

University Roll No. 21234757061

Master of Computer Applications

Subject:-Java Programming

Paper Code: MCAO- 201

Unique Paper Code: 223403201

Semester II

May-2023

Year of admission: 2021-22

Time: Three Hours

Max. Marks: 70

Instructions:

1. All questions are compulsory.
2. Q1 carries 20 marks, Q2 to Q6 carries 10 marks each.
3. Attempt all the parts of a question together
4. You must document your code properly for full credits.

Q1. Describe the following with the help of Java code snippets: (5×4)

- A) abstract class and interface
- B) throw vs. throws
- C) ArithmeticException //checked or unchecked
- D) this() vs super()
- E) ArrayIndexOutOfBoundsException //checked or unchecked

Q2. (i) What is the purpose of `final` keyword in context to variable, method and class? Explain with the help of suitable examples. (5)

Q2. (ii) Write a method to copy the content of one file into other file using `PrintWriter` class. (5)

Q3 (i) Explain method hiding and variable hiding with the help of Java code snippets. (5)

Q3. (ii) Write a method in Java which accepts the numbers from command-line and show the addition of the inputted numbers. (5)

Q4. (i) Why Java has two types of I/O stream: character streams and byte streams? What is the difference between the two types of streams? (5)

Q4. (ii) What will be the output of the following code? Show step-by-step internal working of the code. (5)

```
byte a=14, b=-14, c,d,e,f,g,h;  
c=(byte) (a<<2);  
d=(byte) (a>>2);  
e=(byte) (a>>>2);  
System.out.println(c+" "+d+" "+e);  
f=(byte) (b<<2);  
g=(byte) (b>>2);  
h=(byte) (b>>>2);  
System.out.println(f+" "+g+" "+h);
```

Q5. (i) Show the exact output produced by the following code segment. (5)

```
class Demo{  
    static int a = 10;  
    static int b;  
    static void show(int x) {  
        System.out.println("x = " + x);  
        System.out.println("a = " + a);  
        System.out.println("b = " + b);  
    }  
    static {  
        System.out.println("Static block.");  
        b = ++a + a++;  
    }  
    public static void main(String args []) {  
        show(20);  
    }  
}
```

Q5 (ii) What will be the output of the following code? Justify your answer. (5)

```
class Demo{
    Demo(int x){
        System.out.print("Super class =" + x);
    }
}
class Sub extends Demo{
    Sub(int a, int b){
        super(b);
        System.out.print("Sub class =" + a);
    }
    Sub(int x){
        System.out.print("Sub class =" + x);
    }
    public static void main(String arg[]) {
        new Sub(10, 20);
    }
}
```

Q6 (i) What will be the result of attempting to run the following code? Justify your answer. (3)

```
class Demo{
    void test()
        System.out.println("No parameters");
    void test(int a, int b) {
        System.out.println("a and b: " + a + " " + b);
    }
    double test(double a) {
        System.out.println("double a: " + a);
        return a*a;
    }
    public static void main(String[] args) {
        Demo ob=new Demo();
        ob.test();
        ob.test(127);
        ob.test(5, 10);
        double result = ob.test(10.11);
        System.out.println("Result: " + result);
    }
}
```



```
}}
```

Q6 (ii) Show the exact output of the following program and justify your answer. (4)

```
class Demo{
    public static void main(String args []) {
        ram:for (int i = 0; i<10; i=i+2){
            System.out.print("hi ");
            for (int b=5; b<i; b=b+2)
                System.out.println("hello ");
            for (int b=5; b<i; b=b+3) {
                System.out.println("bye ");
                if(i>7)
                    break ram;
            }
        }
    }
}
```

Q6 (iii) How many times will the following loops run?

(3)

```
for (int i = 10; i>0; i--);           //Loop1
for (int i = 40; i>10; i=i-2);        //Loop2
for (int i = 20; i>10; i=i-3);        //Loop3
```



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P. b