

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA - SEMESTER– I • EXAMINATION – WINTER • 2015

Subject Code: 610001

Date: 22-12-2015

Subject Name: Fundamentals of Programming

Time: 10:30 am - 01:00 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)** Answer the following questions. **07**
- (1) Declare a symbolic constant PI with value 3.14 using preprocessor directive.
 - (2) Declare an enum user defined data type Boolean whose variable may contain value either TRUE or FALSE.
 - (3) Declare only a main() function to take command line arguments.
 - (4) Declare the structure CRICKET to create a linked list that contains name of cricketer, scored total runs and country.
 - (5) Declare an array RESULT to store the marks of 7 subjects in each semester with total 6 semesters of 100 MCA students.
 - (6) Declare an array of 10 pointers to point float variables.
 - (7) Declare an array of string to store names of 100 students with maximum name length 20.
- (b)** Answer the following questions. **07**
- (1) Which system softwares translate the source code into its equivalent machine language code?
 - (2) What is pointer?
 - (3) What is backslash character constant?
 - (4) Write any four string handling functions.
 - (5) Write the storage classes available in C.
 - (6) Which are the basic formatted input output functions in C?
 - (7) Which loop will always be executed at least once regardless of condition evaluated to true or false?
- Q.2 (a)** What is data type? Give classification of data types in C and explain with example all types of integer data types with range, sign and size modifiers. **07**
- (b)** What is the use of switch statement? Which kind of data type we can use with switch statement? Explain it with syntax, flow chart and example sample code. **07**
- OR**
- (b)** What is an operator? Give categories of all operators. Explain relational operators in detail with example. **07**
- Q.3 (a)** What is a loop construct? Explain for loop with syntax and flow chart. Write a program using for loop to print the message "C Language" N times. **07**
- (b)** What is a function? How it is useful in programming? Explain function declaration, function definition and function call. Write a program using function to determine whether the given number is odd or even. **07**

OR

Q.3 (a) When will you use getchar() and gets() functions? Write a program that will receive one string from keyboard and copy that string to another string. The resultant string must contain all the alphabets in upper case leaving all other characters as it is. Display both the strings. **07**

(b) What is recursion? Explain it with the example of finding factorial of a given number. Also write the non-recursive version of the factorial function. **07**

Q.4 (a) Define an array? Explain initialization and printing it in matrix form of two dimensional array of size 3×3 . **07**

(b) Differentiate structure vs union. **07**

OR

Q.4 (a) Explain various constructs of if statement with syntax and flow chart. **07**

(b) Differentiate array vs linked list. **07**

Q.5 (a) Explain various file opening modes in C. **07**

(b) What is dynamic memory allocation? Explain dynamic memory management in C using syntax and example of malloc(), calloc () and free() functions. **07**

OR

Q.5 (a) Draw a flow chart to find out the sum of following series. **07**
 $1 + 1 + 2 + 3 + 5 + 8 + 13 + \dots \dots + N$ terms.

(b) Write a program to print following triangle for N number of lines in output. **07**
For example if $N = 5$ then output should be as follows.

```
5 4 3 2 1
4 3 2 1
3 2 1
2 1
1
```
