Examination	: First Internal	Seat No.	: _____
Date	: 30/01/13	Day	: Wednesday
Time	: 4:00 to 5:15 P.M	Max. Marks	: 36

INSTRUCTIONS:
1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1   Do as directed.

(a)   State true/ false with justification: [2]
    i) Every C program will contain at least one preprocessor directive.
    ii) The Switch statement testes for equality only.

(b)   Give output of the following program .   [6]

i) main()	ii) main()	iii) main()
{	{	{
int i = 0xff ;	int x=5;	enum status{ pass,fail,atkt};
printf("%d", i<<2);	for(; x!=0 ; x--)	enum status stud1, stud2, stud3;
}	{	stud1 = pass;
	printf("x=%d", x--);	stud2 = atkt;
(a) 4	}	stud3 = fail;
(b) 512	}	printf("%d, %d, %d\n", stud1,
(c) 1020		stud2, stud3);
(d) 1024	(a) 5, 4, 3, 2,1	}
	(b) 4, 3, 2, 1, 0	
	(c) 5, 3, 1	
	(d) none of the above	

(c)   Find the error if any,solve it and write down the output.   [4]

i) main()	ii) main()
{	{
if(3>2)	int i=10;
printf("2 is smaller than 3");	do
printf("and");	{
else	printf("%d",i);
printf("3 is greater");	i=i-1;
}	}while(i>0 || i=5)
	}

Q.2   Attempt any two from the following questions.   [12]
(a)   Write a program and draw the flowchart to convert a binary number into a decimal number.   [6]
(b)   i) Write a program to check whether a given no is odd or even without using arithmetic operator.   [3]
    ii) Write a program to find greatest among three no's using ternary operator.   [2]
    iii) What is the Null statement in the Loop.   [1]
(c)   i) Write a program to solve the series sum = 1 / 2! + 2 / 3! + 3 / 4! + 4 / 5!+.......+ n / (n+1)! where n   [4]
    is entered by user.
    ii) Write a program to print Fibonacci series up to n terms where n is entered by user.   [2]

Q.3   Attempt the following questions.   [12]
(a)   i) Explain precedence and associativity with an example.   [3]
    ii) Explain Sentinel and Counter controlled loops with proper example.   [3]
(b)   Write a program to display following pattern using loops: [6]

```
a
b a
c b a
d c b a
e d c b a
```
                                        OR

Q.3   Attempt the following questions.   [12]
(a) Differentiate these terms: [6]
    i) break and continue
    ii) switch and else if ladder
    iii) Explicit Typecasting and Implicit Typecasting
(b)   Write a program to display following pattern using loops: [6]

```
1
2 1
3 2 1
4 3 2 1
4 3 2 1
3 2 1
2 1
1
```

DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B. TECH. SEMESTER II (CE/IT/MECH)
SUBJECT: (CT 213) Computer Programming in 'C'

Examination	: Second Sessional		
Date	: 13-03-2012	Seat No.	:
Time	: 3:30 PM to 4:45 PM	Day	: Wednesday
		Max. Marks	: 36

INSTRUCTIONS:
1. Figures to the right indicate maximum marks for that question.
2. The symbols used to carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1   State True or False with justification.   **[12]**

1   Variable names in the function definition must match with those specified in the function declaration.   1

2   When an array is passed to a function, C passes the value for each element.   1

Predict the output for the given C Code.

3   4
```
#include<stdio.h>
int f(int n)
{
    if( n == 0 || n == 1)
        return n;
    else
        return ( 2 * f(n-1) + 3*f(n-2) );
}
main()
{
    printf("%d" , f(5) );
}
```

4
```
#include<stdio.h>
#include<string.h>
main()
{
    char p[20], s[] = "string";
    int i;
    int length = strlen(s);
    for( i = 0; s[i] != '\0' ; i++)
    {
        p[i] = s[length-i];
    }
    printf("%s" , p);
}
```

Find the errors in given C Code, Correct them and write output. If no error then write output.   4

5
```
#include<stdio.h>
void func()
{
    static int i = 0;
    printf("%d\n",i++);
}
main()
{
    int i;
    {
        int j = 10;
        for(i=0;i<j;i++)
        {
            func();
        }
    }
    printf("Printed %d letters\n" , j );
}
```

6
```
#include<studio.h>
main()
{
    int sum(int j,k,l);
    sum(1,2,3);
}
void sum(int i,int j, int k)
{
    printf("%d %d %d",i,j,k);
}
```

Predict the output of following C function?   2

```
7    #include<stdio.h>
     void f(char str[])
     {
       if (str[0] != '\0')
       {
              f(str+1);
              printf("%c",str[0]);
       }
     }
     main()
     {
       f("hello");
     }
```

Q.2 Attempt *Any Two* of the following questions   **[12]**

1. Write a function that takes an integer array as argument and sorts it in descending order.   6
2. Write a function that takes two strings as an argument that checks for case insensitive 6 equality. i.e., if strings are equal it returns 1, else returns 0.
   e.g., "hello" and "Hello" are case insensitive equal.
3. (i) Write a **recursive** function that takes two integers as arguments and returns modulo 3 of them.
   e.g., f(a,b) should return modulo of a and b.
   Please **do not** use modulo operator in the function.
   (ii) Write a function that takes a string and search character as arguments and returns 1 if 3 the specified character is found in array, 0 otherwise.
   e.g., f("abcbd",'d') returns 1, while f("life",'t') returns 0.

Q.3 Do as directed   **[12]**

1. (i) Differentiate Pass By Value and Pass By Address/Reference in C?   2
   (ii) Explain *extern* keyword in C with example?   2
   (iii) Write a function that takes a string as an argument and returns the number of vowels 2 in that string.
   e.g., f("hello world") should return 3. 'a','e','i','o','u' are vowels in English.
2. Write a program that takes two 3x3 matrix from user and verify if matrix multiplication is 6 commutative for given two matrices. Print appropriate message, whether matrix multiplication is commutative or not for given matrices.

OR

Q.3 Do as directed   **[12]**

1. (i) Differentiate Actual arguments and Formal Arguments in C for function.   2
   (ii) Differentiate Iterative function and recursive functions.   2
   (iii) Explain *static* keyword in C with example.   2
2. Develop a program to implement the binary search algorithm. This technique compares the 6 search key with the value of the element that is midway in 'sorted' list. Then:
   (i) If they match, the search is over.
   (ii) If the search key is less than the middle value, then the first half of the list contains the key value.
   (iii) If the search key value is greater than middle value, then the second half contains the key value.

Examination	: Third Sessional	Seat No.	: _____
Date	: 17/04/2013	Day	: Wednesday
Time	: 03:00 to 4:15	Max. Marks	: 36

INSTRUCTIONS:
1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1 Answer the Following : [12]

(A) What is an array of pointers? How is it different from pointer to an array? [2]

(B) Structure declaration reserves memory for the structure. Comment on this statement with valid justification. [2]

(C) State True or False with proper reason. [2]
   (i) A ragged array consumes less memory space.
   (ii) It is mandatory to close all the files before exiting the program.

(D) Give the output of the following code: [2]

```
void main()
{ char c;
  FILE *fp=fopen("abc.txt","w");
  for(c=' A ';c<=' I ';c++)
    { putc(c,fp); }
  fclose(fp);
  fp=fopen("abc.txt","r");
  fseek(fp,5,0);
  fseek(fp,-3,1);
  printf("%c",getc(fp)); }
```

(E) Find the errors if any correct it and write the output of the following code. [4]

```
(1) #include<stdio.h>       (2) #include<stdio.h>
struct one                  void main()
{ union                     {
  { int i;                  int a[2][2][2]={1,2,3,4,5,6,7,8};
    int j;                  int *p,*q;
  }a; } b={10,5};           p=&a[1][1][1];
void main()                 q=a;
{ printf("%d", b.i - b.j); } printf("%d %d",*p,*q); }
```

Q.2 Answer the following. (Any three) [12]

(A) WAP to copy "University" from the given string "Dharmsinh Desai University" using Pointers. [4]

(B) WAP to count the total number of vowels(a, e, i, o, u) in a file "**database.txt**". [4]

(C) WAP to define a Union and a Structure both having exactly the same members. Using the sizeof operator , print the size of structure variable as well as union variable and comment on the result. [4]

(D) WAP to find and display addition of two 3X3 matrix using pointer. [4]

Q.3 Answer the following: [12]

(A) Define a structure Height which contains two data members Feet and Inch. Write a program to read, display, add and subtract two Heights. Use functions to add and subtract the Heights which contains structure as an argument to it. [6]

(B) WAP to read a file which contains some character data. Copy the data of this file to another file with all lower case characters converted into uppercase.(use Command Line Argument to take the file names). [6]

OR

Q.3 Answer the following: [12]

(A) Define a structure Time which contains three data members Hour, Minute and Seconds. Write a program to read, display, add and subtract two Times. Use functions to add and subtract the Times which contains structure as an argument to it. [6]

(B) WAP to write record of 5 students to a FILE "**student_detail.txt**" using array of structure. Structure student contains three d[...] percentage marks. First scan all data in an array then write it to a file. [6]

Examination : Block Exam   Seat No. :_____
Date : 03/05/2013   Day : Friday
Time : 11:00 to 12:15   Max. Marks : 36

INSTRUCTIONS:
1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1 Answer the Following : [12]
  (A) What is the functionality of strcat( ) & strlen( ) function? [2]
  (B) Can i use same variable names in different function without any conflict? Justify [2]
     your answer.
  (C) **State True/False with proper justification.** [2]
     (i) In switch statement break is compulsory.
     (ii) A function in C should have at least one argument.
  (D) State difference between static and global variables. [2]
  (E) What is special about void pointer? Give an example. [2]
  (F) What is the significance of EOF? [1]
  (G) If a=4 & b=5 then what should be the value of the following C statements: [1]
     printf ("%d", a-a != b);

Q.2 Answer the following questions.(Any Three) [12]
  (A) Write a program to solve the series **sum = 1-2+3-4+5.... n** where n is entered by [4]
     user.
  (B) What do you mean by Pointer to Function ? Explain with proper example. [4]
  (C) Write a program to find out the factorial of given no. using Recursive Function. [4]
  (D) Write a program to insert an element into an array. [4]

Q.3 Answer the following questions. [12]
  (A) Write a Program to display only odd bytes of the File "data.txt" [6]
  (B) Define a structure containing the information of zoo. For each animal, the members [6]
     are name of animal, food and total no. of animals. Take input for at least 5 different
     animals. Write a program to print a list of animals sorted by name.

OR

Q.3 Answer the following questions. [12]
  (A) Write a program to compare two file contents say "data1.txt" & "data2.txt" using [6]
     command line argument.
  (B) Write a program using pointers to count the number of words, spaces, tabs, [6]
     characters in a given string.