

USN

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**First Semester MCA Degree Examination, January 2011
Problem Solving using C**

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1 a. What are the characteristics of an algorithm? (05 Marks)
 b. Write a flowchart for solving a quadratic equation. (08 Marks)
 c. Give the general format of a C program. (05 Marks)
 d. What is "volatile" qualifier meant for? (02 Marks)

- 2 a. Explain the syntax of switch...case...default construct. Give an example program. (08 Marks)
 b. Write a program to check whether a given integer is a perfect square or not. (04 Marks)
 c. What are the bit-wise operators? Give an example program for right shift operator. (06 Marks)
 d. Check whether a number is odd or even, using the ternary operator. (02 Marks)

- 3 a. What are the differences between the while...loop and do...while loop? (04 Marks)
 b. Generate the prime numbers between the given upper and lower bounds (upper bound > lower bound). (08 Marks)
 c. Find the value of π , for a given accuracy. The value of π is given by the series

$$\pi = \sqrt{\frac{6}{1^2} + \frac{6}{2^2} + \frac{6}{3^2} + \dots + \frac{6}{r^2}}$$
 Write a C program. (08 Marks)

- 4 a. What are arrays? How are they declared and initialized? Give examples. (06 Marks)
 b. Write a program to reverse a given array of n-elements. (06 Marks)
 c. Write a program to simulate strcat() function, without using any built in functions related to strings. (08 Marks)

- 5 a. What are functions? How are they useful? What are the different kinds of user defined functions? (06 Marks)
 b. Write a C program to describe passing arrays to a function. (08 Marks)
 c. Write a recursive function in C programming, with an example. (06 Marks)

- 6 a. What are the unions? How are they different from the structures? Give an example for union. (06 Marks)
 b. What are the bit fields? What is their significance? (04 Marks)
 c. Write a program that reads an array of structures named "STUDENT". The structure has three fields viz., name of the student, USN(alphanumeric data), branch and grade (character data). Perform a linear search based on a particular USN (key) and print the details of the student, if available. (10 Marks)

- 7 a. What are the pointers? How are they useful? (05 Marks)
 b. Write an example program to show how the members of a structure could be accessed, using the pointers. (05 Marks)
 c. Write a program that adds the elements of an array, using a pointer. (06 Marks)
 d. What is a file? How a file is opened and closed? (04 Marks)

- 8 a. What do you mean by command line arguments? Give an example program. (06 Marks)
 b. Explain the syntax and working of the following functions:
 i) malloc() ii) calloc() iii) realloc() (09 Marks)
 c. What are macros? Give one programming example. (05 Marks)

* * * * *

Important Note : 1. On completing your answers, if also by drawing diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

