

7. (a) What is a binary search tree ? What are its advantages over linked list and array ? Show stepwise procedure to construct a binary search tree from the following number :
61, 13, 22, 72, 55, 99, 35, 45, 80, 95.
Show that the state of tree after deleting 55 and 35. **15**
- (b) What is priority queue ? What are its applications ? **5**
8. (a) Write an algorithm to search an element from sorted Linked List. **7**
- (b) Write recursive algorithm for binary search. **7**
- (c) Write an algorithm to perform selection sort. **6**

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B. Tech. EXAMINATION, Dec. 2018

(Third Semester)

(Old Scheme) (Re-appear Only)

(CSE, ECE, AEI)

CSE201

DATA STRUCTURES AND
ALGORITHMS

Time : 3 Hours]

[Maximum Marks : 100

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt any *Five* questions. All questions carry equal marks.

1. (a) Write an algorithm to convert infix expression into postfix expression using stack. **10**
 (b) Consider an infix expression

$$P : (A * B^D / (E + F)) / G$$
 Convert the expression P into postfix expression using Stacks. **10**
2. (a) Write an algorithm to delete an algorithm from queue when is represented using linear array. **10**
 (b) Write an algorithm to insert an element after given node LOC in singly Linked List. **10**
3. (a) Write an algorithm to perform postorder traversal of Binary tree. With the help of example, illustrate postorder traversal of tree using stacks. **15**
 (b) What is AVL tree ? What is the relevance of AVL tree ? **15**

4. (a) Compare and contrast depth first and breadth first tree traversals. **7**
 (b) Write Warshall's algorithm to find shortest path on graph. **7**
 (c) What is Hash Function ? What are its applications ? **6**
5. Explain the following :
 (a) Recursion **4**
 (b) Time complexity **4**
 (c) Big oh notation **4**
 (d) Divide and conquer algorithm. **8**
6. (a) Write an algorithm for bubble sort. Sort the given array using bubble sort :
 24, 80, 54, 29, 60, 51, 91, 86, 44, 33. **10**
 (b) Write an algorithm to perform merging of sorted algorithm. **10**