

(3 Hours)

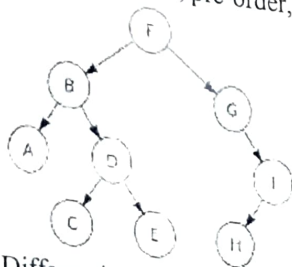
Total Marks: 80

- B: (1) Question No. 1 is compulsory  
(2) Attempt any three questions out of the remaining five questions

- Q.1 (a) Define ADT. Write ADT for Queue data structure.  
(b) Find the in-order, pre-order, post-order traversal

[05]

[05]



- (c) Differentiate between Linked list and Array  
(d) Explain application of Binary tree

[05]

[05]

- Q.2 (a) Apply Huffman coding for following examples. Determine the code for the following characters. "CONSTRUCTION"  
(b) Consider a hash table with size = 10. Using Linear probing, insert the keys 28, 55, 71, 67, 11, 10, 90, 44 into the table.

[10]

[10]

- Q.3 (a) Write an C program to check the well-formedness of parenthesis in an algebraic expression using the Stack data structure.  
(b) Construct AVL for the given elements 27, 25, 23, 29, 35, 33, 34

[10]

[10]

- Q.4 (a) Write a program to perform the following operations on the Doubly linked list:

[10]

- Insert a node at the end
- Delete a node from the beginning
- Search for a given element in the list
- Display the list

- (b) Write DFS algorithm. Show DFS traversal for the following graph with all the steps.

[10]



- Q.5** (a) Define Data Structure. Explain its type with an example [10]  
(c) Explain B tree. Draw the B-tree of order 3 created by inserting the [10]  
following data arriving in sequence: 50, 25, 10, 5, 7, 3, 30, 20, 8, 15
- Q.6** (a) Draw the Stack structure in each case when the following operations are [10]  
performed on an empty stack.  
i. PUSH A, B, C, D, E, F  
ii. POP two letters  
iii. PUSH G  
iv. POP H  
v. POP four letters  
vi. PUSH I, J  
vii. POP one letter
- (b) Write a C program for polynomial addition using a Linked-list. [10]

\*\*\*\*\*