BACHELOR OF TECHNOLOGY (CBCS - 2023)

B. Tech. Sem-II COMPUTER SCIENCE & ENGINEERING : WINTER : 2024

SUBJECT: LINEAR DATA STRUCTURES

Day : Wednesday
Date : 27/11/2024

W-27697-2024

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) Assume suitable data **WHEREVER** necessary.

Q.1 Explain importance of time complexity and space complexity of an algorithm with suitable example. **(10)**

OR

Q.1 Explain 2-D array with Example. **(10)**

Q.2 What is linked list? What are advantages and disadvantages of linked list over array? **(10)**

OR

Q.2 Explain the insertion operation in linked list. How nodes are inserted after specified node. **(10)**

Q.3 Write an algorithm for Push and Pop operations on Stack. **(10)**

OR

Q.3 Write the algorithm for converting infix expression to postfix (polish) expression? Convert A+B*(C-D)/(P-R) **(10)**

Q.4 Explain the implementation of circular queue using array. How an "empty queue" is distinguished from a "full Queue"? Write necessary functions to perform all valid operations on circular queue. **(10)**

OR

Q.4 What is a DeQueue? Explain its operation with example? **(10)**

Q.5 Explain heap sort. Construct heap sort for the initial key set 42, 23, 74, 11, 65, 58, 94, 36, 99, 87. **(10)**

OR

Q.5 Write an algorithm to implement Bubble sort with suitable example. **(10)**

Q.6 Explain basic file organization in detail. **(10)**

OR

Q.6 Explain different file processing operations with example. **(10)**

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