BITS, PILANI-DUBAI CAMPUS
DUBAI INTERNATIONAL ACADEMIC CITY, DUBAI
II SEMESTER 2012-2013

COURSE	: **CS F111 Computer Programming**	I YEAR
COMPONENT	: Comprehensive Examination (CLOSED BOOK)	
DURATION	: 3 HOURS	
WEIGHTAGE	: 30% (60 Marks)	
Date	: 05-06-2013	

Answer Part A, Part B and Part C in separate answer sheets.
Calculators are NOT allowed.

PART A

Q1. Perform the following:

a) $(1010111.10101)_2 = (\ ?\ )_{16}$

b) $(78)_{16}\ -\ (2D)_{16} = (\ ?\ )_2$

[1+2]M

Q2. What does the following C program do?

```
#include<stdio.h>
int main()
    {
        FILE *fp;
        char ch;
        int i=1;
        fp = fopen("myfile.c", "r");
        while((ch=getc(fp))!=EOF)
        {
            if(ch == '\n')
                i++;
        }
        fclose(fp);
        return 0;
    }
```

[1M]

Q3. Write a program to pick up the largest number from any 5 X 5 matrix.

[4M]

Q4. The variables count, price, and city have the following values

```
count  =  1275
price  =    -235.74
city   =  "Cambridge"
```

Show the exact output that the following printf statements will produce:

```
printf("%10dxxx", count);
printf("%5.1f", price);
printf("%5s", city);
printf("%.5s", city);
```

[2M]

Q5. Determine the value of each of the following logical expressions
if a=5, b=10 and c= -6

1) a > b && a < c
2) b > 15 && c < 0 || a > 0
3) a == c || b > a

[1.5M]

Q6. The file SOURCE.TXT contains a string. Write a program that reads the file SOURCE.TXT. Print the string after reversing the string and store the reversed string into another file DESTINATION.TXT.

[4M]

Q7. What is explicit type conversion, explain that with two examples.

[1.5M]

Q8. What is printed when the following error free code is executed?

```
#include<stdio.h>
main()
{
        int m;
        for(m=0; m<3;++m)
        printf("%d\n", (m%2) ? m: m+2);
}
```

[3M]

PART B

Q1. Write a C program to find sum of n elements in an array entered by user. Allocate memory dynamically using malloc () function for the array.

[3M]

Q2. Can you Write, Compile and Execute a C program without using main function? Mention your statement for each case. Give examples of C program without a main function.

[3M]

Q3. Write the output for the following error free code

i)

```
#include <stdio.h>
#include <stdlib.h>
main ()
{
  char *str;
  /* Initial memory allocation */
  str = (char *) malloc(14);
  /*Assume the address to be 35509*/
  strcpy(str, "tutorialspoint");
  printf("String = %s,Address = %u\n", str, str);
  /* Reallocating memory */
  str = (char *) realloc(str,4);
  strcat(str, ".com");
  printf("String = %s,  Address = %u\n", str, str);
  free(str);
  return(0);
}
```

ii)

```
#include<stdio.h>
main()
{
int i=0;
int j;
for(j=0;j<=5;j+=2)
switch(j)
{
case 1: i++;break;
case 2: i+=2;
case 4: i%=2;
j=-1; continue;
default: --i; continue;
}
printf("%d",i);
}
```

[2+2]M

Q4. Write a function to print the squares of numbers between 1 and 5, Call the function twice from the main function

Input: 1 2 3 4 5
Output: 1 4 9 16 25
1 4 9 16 25

[3M]

Q5. Write the output for the following error free code

i)
```
#include<stdio.h>
main()
{
int check=2;
switch(check)
{
case1:printf("COMPUTER PROGRAMMING");
case 2: printf("SUSILA\n");
case3:printf("NAND KUMAR\n");
default: printf("SUSAN\n");
}
}
```

ii)
```
#include<stdio.h>
main()
{
    int i, j;
    i=j=2,3;
    while(--i && j++)
    printf("i=%d, j= %d", i, j);
    return 0;
}
```

[2+2]M

Q6. Write a function to check a number is palindrome or not

Input: 131

Output: The given number is Palindrome

[3M]

PART C

Q1. What will be the output of the following code segment? Consider the base address of structure array s as 43568

```
struct stud
{
        char idno[13];
        char name[30];
        int age;
        float cgpa;
}s[1000];
main()
{
        struct stud *sp=&s[1];
        sp++;
        printf("%u",sp);
}
```

[2M]

Q2. Consider the following nodes

NODE NAME	NODE VALUE	NODE ADDRESS
N1	459	31564
N2	326	85690
N3	194	58462
N4	247	17524
N5	812	24388

Show the singly linked list arrangement for the following sequence

N5 → N2 → N4 → N3

Insert node N1 to the above sequence between node N2 & N4 and show the whole list arrangement again.

[3+2]M

Q3. "Big movie" a cinema hall, screens movies for the public. There are 5 screens in the cinema hall. Movies have the attributes like movID, movName, movTime, movScreen, movPrice etc.

Write a C program to create the Movie List by defining & declaring an array of movies structure. Perform the operations mentioned below by accessing the movie array.

i) **void readmovlist(structmovie movList[], int n)**
This function will read the 'n' number of movie details from the user and will store them in the movie structure array **movList[].**

ii) **int getScreen(struct movie movList[],int n,intmovID)**
This function will return the screen number where the movie movID is being screened.

iii) **void DisplayMov(struct movie movList[],int n, float maxPrice, float minPrice)**
This function will display the movie details of those movies whose price is between maxPrice and minPrice range.

iv) Write the **main()** function to call all the above functions

[2+3+3+2]M

Q4. What is recursive function? Explain with an example.

[3M]

*** **END** ***

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II SEMESTER 2012-2013

COURSE	: **CS F111** **Computer Programming**	I YEAR
COMPONENT	: TEST – II (OPEN BOOK)	
DURATION	: 50 MINS	
WEIGHTAGE	: 20% (40 Marks)	
Date	: 01-05-2013	

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1. Write a function power (a, b), to calculate the value of 'a' raised to 'b'.
[4M]

2. What will be the output of the following error free code segment?

i)
```
# include< stdio. h >
void fun1( int *x , int y);
main()
{
int i=4,j=2;
 fun1(&i,j);
 printf("%d%d\n",i,j);
 return 0;
}
 void fun1(int *i,int j)
 {
 *i= *i* *i;
 j= j * j;
 }
```

ii)
```
# include< stdio.h >
struct total
{
int num;
char mass[20];
char amount[20];
} A1={2,"success", "quality" };
main ()
{
struct total A2,A3;
 A2=A1;
A3=A2;
printf("%d %u %s",A1.num, A2.mass,
A3.amount);
}
```

[4M+3M]

3. Write a function to insert an element in an array at a specified location.
[5 M]

4. Write a program to accept a string (including blank spaces) from user and print the character and it's occurrences in the input string.

Ex.

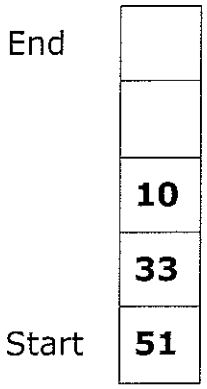
Enter the string: This is CP

T = 1 h = 1 i = 2 s = 2 ' ' = 2 C = 1 P = 1

(The characters should not repeat) (' ' is a blank space)

[8M]

5. Consider the following stack of size 5 and perform the given operations. Clearly indicate the status of the stack with the pointer(s) after each operation.



pop(), pop(), push(44), pop(), pop(), push(9), pop(), pop()

4M

6. Create a structure to specify data of customers at an ATM counter,

The data to be stored is:

a) Name of the card holder
b) 16 digit number on the ATM card
c) Name of the bank.

Assume maximum of 150 customers,
If the customer request for withdrawal or deposit,
It is given in the form:
Acct No, Amount, Code (1 for withdrawal, 0 for deposit).
Write a program to give a message "The balance is insufficient for the specified withdrawal". If the amount requested for withdrawal is more than 5000/-dirham's. **8M**

7. Structure **graph** is declared as given below, this structure stores the coordinates of a point

```
struct graph
{
int x;
int y;
};
```

Declare an array of structure to store the coordinates of the following points: (2,3), (3,5), (5,7), (5,4), (4,1) **4M**

*****END*****

INDICATIVE ANSWERING SCHEME

1.

```
int power (int x, int y)
{
int i;
int p=1;
for(i=1;i<=y;i++)
p=p*x;
return p;
}
```

4 M

2.

a)16, 2 — 4M

b)2, address, quality — 3M

3.

Void insert(arrayint a[], element to be inserted data, how many elements in array n, position pos)

5M

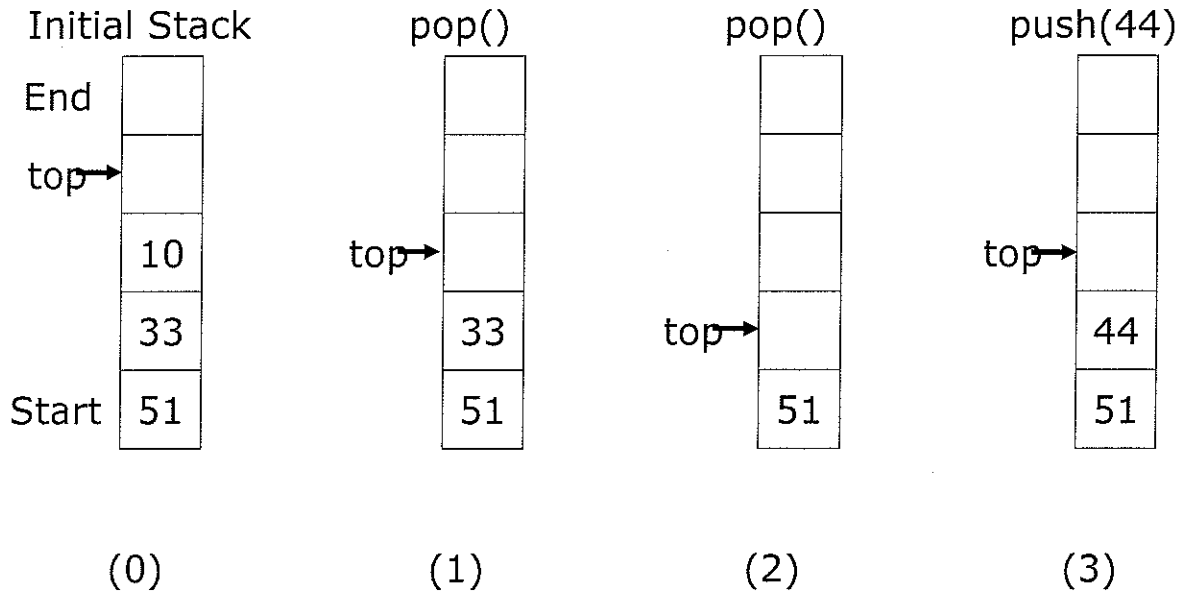
```
{
    int i;
    for(i=n-1;i>= pos-1;i--)
    a[i+1]=a[i];
    a[pos-1]=data;
```

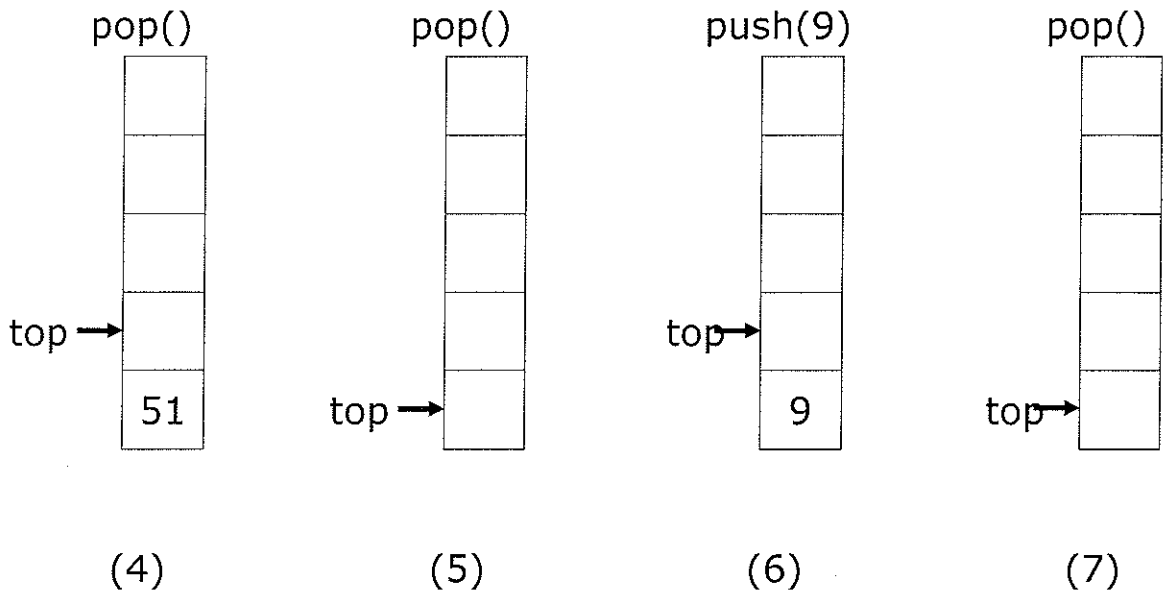
4. 8M

```
main()
{
    char a[50],b[50];
    int i,c,j,m=0,n;

    scanf("%[^\n]s",a);

    for(i=0;a[i]!='\0';i++)
    {
        n=0;
```

```
            c=0;
            for(j=0;b[j]!='\0';j++)
                if(a[i]==b[j])
                    c++;

            if(c==0)
            {
                b[m]=a[i];
                m++;
                b[m]='\0';
                for(j=i;a[j]!='\0';j++)
                    if(a[i]==a[j])
                        n++;
                printf("\n%c == %d\n",a[i],n);
            }
        }
    }
```

5. 4M





Performing pop() operation the current state of stack will result in underflow as there are no elements in the stack currently.

6.

Create Struct	3M
Program input /output	2M
LOGIC	3M

7. Struct graph g[5] = { {2,3}, {3,5}, {5,7}, {5,4}, {4,1}};4M

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II SEMESTER 2012-2013

COURSE	: **CS F111**	**Computer Programming**	I YEAR
COMPONENT	: TEST – I	(CLOSED BOOK)	
DURATION	: 50 MINS		
WEIGHTAGE	: 20% (40 Marks)		
Date	: 13-03-2013		

---

1. Write a C program using 'do while' loop for checking whether the entered character is a Capital letter or not, until user enters 'X' letter.

Ex.

```
Enter character: k
The character k is not a capital letter.
Enter character: $
The character $ is not a capital letter.
Enter character: D
The character D is a capital letter.
Enter character: X
```

8M

2. What will be the output of the following code segment?

i)
```
#include<stdio.h>
main()
{
int x=100,y,z;
y=x=100;
z=x<100;
printf(" %d %d %d", x,y,z);
}
```

ii)
```
#include<stdio.h>
main()
{
int k,num=30;
k= (num>15? (num<=10?100:200):500);
printf("%d",num);
}
```

2M+2M

3. Write a C program to **print** and **calculate** the sum of following series using a 'while loop'
1+2+4+8+16+32+64+128+.....+N. The number of terms should be accepted from the user.

Ex.

How many term(s) you want: *7*
The 7 terms of the series are as follows: *1 2 4 8 16 32 64*
The sum of 7 terms is: *127*

7M

4. Point out the errors if any and write the correct code

```
#include<stdio.h>
main()
{
        int n=9;
        (n==9? printf("correct"); : printf("wrong"));
}
```

3M

5. What will be the output of the following code segment?

```
#include<stdio.h>
main()
{
        int i=4,j=-1,k=0,w,x,y,z;
        w=i || j || k;
        x=i && j && k;
        z=i && j || k;
        y= i || j && k;
        printf(" %d %d %d %d", x,y,w,z);
}
```

4M

6. Write a program to print all prime numbers from 1 to 300 using nested loop and break.

8M

7. What will be the output of the following code segment?

i)

```
#include<stdio.h>
main()
{
        int x,y;
        for(x=1;x<=5;x++)
        {
                for (y=1;y<=x;y++)
                printf("%d\t",x);
                printf("\n");
        }
}
```

ii)

```
#include<stdio.h>
int main()
{
        int i=5;
        do
        {
                printf(" %d",i);
                continue;
                i++;
        }while(i<=10);
        return 0;
}
```

4M+2M

*****END*****

BITS, PILANI-DUBAI CAMPUS
DUBAI INTERNATIONAL ACADEMIC CITY, DUBAI
II SEMESTER 2011-2012

COURSE :**CSF111ComputerProgramming** **I**YEAR
COMPONENT : TEST – I(CLOSED BOOK)
DURATION : 50 MINS
WEIGHTAGE : 20% (40 Marks)
Date : 13-03-2012

INDICATIVE ANSWERING SCHEME

1.

```
main()
{
        char c;
        scanf("%c",&c);
        do
        {
                if(c>='A' && c<='Z')
                        printf("The character %c is a capital letter\n",c);
                else
                        printf("The character %c is not a capital letter\n",c);

                printf("Enter character: ");
                scanf("%c",&c);
        }while(c!='X');
}
```

2. i) 100 100 0 ii) 30 [2M+2M]

3.

```
#include<math.h>
main()
{
        int i,j,k,n,sum=0;
        scanf("%d",&n);
        i=0,j=1,k=0;
        printf("The %d terms of the series are as follows:",n);
        while(i<=n)
        {
                k=1;
                j=1;
                while(j<=i)
                {
                        k=k*2;
                        j++;
                }
                sum=sum+k;
                printf("%d ",k);
                i++;
        }
```

```
        printf("\n\nThe sum of %d terms is: %d\n\n",n,sum);
}
```

4. No semicolons after printf

```
#include<stdio.h>
main()
{
        int n=9;
        n==9? printf("correct") : printf("wrong");
}
```

[3M]

5. 0 1 1 1 [4M]

6. Sample Code

```
n=1;
while(n<=300)
{
 i=2;
while(i<n)
{
 if(n%i==0)
break;
else
i++;
}
if(i==n)
printf("%d",n);
n++;
}
```

[8M]

7.

i) 1
2 2
3 3 3
4 4 4 4
5 5 5 5 5 [4M]

ii) 5 (infinite times) [2 m]

A

BITS, PILANI-DUBAI CAMPUS
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II SEMESTER 2012-2013

COURSE	: **CS F111 Computer Programming**	I YEAR
COMPONENT	: QUIZ – I (CLOSED BOOK)	
DURATION	: 20 MINS	
WEIGHTAGE	: 5% (10 Marks)	
Date	: 27-02-2013	

IDNO: **NAME:**

Given Data: ASCII value of 'A' is 65 and 'a' is 97

Q1. For the following mathematical formulas, write the equivalent C statement (consider all the variables to be integers) **1M**

$x = 1 + \frac{y}{5z} \div \frac{4y^2}{z^3}$	**Answer 1**

Q2. Consider the following values x=4,y=3.5,z='D'

What will be the value of the following arithmetic expressions? **1M+1M**

i)	(double)((x+(int)z)/(int)y)	**Answer 2(i)**
ii)	(float)(((int)z%x)+(int)y)	**Answer 2(ii)**

Q3. Is left-to-right or right-to-left order guaranteed for operator precedence in C? What is the best way to guarantee operator precedence? **1M**

Answer 3

Q4. What is the difference between the 2 given statements? **1M**

A) printf("The");
printf("rain");

B) printf("The\nrain");

Answer 4

Q5. The operator _____ cannot be used with real operands. **1M**

Q6. How to swap the content of two variables without a temporary variable?
Write only the logic. **2M**

Answer 6

Q7. Write the output for the following C program **2M**

i)
#include<stdio.h>
main()
{
int x,
x=10,20,30;
printf("%d",x);
}
	ii)
	#include<stdio.h>
	main()
	{
	int i=70;
	printf("%c",i);
	}

Answer 7(i)	**Answer 7(ii)**

******END*****

Answer Sol.

A

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II SEMESTER 2012-2013

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COMPONENT	: QUIZ – I (CLOSED BOOK)	
DURATION	: 20 MINS	
WEIGHTAGE	: 5% (10 Marks)	
Date	: 27-02-2013	

IDNO: SOLUTION **NAME: SOLUTION**

Given Data: ASCII value of 'A' is 65 and 'a' is 97

Q1. For the following mathematical formulas, write the equivalent C statement (consider all the variables to be integers) **1M**

	Answer 1
$x = 1 + \frac{y}{5z} + \frac{4y^2}{z^3}$	**X=1+(y/(5*z))+((4*y*y)/(z*z*z))**

Q2. Consider the following values x=4,y=3.5,z='D'

What will be the value of the following arithmetic expressions? **1M+1M**

		Answer 2(i)
i)	(double)((x+(int)z)/(int)y)	**24.000000**
		Answer 2(ii)
ii)	(float)(((int)z%x)+(int)y)	**3.000000**

Q3. Is left-to-right or right-to-left order guaranteed for operator precedence in C? What is the best way to guarantee operator precedence? **1M**

Answer 3

NOT Guaranteed,

Use of Parenthesis is the best way to guarantee operator precedence.

Q4. What is the difference between the 2 given statements? **1M**

A) printf("The");
printf("rain");

B) printf("The\nrain");

Answer 4 A. The rain **B.The** **rain**

Q5. The operator _____%_____ cannot be used with real operands. **1M**

Q6. How to swap the content of two variables without a temporary variable?
Write only the logic. **2M**

Answer 6 a=a+b; **b=a-b;** **a=a-b;** **OR** **a =a*b;** **b=a/b;** **a=a/b;**

Q7. Write the output for the following C program **2M**

i)
#include<stdio.h>
main()
{
int x,
x=10,20,30;
printf("%d",x);
}
	ii)
	#include<stdio.h>
	main()
	{
	int i=70;
	printf("%c",i);
	}

Answer 7(i) 10	**Answer 7(ii) F**

******END*****