S.E. (Computer) (Sem-III) (CBSGS)

Paper / Subject Code: 49303 / DATA STRUCTURES

Date-20/5/19

Q.P. Code: 36285

[Time: Three 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 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)

3. (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)

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

   (i) Creating a Linked 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: 10,5,14,22,17,1,8 (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) Explain BFS algorithm with example
   (c) Doubly Linked list.

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