CSC 111

TUT 6

A. Write the java statement that assigns 1 to x if y is greater than 0

B. Suppose that score is a variable of type double. Write the java statement that increases the score by 5 marks if score is between 80 and 90

C. Rewrite in Java the following statement without using the NOT (!) operator:

```
item = !( (i<10) || (v>=50) )
```

D. Write a java statement that prints true if x is an odd number and positive

E. Write a java statement that prints true if both x and y are positive numbers

F. Write a java statement that prints true if x and y have the same sign (-/+)

```
A. if (y > 0) x = 1;
B. if (score >= 80 && score <=90) score += 5;
C. item = i >= 10 && i < 50
D. if (x % 2 != 0 && x > 0) System.out.println(true);
   or
   System.out.println(x%2 !=0 && x>0); // This prints false
   otherwise
E. if (x > 0 && y > 0) System.out.println(true);
   or
   System.out.println(x > 0 && y > 0); // This prints false
   otherwise
F. if (x * y > 0) System.out.println(true);
   or
   System.out.println(x * y > 0); // This prints false otherwise
```

Two programs are equivalent if given the same input they produce the same output.

Which of the following programs are equivalent? Why?

```
A. import java.util.Scanner;
   class TestPositive {
     public static void main(String [] args) {
       Scanner S = new Scanner(System.in);
       System.out.print("Enter a value: ");
       int x = S.nextInt();
       if (x > 0) {
         System.out.println("The value is positive:");
       }
       else {
         if (x < 0) {
           System.out.println("The value is negative:");
         } else {
           System.out.println("The value is zero:");
         }
       }
       System.out.println("Good Bye!");
     }
   }
```

B.
```java
import java.util.Scanner;
class TestPositive {
  public static void main(String [] args) {
    Scanner S = new Scanner(System.in);
    System.out.print("Enter a value: ");
    int x = S.nextInt();
    if (x > 0) {
      System.out.println("The value is positive:");
    }
    if (x < 0) {
      System.out.println("The value is negative:");
    } else {
      System.out.println("The value is zero:");
    }
    System.out.println("Good Bye!");
  }
}
```

```java
C. import java.util.Scanner;
   class TestPositive {
     public static void main(String [] args) {
       Scanner S = new Scanner(System.in);
       System.out.print("Enter a value: ");
       int x = S.nextInt();
       if (x > 0) {
         System.out.println("The value is positive:");
       }
       if (x < 0) {

           System.out.println("The value is negative:");
       }
       if (x ==0) {
           System.out.println("The value is zero:");
       }
       System.out.println("Good Bye!");
     }
   }
```

Programs A and C are equivalent. Program B is different since it gives different output if input is a positive number greater than zero. For example, 3

Convert the following switch statement into if-else statements then into if-then statements:

```
String dayString1, dayString2, dayString3;
int day = KB.nextInt();
switch (day) {
  case 1: dayString1 = "Saturday";
  case 2: dayString2 = "Sunday";
          break;
  case 3: dayString3 = "Monday";
          break;
  case 4: dayString1 = "Tuesday";
  case 5: dayString2 = "Wednesday";
          break;
  default: dayString3 = "Invalid day";
            break;
}
```

```
if-else:
  String dayString1, dayString2, dayString3;
  int day = KB.nextInt();
  if (day == 1) {
    dayString1 = "Saturday";

    dayString2 = "Sunday";
  }
  else
    if (day == 2)
      dayString2 = "Sunday";
    else
      if (day == 3)
        dayString3 = "Monday";
      else
        if (day == 4) {
          dayString1 = "Tuesday";
          dayString2 = "Wednesday";
        }
        else
          if (day == 5)
            dayString2 = "Wednesday";
          else
            dayString3 = "Invalid day";
```

```
if-then:
    String dayString1, dayString2, dayString3;
    int day = KB.nextInt();
    if (day == 1) {
      dayString1 = "Saturday";
      dayString2 = "Sunday";
    }
    if (day == 2)
      dayString2 = "Sunday";
    if (day == 3)
      dayString3 = "Monday";
    if (day == 4) {
      dayString1 = "Tuesday";
      dayString2 = "Wednesday";
    }
    if (day == 5)
      dayString2 = "Wednesday";
    if (day < 1 || day > 5)
      dayString3 = "Invalid day";
```