Advanced Data structures Lab Viva questions

1. Define Binary Tree
2. Define Tree Data Structure
3. Name some characteristics of Array Data Structure
4. What is Hash Table?
5. What is Heap?
6. What is Priority Queue?
7. What is a Graph?
8. Under what circumstances are Linked Lists useful?
9. What are Dynamic Arrays?
10. What is Binary Heap?
11. What is Complexity Analysis of Priority Queue operations?
12. What is the space complexity of a Hash Table?
13. What's the difference between the data structure Tree and Graph?
14. Compare Heaps vs Arrays to implement Priority Queue
15. What is AVL Tree?
16. What is Balanced Tree and why is that important?
17. What is an Associative Array?
18. What is complexity of Hash Table?
19. Explain what is B-Tree?
20. How To Choose Between a Hash Table and a Trie (Prefix Tree)?
21. What are some main advantages of binomial queues
22. Compare lookup operation in Binomial queues
23. How are B-Trees used in practice?
24. What are the various applications of Data structures
25. Explain the difference between file structure and storage structure?
26. What is hashmap in data structure? What is the time complexity of basic operations get() and put() in HashMap class?
27. What is the maximum number of nodes in a binary tree of height k?
28. Write a recursive function to calculate the height of a binary tree?
29. What is topological sorting in a graph?
30. What is the difference between backtracking and a brute force one?
31. What is the advantage of using Bellman-Ford over Dijkstra?
32. What is the minimum number of queues needed when implementing a priority queue?
33. ow do you find the duplicate number on a given integer array?
34. Can you store a duplicate key in Hashmap?
35. What are the differences between B tree and B+ tree?
36. Compare lookup operation in AVL tree vs Red Black tree
37. What is the difference between Hashing and Hash Tables?
38. When would you want to use a Heap data structure?
39. Why is a Hash Table not used instead of a B-Tree in order to access data inside a database?
40. Difference between Hashmap and Hashtable
41. can Min heap can be used to implement selection sort?
42. What is hashmap in data structure?
43. What is the requirement for an object to be used as key or value in HashMap?
44. What is the complexity of Insertion operations in Binomial queues and Priority queues
45. Whn does Binomial queues preferred over priority queus
46. What is a priority queue? What are the applications for priority queue?
47. Compare different implementations of priority queue
48. What is AVL tree data structure, its operations, and its rotations? What are the applications for AVL trees?
49. What is a B-tree data structure? What are the applications for B-trees?
50. Define Red-Black Tree and its applications
51. Which data structures are used for implementing LRU cache?
52. Write a program to remove duplicates from a sorted array in place?
53. Write a function to merge two sorted binary search tree
54. Write a recursive function to calculate the height of a binary tree \
55. What is topological sorting in a graph?
56. How can memory be saved when storing color information in a Red-Black tree?
57. which of the data structures is best for searching words in dictionaries?
58. How do you check if a given binary tree is a subtree of another binary tree?
59. How do you find if two trees are identical?
60. How are binary trees used for data compression?
61. How to handle duplicate nodes in a binary search tree?
62. Can binary search be used for the linked list?
63. What is rehashing
64. Compare Naïve patters searching with Robin krap pattern searching algorithms
65. What is the time complexity of Kunth morris pratt pattern searching algorithm
66. What are various collision handling methods in hashing
67. What is the disadvantage of separate chaining hashing method
68. What is the complexity of Floyd warhalls algorithm
69. What is the best method to join two disjoint sets
70. Give an example for an equivalence relation