1 Show manual tracing for the following program and find the final output. In the program, last_two_digits_of_your_student_id means the last two digits of your student id from the right most. For example, Your Student ID= 011193127. So, last_two_digits_of_your_student_id=27.

```
#include<stdio.h>
int a, b;
int func1(float x);
void func2(int x, float y);
int main(){
        a=last_two_digits_of_your_student_id;
        b=a*10;
        printf("%d %d\n", b, a);
        a=func1(5.5*a);
        printf("%d %d\n", a, b);
        return 0;
      }
int func1(float x) {
        b=b*a;
        printf("%f\n", x);
        func2(5, 4.5);
        return b-1;
}
```

2 Find output for the following program by drawing a recursion tree. In the program, last_two_digits_of_your_student_id means the last two digits of your student id from the right most. For example, Your Student ID= 011193127. So, last_two_digits_of_your_student_id=27.

```
#include<stdio.h>
int a=last_two_digits_of_your_student_id;
void func(int x);
int main(){
        func(a);
        return 0;
}

void func(int x){

    if (x==a-3) return;
    else {
        printf("%d\n", x);
        func(x-1);
        printf("%d\n", x);
      }
}
```

3 Write a program using a user defined recursive function to implement the following code segment. main() will print the value of sum. last_two_digits_of_your_student_id is defined in Question No 2(a).

```
int n, i, sum;
n= last_two_digits_of_your_student_id+3;
sum=0;
for (i=n-3; i<=n; i++){
  sum=sum+i;
```

```
}
printf("%d", sum);
```

4 Write a program having the structure student (name, id, marks) to perform the following operations for 4 students

a) Read name, id, marks of 4 students from keyboard
b) Find the minimum marks and the maximum marks holder students
c) Calculate the average marks of all the students
d) Display the following sample report on monitor.

```
Rahim     10    85.0
Saiham    20    85.4
Sabera    15    82.8
Farhan    18    80.0

Minimum marks holder student:  Farhan  18
Maximum Marks holder student: Saiham  20
Average Marks: 83.3
```

5 What will be the effect of the following program?

```
#include<stdio.h>
int main(){
        FILE *fp1;
        int i;
        float num[6]={10.0, 20.5, 30.6, 40.0, 50.5, 9.5};
        float sum;
        fp1= fopen("D:\\students\\dest.txt", "w");
        sum=0.0;
        for(i=5; i>=0; i--){
                if(i%2 !=0){
                        sum=sum+num[i];
                        fprintf(fp1, "%f\n", num[i]);
                }
        }
       fprintf(fp1, "%f", sum);
        fclose(fp1);
        return 0;
    }
```

6 Write a program to do the following operations

i) Read two floating numbers from a text file
ii) Add both the numbers
iii) Show the addition result in another text file

7 Show manual tracing of the following code segment and find output.

```
char str1[12]={'\0'};
char str2[4]={'\0'};
int i, k;
strcpy(str1, "CSE");
strcpy(str2, "UIU");
i=strlen(str1);
for(k=0; str2[k] !='\0'; ++k)
   str1[i+k]=str2[k];
```

```
puts(str1);
printf("\n");
strrev(str1);
puts(str1);
strcat(str1, str2);
printf("\n");
puts(str1);
if(strcmp(str2, str1)<0)
  printf("\nCSE");
else
  printf("\nUIU");
```

8 Write a program to build a simple calculator using user defined functions that calculate addition, subtraction, multiplication, division, modulus and power of two integer numbers that are taken as inputs in main(). The main() function also prints the addition, subtraction, multiplication, division, modulus and power results on monitor.