

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.

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(1)

(Turn Over)

6. Explain the following 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 :



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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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