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M.Sc. Computer Science
Subject:-Java Programming
Paper Code: MCSO-201
Unique Paper Code: 223413201
Semester II
August-2022
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Time: Three Hours **Max. Marks: 70**

Note: All questions are compulsory. Q1 carries 20 marks, Q2 to Q6 carries 10 marks each.

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

A) compareTo() //defined in String class
B) System.out and System.in
C) ClassNotFoundException //checked or unchecked
D) read() //defined in InputStream class
E) itemStateChanged() //defined in ItemListener interface

Q2. (i) What is String Pooling in Java? Demonstrate String Pooling with the help of Java code snippets. (6)

Q2. (ii) What will be the output of the following code? Justify your answer. (4)

```
byte a=20, b=10;
if(a++>20 && ++b<=11)
     System.out.println("Hello");
System.out.println(a+"  "+b);
a=20; b=10;
if(a++>20 & ++b<=11)
     System.out.println("Hi");
System.out.println(a+"  "+b);
```

Q3 (i) Explain method hiding and variable hiding with the help of Java code snippets. (6)

Q3. (ii) Calculate and show the changes in the value of the variable `result` after each step. Show all intermediate calculations. (4)

```
int arr[] = {12, 98, 13, 76, 53};
int index = 4, result = 0, i;
for (i = 0; i <index; i++) {
     result += arr[i];
     i++;
}
for (i = 0; i < index; i++)
     result += arr[i];
System.out.println("Result: "+ result);
```

Q4 (i) What are custom exceptions in Java? How to create custom unchecked exception in Java, show with the help of Java code snippets. (6)

Q4 (ii) What will be the output of the following code? Show step-by-step internal working of the code. (4)

```
byte a=22, b=-22,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. (6)

```
char[][] pic = new char[6][6];
for (int i = 0; i < 6; i++)
   for (int j = 0; j < 6; j++) {
      if ( i == j  ||  i == 0  ||  i == 5 )
         pic[i][j] = '@';
      else
         pic[i][j] = '*';
   }
for (int i = 0; i < 6; i++) {
   for (int j = 0; j < 6; j++)
      System.out.print(pic[i][j]);
   System.out.println();
}
```

Q5 (ii) What will be the output of the following code? Justify your answer. (4)

```
class Abc
{
     static Abc obj;
     static Ram ram_obj;
     public static void main(String[] args)
     {
          obj.show();
          ram_obj.show_Ram();
     }
     static void show()
     {
          System.out.println("Show method in Abc class");
     }
}
// Another class in the same package.
class Ram
{
     static void show_Ram()
     {
          System.out.print("Show method in Ram class");
     }
}
```

Q6 (i) What will be the result of attempting to run the following code? Justify your answer. (4)

```
class Abc {
 public static void main(String[] args){
 String [][][]arr={
      { {}, null},
      { {"i","2"}, {"1", null, "3"}},
      {},
      { { "1", null}}
      };
 System.out.println(arr[0].length);
 System.out.println(arr.length);
 System.out.println(arr[1][2].length);
  }}
```

Q6 (ii) Which statements concerning *casting* and *conversion* are true? Justify your answer. (4)

Select all valid answers.

A) Conversion from `int` to `long` does not need a cast.
B) Conversion from `byte` to `short` does not need a cast.
C) Conversion from `float` to `long` does not need a cast.
D) Conversion from `short` to `char` does not need a cast.
E) Conversion from `boolean` to `byte` using a cast is not possible.

Q6 (iii) What will be the output of the following program. Justify your answer.

(2)

```
class Demo
{
        public static void main(String args[]) {
        System.out.print(2 + 3 + "Demo"+2+3);
        }
}
```