Seat No:

2/31

2811N863

Candidate's Seat No :_____

B.Sc Sem.-5 Examination

CC 303

Computer Science

Time : 2-30 Hours] **November-2024** **[Max. Marks : 70**

Q1(A) Describe the history of Java, highlighting its inception, evolution, and key milestones. (7)

Q1(B) Compare and contrast the major versions of Java, focusing on their key features and improvements. (7)

OR

Q1(A) Explain the various programming environments available for Java development and their unique features. (7)

Q1(B) Discuss the importance of Java documentation and the different types available to developers. (7)

Q2(A) Explain the four main principles of Object-Oriented Programming (OOP) in Java, and illustrate them with an example where inheritance leads to ambiguity. (7)

Q2(B) Explain the different data types in Java. Include examples of each type and discuss the difference between primitive and reference data types. (7)

OR

Q2(A) Describe the four main principles of object-oriented programming (OOP) in Java. Provide examples for each principle. (7)

Q2(B) What is exception handling in Java? Explain the purpose of try-catch blocks and the finally keyword with an example. (7)

Q3(A) What is the Java Collections Framework? Explain the differences between List, Set, and Map interfaces. Provide a use case for each. (7)

Q3(B) What are the primary control flow statements in Java? Describe how the if, else if, and else statements work with an example. (7)

OR

Q3(A) Describe the purpose of the switch statement in Java. How does it differ from using if-else statements? Provide an example of both. (7)

Q3(B) What is the ternary operator in Java? Write a code snippet that demonstrates its use and explain how it works. (7)

Q4(A) What is an infinite loop in Java? Write a code snippet that intentionally creates an infinite loop. Then, explain how to terminate the loop and provide a safe way to achieve the desired outcome instead of an infinite loop. (7)

Q4(B) Describe the structure of a for loop in Java. Write a program that uses a for loop to print the numbers from 1 to 10. Include a modification to skip the number 5 and explain how this modification works. (7)

OR

Q4(A) Explain the difference between a while loop and a do-while loop in Java. Write a program using a while loop to calculate the sum of even numbers from 1 to 20. Additionally, implement a check that ends the loop if the sum exceeds 50. What will be the output of your program? (7)

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Q4(B) Write a program using a for loop that prints the numbers from 1 to 10, but for multiples of 2, it prints "Even" instead, and for multiples of 3, it prints "Odd." What happens when a number is both a multiple of 2 and 3? Explain your logic and the output of your program. (7)

Q5 MCQ Attempt any seven out of twelve.(2 Marks each) (14)

1) Which of the following is not a primitive data type in Java?
   a) int b) float c) String d) boolean
2) What is the output of the following code?
   System.out.println(10 + 20 + "30" + 40);
   a) 303040 b) 10203040 c) 3030 d) 3040
3) Which keyword is used to create a subclass in Java?
   a) extends b) implements c) inherits d) super
4) What is the default value of a boolean variable in Java?
   a) true b) false c) 0 d) null
5) What will happen if you try to compile and run the following code?

```
int x = 10;
if (x = 20) {
   System.out.println("x is 20");
}
```

   a) It will print "x is 20"
   b) It will cause a compile-time error
   c) It will cause a runtime error
   d) It will print nothing
6) Which of the following statements about Java is false?
   a) Java is platform-independent.
   b) Java supports multiple inheritance through classes.
   c) Java is a compiled language.
   d) Java is an object-oriented programming language.
7) What does the 'final' keyword signify in Java?
   a) The method can be overridden.
   b) The variable's value cannot be changed.
   c) The class can be inherited.
   d) None of the above.
8) What is the output of the following code?
   System.out.println("5" + 2 + 3);
   a) 53 b) 523 c) 32 d) 10
9) Which of the following is the correct way to declare a constant in Java?
   a) constant int x = 10; b) final int x = 10; c) static int x = 10;
   d) immutable int x = 10;
10) Which of the following is not a valid identifier in Java?
    a) _myVar b) $myVar c) my-var d) myVar
11) What is the purpose of the 'static' keyword in Java?
    a) It allows a method to be invoked without creating an instance of the class.
    b) It restricts the visibility of a method or variable.
    c) It makes a variable or method constant.
    d) It is used to declare a method that can be overridden.
12) In Java, which of the following is used to handle exceptions?
    a) catch b) finally c) try d) All of the above

ALL THE BEST