

BACHELOR OF TECHNOLOGY (CBCS - 2023)
B. Tech. Sem-III Computer Science & Engineering : WINTER : 2024
SUBJECT: NON-LINEAR DATA STRUCTURES

Day : Tuesday
 Date : 03/12/2024

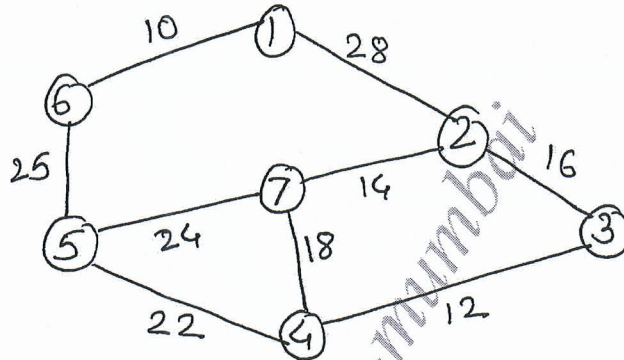
W-29202-2024

Time : 10:00 AM-01:00 PM
 Max. Marks : 60

N.B :

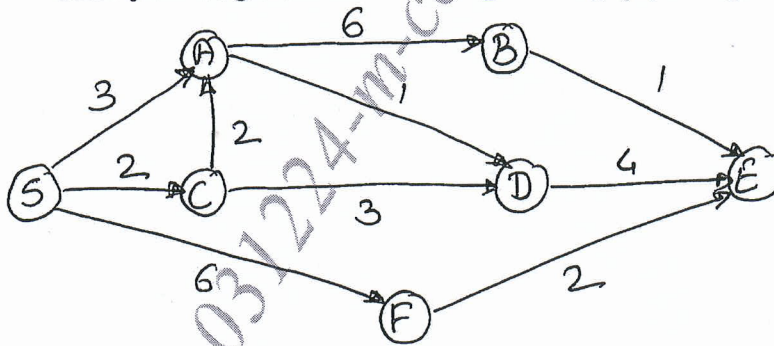
- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat and labeled diagrams **WHEREVER** necessary.
- 4) Use of non programmable **CALCULATOR** is allowed.
- 5) Assume suitable data if necessary.

Q.1 Obtain minimum spanning tree for following graph. (10)



OR

Q.1 Run Dijkstra's algorithm on the following directed graph, starting at vertex S. (10)



Q.2 Which are tree traversal methods? Construct Binary search tree for following values and apply traversal method on it. (10)
 57, 18, 37, 92, 73, 87, 97, 15, 42, 39.

OR

Q.2 What is Binary tree? How to represent tree. (10)

Q.3 Draw the B-tree of order 3 created by inserting the following data arriving in sequence 92, 24, 6, 7, 11, 8, 22, 4, 5, 16, 19, 20, 78. (10)

OR

Q.3 What is Red-Black tree? What are the properties of Red-Black tree? Write algorithm to insert and delete element in Red-Black tree. (10)

P.T.O.

Q.4 Differentiate between tree and heap with proper example. (10)

OR

Q.4 Arrange following elements in ascending order using heap sort (10)
35, 33, 42, 10, 14, 19, 237, 44, 26, 31.

Q.5 How collision is resolved using linear probing? Construct hash table of size (10)
10 using linear probing without replacement strategy for collision resolution.
The hash function is $h(x) = x \% 10$.
31, 3, 4, 21, 61, 6, 71, 8, 9, 25

OR

Q.5 Explain Quadratic probing with example. (10)

Q.6 How to search a pattern in the suffix trees? Give applications of the suffix (10)
trees.

OR

Q.6 Explain Boyer Moore algorithm. (10)

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