North South University
Department of ECE
Final Examination Summer 2016
Course: Programming Language I (CSE115)
Total Marks: 60 Time: 1 hour 30 minutes
(Answer any six out of seven questions)

1. a) A C program contains the following statements. 3

```
int  i, j = 25;
int *pi , *pj = &j;
.....
*pj = j + 5;
i= *pj + 5;
pi = pj;,
*pi = i+ j;
```

(i) At the end of the program what value is assigned to ***pj, i and *pi**?

b) Write a single C statement that uses malloc to create an array named list that holds 100 values of type double. 3

c) What is the output of the following C code? 4

```
#include<stdio.h>
int main(){
        int a = 10;
        void *p = &a;
        int *ptr = p;
        printf("%u",*ptr);
        return 0;
}
```

7. A bad hacker wants to change any string you enter. The hacker changes all the vowels in the strings to other characters, here is the list 10

Given letter	Changes to
a	?
e	!
i	#
o	%
u	*

For example if you enter "hello world" it changes to h!ll% w%rld
Now you have to write the antivirus so that the special characters are changed back to vowels. Now write the program that will get a string initialized with the changed letters, and correct it!

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3. Write a code that fills out an N x M two-dimensional array with user inputs and then calculates the sum of elements at border of the array. Example: For the 2D array shown bellow, your program should calculate the sum of the elements in the grey region, i.e.: sum = 5 + 4 + 9 + 8 + 7 + 8 + 6 + 1 + 8 + 1 + 3 + 1 + 7 + 9 + 7 + 1 = 85. 10

5	4	9	8	7
1	0	2	4	8
7	4	4	5	6
9	3	9	4	1
7	1	3	1	8

4. Write a program that will copy a file named "input.txt" into "output.txt" file. Assume that the input file contains a line of text "Good bye CSE 115". 10

5. Calculate the value of f (4) for the following recursive function definition: 10

$f(0) = 1$

$f(n) = n \times f(n - 1) + n$

6. Suppose you have to write a program for a Book Fair. There are 100 books published in that fair. You have to take the following information as Input 10

- BookName
- AuthorName
- PublicationName
- CopiesSold

Now your task is to complete the project by implementing the following steps,

a) Declare a structure called Book to store the necessary data for each Book.

b) Take input for 100 published book

c) Write a function BestSeller() to find out the best sold book and print the book name, author name and publication name.

7. Write a program that asks the user to type N integers of an array, an integer V, and an index i between 0 and N-1. The program then inserts the value V at the index *i* in the array, shifting each element right and dropping off the last element using a user defined function with the following prototype 10

```
void  func ( int A[ ] , int N, int V, int index);
```

In the function, the program finally displays the modified array