Paper / Subject Code: 49303 / DATA STRUCTURES

Date -20/11/19

Time: 3 Hours   Marks: 80

N.B. (1) Question No.1 is Compulsory
     (2) Attempt any three questions out of remaining five questions
     (3) Make suitable assumptions wherever necessary
     (4) Figures to the right indicate full marks

1. (a) Explain ADT with an example.   (5)
    (b) Differentiate between Static and Dynamic representation of Data Structure (5)
    (c) Write a 'C' program to implement Binary Search using recursion   (5)
    (d) Discuss practical applications of Queues   (5)

2. (a) Write a 'C' program to implement STACK using arrays   (10)
    (b)What are the different methods of File I/O in 'C' language? What library
       functions are supported by 'C' language to do this?   (10)

2. (a) What are the advantages of Linked- list over array? Write a 'C' program to
     implement Queue ADT using Linked-List   (10)

    (b) Explain indexed Sequential search with a suitable example. What are the
     advantages and disadvantages of Indexed Sequential search   (10)

3. (a) Write a 'C program to create a "Singly Linked List". The ADT should support
     the following operations   (10)

        (i) Creating a Link List
        (ii) Inserting a node after a specific node
        (iii) Deleting a node
        (iv) Displaying the list
    (b)Explain the method of Huffman Encoding. Apply Huffman encoding method for the
    Sentence "MAHARASHTRA". Give Huffman code for each symbol.   (10)

5. (a) Write a 'C' program to create Binary Search Tree. Show BST for the following input:
     10,05,14,22,17,01,08   (10)
    (b)What is the use of hashing? Show hash table entries for the given dataset using Linear
    Probing and Quadratic Probing: 12,45,67,88,27,78,20,62,36,55.   (10)

6. Write Short notes on (any two)   (20)
       (a) Threaded Binary Tree
       (b) BFS Traversal
       (c) Doubly Linked-list.

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