BITS, PILANI-DUBAI CAMPUS
DUBAI INTERNATIONAL ACADEMIC CITY, DUBAI
II SEMESTER 2013-2014
COMPREHENSIVE EXAMINATION

COURSE	: **CS F111**	**Computer Programming**	I YEAR
DURATION	: 3 HOURS		
WEIGHTAGE: 40%	:80 Marks		
Date	: 05-06-2014 FN		

Answer part A, Part B and part C in separate answer sheets

PART-A

1. Perform the following conversions. **[2.5M]**

   a) Octal number $(525)_8$ to Decimal
   b) Decimal number 215 to Binary
   c) Binary $(11101)_2$ to Decimal
   d) Decimal number 701 to Hexadecimal
   e) Hexadecimal CA2 to Binary

2. Write a C Program to Print a Semicolon without using a Semicolon anywhere in the code. **[2.5M]**

3. Write a C Program to add the elements of two matrices of size n X m. **[5 M]**

4. Write a C Program to perform an ATM transaction. The types of ATM transaction are
   1) Balance checking
   2) Cash withdrawal
   3) Cash deposition.

   Begin your program by verifying your secret pin number, the program must give you the options for Balance checking, Cash withdrawal, Cash deposition using switch statement, the program must give you the balance after every withdrawal and cash deposition, the program must end or quit with a message "Thank you using ATM service".
   Note: For cash withdrawal, amount requested must be less than current balance.
   Do not use functions. **[5 M]**

5. Find the output for the following. **[2.5X2=5M]**

a)
```
#include <stdio.h>
void main()
{
    int i = 0, j = 0;
    for (i = 0;i < 5; i++)
    {
        for (j = 0;j < 4; j++)
        {
            if (i > 1)
                break;
        }
        printf("Hi \n");
    }
}
```

b)
```
#include <stdio.h>
int main()
{
    int i = 0;
    do
    {
        i++;
        if (i == 2)
        continue;
    printf("In while loop ");
    } while (i < 2);
    printf("%d\n", i);
}
```

6. If the value of y = 76.1234, write the format for the following printf statements.
Sample for required output format: **[0.5X10=5M]**

a) printf("% -7.2 f", y);
b) printf("% 7.2 f", y);
c) printf("% 11.4 e", - y);
d) printf("% -7.4 f", y);

If the value of y = 1234, write the format for the following printf statements

a) printf("% 06d", y);
b) printf("% -6d", y);
c) printf("% 2d", y);

If a string "ALL THE BEST" has 12 characters,
char name [12] ="ALL THE BEST", write the format for the following printf statements

a) printf("%-20.7s ", name);
b) printf("% .5s ", name);
c) printf("% 5s ", name);

PART B

1. What will be the output for the following error free code? **[2 M]**

```
# include<stdio.h>
        main()
        {
                m();
        }
        void m()
        {
         printf("CP");
                m();
        }
```

2. Write a function to find length of the string without using the pre defined library function in strings. **[3 M]**

3. Explain the operation of stack with the help of these user-defined functions that are given below. **[4M]**

   isEmpty()
   isFull()
   push(int)
   int pop()

4. Name any four standard library string functions. **[2 M]**
5. Given a 5 elements stack S (from top to bottom: 2, 4, 6, 8, 10), and an empty queue Q, remove the elements one-by-one from S and insert them into Q, then remove them one-by-one from Q and re-insert them into S. with a neat diagram show how the S looks like (from top to bottom). **[3 M]**

6. char name[ ] = "BITS-DUBAI"
   Write sequence of C code for printing the full string using name array. **[2 M]**
7. Write a function to create a linked list with three nodes. **[4 M]**
8. Write a program to find factorial of a number. **[3 M]**
9. A Queue is best characterized as ---------- and a stack is best characterized as ---------- **[2 M]**
   a) Last In First Out
   b) First In Last Out
   c) First In First Out
   d) None of the above

PART-C

1. Check whether the given **program segments** are error free, if any, mentioned them clearly "what is error type", if not, mention "No Error". **[3 x 2 M = 6 M]**

a) #include<stdio.h>
void main()
{
unsigned char;
FILE *fp
fp = fopen (" Trail ", ' r ');
while ((ch = getch(fp)) != EOF)
printf(" %c ", ch);
.....
}
	a) # include<stdio.h>
	void main()
	{
	struct
	{
	char name [25];
	char language [10];
	};
	struct employee x=
	{"Jack", "C"};
	printf(" \n %s %d",
	x.name, x.language);
	.....
	}
		# include<stdio.h>
		main()
		{
		struct list
		{
		int value;
		struct list *value;
		}
		struct list *ptr
		ptr = (struct list*) malloc
		(sizeof (struct list));
		.....
		}

2. What is the output of the following **C program segments**? **[3 x 2 M = 6 M]**

a)
```
#include<stdio.h>
#include<conio.h>
int main(){
 int x[5]={1,2,3,4,5};
 int *p=x;//p points to array x
 int i;
 for(i=0;i<2;i++)
  {
   int temp=*(p+i);
   *(p+i)=*(p+4-i);
   *(p+4-i)=temp;
  }
 for(i=0;i<5;i++) printf("%d\t",x[i]);
getch();
return 0;
}
```

b)
```
#include <stdio.h>
int main()
{
 char *a = {"p", "r", "o", "g", "r", "a", "m"};
 printf("%s", a);
 .....
}
```

c)
```
#include <stdio.h>
void main()

{
 char *a[10] = {"hi", "hello", "how"};
 printf("%d\n", sizeof(a));
 ......
}
```

3. Write a program to read data from a file. If the file doesn't exist then it has to display a message stating "non-existing of file". **[7 M]**

4. An automobile company has serial number for engine parts starting from AA00 to FF99. The other characteristics of the parts to be specified in a structure are: Year_of _manufacture, Material and Quantity. Write C functions to store, retrieve and display all the data of the structure members. Retrieve function is to retrieve the automobile parts information based on parts serial numbers between BB11 and CC6 **[8 M]**

5. Check whether the above given statement is correct or wrong? **Justify your answer in TWO lines.** **[3 M]**

   a) "On freeing a dynamic memory, if the pointer value is not modified, then the pointer points to the same deallocated memory location."

   b) "calloc initialises memory with all bits set to zero".

   c) "realloc (ptr, size), where size is zero means free the memory pointed to by ptr".

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Dubai International Academic City, Dubai

Year I – Semester II 2013– 2014

TEST II (Open book)

Course No.: **CS F 111** Course Title: **Computer Programming** **Date: 10.04.14**

Time: **50 Minutes** Max. Marks = **30** **Weightage (15%)**

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1. Write a function that can be called with pointer argument to find the largest element of an array of size n. [5 M]

2. What will be the output of the following error free code? [2M]

```
#include<stdio.h>
main()
{
char str1[]="abcd";
char str2[]="abcd";
if(str1==str2)
printf("equal");
else
printf("unequal");
}
```

3. Write a C program for swapping of two numbers using pointers. [3 M]

4. Find the output of the following C code segments: [3 * 2 = 6 M]

a)

```
#include<stdio.h>
{
main( )
 int x=30, *y, *z;
 y = &x;    // Assume address of x is 500 and integer is 4 bytes size.
 z = y;
 *y++ = *z++;
 printf(" x = %d,  y = %d, z = %d \n", x, y, z);
}
```

b)

```
#include <stdio.h>
main()
{
 int  ***r,  **q,  *p, i=8;  //  Assume address of i is 65500 and integer is 4 bytes size.
 p = &i ;
 q = &p;
 r = &q;
 printf( " %d,  %d,  %d \n", *p,  **q,  ***r);
```

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Dubai International Academic City, Dubai

Year I – Semester II 2013– 2014

TEST I

Course No.: **CS F 111** Course Title: **Computer Programming** **Date: 06.03.14**

Time: 50 Minutes Max. Marks = 40 **Weightage (20%)**

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1. Show how the value – 15.564 would be printed using the formats %8.4f, %8.3f, %8.1f, %8.0f, %.2f. [2.5 M]

2. Find the output of the following error free code [2 M]

```
#include<stdio.h>
main()
{
int i=17;
char c='A';
int sum;
sum=i+c;
printf("the value of sum:=%d\n", sum);
}
```

3. Evaluate the following expression and show their hierarchy assuming a = 4, y = 1, c = 3, assume result to be an int. [2.5 M]

```
Result = 4 * a * y / c - a * y / c;
```

4. Find the output of the following error free code [3 M]

```
#include<stdio.h>
int main()
{
        int a =10, b,c;
        b= a++;
        c = ++a;
        printf("%d,%d,%d",a,b,c);
        b=b++;
        c=++c;
        printf("%d,%d,%d",a,b,c);
}
```

7. Find the error associated with the c code segment given below: [2 M]

```
#include<stdio.h>
main()
{
    int x=97;
switch(x)
  {
        case 'a':
          printf("Yes\n");
          break;
        case 97:
          printf("No\n");
          break;
  }   }
```

8. Write the equivalent c code using "if" statement. [2 M]

```
#include<stdio.h>
main()
{
  switch (ch)
  {
    case 'a':
    case 'A':
      printf("\n True");
  }
}
```

9. Write a C Program to add digits of a given number using while loop [5 M]

Example Input: 1234

Output: 10 (i.e 1+2+3+4=10)

10. Find the output of the following error free code [4*2=8M]

a.
```
#include<stdio.h>
    main()
{
    int x=4, y=0,z;
    while(x>=0)
{
    if(x==y)
    break;
```

```
            else
            printf("/n %d %d", x, y);
            x--;
            y++;
    }
    }
```

b.
```
#include<stdio.h>
main()
{
int i=1, j=1;
for( ; ;)
{
if(i>5)
break;
else
j+=1;
printf("/n %d", j );
i+=j;
}
}
```

11. Find the output of the following error free code [2M]

```
#include<stdio.h>
main()
{
        int x=4, y=0,z;
        while(x>=0)
{
        if(x==y)
        break;
        else
        printf("/n %d %d", x, y);
        x--;
        y++;
}
}
```

IDNO:

NAME:

Instructor Name:

BITS, PILANI-DUBAI CAMPUS
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II SEMESTER 2013-2014

B

COURSE NO : CS F111
COURSE TITLE : Computer Programming I YEAR
COMPONENT : QUIZ – I (CLOSED BOOK)
DURATION : 20 MINS
WEIGHTAGE : 5% (10 Marks)
Date : 20-03-2014

1. What is the output of printf("%d") [0.5M]

2. What is the purpose of main() function, what is the default return value of main(), what is the difference between void main() and int main() [1.5M]

3. Choose the correct output for the following c code segment given below. [1 M]

```
#include<stdio.h>
void main()
{       char arr[7]="Network";
        printf("%s",arr);
}
```

(A) network
(B) Compilation error
(C) Garbage value
(D) Network
(E) N

4. Write sequence of C code to initialize an array **int number [3]** during compile time and at run time. [2 M]

5. What is the output of the following C program segment? [1 M]

```
#include<stdio.h>
main()
{
  int i;
for(i=0;i<=9; i++);
printf("%d\n", i);
}
```

6. What is the output of the following C program segment? [1 M]

```
#include <stdio.h>
 int main( )
  {
  void call( );
      printf("1\n ");
       call( );
   }
   void call( )
    {
        printf("2\n ");
    }
```

Answer:-

7. Choose the correct output for the following c code segment given below. [3 M]

```
 include<stdio.h>
 int main ()
{
  int a[5] = { 5,1,15,20,25};
   int i, j, m;
   i= ++a[1];
   j = a[1]++;
  m = a[i++];
   printf(" %d  %d  %d", i, j, m);
}
```

A.	3, 2, 15	B.	1, 2, 5
C.	2,3,20	D.	2, 1, 15