

Total No. of Questions—8]

[Total No. of Printed Pages—3

Seat No.	
-------------	--

[5252]-534

**S.E (E&TC/Electronics) (I Semester) EXAMINATION, 2017**  
**DATA STRUCTURES AND ALGORITHMS**  
**(2015 PATTERN)**

**Time : Two Hours**

**Maximum Marks : 50**

**N.B. :—** (i) Neat diagram must be drawn wherever necessary.

(ii) Figures to the right indicate full marks.

(iii) Use of non-programmable electronic pocket calculator is allowed.

(iv) Assume suitable data, if necessary.

1. (a) What do you mean by recursive function ? Explain with suitable example. [6]

(b) Write a C function for insertion sort to sort integer numbers.[6]

*Or*

2. (a) Explain with suitable examples, how do you pass structure variable to a function. [6]

(b) What is pointer ? What are the advantages using pointer ? Explain pointer declaration and its initialization with an example.[6]

3. (a) Differentiate between SLL and DLL. [4]

(b) Write PUSH function to implement stack using array. [4]

(c) Name types of queues. Explain any *one* in detail. [4]

*Or*

4. (a) Write short notes on : [6]

(i) Circular Linked List.

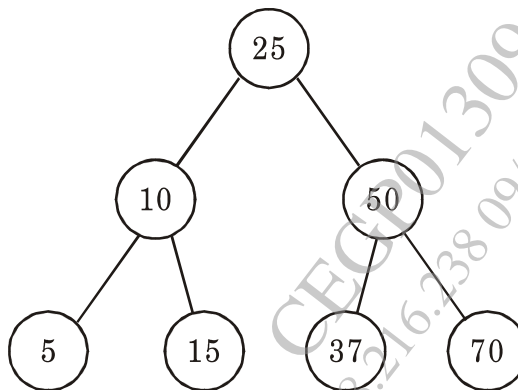
(ii) Doubly Link List.

P.T.O.

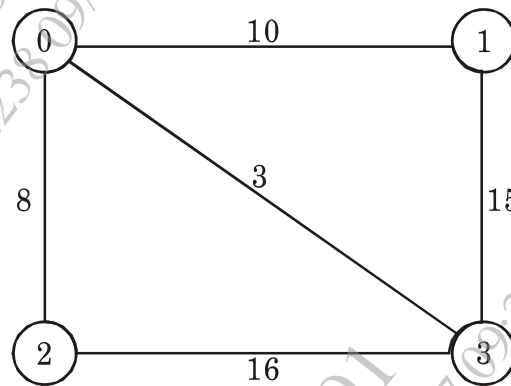
- (b) What is queue ? Explain its implementation using any *one* method. [6]
5. (a) Using the following data, draw a Binary Search Tree. Show all steps. [4]  
10 60 40 28 14 50 5
- (b) Write a C function to search element in Binary Search Tree.[4]
- (c) Define the following terms :
- (i) Root
  - (ii) Subtree
  - (iii) Level of Node
  - (iv) Dept of Tree
  - (v) Siblings
  - (vi) Height of tree

*Or*

6. (a) Define Binary Tree. What are its types ? Explain with suitable figures. [4]
- (b) Write inorder, preorder and postorder traversals for the following tree. [6]



- (c) Explain algorithm to Insert an element in BST. [4]
7. (a) Explain Dijkstra's algorithm with example. [7]
- (b) What do you mean by spanning tree of a graph ? Find minimal spanning tree of the following graph using Kruskal's algorithm.[6]



*Or*

8. (a) Define the term Graph. With the help of suitable example give adjacency matrix representation and adjacency list representation of a graph. [7]
- (b) Define DSF and BSF terms of graph with example. [6]