## UNIT - III **Short Answer Questions**

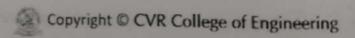
- What are dictionaries? Briefly explain the operations that are performed on them.
- Explain how dictionaries can be represented using skip lists.
- Explain the insertion and deletion operations on a skip list. 3.
- Explain about hashing, hash table and hash function with example. 4.
- What objective should be sought in the design of a hash function? 5.
- What are the major application of hash table? 6.
- Explain various collision resolution techniques in Hashing. 7.
- Define a binary search tree. 8.
- 9. What is a degenerated tree.
- 10. What is a strictly binary tree?
- 11. Write the difference between fully, strictly, complete binary tree.

# **Essay Questions**

- 1. Given the input
  - {4371, 1323, 6173, 4199, 4344, 9679, 1989} and hash function  $h(x)=x \mod 10$  show the result for following:
  - (a) Separate chaining hash table
  - (b) open addressing hash table using linear probing
  - (c) open addressing hash table using quadratic probing
  - (d) open addressing hash table using with second hash function  $h2(x)=7-(x \mod 10)$
  - Explain about various open addressing hashing mechanism with example
- Implement search function for hashing using Generics 3.
- Implement insert function for hashing using Generics
- 4. Explain about separate chaining hashing mechanism with example.
- 5. Implement Chained Hash Tables in JAVA.
- Implement insertion into a binary search tree using Generics. 6.
- Implement deletion from a binary search tree using Generics. 7.
- Implement searching algorithm of a binary search tree using Generics. 8.
- 10. Construct the binary search tree from following set of strings March, May, Nov.,
  - August, April, January, December, July, February, June, October, September. Show all the steps.
- 11. Implement a sorted list using Generics
- 12. Write the code for SkipNode and SkipList. 13. What are Stream Intermediate operations and Explain map(), filter(), distinct(),
- 14. Explain Terminal operations forEach(), reduce(), collect(), min(), max(), count().

### UNIT - V Short Answer Questions

- 1. Define a circular queue.
- 2. When is a circular queue full?
- 3. Define a Priority queue.
- 4. Define a deque.
- 5. Define a heap.
- 6. Define a max heap
- 7. Define a min heap
- 8. Define B tree.
- 9. List out the properties of B Tree.
- 10. List out the operations on B Tree.
- 11. Define max and min heaps, realizing, operations-insertion, deletion, and their Implementation using user-defined generic classes, heap sort and its implementation using user-defined generic classes.
- 12. Explain max heap construction.
- 13. Explain the importance of priority queues using heaps.
- 14. List the operations heap.
- 15. Define a heap sort.
- 16. List the operations heap sort.



#### UNIT - IV Short Answer Questions

- 1. What is an AVL tree?
- 2. List the rotations in AVL tree.
- 3. What are balanced trees?
- 4. List the rotations in AVL tree.
- 5. What is an indexed binary search tree?
- 6. Define height of an AVL tree.
- 7. Give an example for RR rotation.
- 8. Give an example for LL rotation.
- 9. Give an example for RL rotation.
- 10. What is an m-way search tree?
- 11. List the applications of a red-black tree.
- 12. List the operations on a red-black tree.

### Essay Questions

- Implement insertion into a AVL tree using Generics.
- Implement deletion from a AVL tree using Generics.
- 3. Implement searching algorithm of a AVL tree using Generics.
- 4. Explain the RR rotation of AVL tree.
- 5. Explain the RL rotation of AVL tree.
- 6. Explain the LR rotation of AVL tree.
- 7. Explain the LL rotation of AVL tree.
- 8. List the properties of a m-way search tree.
- 9. Explain the search operation in Red Black Search trees.
- 10. Explain the Insertion operation in Red Black Search trees.
- 11. Explain the deletion operation in Red Black Search trees.

#### UNIT-IV

### Short Answer questions:

- 1. What is binary representation?
- 2. Define ASCII
- 3. What is the purpose of EBCDIC?
- 4. Define NAND gate.
- 5. What is gray code?
- 6. What is fixed point representation?
- 7. List the challenges associated with fixed-point arithmetic.
- 8. Provide an example of fixed-point number representation
- 9. How is addition performed in fixed -point arithmetic?
- 10. Explain the concept of fractional Bits

### Long Answer Questions:

- 1. Explain the basics of floating-point representations.
- 2. Elaborate the concept of precision and overflow in floating-pointarithmetic.
- 3. List and challenges of floating-point arithmetic
- 4. Explain various types of data representations in Computer architecture.
- 5. What are the error detection and correction codes in data representations?
- 6. Explain decimal arithmetic principles and its applications.
- 7. Explain the arithmetic instructions with an example.
- 8. Explain the basic multiplication algorithm for unsigned integers.
- 9. Elaborate complexity and advantages of Booth's algorithm
- 10. Discuss applications of Booth's algorithm in binary multiplication.