SECTION - B
give algorithms or C codes
(Answer **any four** from this section)　　　**4x7.5=30**

B1. Print first n numbers of the series 1, 2, 5, 12, 29, 70, 169, ... so on, i.e., $a_n=2a_{n-1}+a_{n-2}$, for n>2 and $a_1=1$, $a_2=2$. n will be user input.

B2. Print the number of days between two user given dates in DDMMYYYY format; if the inputs are not in correct format print an error.

B3. Print the all the m-digit Armstrong number. m will be the user input. If $a_na_{n-1}a_{n-2}...a_2a_1$ are the digits of an n-digit number x, then, x is an Armstrong number if $x= (a_n)^n+(a_{n-1})^n+(a_{n-2})^n+...+(a_2)^n+(a_1)^n$.

B4. Calculate GCD of two user given numbers by both recursion and iteration and print the results.

B5. Make all lower case letters of a user given string to upper case letters and print the string. (ASCII value: 'A'-'Z':65-90, 'a'-'z':97-122)

B6. Swap the values of two variables by passing their references (addresses) into a function.

B7. Consider a file of employee that holds information of employee Id, department and salary. Write a program to create an array of the structure and read data from file. Then print the employee Id's who get the highest salary and the name of departments they work in.

B8. Merge two n-length sorted (in ascending order) array of numbers into a 2n-length sorted array (in ascending order) and print.

Full Marks : 50

Time Allotted: 1hr 30 min

SECTION - A
multiple choice questions
(Answer **any eight** from this section)　　　**8x2.5=20**

A1 - A9: Pick appropriate outputs from the given options, if the programs are run in gcc compiler. If you choose the option 'compilation error', mention the reason for it.

A1.
```c
#include<stdio.h>
void main(){
    printf("%d",!2+2*2-2>=2/2);
}
```
Options:
(a)　0
(b)　1
(c)　2
(d)　Compilation Error

A2.
```c
#include<stdio.h>
void main(){
    int i,j,k=0;
    for(i=1;i<6;i++){
        if(i%2==0)
            continue;
        for(j=1;j<i;j++)
            k++;
    }
    printf("%d",k);
}
```
Options:
(a)　4
(b)　6
(c)　9
(d)　10

A3.
```c
#include<stdio.h>
void main(){
    int i,j,k=0;
    for(i=1,j=10;i!=j;i+=2,j-=2)
        printf("%d",++k);
}
```
Options:
(a) 123
(b) 1234
(c) 12345
(d) 12345678...
    infinite loop

A4.
```c
#include<stdio.h>
void main(){
    char a='5';
    do{
        printf("%d",a);
    }while(a!=5);
}
//ASCII value of '5' is 53
```
Options:
(a) Nothing will be printed
(b) 5
(c) 53
(d) 5353535353...
    infinite times

A5.
```c
#include<stdio.h>
void main(){
    int a=5;
    printf("%d%d%d",a++,a,--a);
}
```
Options:
(a) 544
(b) 665
(c) 455
(d) 654

A6.
```c
#include<stdio.h>
void main(){
    printf("%d",0?1:2);
}
```
Options:
(a) 0
(b) 1
(c) 2
(d) Compilation Error

A7.
```c
#include<stdio.h>
void main(){
    int i=1;
    switch(i){
        case 4: printf ("1");
        case 3: printf ("2");
        case 2: printf ("3");
        case 1: printf ("4");
    }
}
```
Options:
(a) 1
(b) 4
(c) 1234
(d) Compilation Error

A8.
```c
#include<stdio.h>
#include<string.h>
void main(){
    char s1[]="A", s2[]="B";
    printf("%d",strcmp(strcat(s1,s2),
                        "BA"));
}
```
Options:
(a) 2
(b) 1
(c) 0
(d) -1

A9.
```c
#include<stdio.h>
int func1(int m){
    printf("%d",m);
    if(m>=1)
        func1(m-1);
    printf("%d",m);
}

void main(){
    func1(4);
}
```
Options:
(a) 12344321
(b) 1234554321
(c) 4321001234
(d) 43211234

A10. What is the time complexity of the following program?
```c
#include<stdio.h>
void main(){
    int n;
    scanf("%d",&n);
    while(n>1)
        printf("%d ",n/=2);
}
```
Options:
(a) O(log$_2$ n)
(b) O($\sqrt{n}$)
(c) O(n)
(d) O(n log$_2$ n)