

**B.M.S. College of Engineering, Bengaluru-560019**

**Autonomous Institute Affiliated to VTU**

December 2018 / January 2019 Semester End Main Examinations

## **Programme: B.E.**

**Branch : Computer Science and Engineering**

Branch: Computer Science & Technology  
Course Code: 15CS3DCDST

Course Code: ISCESSD0

Semester : III

**Duration:** 3 hrs.

Max Marks: 100

Date: 29 12 2018

**Instructions:** 1. Answer any FIVE full questions, choosing one full question from each unit.  
2. Missing data, if any may suitably assumed

UNIT - I

- |   |   |    |
|---|---|----|
| 1 | a) Show the representation of stack operation of size 5 with an example   | 06 |
|   | b) Write the algorithm/program to implement postfix expression and Evaluate the postfix expression in tabular form.<br>$623+382/+*2+3-$ | 08 |
|   | c) Write a C program to implement ordinary queue operations.  | 06 |

UNIT - II

- |   |   |    |
|---|---|----|
| 2 | a) Show the representation of singly & double linked list with an example.          | 06 |
|   | b) Write a function to insert the node at specified location in singly linked list. | 06 |
|   | c) Write a C program to create a singly linked based on stack principle.            | 08 |

OR

- 3 a) Write a C program to create the doubly linked list and perform the following operations. 12

  - i. Insert the new node at beginning
  - ii. Delete the node from the specified position
  - iii. Display the status of doubly linked list

b) Write a function to merge two sorted Double Linked List. 08

## **UNIT - III**

- 4 a) Construct the binary search tree for the following elements 45, 67, 23, 34, 9, 67, 45, 84, 27, -8, 102. Show the construction of BST one element at a time. Write recursive function for preorder, inorder and postorder and also show tree traversal for preorder, inorder and postorder for the constructed tree. 10

b) Construct a binary search tree from the traversals. Show all possible steps to create the binary search tree. 10

postorder: H D I E B L E K J G C A

inorder: HDBLJEAELCKGL

also write a function to construct a Binary Search Tree

## **UNIT - IV**

- 5 a) Write the properties of AVL tree 04  
 b) Discuss different rotations in AVL Tree. 10  
 Construct an AVL tree by inserting the following items: 30, 20, 41, 58, 82, 21, 96. Write the corresponding balance factors for each node at every set of construction.

c) Construction 2-3 tree for the following items 67, 23, 69, 9, 12, 60, 75, 12, 93, 17, 32. 06

OR

- 6 a) Construct Huffman tree for the file with alphabets and their frequency as follows : { (A,100), (B,60),(C,70), (D,43),(E,24),(F,59)} 10  
b) Write the properties of red black tree 04  
c) Demonstrate binomial heap representation with an example. 06

UNIT - V

- 7 a) Write a C program to implement insertion sort and demonstrate each pass with an example. 10

b) Construct the linear probe hashing for the following elements 45, 78, 49, 23, 12, 67, 52, 28, 33 10

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