DSA SIMP Questions -23SCHEME

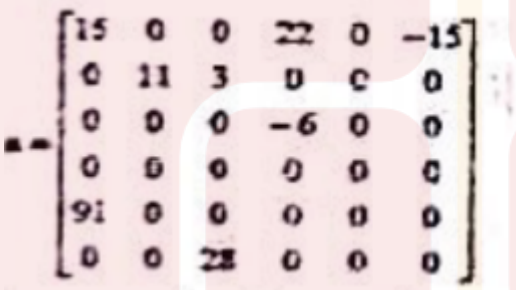
BY TIE REVIEW TEAM

Protip: If time is a constraint, study only 3+1 Questions per module

Average time to be spent per module- 120Mins

Module-1

1. Define Data Strcutures!? Illustrate the different types of DS with a neat diagram, Summarize the primitive operations that can be performed on data structures
2. Explain Traversing, inserting, deleting, searching, and sorting operations with a programming example
3. Explain (i)Array of structures (ii) SR Structures with examples
4. Summarize DMA functions with appropriate syntax and examples, also differentiate between Dynamically allocated arrays and multidimensional arrays
5. Construct an algorithm to transpose a sparse matrix, express the given matrix in triplets and find its transpose



Module-2

6. Define Stack, summarise the implementation of various operations of Stack(push, pop, display etc), also check for overflow and underflow conditions
7. Outline the algorithm for Infix to Postfix, Apply the same algorithm to convert the following infix expression to an equivalent postfix expression- ***(A+B*C)*((D+E-F)/J)***
8. Define recursion, explain the recursive function for implementing Tower of Hanoi
9. Define the steps to evaluate a postfix expression with an example
10. Define queue, enlist the different types of queues, and illustrate a C function to perform insertion and deletion operations in a Circular queue
11. Write a short note on different types of queues - 20M

Module-3

12. Define linked lists, List out their classification, and Demonstrate a C function to

perform the following operations on SLL (i)search (ii)sort (iii)Insert & Delete (iv)Traversing

13. Differences between SLL vs DLL vs CLL vs HLL -with operational syntax - 12M
14. Define circular linked lists, illustrate a C function to create a node and insert a node at the beginning of the Circular linked list
15. Demonstrate a C function to add polynomials using LL

POLY 1: $5x^2+4x+2$
POLY 2: $3x^2+2x+5$

16. For the given matrix - give the diagrammatic linked representation

$$A = \begin{bmatrix} 3 & -1 & 0 \\ -1 & 2 & -1 \\ 0 & -1 & 3 \end{bmatrix}$$

Convert it into a positive matrix and give the diagrammatic linked representation

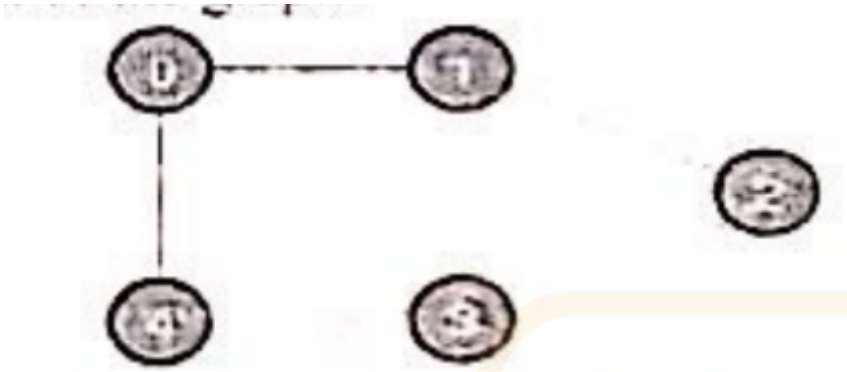
Module-4 & 5

17. Define binary tree with an example, summarize the different tree traversals with an example

    Illustrate representation of queues using LL
18. Define binary tree, explain the different operations performed on B tree with an example
19. Construct a Binary search tree by using the following inorder and preorder traversals

    In order: BCAEDGHFI **Pre-order: ABCDEFGHI**
20. Define threaded binary tree, list its advantages and disadvantages
21. Illustrate DFS and BFS methods with an example

22. Define the Graph, for the given graph show the adjacency matrix and adjacency linked list representation of the graph



23. Define hashing, summarise different types of functions with example
24. Define collision, and illustrate linear probing collision resolution techniques with an example
25. Difference between Static and Dynamic Hashing with example