VPMP POLYTECHNIC, GANDHINAGAR

Department of Computer Engineering

Subject: Data Structures and Algorithms

IMP Questions

Unit 1

1. Define Data Structure. Explain types of Data Structure.
2. Explain Row major array and Column major array.
3. What is algorithm? Explain key features of an algorithm.
4. Define: Time Complexity, Space Complexity and Worst Case Complexity.
5. Differentiate: Primitive Data Structure v/s Non Primitive Data Structure
6. Write an algorithm for Linear Search.
7. Explain Binary Search with example.

Unit 2

1. Define String. List out different String Operation.
2. Write an algorithm for String Length.
3. Write an algorithm for String Copy.
4. Write an algorithm for String Concate.
5. Write an algorithm for String Reverse.
6. Write an algorithm for String Compare.

Unit:3

1. Define Stack. Write an algorithm for Stack(Push and POP).
2. Define Queue. Write an algorithm for Queue(Insert and Delete).
3. Example : Conversion of infix to prefix and infix to postfix.
4. Difference between Stack and Queue.
5. Difference between Circular Queue and simple Queue.

Unit: 4

1. Define Linked List. Explain Types of Linked List.
2. Difference between Single Linked list and circular linked list.
3. Difference between circular linked list and double linked list.
4. Write an algorithm to insert a node in single linked list.
5. Write an algorithm to delete a last node of single linked list.

Unit: 5

1. Define following:
    - Tree
    - Leaf node
    - Root node
    - Indegree
    - Out degree
    - Forest
    - Binary tree, complete binary tree and Strictly binary tree
2. Example: Construct a binary search tree
3. Explain in order, preorder and postorder traversal method

Unit: 6

1. Define sorting. List out types of sorting.
2. Write an algorithm of selection sort.
3. Write an algorithm of Bubble sort.
4. Write an algorithm of Merge sort.
5. Write an algorithm of insertion sort.
6. Example of :Radix sort, Selection sort, Bubble sort, Quick sort
7. Define hashing. List out hash function. Explain different method for hash functions.