

2017

(Introduction to Computer and Computer Programming)

Marks-20

1. Answer any three of the following

(1x3=3)

a) Define flowchart

Answer: Flow chart is a diagrammatic representation of an algorithm. These diagrams are used to show program and processes.

b) What is a string?

Answer: A string is a sequence of characters always delimited by double quotes.

Example: "Nagaon -782002"

c) What is word length of the computer?

Answer: The word length of the processor in a computer refers to the maximum number of bits it can take as input. It is the number of bits (32 bits or 64 bits) processed by a computer CPU in a single pass.

d) What is the standard input stream in C++ to access the keyboards?

Answer: The standard input stream in C++ to access the keyboards is **stdin**.

2. Answer any one of the following

(2)

a) What are the differences between machine language and High level language?

Answer: Differences between machine language and High level language

Machine language	High level language
It is the most elementary level of Programming language. It is the only language that computer can understand. Its machine code is represented by a string of binary digits of 0 and 1.	HLL is Easy to learn, It produces efficient programs. A HLL is a programming language that uses English and mathematical symbols in its instructions. HLL are machine independent and can run on different hardware.

b) Write a program in C++ to find the compound Interest

```
#include<iostream>
#include<math.h>

using namespace std;

int main()
{
    float p,r,t,ci;

    cout<<"Enter Principle, Rate and Time:\n";
    cin>>p>>r>>t;

    ci=p*pow((1+r/100),t);

    cout<<"\nCompound Interest = "<<ci;

    return 0;
}
```

4. Answer any one of the following questions (10)

a) Write the algorithm and draw the flowchart to find the roots of a quadratic equation

Answer: **Algorithm to find all roots of a quadratic equation $ax^2+bx+c=0$**

Step 1: Start

Step 2: Declare variables a, b, c, D, x1, x2, rp and ip;

Step 3: Calculate discriminant

$$D \leftarrow b^2 - 4ac$$

Step 4: If $D \geq 0$

$$r1 \leftarrow (-b + \sqrt{D}) / 2a$$

$$r2 \leftarrow (-b - \sqrt{D}) / 2a$$

Display r1 and r2 as roots.

Else

Calculate real part and imaginary part

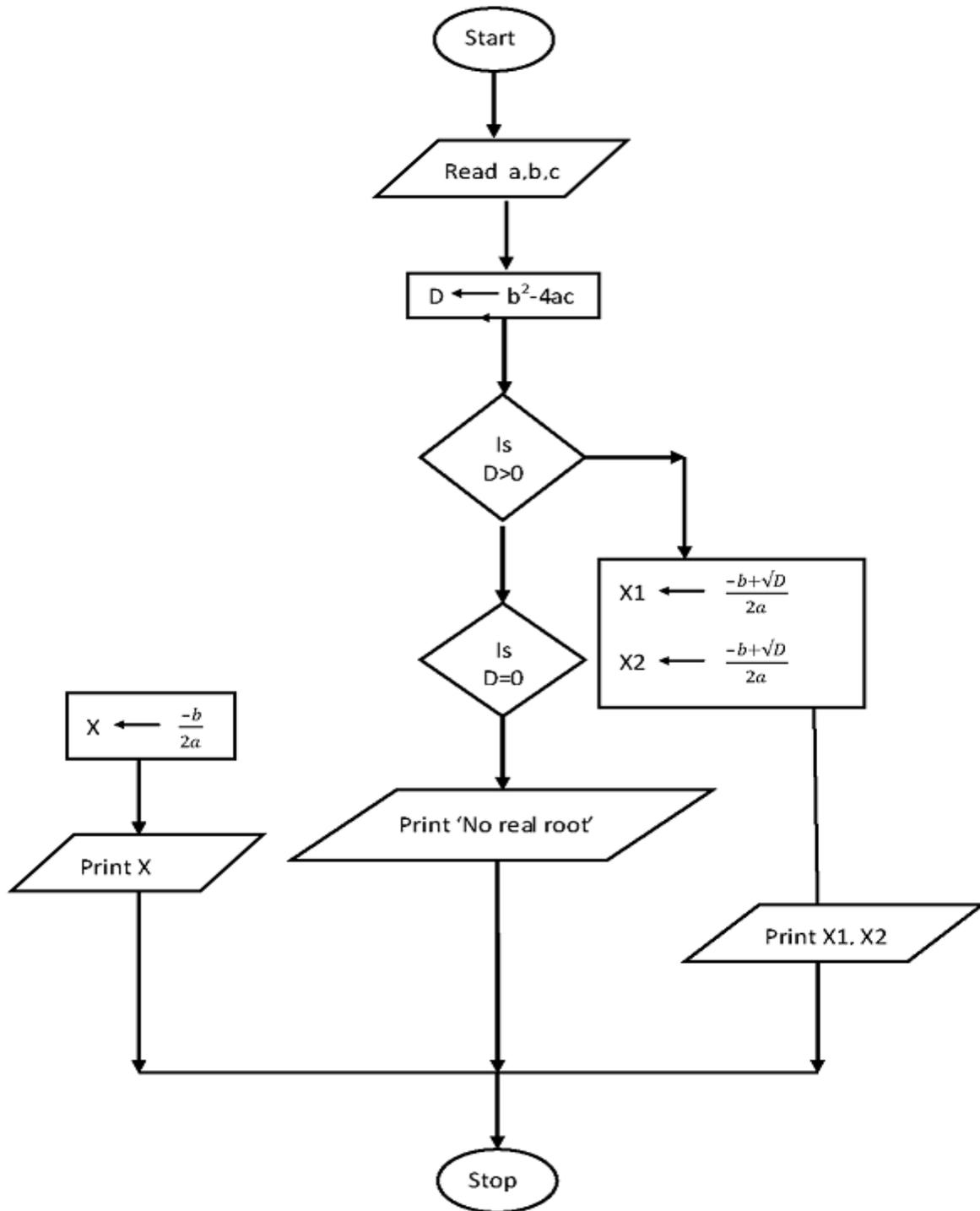
$$rp \leftarrow -b / 2a$$

$$ip \leftarrow \sqrt{-D} / 2a$$

Display $rp + j(ip)$ and $rp - j(ip)$ as roots

Step 5: Stop

Flowchart to find all roots of a quadratic equation $ax^2+bx+c=0$



b) Write the algorithm and the program in C++ to find the sum and average of first n natural numbers.

Answer: **Algorithm to find the sum of N natural numbers**

```
start  
  
input N, count, sum  
  
let count =1, sum =0  
  
If count ≤ N  
    Print sum  
  
else count = sum +1  
  
stop  
  
end
```

Program to find the sum of N natural numbers

```
# include<stdio.h>  
  
main ()  
  
{    int n, i, s =0;  
    scanf ("%d", &n);  
  
for (i=1; i< = n; i++)  
  
s= s+ i  
  
printf("\n sum =%d",s);  
  
}
```