

(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 of these is correct way of inheriting class A in class B?

(A) class B inherits A  
A

(B) class B extends

(C) class B inherits class A  
class A

(D) class B extends

(ii) Static variables are also called as:

(A) instance variables

(B) object variables

(C) special variables  
variables

(D) class

(iii) Which of the following class can be used to read characters from a file?

(A) FileReader  
ObjectInputStream

(B)

(C) FileWriter  
InputStreamReader

(D)

(iv) Which of these methods return description of an exception?



(iv) What is purpose of wait() method in multithreading?

(v) What is an inner class in Java?

Q. 2 Attempt the following (Any THREE)  
(15M)

(a) What is type casting? Why is it required? How is it achieved in Java?

(b) Explain various access specifiers that can be used in Java.

(c) Explain different ways in which 'super' keyword can be used in Java.

(d) Differentiate between an interface and a class.

(e) Create a class Complex with the following members:

(i) two fields of type double to store the real and imaginary part of the complex number

(ii) constructor(s) to initialize the complex number

(iii) method that adds two complex numbers and returns the result

(f) Create a class Box with fields for storing height, width and depth of a box. Write parameterized constructor with values of height, width and depth given as parameter. Add a method for calculating the volume of the Box. From the Box class inherit a class WeightBox that adds a field weight to the class. Write an appropriate constructor. In another class write main method to create an object of WeightBox and calculate its volume.

Q. 3 Attempt the following (Any THREE)  
(15M)

- (a) What is the purpose of throw keyword in exception Handling. Illustrate with an example.
- (b) What do you understand by multithreading? Explain how to create thread using Thread class.
- (c) Explain any two byte-stream classes that can be used for reading content from a file.
- (d) What is the purpose of ServerSocket class? Explain any two constructors and two methods of ServerSocket class.
- (e) Write a program that accepts two numbers a and b as command-line arguments, and calculates a/b. The program should handle an appropriate exception if value of b is 0.
- (f) Write a client-server program that accepts a user name from the client and sends a greeting message 'Hello, <username>' to the client.

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Q. 4 Attempt the following (Any THREE)  
(15)

- (a) What is the purpose of CheckboxGroup class in Java? How to use it in AWT programming?
- (b) Explain Set interface and any one of its implementation class.
- (c) Explain the concept of Anonymous inner class. Give example to illustrate.

(d) What are type wrappers? Explain any 3 methods that can be used with Double class. Illustrate with suitable examples.

(e) Write a program that displays names of any four operating systems in a list box, and the selected operating system should get displayed in a label.

(f) Write a program to create an ArrayList containing names of five states of India, and then displays them.

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

(a) Explain the concept of abstract classes in Java.

(b) What is a string? Explain, with example, the following methods of String class:

(i) indexOf() (ii) substring()

(c) Explain how try-catch keywords are used for exception handling.

(d) What is thread synchronization? How is it achieved in Java?

(e) Write a note on Event-Delegation model.