K24U 3535

Reg. No. : .....

Name : .....

III Semester B.C.A. Degree (C.B.C.S.S. – O.B.E.-Regular/Supplementary/ Improvement) Examination, November 2024
(2019 to 2023 Admissions)
General Awareness Course
3A12BCA : DATA STRUCTURES

Time : 3 Hours Max. Marks : 40

PART – A
(Short Answer)

Answer **all** questions. (6×1=6)

1. What is linear data structure ?
2. List the ways to represent a two-dimensional array in memory.
3. Convert the equation to prefix : A*B/(C – D)+E.
4. What do you mean by stack overflow ?
5. What do you mean by LIFO data structures ?
6. What is the content of the link part of the last node in a linked list ?

PART – B
(Short Essay)

Answer **any 6** questions. (6×2=12)

7. Describe the features of the insertion sort method.
8. What are the limitations of the linear search method ?
9. Write an algorithm to perform the insertion of a number into a linear queue.
10. Write a short note on the dequeue.
11. Describe the basic structure of a Linked List node.

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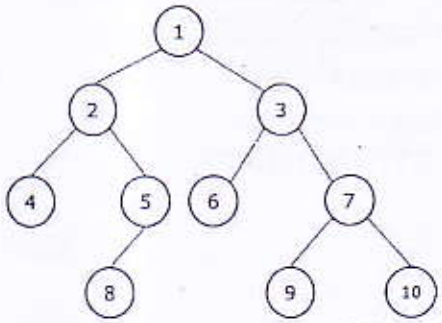
12. Describe the process of deleting a node from a linked list.
13. Describe the depth and height of a binary tree with an example.
14. Perform preorder traversal of the binary tree given below.



PART – C
(Essay)

Answer **any 4** questions. **(4×3=12)**

15. Briefly explain the representation of a sparse matrix using an array and linked list.
16. Write a note on the binary search method.
17. Compare and contrast the sorting algorithms : quick sort and merge sort.
18. What is a priority queue ? Explain the priority queue representation using the linked list.
19. Write an algorithm to merge two sorted linked lists.
20. Write a short note on Huffman code. Illustrate an example.

PART – D
(Long Essay)

Answer **any 2** questions. **(2×5=10)**

21. What are the various types of recursion ?
22. Write a function or algorithm to implement a stack using a linked list.
23. Explain various types of linked lists.
24. Explain BST and its operations with an example.
