

Indian Institute of Technology, Kharagpur

Department of Computer Science and Engineering

Class Test 2, Autumn 2016-17

Programming and Data Structure (CS 11001 / CS 10001)

Students: 681

Date: 27-Oct-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:	10	4	6	20
Marks Obtained:				

1. (10 marks) Write C statements (corresponding to a program segment) for the followings:
- (a) Define a structure for representing a complex number, and declare a variable x of that data-type (i.e. using defined structure).

- (b) Write a function named *swap(.)* which exchanges values of two integer variables whose location/address is passed as arguments to it.

(c) Dynamically allocate an array of 100 integers to a pointer to an *int* data type.

(d) Declare a pointer *ptr* of an *int* variable and also an integer variable *k*. Assign the address of *k* to *ptr*.

(e) Suppose *p* is a pointer to an integer variable and *a* is an array of integers. Set the address of the first element of the array *a* to *p*. Write the expression for accessing *a*[*i*] using *p*.

2. (4 marks) What will be printed when the following program statements / segments will execute?

(a)

```
int *x, y;
int a[6]={0,1,2,3,4,5};
x=a+2;
y=a[0]+*x;
printf ("y = %d, value=%d", y, *(a+4));
```

(b)

```
void compute(int *a, int n) {
    int i;
    for (i=1;i<n;i++)
        a[i]=a[i-1]+a[i];
}

main() {
    int b[4]={10,20,30,40};
    compute(b,4);
    printf("Value=%d \n", b[3]);
}
```

3. (6 marks) Define a structure for storing date with components day, month and year as integers within it. Write a C function that takes two dates d1 and d2 as arguments (using the same structure definition). The function returns 1 if d1 is older than d2, -1 if d1 is more recent than d2, otherwise 0.

[Extra page for rough work]