

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA SEM-I Examination- Jan.-2012

Subject code: 610001

Date: 02/01/2012

Subject Name: Fundamentals of Programming (FOP)

Time: 10.30 am-1.00 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) Do as directed : 07
- (i) What is data type?
 - (ii) What do you mean by lifetime of a variable?
 - (iii) Give the size and range of unsigned int variable.
 - (iv) What is the use of Linker?
 - (v) What do you mean by declaring a variable and defining a variable?
 - (vi) What do you mean by unary operator?
 - (vii) What is word boundary?
- (b) Answer the following questions :
- (i) List the disadvantages of a Singly Linked List 02
 - (ii) Give the structure of a doubly linked list node 01
 - (ii) How Bitwise OR is working? Explain with an example. 02
 - (iv) What is the difference between function and a macro? 02
- Q.2 (a) Explain with suitable example : return, break and continue statements. Also compare break and continue. 07
- (b) (i) What is String? How to store it in 'C' program? 02
- (ii) Write a 'C' program to count no. of occurrences of a given character in a given string 05
- OR
- (b) (i) Explain any 4 string functions defined in string.h file. 02
- (ii) Write a 'C' program to sort an array elements in ascending order by using bubble sort. 05
- Q.3 (a) (i) What is function prototype, function definition and function call? – explain with an example. 05
- (ii) Write a function that can have multiple return statements. 02
- (b) (i) Explain the use of indirection operator and address operator. 02
- (ii) Write short note on Call by address 05
- OR
- Q.3 (a) (i) What is Recursive function? How it is implemented by using stack? Explain with example. 05
- (ii) Write short note on nesting of functions 02
- (b) (i) Write short note on void pointer 02
- (ii) Compare Array name and pointer. Also explain array of pointers and its use with array of strings. 05

Q.4	(a)	(i) Explain Array within a structure and Array of structure with suitable example.	05
		(ii) Which are the naming conventions for Identifier in C?	02
	(b)	(i) Explain following functions : fgetc(), fgets(), fscanf() and fflush()	04
		(ii) Discuss in brief : signed, short and long.	03
OR			
Q.4	(a)	(i) Define a structure named CityInfo that stores city name and city code. Write a C-program that uses CityInfo structure to store information of 10 cities. Program will take a city code and will display the appropriate city name.	05
		(ii) Write short note on Relational operators in C.	02
	(b)	(i) What is the use of File in C-program? How to open and close a File?	04
		(ii) Write short on Conditional operator.	03
Q.5	(a)	(i) What is File Mode? List and explain meaning of all file opening modes.	04
		(ii) What is argc and argv in command line arguments? Explain with suitable example.	03
	(b)	(i) Explain enum statement with suitable example	02
		(ii) Write a C function that inserts a node at a specific position in a singly linked list. Use this function in a program.	05
OR			
Q.5	(a)	(i) What do you mean by Sequential and Random Access file? Explain fseek(), ftell() and rewind() functions.	04
		(ii) Write a macro to find out X^3 . Write a program to use this macro.	03
	(b)	(i) Explain the use of a . (dot) operator and -> operator with example.	02
		(ii) Write a C function that deletes a node from a specific position in a singly linked list. Use this function in a program.	05

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA SEM-I Examination- Jan.-2012

Subject code: 2610001

Date: 02/01/2012

Subject Name: Fundamentals of Programming (FOP)

Time: 10.30 am-1.00 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) Do as Directed

- 1 List common escape sequence characters. **02**
- 2 State all and explain any one bitwise operator with example. **02**

3 Give output of followings **03**

i) `main()`
`{`
`int i=0, j=1;`
`printf("\n %d", ++i && ++j);`
`printf("\n %d %d", i,j);`
`return 0;`
`}`

ii) `main()`
`{`
`int a,b;`
`a= -3- -3;`
`b= -3- -(-3);`
`printf("a=%d b=%d",a,b);`
`}`

iii) `main()`
`{`

`printf("\n\n\n nn\n");`
`printf(" Have a good day\n");`
`printf("\n /n/n nn/n");`
`}`

(b) Answer the following questions **07**

- 1 Explain ternary operator in 'C'.
- 2 Differentiate formal and actual parameters.
- 3 Write use of `putc()` with example.
- 4 What is conditional compilation?
- 5 Give the difference between `break` and `continue`.
- 6 Write a drawback of a singly linked list?
- 7 Write the purpose of `fclose()`.

Q.2 (a) Briefly classify Generation of programming languages. **07**
Discuss its advantages over other generations.**(b) Which are the control structures available in C Language? **07****
Explain any one with example.**OR**

- (b) What is an Array? Discuss two dimension arrays with memory representation and example. **07**
- Q.3** (a) What is Recursion? Where Recursion can be used? Discuss the advantages of Recursion. Explain with example. **07**
- (b) What is pointer? How pointers can be used for call by reference parameter passing mechanism? **07**
- OR**
- Q.3** (a) What is the purpose of storage class in 'C'? Discuss each storage class with example. **07**
- (b) How will you handle the strings in 'C'? Explain the string manipulation functions with example. **07**
- Q.4** (a) Define Function. Differentiate user defined function and built in function. Write a program to find factorial of a given number using user defined function. **07**
- (b) Attempt followings
- 1 Discuss advantages and limitations of flowchart **04**
- 2 How is an enumerated data type defined? Explain with example. **03**
- OR**
- Q.4** (a) What is a structure? Why is it called user-defined data type? Give examples for three different ways to declare a structure. **07**
- (b) What is Dynamic memory allocation? Explain the uses of malloc() and calloc() with example. **07**
- Q.5** (a) What do you mean by Preprocessor directives? Discuss unconditional directives with example. **07**
- (b) Write a C program which accepts input from user to multiply two matrices. **07**
- OR**
- Q.5** (a) How files can be managed in C? Explain three necessary functions to access a file randomly? **07**
- (b) Write a C program to copy a text file which accepts source and destination file name from command line arguments. **07**

GUJARAT TECHNOLOGICAL UNIVERSITY**MCA- Ist SEMESTER-EXAMINATION – MAY/JUNE - 2012****Subject code: 610001****Date: 29/05/2012****Subject Name: Fundamentals of Programming****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) Define algorithm and flowchart. Explain features of good algorithm. **07**

Write an algorithm and draw the flowchart to evaluate following series.

$$\text{Sum} = X - X^2/2! + X^3/3! - X^4/4! + \dots \pm X^N/N!$$

(b) What do you mean by looping? Compare and Contrast the while(), do...while() and for() loops with their flowcharts and examples. **07****Q.2 (a)** How strings are managed in C? Explain various string manipulation functions with syntax and example. **07****(b)** Write a detailed note on the data types available in C, with their memory requirements and ranges. **07****OR****(b)** Explain all the possibilities of format specifications in printf() function. **07****Q.3 (a)** What is the need of UDF? Explain various storage classes available in C. **07****(b)** How pointer works? Explain “Array of Pointers” and “Pointer to an Array” with examples. **07****OR****Q.3 (a)** What is recursion? Describe the mechanism of recursion with suitable example. Write a recursive function of binary search. **07****(b)** Explain “Function Pointers” with suitable examples. **07****Q.4 (a)** Write a detailed note on Array of Structures and Nested Structures. **07****(b)** What is file? Describe various types of files. Explain fopen() and fseek() functions in detail. **07****OR****Q.4 (a)** Write a program to enter N records of Employee (empcode, name, designation, salary), and sort these records as per employee names and print the result. **07****(b)** Write a program to copy one file to another file using command-line arguments. **07****Q.5 (a)** Write a program to convert given Decimal value to its Hexadecimal equivalent. **07****(b)** Write a menu-driven program to Create singly linked list, Add a node after given node, Delete a given node and Display the list. **07****OR****Q.5 (a)** Write a program to evaluate the following series using Nested Recursive function, $F(x) = X - X^3/3! + X^5/5! - X^7/7! + \dots \pm X^N/N!$ **07****(b)** What is the difference between Array and the Linked-List? Describe various operations on singly linked list using diagrams. **07**

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 statement? **01**

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

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

(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 differs from Union? Explain passing structure elements to function by taking suitable example. **07**

(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 Linked List. **07**

(b) How many arguments are passed to main() function in order to use command line arguments? **07**

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 chart to calculate sum of first N natural numbers. **07**
