Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA- Ist SEMESTER–EXAMINATION – MAY/JUNE - 2012

Subject code: 2610001   **Date: 29/05/2012**
Subject Name: Fundamentals of Programming (FOP)
Time: 02:30 pm – 05:00 pm   **Total Marks: 70**
Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** State whether true or false.   **07**
1. The constant 243 is equal to the constant 0243.
2. The expression ++(a+b) is a valid expression.
3. The assignment statement a+b=c is a valid statement.
4. The first character of an identifier may be an underscore.
5. The sizeof operator determines the memory space required by its operand.
6. The associativity of <<= operator is from Right to Left.
7. Execution of C program always starts from main() function.

(b) Name any three C Compilers. "C is the Middle Level Language". Justify **07** this statement. What is the requirement of Algorithm?

Q.2 **(a)** What is a typecast operator? Write its significance and purpose with **07** suitable example(s). Also explain any three Bitwise operators with example.

(b) What is character array? How can we use it to handle string type data in **07** C? Explain any four inbuilt string functions in brief.
OR
(b) Write a program to print following pattern.   **07**
Input = 4 then
Output =
z
z y
z y x
z y x w

Q.3 **(a)** State what will be the output of following code :   **06**
(1) void main()
```
    {
        int i=9;
        for (i--; i--; i--)
                printf("%d",i);
    }
```

```
(2) void main()
    {
        for (;printf("C");) ;
    }
```

```
(3) void main()
    {
        int I;
        for (i=-10;!i; i++)
                printf("%d",-i);
    }
```

(b) Explain conditional operator in brief.   01

(c) Differentiate following: 07
    (1) Function Prototype & Function Definition
    (2) Call By Value & Call By Reference

OR

Q.3 **(a)** (1) void main()   06
```
    {
        int I = 54;
        clrscr();
        printf("%d",sizeof(I));
    }
```

```
    (2) void main()
    {
        int I;
        printf("%d",scanf("%d",&I));
    }
```

```
    (3) void main()
    {
        I = 64/square(4);
        printf("%d",I);
    }
```

(b) Is it necessary to write default clause after the last case clause in Switch **01** statement?

(c) What is an Array? How it differs from ordinary variables? How to **07** initialize 1-D array and 2-D array? Write a program which find odd maximum number from 1-D Integer array.

Q.4 **(a)** What is recursive function? Explain it in brief. Write a recursive function **07** to find factorial of given number.

(b) Differentiate Dynamic Memory Allocation Vs Static Memory Allocation. **07**

Explain calloc() and malloc() functions with example.

OR

Q.4 **(a)** Explain Structure variable in C language with syntax and example. How it **07** differs from Union? Explain passing structure elements to function by taking suitable example.

(b) Write the meaning of each of the following declarations. **07**

      (1) int *p;
      (2) int *p[10];
      (3) int *p(void);
      (4) int p(char *a);
      (5) int *p(char a[]);
      (6) int *p(char *a[]);
      (7) int *p(char (*a)[]);

Q.5 **(a)** Write a program for insertion of a new node before a specified node in a **07** Linked List.

(b) How many arguments are passed to main() function in order to use **07** command line arguments?
Explain the use of these arguments by taking suitable examples.

OR

Q.5 **(a)** Write a program to copy a file character by character. **07**

(b) Define Flowchart. Explain basic symbols used in flowchart. Draw a flow **07** chart to calculate sum of first N natural numbes.

****