

BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)  
B. Tech. Sem - III Computer Science & Engineering : WINTER : 2023  
SUBJECT : NON-LINEAR DATA STRUCTURES

Day : Friday

Time : 10:00 AM-01:00 PM

Date : 1/12/2023

W-25310-2023

Max. Marks : 60

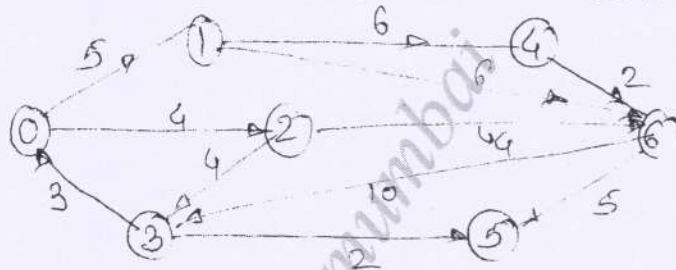
N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of non-programmable **CALCULATOR** is allowed.

Q.1 What is non-linear data structure? Differentiate between NLDS and LDS. (10)  
List and explain types of graph.

OR

Define spanning tree. Explain prim's algorithm with following graph. (10)



Q.2 Write and explain operations used on binary search tree (BST) with example. (10)

OR

Explain with example threaded binary tree. (10)

Q.3 Explain AVL tree and construct for 1-8 number. (10)

OR

Explain B and B+ tree with example differentiate between B and B+ tree. (10)

Q.4 Explain how to implement heap and apply insertion and deletion operations on it. (10)

OR

Explain Huffman coding. What is time complexity of Huffman coding, Also explain its limitations? (10)

Let  $A = \{a/20, b/15, c/5, d/17, e/45\}$  be the alphabet and its frequency distribution. Draw the Huffman tree.

Q.5 Write short note on collision Resolution strategies along with advantages and disadvantages. (10)

OR

List collision methods. Explain linear probing with example. (10)

Q.6 What is Knuth-Morris-pratt algorithm? Explain with example and give its complexity. (10)

OR

Explain the Boyer moore algorithm. (10)

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