K24U 3417

Reg. No. : .....

Name : .....

III Semester B.Sc. Degree (C.B.C.S.S. – O.B.E.-Regular/Supplementary/ Improvement) Examination, November 2024
(2019 to 2023 Admissions)
CORE COURSE IN COMPUTER SCIENCE/COMPUTER SCIENCE WITH AI AND ML
3B04CSC : Data Structures

Time : 3 Hours Max. Marks : 40

PART – A
(Short Answer)

Answer **all** questions. **(6×1=6)**

1. What is a linear array ?
2. Define a stack.
3. What is a binary tree ?
4. What is an adjacency matrix in graph theory ?
5. What is the Big O notation used for ?
6. What is the difference between linear search and binary search ?

PART – B
(Short Essay)

Answer **any 6** questions. **(6×2=12)**

7. Explain the representation of a polynomial using arrays.
8. What is a circular queue ?
9. Define a two-way linked list.
10. What is heap sort ?

P.T.O.

11. What is the difference between BFS and DFS ?

12. Define asymptotic notations Omega and Theta.

13. What is quick sort ?

14. Compare insertion sort and selection sort.

PART – C

(Essay)

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

15. Explain the operations on a stack with examples.

16. What are the steps involved in polynomial addition using arrays ?

17. Explain the memory allocation and garbage collection process in linked lists.

18. How are binary trees represented in memory ?

19. Explain the operations on a graph using BFS.

20. Describe the process of measuring the running time of a program.

PART – D

(Long Essay)

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

21. Explain the various operations on linked lists with examples.

22. Discuss Huffman's Algorithm with an example.

23. Explain the depth-first search algorithm in graph theory with an example.

24. Compare merge sort and bubble sort with respect to their time complexity and performance.

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