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SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

THIRD SEMESTER B.TECH DEGREE EXAMINATION (Regular), DECEMBER 2022

(2020 SCHEME)

Course Code: **20CST281**

Course Name: **Object Oriented Programming**

Max. Marks: **100** **Duration: 3 Hours**

PART A

(Answer all questions. Each question carries 3 marks)

1. Why are java programs said to be platform independent?
2. Represent the entities 'Student' and 'Course' and their relationship using a Class diagram.
3. Explain conditional operators with example.
4. What is static keyword in Java?
5. With the help of examples, explain how inheritance is implemented in Java.
6. What is method overriding? What is the rule for that?
7. What is serialization in java?
8. Why Strings in Java are called as Immutable?
9. Define swing. What are the advantages of swing over AWT components?
10. Describe about Delegation Event Model.

PART B

(Answer one full question from each module, each question carries 14marks)

MODULE I

11. a) What is the role of Java Virtual Machine? (5)
    b) Construct Use Case diagrams for the following
       i) ATM (9)
       ii) Library

OR

12. a) Write a note on object oriented concepts. (6)
    b) Draw an activity diagram to represent a library management system.
       1) Any library member should be able to search books by their title, author, subject category as well by the publication date.
       2) The system should be able to retrieve information like who took a particular book or what are the books checked-out by a specific library member. (8)
       3) There should be a maximum limit (5) on how many books a member can check-out.

4) There should be a maximum limit (10) on how many days a member can keep a book.
5) The system should be able to collect fines for books returned after the due date.
6) Members should be able to reserve books that are not currently available.
7) The system should be able to send notifications whenever the reserved books become available, as well as when the book is not returned within the due date.
8) Each book and member card will have a unique barcode. The system will be able to read barcodes from books and members' library cards.

MODULE II

13. a) Write a note on various primitive data types in Java. (8)
b) Write a Java program that accepts two numbers as command line arguments and find all palindrome numbers between them. (6)

OR

14. a) Write a java program to check whether a given number is prime or not. (5)
b) Explain various selection statements in Java with example. (9)

MODULE III

15. a) What will be the output of the following code. (10)

```
class Base {
        public Base() {
                System.out.println(10);
        }
        public Base(int a) {
                System.out.println(20);
        }
}

class Sub extends Base{
        public Sub() {
                this(10);
                System.out.println(30);
        }

        public Sub(int i) {
                System.out.println(40);
        }
}
class SubChild extends Sub{
        public SubChild() {
```

```
                super(10);
                System.out.println(50);
        }
}

public class ConstructorChaining {

        public static void main(String[] args) {
                SubChild subChild= new SubChild();
        }
}
```

b) Explain the use of super() and this(). (4)

OR

16. a) What's the difference between an abstract class and interface in Java? (5)

b) Explain in detail how exception handling mechanism used in Java using try- catch- finally, throw and throws. (9)

MODULE IV

17. a) Explain the difference between StringBuffer, StringBuilder and String in Java. (6)

b) Compare Byte Streams and Character Streams. Write a program to demonstrate the usage of the PrintWriter class. (8)

OR

18. a) Explain ArrayList collections framework. Also explain the use of iterator in accessing collections (8)

b) Write a Java program for writing odd numbers and even numbers up to 100 into two different files. (6)

MODULE V

19. a) Explain different ways of creating thread in Java. (6)

b) Summarize any three features Swing. List out any four Containers and Component classes of Swing. (8)

OR

20. a) Write a java program to create two threads, one for writing odd numbers and another for writing even numbers up to 100 into two different files. (7)

b) Explain any four Event Listener Interfaces. (7)

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