

**Giri's Tech Hub Pvt.Ltd, Pune.**  
**Programming (Machine) Test**

**Batch: Nov-24/Dec-24/Jan-25**

**Date: 20/03/2025**  
**Time: 02:00 to 05.00 Am**

**Instructions:**

**Total:- 10 Marks**

1. Input should be from user.
2. Solve all questions.
3. Indentation and comments mandatory.
4. Each program 1 Marks & comments 0.25 marks.

**Q1. Write a java program to check whether number is amicable number or not.**

Amicable numbers are two different numbers so related that the sum of the proper divisors of each is equal to the other number. (A proper divisor of a number is a positive factor of that number other than the number itself.

**Examples: (220,284)**

- Proper divisors of 220: 1, 2, 4, 5, 10, 11, 20, 22, 44, 55, 110
  - $\text{Sum} = 1 + 2 + 4 + 5 + 10 + 11 + 20 + 22 + 44 + 55 + 110 = 284$
- Proper divisors of 284: 1, 2, 4, 71, 142
  - $\text{Sum} = 1 + 2 + 4 + 71 + 142 = 220$

Thus, (220, 284) is a pair of amicable numbers.

**Q2. Write a java program to print 1 to nth strong number.**

**Q3. Write a java program to print this pattern.**

```
# 1
# 2
# 3  # 3
# 4  # 4
# 5  # 5  # 5
# 6  # 6  # 6
```

**Q4. Write a java program to print this pattern.**

```
A  B  C  D  E  F
  A  B  C  D  E
    A  B  C  D
      A  B  C
        A  B
          A
```

**Q5. Write a Java program to count the number of alphabets, vowels, consonants, digits, and special symbols in a character array.**

**Q6. Write a Java program to find the union and intersection of two arrays.**

**Explanation:**

**The union of two arrays includes all unique elements from both arrays.**

**The intersection of two arrays includes only the elements that are present in both arrays.**

**Array 1: {1, 3, 4, 5, 7}**

**Array 2: {2, 3, 5, 6}**

**Union: {1, 2, 3, 4, 5, 6, 7}**

**Intersection: {3, 5}**

**Q7. WAP to Create a class name as StudentPer with a three function void setValue( ) , void CalPer( ) and void checkGrades( ).**

```
void setValue(int studid, String name, int marks[ ])
{
// this function can accept the array.
}
void CalPer( )
{
//this function can use calculate the percentage in array.
}
void checkGrades()
{
    //this function can use check the grade.
    percentage >= 91% to 100 % : Grade A
    81% to 90% : Grade B
    71% to 80% : Grade C
    61% to 70% : Grade D
    51% to 60% : Grade E
    41% to 50% : Grade F
    10% to 40% : Student is Fail.
}
```

**Q8. WAP to Create a class name as Isogram with a two function void setArray(char ch[]) and void checkIsogram( ).**

```
setArray(char ch[])
{
// this function can accept the array.
}
void checkIsogram( ).
{
//this function can use the implement the logic.
//Given a word or phrase, check if it is an isogram or not. An Isogram is a word in which
//no letter occurs more than once.
//Input: Machine                                Output: True
//Explanation: "Machine" does not have any character repeating, it is an Isogram
//Input : Geek                                    Output : False
//Explanation: "Geek" has 'e' as repeating character, it is not an Isogram
}
```

**-----ALL THE BEST-----**