

# **B.Sc. Computer Science**

## **III Semester (Data Structures)**

### **Important Questions**

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#### **Unit - I**

1. What is algorithm? Explain analysis of algorithm in brief.
2. Explain memory representation and address calculation of 1D, 2D & 3D array.
3. Explain stack ADT. W.A.P. to implement stack ADT using array.
4. Define notations of arithmetic expression. Explain the evaluation of postfix expression.
5. W.A.P. to convert an infix expression to prefix expression

#### **Unit – II**

1. What is recursion? What are the variants(types) of recursion?
2. Explain queue ADT. W.A.P. to implement queue using array.
3. Define linked list. Explain primitive operations in linked list.
4. What are linked list variants. How to create doubly linked list.
5. Explain representation of linked stack (or) write the application of linked list.

#### **Unit-III**

1. Define tree. Explain the representation of trees.
2. What is binary tree(ADT). What are the ways of implementing a binary tree?
3. Explain binary tree traversal techniques( Pre order, inorder, post order)
4. Define graph ADT. Explain representation of graphs.
5. What are graph traversal methods explain with suitable example (BFS & DFS)
6. What is spanning tree. What are the two methods( prim's & kruskal's) used to find minimum spanning tree (MST)
7. Explain Hash functions.

#### **Unit – IV**

1. What is searching, explain the methods of searching an element.(linear, binary search)
2. What is sorting? Explain about bubble sort.
3. Explain the following with suitable example.
  - i) Quick sort
  - ii) Merge sort
  - iii) Heap sort