

7/10/2022

- N.B. 1) All questions are compulsory.
2) Figures to the right indicate marks.
3) Illustrations, in-depth answers and diagrams will be appreciated.
4) Mixing of sub-questions is not allowed.

Q.I Answer the following (Any three)

15 Marks

- Explain inheritance in detail.
- Explain the concept of Shallow and Deep Copying.
- Write a program to demonstrate Dequeue operations.
- Explain Theta notation with proper example.
- Explain different goals of python.
- Explain in detail amortized analysis.

Q.II Answer the following (Any three)

15 Marks

- Explain stack and its different operations.
- Write a program to demonstrate append operation in single linked list.
- Explain a double linked list with proper representation.
- Write a program to demonstrate arrays structure.
- Explain in detail Deleting an element in a circular list.
- Write a program to Bracket-matching application.

Q.III Answer the following (Any three)

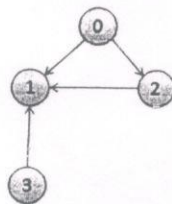
15 Marks

- Explain Node-based queues with proper representation.
- Explain Post-order traversal with proper example.
- Write a program to demonstrate Breadth-first traversal.
- Explain Ternary search tree in detail.
- Write a program to delete a node from a tree.
- Explain in detail Binary search tree operations.

Q.IV Answer the following (Any three)

15 Marks

- Write a program to retrieve elements from the hash table..
- Explain chaining concept with suitable example.
- Explain in detail the priority queue .
- Write a program to demonstrate insertion operation in heap.
- Write a short note on the selection algorithm.
- Convert the below graph in adjacency matrix.



Q.V Answer the following.(Any three)

- a. Sort the below elements using insertion sort
12 11 13 5 6
- b. Write a program to demonstrate Quick sort algorithm.
- c. Explain in detail the Median of medians Partitioning step.
- d. Explain in detail The Rabin-Karp algorithm.
- e. Write a program to demonstrate quick sort.
- f. Explain Randomized selection-Quick Select.

15 Marks

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