SSR DEGREE COLLEGE (AUTONOMOUS) NIZAMABAD
UNIT WISE QUESTIONS
MSDS DATA STRUCTURES SEM-II

UNIT – I : Fundamentals, Arrays & Stacks

Short Questions

1. What is an algorithm? List its characteristics.
2. Define time complexity and space complexity.
3. What is an array? Mention its advantages.
4. Define stack and list its basic operations.
5. What is postfix expression?

Long Questions

1. Explain algorithm analysis with examples of time and space complexity.
2. Describe array representation in memory. Explain 1-D and 2-D arrays.
3. Explain stack data structure using array representation.
4. Write an algorithm to convert infix expression to postfix expression and explain.
5. Explain applications of stacks in detail.

UNIT – II : Recursion, Queues & Linked Lists

Short Questions

1. What is recursion? Define base condition.
2. What is a queue? Mention its types.
3. Define circular queue.
4. What is a linked list?
5. What is garbage collection?

Long Questions

1. Explain recursion and compare recursion with iteration.
2. Explain queue operations and representation using arrays.
3. Describe circular queue and double-ended queue (Deque).
4. Explain singly linked list with insertion and deletion operations.
5. Explain doubly linked list and circular linked list with diagrams.

UNIT – III : Trees, Graphs & Hashing

Short Questions

1. Define tree and its terminology.
2. What is a binary tree?
3. Define graph and its types.
4. What is BFS and DFS?
5. What is collision in hashing?

Long Questions

1. Explain representation of binary trees and its applications.
2. Describe binary tree traversals with examples.
3. Explain graph representation and traversal techniques (BFS & DFS).
4. Explain minimum spanning tree using Prim's and Kruskal's algorithms.
5. Explain hashing techniques and collision resolution strategies.

UNIT – IV : Searching & Sorting

Short Questions

1. What is searching? Name its types.
2. Define linear search.
3. What is binary search?
4. Define sorting.
5. What is heap?

Long Questions

1. Explain linear search and binary search with algorithms and complexity.
2. Explain Bubble Sort and Insertion Sort with examples.
3. Describe Quick Sort algorithm and its time complexity.
4. Explain Selection Sort and Merge Sort.
5. Explain Heap Sort and heap data structure.