

Roll No.

BCA-302(N)

B. C. A. (Third Semester) EXAMINATION, Dec., 2017

(New Course)

Paper Second

DATA STRUCTURE USING C AND C++

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt questions from all Sections as directed.

Inst. : The candidates are required to answer only in serial order. If there are many parts of a question, answer them in continuation.

Section—A

(Short Answer Type Questions)

Note : All questions are compulsory. Each question carries 3 marks.

1. (A) Write the definition of data structure with an example.
- (B) Write the types of data structure with at least one real example.
- (C) Write the definition of Algorithm and also write the algorithm of stack.
- (D) What is queue ? Write the definition of circular queue with insertion and deletion of queue.

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- (E) Write the definition of linked list and also show the insertion and deletion operation of linked list.
- (F) What is binary tree ? Find the height of binary tree in terms of no. of nodes.
- (G) Write the algorithm of Binary Search with *one* example.
- (H) What is Traversal ? Write the type of traversal.
- (I) What is the difference between B-Tree and Binary tree ? Explain with at least *one* example.

Section—B

(Long Answer Type Questions)

Note : Attempt any *two* questions. Each question carries 12 marks.

- 2. Write a C or C++ Program of stack using underflow and overflow condition and also write sub-function of Push() and Pop().
- 3. What is hashing ? Write at least *three* functions of hashing. Also write the functions for taking 4 keys into two digit number for example :

4132, 2141, 4141, 6136

- 4. Write a C or C++ Program to insert or delete an element from Binary search tree and also explain by taking a example.

Section—C

(Long Answer Type Questions)

Note : Attempt any *two* questions. Each question carries 12 marks.

- 5. What is B-Tree ? Write all properties of B-Tree and also explain how you insert a node or delete a node from the B-Tree.

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- 6. (a) Write the algorithm of Bubble sort.
- (b) Give the example of Bubble sort using algorithm of Bubble sort.
- (c) Write the time complexity of the Bubble sort.
- 7. (a) Write a C or C++ example of heap sort.
- (b) Give a example of heap sort minimum 15 keys.
- (c) Also write the time complexity of the bubble sort.
- 8. (a) Write the algorithm of Bucket sort.
- (b) Give an example of Bucket sort using minimum 15 keys.
- (c) Write the time complexity of the Bucket sort.

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