

Total No. of Questions—8]

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[5152]-134

S.E. (E&TC/Electronics) (First Semester) EXAMINATION, 2017
DATA STRUCTURES AND ALGORITHM
(2012 PATTERN)

Time : Two Hours**Maximum Marks : 50****N.B. :—** (i) Neat diagrams must be drawn wherever necessary.

(ii) Figures to the right indicate full marks.

(iii) Assume suitable data, if necessary.

1. (a) What do you mean by recursive function ? Explain with example. [6]
 - (b) Write a C function for linear search. Discuss its time complexity. [6]
- Or*
2. (a) Explain parameter passing by value and passing parameter by reference with suitable example. [6]
 - (b) What is pointer ? Explain advantages of pointer, pointer declaration and its initialization with an example. [6]
3. (a) What is priority queue ? What are various ways of implementing priority queue ? Explain any *one* : [6]
 - (b) Explain the following : [6]
 - (i) Garbage collection
 - (ii) Garbage compaction.

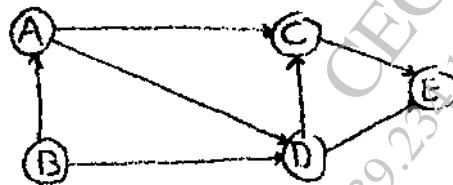
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Or

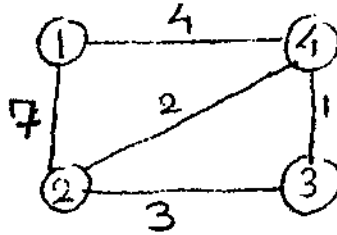
4. (a) Convert the following expression into postfix format with all steps and stack contents during every step : [6]
 $(a + (b * c/d) - e)$
- (b) Write short notes on : [6]
 (i) Singly linked list and
 (ii) Doubly linked list.
5. (a) What is BST ? Write C function for : [7]
 (i) Finding smallest no. in BST
 (ii) Recursive inorder traversal of BST
- (b) What is AVL Tree ? Define balance factor. Explain RR rotation. [6]

Or

6. (a) What is BST ? Construct a BST for the following numbers : [8]
 27, 42, 43, 17, 39, 31, 10, 9, 19, 54, 33, 48
 Show all the steps. Write its preorder traversal.
- (b) Explain threaded binary tree with an example. What is its advantage ? [5]
7. (a) Write a C function to implement DFS traversal of graph implemented using adjacency matrix. [7]
- (b) Write topological sort for the following graph : [6]



8. (a) Define term graph with suitable example. Give adjacency matrix representation and adjacency list representation of the graph. [7]
- (b) Define spanning tree. Find all the spanning tree for graph given below : [6]



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