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

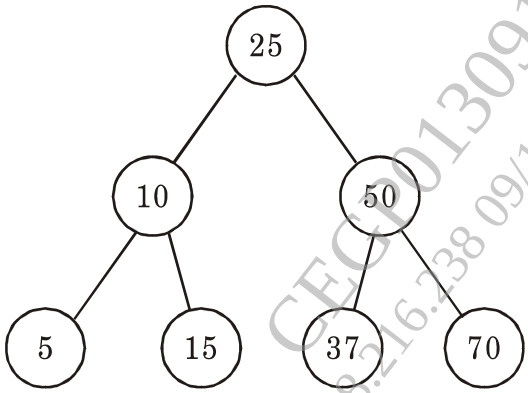
(*v*) Siblings

(*vi*) Height of tree

Or

6. (*a*) Define Binary Tree. What are its types ? Explain with suitable figures. [4]

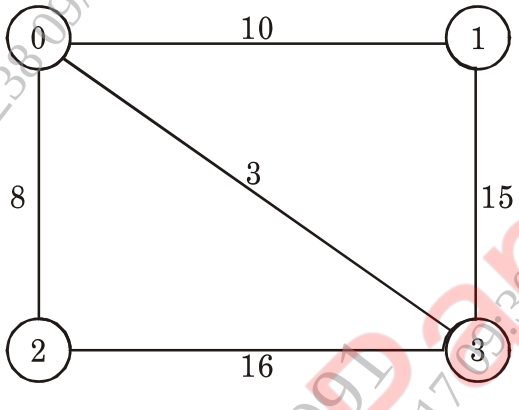
(*b*) Write inorder, preorder and postorder traversals for the following tree. [6]



(*c*) Explain algorithm to Insert an element in BST. [4]

7. (*a*) Explain Dijkstar'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]