

Indian Institute of Technology, Kharagpur

Department of Computer Science and Engineering

Class Test 1, Spring 2016-17

Programming and Data Structure (CS 11001 / CS 10001)

Students:

Date: 02-Feb-2017

Full marks: 20

Time: 7:00pm–8:00pm

Answer the questions in the spaces provided on the question sheets. You may use the last page of this booklet for your rough work. No other supplementary sheets will be given to you.

Roll Number		Section	
Name			

Question:	1	2	3	Total
Points:	5	10	5	20
Score:				

- (5 points) Write C statements (corresponding to a program segment) for the following:
 - Declare a variable x of type `float` and initialize it to 2×10^{-22} .
 - Declare a of type `int` and b of type array of 100 integers.
 - Read a and first element of b from the user.
 - Compute remainder when a is divided by first element of b , and store the result second element of b .
 - Print the value of second element of b such that the number of characters printed is at least 3.

```
(a) float x = 2e-22; (or) float x = 2*pow(10,-22);
(b) int a, b[100];
(c) scanf("%d %d",&a, &b[0]);
(d) b[1]=a%b[0];
(e) printf("%3d",b[1]);
```

2. (10 points) What will be printed when the following programs will execute? If it causes a compiler error or some other error, write that as answer.

(a)

```
#include <stdio.h>

int main(){
    char a[100]={ 'A', 'm' , 'i', 't' };
    a[5] = 'B';
    printf("%s\n",a);
}
```

Amit

(b)

```
#include <stdio.h>

int main() {
    int a = 4, b = 8;
    #define SQUARE(X) (X*X)
    printf("Squared Distance: %d\n",
        SQUARE(4-8));
}
```

Squared Distance: -36

(c)

```
#include <stdio.h>

int main(){
    int a=2, b=3, r1, r2;
    float fa=2, fb=3, r3, r4;
    r1 = a / b;
    r2 = fa / fb;
    r3 = fa / fb;
    r4 = a / b;
    printf("%d %d %f %f\n",r1,r2,r3,r4);
}
```

0 0 0.66 0.00

(d)

```
#include <stdio.h>

int main(){
    int x = 10;
    if(x > 100)
        if(x < 200) x = 20;
    else x = 30;
    printf("%d",x);
}
```

10

(e)

```
#include <stdio.h>

int main(){
    int i,j;
    for(i=0, j=100; (i-j); i++, j--);
    printf("%d %d\n",i,j);
}
```

50 50

3. (5 points) An integer is a prime number if the remainder of its division by any integer other than 1 and itself is non-zero. Write a full program in C to print all the **prime numbers ending with 7** between 1 and N , where N is read from the user.

```
#include < Stdio.h >
int main()
{
    int N, i, j, flag=0;
    printf("Enter the value of N");
    scanf("%d",&N);
    for(i=2; i < N; i++)
    {
        flag=0;
        for(j=2; j <= i/2; j++)
        {
            if(i%j==0)
            {
                flag=1;
                break;
            }
        }
        if(i%10==7)
            printf("%d", i);
    }
    return(0);
}
```

[Extra page for rough work]