

# Indian Institute of Technology, Kharagpur

*Department of Computer Science and Engineering*

## Class Test 1, Autumn 2016-17

Programming and Data Structure (CS 11001 / CS 10001)

Students: 681

Date: 25-Aug-16

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
Full marks:	5	10	5	20
Marks Obtained:				

- (5 marks) Write C statements (corresponding to a program segment) for the following:
  - Declare a variable  $x$  of type `float` and initialize it to 2000.
  - Declare  $a$  and  $b$  of type `int`.
  - Read  $a$  and  $b$  from the user.
  - Compute  $a$  divided by  $b$  with proper type cast so that no information is lost, and store the result in  $x$ .
  - Print the value of  $x$ .

2. (10 marks) What will be printed when the following program statements / segments will execute?

(a)

```
int x;
float y, z;
x = 10/3;
y = x/3;
z = x+y;
printf ("y = %f, z=%f", y, z) ;
```

(b)

```
#define CALC(X) (X*X)
int main() {
    int a, b=5;
    a = CALC(b+2);
    printf("\n a= %d b=%d", a,b);
}
```

(c)

```
int a=10;
if(a>=5)
    a=a+3;
else
    a=a+2;
printf("\n a=%d ",a);
```

(d)

```
int a=10, b=-4;
if(a=5)
    b=a+b;
else
    b=a-b;
printf("\n a=%d b=%d",a, b);
```

(e)

```
int i,a[10];
a[0]=0;
for (i=1; i<10; i++)
    a[i]=a[i-1]+i;
printf("\n val1=%d val2=%d",a[4], a[9]);
```

- (5 marks) An integer is a perfect square if its square root is also an integer. Write a full program in C to print all the **odd perfect squares** between 1 and  $N$ , where  $N$  is read from the user.

[Extra page for rough work]