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

COURSE	: CS F111	Computer Programming	I YEAR
DURATION	: 3 HOURS		
WEIGHTAGE	: 30% (90 Marks)		
Date	: 03-06-2012 FN		

Answer part A and Part B in separate answer sheets

PART-A

1. Convert the following Decimal to
   a) Binary   5.912   (upto 5 digits after decimal point)
   b) Octal   30.652
   c) Hexadecimal   51.67
   d) Binary   -105

   [2x4=8M]

2. Convert the given Signed 8 bit Binary 1100 0111 to Decimal

   [1M]

3. Perform the following operations step by step
   a) 13 − 8 provide the result in Signed 4 bit Binary.
   b) If +14 is a Signed 8 bit Binary and -9 is Singed 5 bit Binary.

   [1.5x2=3M]

4. Give the Output for the following printf statements, indicate blank spaces (if any) by '-'

   [1x5=5M]

   1) If y = 48.7654
      a) printf("%7.2f \n", y);
      b) printf("%-7.2f \n", y);
      c) printf("%10.2e \n", y);
   2) If char name[20] = "SUNIL KUMAR GUPTA"
      a) printf("%-20.10s \n",name);
      b) printf("%.5s \n",name);

5. Evaluate the following expressions and show their hierarchy

   [1x2=2M]

   a) s = qui * add / 4-6 /2 +2/3 *6 /good;
      (qui = 4, add = 2, good = 2, assume s to be an int)
   b) s = 1 / 3 * a / 4 − 6 / 2 + 2 / 3 * 6 / g;
      (a = 4, g = 3, assume s to be an int)

6. Convert the following equation into corresponding C Statement

[1 M]

$$A = \frac{7.7b\ (xy + a)/c - 0.8 + 2b}{(x+a)\ (1/y)}$$

7. What would be the output of the following program

[1x3=3M]

a)	b)	c)
```#include<stdio.h> main() { int i=2, j=3,k,l; float a,b; k = i/j *j; l =j/i *i; a = i/j*j; b = j/i*i; printf("%d %d", k,l); printf("%f %f",a,b); }```	```#include<stdio.h> main() { int a,b; a = -3 - -3; b = -3- - (-3); printf(" %d %d",a,b); }```	```#include<stdio.h> main() { printf(" nn \n\n_nn\n"); printf("nn_/n/n_nn/n"); }```

8. Students of BPDC have been given a facility to buy things from grocery/canteen on credit basis. That means they will not have to pay on the spot. The charges will be added to the file against their IDNO. So the grocery/canteen authorities want you to write a C code for them so that their job can be simplified. You just need to identify the student with his IDNO & name and the balance will be added to the previous balance. The credit details are saved to a file balance.txt (assume that this file already exists). The file stores the IDNO, name & updated balance. Your program should read the same file, load data in your program.

Now if a student wants to buy something, the clerk should be able to enter his IDNO and the details of that student like name and previous balance should be shown. Write functions for all the tasks.

[15 M]

Ex.

The existing list from file is

2011A2TS885U MANISH 500
2011A2TS892U REKHA 0
2011A2TS841U SACHIN 1026
2011A2TS842U RANVEER 459
2011A2TS853U SUSHILA 0

2011A2TS855U SHIVKUMAR 487
2011A2TS856U SUNILA 265
2011A2TS877U ANIL 0
2010A2PS778U ARKESH 3596
2010H129003U YAMINI 1508
2010H129016U RITIKA 0
2010H140086U NIHIR 902

Enter IDNO: **2011A2TS842U**

The IDNO 2011A2TS842U exists. The details are

2011A2TS842U RANVEER 459

Today's sale for 2011A2TS842U IDNO: **308**

The list updated successfully for 2011A2TS842U

2011A2TS842U RANVEER 767

9. Write a C program for printing the below mentioned pattern. The size of the pattern should be accepted from user.

5 5 4 5 5 4 3 4 5 5 4 3 2 3 4 5 5 4 3 2 1 2 3 4 5 5 4 3 2 1 0 1 2 3 4 5	For example if the user input of the pattern size is given 5 then the pattern printed will be this.

[7M]

PART B

1. There is a structure called employee that holds information like emp_code, emp_name, and emp_age. Write a program to create an array of structures to hold 20 such employee records. And also write code to read these records and to display it after arranging them in ascending order by emp_age. [10 M]

2. Write a program to first allocate 17 characters, copy the string "this is 16 chars" onto them, and then increase the size to 18 in order to place a full stop at the end and print the string in both the cases. [10 M]

3. Write the output of the following code. [2.5 M]

```
main()
{
char *ptr = " Cisco Systems";
*ptr++;  printf("%s\n",ptr);
ptr++;   printf("%s\n",ptr);
}
```

4. Write a program which reads a string and a character using **command line arguments**. The program should also count and print the number of times the character appears in the string. [7 M]

Sample input : $ a.out bitspilanidubaicampus i

Output : $ 4

5. Imagine we have an initially empty stack of integers **s** and a queue of integers **q**. Draw a picture of **s** and **q** after all of the following sequence of consecutive operations:- [8 M]

Pushstack(s,3)

Pushstack(s,12)

Enqueue(q,5)

Enqueue(q,8)

Popstack(s,x)

Pushstack(s,2)

Enqueue(q,x)

Dequeue(q,y)

Pushstack(s,x)

Pushstack(s,y)

where the second argument to popstack() and dequeue() is the item popped from the stack and deleted from the queue respectively. Enqueue() adds an item to the queue and Dequeue() deletes an item from the queue.

6. A set of integer numbers are represented as a singly linked list. Define a function **large()** using the following prototype to find the largest integer value in it. [7.5 M]

```
struct list{
int item;
struct list *link;
};              /* representation  of a node */
typedef struct list node;

int  large (node * head);   /* function prototype */
```

END

COURSE   : **CS F111**   **Computer Programming**   I YEAR
COMPONENT   : TEST – II   (OPEN BOOK)
DURATION   : 50 MINS
WEIGHTAGE   : 20% (60 Marks)
Date   : 12-04-2012

1. Write program to find smallest element of an integer array if size ten using pointers.[10]

2. What will be the output of the following program if the array a starts at location 6512

```
#include<stdio.h>                                    [5 M]
main()
   {
       float a[]={1.1,2.2,3.3,4.4,5.5,6.6};
          float *j,*k;
          j=a;
          printf("j=%u\n",j);
          k=a+4;
          printf("k=%u",k);
   }
```

3. Define a function **strcmpnocase()** which takes two strings and compares them case in-sensitive, i.e, there is no difference between a lowercase alphabet and its equivalent uppercase. The function returns zero, if the strings are equal and non-zero otherwise. Using this function write a program to check for string equality.   [10 M]

4. Define the function **strlen()** to find the actual length of a string. The function prototype is **int   strlen(char name[]);**   [5 M]

5. Given 3 variables a,b,c. Write a function to circularly shift their values to right, Example if   a=15,b=18,c=20 after circular shift b=15, c=18, a=20. Call the function from main with variables x,y,z to circularly shift values. Print the contents of x,y,z in main function.
            [10 M]

6. Write the Output for the following error free programs; give reasoning for your answer.[5]

```c
#include<stdio.h>
main ( )
{
    int i=10, j=100;
    junk (&i , j);
    printf ("%d %d", i, j);
}
junk (int *i,  int j)
{
    *i = *i * *i;
    j=j *j;
}
```

7. Write a C program to accept values for 3x3 matrix. Then calculate the minimum, maximum and average in each row and print the output.

[15M]

Ex.

The 3x3 matrix is

5	7	3
2	9	8
6	0	4

The output matrix is

3	7	5
2	9	6.3
0	6	3.3

COURSE	: CS F111 Computer Programming	I YEAR
COMPONENT	: TEST – I (CLOSED BOOK)	
DURATION	: 50 MINS	
WEIGHTAGE	: 25% (75 Marks)	
Date	: 26-02-2012	

1. Convert the decimal number given below to binary number and Hexadecimal number.
    73.3125   [5 +5marks]

2. Represent the decimal number -21 in 8 digit signed magnitude form, one's complement form and two's complement form.   [3+3+4 marks]

3. In response to the input statement

scanf(" %d %*d %d %f %f %f ", &a,&b,&x,&y,&z) ; The following data is keyed in.

111 222 333 444.44 55.55E-1 777

What values does the computer assign to variables a, b, x, y, z.   [10 marks]

4. Write the output for the following

```c
#include<stdio.h>
main ( )
{
        int amount;
        char data;
        data='Z' ;
        amount=(int)data;
        printf ("%c ", (char) amount);
}
```
                                                                              [5marks]

5. If the variables x, y and z are 405, 302.558 and -21.31 respectively, write a statement that will display the following line. (_ denotes a blank space)

_ _ 405,_ _ _ _ _302.56,_ _ _ _-21.3   [1+2+2=5marks]

6. Write a program to read the age of three children in a family named Akshay, Anil and Anuj. The program should also find the eldest of the three. [10 marks]

7. Given the following declaration statements in C
   float a, b, c, x, y, z;
   a = 9; b = 12; c = 3;
   Draw the expression evaluation tree and find the resultant value for each of the following C expressions
      i)   y = a – b / (3 + c) * (2 – 1);
      ii)   z = a – (b / (3 + c) * 2) – 1;   [3 + 3 = 6 marks]

8. Given int a; float b = 2; Write the result of evaluating each of the following expressions
      i)   a = 1 / 3 + 1 / 3 + 1 /3;
      ii)   a = 15/10.0 + (float)b / 3;
      iii)   a = b++ + 3;
      iv)   a = --b + 3;   [4 marks]

9. What will be the output for the following C program?

```
main()
{
        int a,b;
        a=b=50;
        if(a<50)
                a=10;
        else if(a=20)
                b=30;
        if(a)
                printf("%d%d",a,b);
}
```
                                                                        [3 marks]

10. Write a C program to print the multiplication table of any whole number accepted from user. You need to use "goto" statement.   Ex.   Enter the number: 7
    7   14   21   28   35   42   49   56   63   70   [12 marks]

COURSE	**: CS F111** **Computer Programming**	I YEAR
COMPONENT	: QUIZ – I (CLOSED BOOK)	
DURATION	: 20 MINS	
WEIGHTAGE	: 5% (15 Marks)	
Date	: 21-03-2012	

IDNO: **NAME:**

1. Write the output of the following program   **[1M]**

```c
# include<stdio.h>
main()
{
        int j=-4;
        for(;j<=0;)
        {
                printf("%d",j);
                j=j+1;
        }
}
```

Answer 1:

2. What type of looping statement is this?   **[1 M]**

```c
for( ; ; );
```

Answer 2:

3. Write the output of the following program   **[2 M]**

```c
# include<stdio.h>
main()
{
        int i,j;
        for(i=1; i<=2;i++)
        {
                for (j=1;j<=2;j++)
                {
                        if(i==j)
                        continue;
                        printf("%d%d\n",i,j);
                }
        }
}
```

Answer 3:

4. The number of value (s) returned by a C function under its name is _____.

        [1M]

5. The function to be present in all C programs is the _____ _____function.

        [1M]

6. _____ _____ is the default return type of a function in C.

[1M]

7. What is the difference between "actual" and "formal" parameters with respect to functions?

[1 M]

> **Answer 7:**

8. If there are multiple statements to be executed in each case, there is a need to enclose them within a pair of braces. State whether the above given statement is True or False, Justify your answer.

[1M]

> **Answer 8:**

9. (a) Write the output of the following

[1M]

```
#include<stdio.h>
main ()
{
        int i, j;
        i=1;
        switch (i)
        {
                case 20:
                j=20;
                printf ("%d", j);
                break;
                printf ("Hello");
                case 1:
                printf ("%d",i);
                break;
        }
}
```

> **Answer 9(a):**
>
> **Answer 9(b):**

(b) Also mention when Hello is displayed on the screen

[1M]

10. What keyword covers unhandled possibilities in switch case?

[1M]

> **Answer 10:**

11. What will be the result of the following code segment? **[1M]**

```c
#include<stdio.h>
main()
{
        int i;
        for(i=0;i<5;i++);
        {
                printf("%d",i);
        }
}
```

12. What will be the result of the following code segment? **[2M]**

```c
#include<stdio.h>
main()
{
        int i=0;
        while(i<5)
        {
                if(i==3)
                        break;
                i++;
        }
        printf("\n%d\n",i);
}
```

Answer 11:

Answer 12:

END