

**MCA-06 (New) / MCA-7 (Old)**

December - Examination 2015

**MCA 1st Year Examination****Data Structure Through C Language****Paper - MCA-06 (New) / MCA-7 (Old)****Time : 3 Hours ]****[ Max. Marks :- 80**

**Note:** The question paper is divided into three sections A, B and C. Write answers as per given instructions.

**Section - A**

8 x 2 = 16

(Very Short Answer Questions)

**Note:** Answer all questions. As per the nature of the question delimit your answer in one word, one sentence or maximum upto 30 words. Each question carries 2 marks.

- 1) (i) What is Array?
- (ii) Define Data Structure.
- (iii) Show the relation between data and information.
- (iv) How to declare the structure in C language.
- (v) What is the importance of FIFO?
- (vi) What is "path" in graph?
- (vii) Define Tree.
- (viii) What are parallel edges?

**Section - B**

4 x 8 = 32

(Short Answer Questions)

**Note:** Answer **any four** questions. Each answer should not exceed 200 words. Each question carries 8 marks.

- 2) Define a one-dimensional, six-element floating-point array called `consts`. Assign the following values to the array elements: 0.005, -0.032, 1e-6, 0.167, -0.3e8, 0.015.
- 3) Compare `malloc()`, `calloc()`, `realloc()` and `free()` functions used in C language.
- 4) Write an algorithm for insertion of a new node into the 3rd position in a singly linked list. Explain with example.
- 5) What are the standard operations on Stack? Explain with example.
- 6) What are the several different ways to represent a graph in computer memory? Explain with example.
- 7) Explain Breadth First search with example.
- 8) Write a C program to evaluate a postfix expression.
- 9) What are the advantages of using doubly linked list over singly link list?

**Section - C**

2 x 16 = 32

(Long Answer Questions)

**Note:** Answer **any two** questions. You have to delimit your each answer maximum upto 500 words. Each question carries 16 marks.

- 10) Describe the importance of queue? Why circular queue is needed? Implement circular queue in C.
  - 11) What is the need of searching? Write a program in C language to search a given number in the list of 10 numbers. Use both Linear and Binary search.
  - 12) What is Binary Search Tree? Explain the process of searching a key value in binary search tree with example.
  - 13) Compare various sorting algorithms with respect to its complexity.
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