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[5363]-302

B.C.A./B.B.A. (CA) (Semester-III) EXAMINATION, 2018

DATA STRUCTURE USING-C

(2013 PATTERN)

Time : Three Hours

Maximum Marks : 80

N.B. :— (i) *All* questions are compulsory.

(ii) *All* questions carry equal marks.

(iii) Assume suitable data if necessary.

1. Attempt any *eight* of the following : [8×2=16]

- (a) State the types of graph.
- (b) Define Data Structure.
- (c) How to measure performance of an Algorithm.
- (d) How to calculate count of Best, Worst and Average case ?
- (e) What is Ancestor of Node ?
- (f) What is ADT for an array ?
- (g) What is searching ?
- (h) What are the operations we can perform on queue ?
- (i) State the difference between Stack and Linked List.
- (j) What is Pointer to Pointer ?

P.T.O.

2. Attempt any *four* of the following : [4×4=16]

- (a) What is the difference between array and structure ?
- (b) Explain BFS traversing technique with an example.
- (c) Sort the following data by using bubble sorts techniques :
56, 23, 98, 67, 3, 87, 45, 77, 99
- (d) Write a 'C' program for addition of two polynomials.
- (e) Write a function to merge given two singly linked lists.

3. Attempt any *four* of the following : [4×4=16]

- (a) Explain quick sort technique with an example.
- (b) Explain different types of Dynamic Memory Allocation Functions.
- (c) Explain different types of Asymptotic notation in detail.
- (d) Write a function to reverse a singly linked list.
- (e) Explain Prim's algorithm for minimal spanning tree.

4. Attempt any *four* of the following : [4×4=16]

- (a) Write a function to create and display circular singly linked list.
- (b) What is Graph ? Explain Adjacency list of graph.
- (c) Write a function to count the number of leaf and non-leaf nodes in a tree (Recursive functions).

- (d) What is an Algorithm ? Explain its characteristics in detail.
- (e) Write a function to check whether a given string is palindrome or not (use stack).

5. Attempt any *four* of the following : [4×4=16]

- (a) Write an algorithm for evaluation of prefix expression.
- (b) Write a function to remove last node of singly linked list and add it at the beginning of linked list.
- (c) Sort the following data by using Insertion sort techniques :
87, 45, 12, 90, 67, 54, 34, 23, 60
- (d) What is circular queue ? Explain it with an example.
- (e) Write the recursive functions to traverse a tree by using inorder(), preorder() and postorder() traversing techniques.