**Question Bank for finals**

1. Define following terms of a tree - a) root b) leaf c) ancestor d) children e) siblings
2. What is the difference between height and depth of the tree
3. What is the level of a tree and what is the relation between height and level?
4. For a given tree show level and height of all nodes and height of a tree?
5. What are the different types of traversal techniques?
6. For given tree calculate Preorder, Inorder and Postorder sequence
7. What is a binary search tree?
8. Insertion in binary search tree? Show insertion for given keys in BST
9. Searching in BST? Search following elements in BST
10. Deletion in BST? Show deletion for given keys in BST
11. What are the applications of BST
12. Time complexities for all operations in BST
13. Explain what are the cases in deletion of BST
14. Algorithm to find min/max in BST
15. Algorithm to find sum of all elements in BST
16. What is an AVL tree? What are the properties of AVL trees
17. What is the balanced factor in AVL ?
18. For given tree compute balancing factor of all elements?
19. What are the different types of rotations performed in an AVL tree on unbalanced nodes?
20. For given nodes, perform rotations and show the final state of the tree?
21. Explain any of the rotation
22. Explain insertion in AVL tree
23. Explain deletion in AVL tree
24. Explain how a particular case is considered for rotation after insertion/deletion?
25. Time Complexities of operations in AVL tree
26. Min and max heights in AVL tree
27. Explain Directed and Undirected graph
28. What are the incoming, outgoing edges and loops
29. What is the adjacent node? Show adjacent nodes of all nodes in a graph
30. What are the ways to represent graphs?
31. What is the adjacency matrix? How will you write it for a given graph?
32. What is an adjacency list? How will you write it for a given graph?
33. What is the degree of a graph? Explain indegree and outdegree
34. What degree-edge theorem in a graph?
35. What are the traversal techniques in a graph?
36. What is the depth first search algorithm?
37. What is the breadth first search algorithm?
38. Give DFS traversal sequence for given graph
39. Give BFS traversal sequence for given graph
40. Applications of DFS
41. Applications of BFS
42. What is hashing? How hash tables are used in hashing?
43. What is the need of hashing?
44. What is the hash function?
45. What are the different types of hash functions?
46. What is a collision?
47. What is a two step hash function?
48. Explain any of the hash function method and compute hash value for given key
49. What are the properties of a hash function?
50. What is the load factor?
51. What are collision resolution techniques?
52. Explain any of the collision resolution technique and show it for given keys
53. How to measure performance of hashing ?