

Duration: 2 hrs

(INFT)

[Max Marks:60]

N.B. : (1) Question No 1 is Compulsory.

(2) Attempt any three questions out of the remaining five.

(3) All questions carry equal marks.

(4) Assume suitable data, if required, and state it clearly.

1 Attempt any THREE

[15]

a Explain linear and nonlinear data structures with suitable examples.

[5]

b Define ADT. Write ADT for Queue data structure.

[5]

c Differentiate between Linked List and array.

[5]

d Write an algorithm for reversing a string.

[5]

2 a Write an algorithm to implement Stack using an array.

[8]

b Write a algorithm to reverse the singly linked list.

[7]

3 a Write a algorithm to implement circular queue using an array.

[8]

b Design a Huffman tree for the word "CONSTRUCTION". Also write the Huffman code to represent each symbol.

[7]

4 a Construct a Binary Search Tree for given numbers 45, 23, 76, 11, 30, 60, 90, 25, 50, 65.

[8]

b Write an algorithm for infix to postfix conversion. Convert the following expression to postfix $(A + B) * C - D / E$

[7]

5 a Write an algorithm to implement singly linked list that performs the following functions

[8]

1. Insert a node in the beginning

2. Insert a node in the end

3. Display the linked list elements

b Draw the Stack structure for each case when the following operations are performed on an empty stack:

[7]

1. PUSH A, B, C, D, E, F

2. POP two letters

3. PUSH G

4. POP one letter

5. POP four letters

6. Pop one letter

7. PUSH I, J

8. POP one letter

6 Write short notes on (any 3)

[15]

a) Doubly Linked List

[5]

b) Double Ended Queue

[5]

c) Types of Binary Tree

[5]

d) Priority Queue

[5]
