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.

   (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.

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.