add appropriate constructor(s) and methods for calculating the area and circumference of the circle. In another class, write main method to test the Circle class.
- (f) Imagine a publishing company that markets both book and CD version of its work. Create a class **Publication** that stores the **title** (a string) and **price** (a float) of a publication. From this class, derive two classes: **Book** which adds **pagecount** (type int); and **CD**, which adds **playtime** (type int) in minutes. Each of these classes should have constructors for initializing their data members and a method for displaying the value of the data members.

Q. 3 Attempt the following (Any THREE)

(15M)

- (a) What is an exception? Explain the exception-handling mechanism in Java.
- (b) What is meant by multithreading? Explain how to create thread using Runnable interface.
- (c) Write a note on FileInputStream class.
- (d) What is the purpose of Socket class? Explain any two constructors and two methods of this class.
- (e) Write a TCP client-server program: the client accepts a number from the user and sends it to the server, the server returns the factorial of that number to the client.
- (f) Write a program to copy the contents of a file **data1.txt** to a file **data2.txt**.

Q. P. Code: 19831**Q. 4 Attempt the following (Any THREE)****(15)**

- (a) Write a note on List interface of Collections Framework.
- (b) What do you understand by type wrappers? Briefly explain any 3 methods of Integer class. Illustrate with suitable examples.
- (c) Explain Border Layout Manager in AWT.
- (d) What is a checkbox? How to create and use a checkbox using AWT.
- (e) Write a program that displays three buttons: Red, Green and Blue. On click of a button, respective colour should be filled in a label.
- (f) Write a program to create a set using Collections Framework. Store names of five countries in the set and then display them.

Q. 5 Attempt the following (Any THREE)**(15)**

- (a) What is an array? How is one-dimensional array declared, created and initialized in Java?
 - (b) Write a note on Thread class.
 - (c) Explain the concept of Member Inner class. Give example to illustrate.
 - (d) What is a string? Write a program to accept a string as a command line argument and print its reverse.
 - (e) Write a program that accepts an integer, n, from the user, and calculates $100/n$. The program should handle an appropriate exception if value of n is 0.
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