BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
Computer Science & Business Systems
B. Tech. Sem - II :SUMMER : 2023
SUBJECT : DATA STRUCTURES & ALGORITHMS

Day : Friday
Date : 26-05-2023
Time : 10:00 AM-01:00 PM
S-24138-2023
Max. Marks : 60

N.B.

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.

Q.1 Explain in detail algorithms and the specification of algorithms. **(10)**

OR

Q.1 What is space time complexity trade off. Justify with examples. **(10)**

Q.2 Write an algorithm for infix to prefix expression conversion. Solve for the expression: A / B – C + D * E – A * C **(10)**

OR

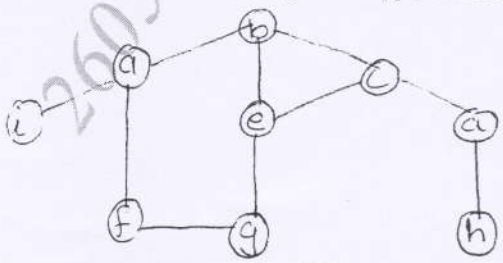
Q.2 Describe in detail how to implement stacks using arrays and linked list. Also write pseudo code. **(10)**

Q.3 Explain in detail what is Binary Search Tree (BST). Create a BST of 45, 36, 76, 23, 39, 115, 98, 39, 41, 56, 69, 48. Also show Preorder, Inorder and Postorder traversal for the created tree. **(10)**

OR

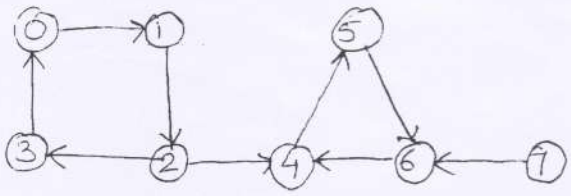
Q.3 Explain what is B tree and its properties. Show the results of inserting 12, 10, 15, 4, 11, 17, 3, 13 & 8 into an initially empty B tree. Delete 12, 13, 15, order Order of the tree m = 3. **(10)**

Q.4 Write BFS algorithm and its running time .Apply on the graph below. **(10)**



OR

Q.4 Explain what are connected components. Demonstrate how to find connected components on the given graph. **(10)**



P.T.O.

Q.5 What is heap data structure? Also explain the procedure of heapify using example. Show working of heap sort with all intermediate steps on the input 73, 6, 57, 88, 60, 42, 83, 72, 48, 85. **(10)**

OR

Q.5 Explain hashing and its significance. Also explain with examples different hashing methods. **(10)**

Q.6 Explain in detail Sequential File Organization. **(10)**

OR

Q.6 Explain in detail Indexed Sequential File Organization. **(10)**

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