Enrolment No: _____

Name of Student: _____

Department/ School: _____

MID TERM EXAMINATION EVEN SEMESTER 2021-22

COURSE CODE:	CSET104	**MAX. DURATION**	**1 HRS**
COURSE TITLE:	Object Oriented Programming using JAVA		
COURSE CREDIT:	3-0-4	**TOTAL MARKS**	**30 Marks**

Note: - All Questions are compulsory

Section-A [3 marks *4 = 12 marks]

Q1. Discuss autoboxing and auto-unboxing with an example. Give reason, why the following code segment does not result in a compile-time error.

Byte b=2;
double d=b.doubleValue();

[2marks+1mark]

Q2. Differentiate between $s1== =s2$, $s1.equals(s2)$ and $s1.compareTo(s2)$ where s1 and s2 are two String objects.

[3 marks]

Q3. Design a method *void printAlphabet(double)* to convert a double value to corresponding alphabet and print the Alphabet. If the input argument is not in the range of the alphabets then print **"Invalid Data"**.

Example:

printAlphabet(64.003): output- Invalid Data
printAlphabet(66.35): output- B
printAlphabet(104): output- h

Note: ASCII values of Alpbhabets are 65 to 90 (Upper case) and 97 to 122.

[3 marks]

Q4. The following program has a compile time error. Identify the cause of the error and rectify the error in the code.

[1 mark +2 marks]

```
class Rectangle
 {
    int length,breadth;
    Rectangle(int x, int y)
      {length=x; breadth=y;}
    void area(){System.out.println("Area: "+length*breadth);}}

class Square extends Rectangle{
    Square(int x){length=x;breadth=x;}}

class Main{ public static void main(String args[])
    { Square s=new Square(5);
    s.area();}}
```

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Section-B [6 marks *3 = 18 marks]

Q5. Is it possible to overload a parent class method in child class? Discuss with an example. How method overloading is different from method overriding? Can an overridden method be declared as protected in child class if it is declared as public in parent class?

[1 mark+2 marks+2 mark+1mark]

Q6. Create a class *Student* with *name(String type)*, *cgpa(double type)* and *rank(int type)* as data members. Include constructor to initialize *name and cgpa* of the student class object. Create five student class objects and store them in an ArrayList. Rank the students according to their *cgpa*. The student with maximum *cgpa* gets rank 1 and so on. Assume that no two students have same *cgpa*.

[6 marks]

Q7. Consider the given java program and its output. Some parts of the program are deleted knowingly. Complete the program by writing codes in the indicted places. You are not supposed to change any other parts of the code except for the parts which is indicted to write your code. For comparison of Time1 and Time2 consider hours and minutes only.

[6 marks]

```
interface Time
{ //Write your code here }
class Time1 implements Time
{  int hour,minute;
    //Write your code here

}
class Time2 implements Time
{ int hour,minute,second;
   //Write your code here

}
class Main
{    public static void main(String []args)
    {    Time1 t1=new Time1(2,180);
         Time1 t2=new Time1(0,300);
         Time2 t3=new Time2(3,50,35);
         Time t4=new Time2(3,120,55);
         System.out.println(t1.equals(t2));
         System.out.println(t1.equals(t3));
         System.out.println(t4.equals(t1));
         System.out.println(t1.equals(t3));
         System.out.println(t3.equals(t4));
    }
}
```

Output:
```
true
false
true
false
false
```