2015

Time : 3 Hours

Full Marks : 75

The questions are of equal value.

Answer any five questions.

1. What do you mean by Data Structure ? Explain the different categories of data structure with example.
2. Define stack ? What are the different possible operations on stack ?

   Evaluate postfix expression :

   E : 2 3 10 + * 8 2 / -
3. Define Double Ended Queue (deque). Write an algorithm of insertion and deletion.
4. What is Linked list ? How does it differ from Array ?
5. Suppose POLY1 and POLY2 are polynomials which are stored in linked lists. Write a procedure which finds the sum of POLY1 and POLY2.

6. Explain the follwing terms with a suitable example in context of binary trees
   (a) Level of a node
   (b) Depth of the tree
   (c) Degree of the tree
   (d) Complete binary tree
   (e) Threaded binary tree.
7. Construct binary tree of the algebraic expression and also write in prefix and postfix notation.

   E = [a + (b – c)] * [(d – e) / (f + g –h)]
8. Create B-Tree of order 5 from the following list of elements :

   30, 20, 35, 95, 15, 60, 55, 25, 5, 65, 70, 10, 40, 50, 80, 45
9. Write an algorithm of Quick sort, test the algorithm manually using :

   44, 33, 11, 55, 77, 90, 40, 60, 99, 22, 88, 66
10. Define minimum cost spanning tree. Write Prim's algorithm to generate a minimum cost spanning tree for any given weighted tree.

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