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NCS4304

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Following Paper ID and Roll No. to be filled in your Answer Book.

PAPER ID : 43207 Roll No. 1 2 3 0 4 3 2 2 2 0

B. Tech Examination 2024-25

(Odd Semester)

CORE AND ADVANCE JAVA

Time : Three Hours] *[Maximum Marks : 60*

Note :– Attempt all questions.

SECTION–A

1. Attempt all parts of the following : $1 \times 8 = 8$

   (a) What is the Java Virutal Machine (JVM)?

   (b) Differentiate between 'Final', 'finally' and 'finalize'.

   (c) What is type casting in Java?

   (d) What are instance variables?

   (e) What is method overriding?

   (f) Define an abstract class with an example.

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(g) Differentiate between input stream and output stream.

(h) Explain the use of 'synchronized' keyword in Java.

SECTION – B

2. Attempt any two parts of the following. $6 \times 2 = 12$

(a) Describe the different types of operators in Java with examples.

(b) Explain how interfaces are implemented in Java? Provide a program to demonstrate.

(c) Write a program to create multiple threads in Java using the runnable interface.

(d) Explain string handling in Java using string and stringbuilder classes.

SECTION – C

Note:- Attempt any two parts from each question . All part carry equal marks. $8 \times 5 = 40$

3. (a) Write a program to input marks of 'n' students into an array. Calculate the average marks, and identify students scoring above the average. Discuss how arrays simplify such operations.

(b) Analyze the role of type casting in inheritance. Write a program to demonstrate upcasting and down casting between a parent class and a subclass. Explain the run time implications.

(c) Analyze the impact of garbage collection on program performance. Create a class with a finalize() method and show how unuesed objects are garbage collected?

4. (a) Write a program to demonstrate multiple inheritance in java using interfaces. Analyze how java avoids the diamond problem?

(b) Apply exception handling to design a program that reads a file and handles cases like file not found or incorrect file format.

(OR) Write a multithreaded program in java to simulate a producer consumer problem, using thread synchronization.

5. (a) Analyze the advantages of using packages in large-scale software development. Write a program to demonstrate access control modifiers (Public, protected, private and default) across multiplex packages.

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(b) Create a java swing application with a button and a text field. Use event handling to update the text field with the current date and time, when the button is clicked.

(c) Write a java program to find the frequency of each character in a given string and identify the character with max. frequency.

6. (a) Apply JCBC to design a program that retrieves and displays employee details from a database. Extend the program to allow user to update specific employee details.

(b) Write a program to read the contents of a file and display them on the console. Extend the program to copy the contents to another file. Use FileReader and Filewriter classes.

(c) Write a program to simulate a deadlock scenario in java using two threads and two synchronized methods. Explain how the program can be modified to prevent deadlock.

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Describe Constructor and types of constructor ? Explain constructor overloading with ex. 750

Describe features of Java with ex.