

Unit-2&3

(Short question)

- Q1. Give some applications of stack.
- Q2. Mention the limitations of stack using array
- Q3. If the Tower of Hanoi is operated on $n = 10$ disks, calculate the total number of moves.
- Q4. How do you push elements in a linked stack?
- Q5. What is tail recursion? Explain with a suitable example.
- Q6. Difference between stack and queue.
- Q7. Explain the working of Tower of Hanoi problem for disk=4. Calculate total number of moves for Tower of Hanoi for $n=10$ disks.
- Q8. Consider the following queue, where queue is a circular queue having 6 memory cells.
Front=2, Rear=4 Queue: _, A, C, D, _, _ Describe queue as following operation take place:
- a) F is added to the queue
 - b) Two letters are deleted
 - c) R is added to the queue
 - d) S is added to the queue
- Q9. Convert the given infix expression to postfix expression using stack ADT.
- Q10. Write an algorithm to reverse a list.
- Q11. What is priority queue? How can you represent a priority queue in memory?

(Long question)

- Q1 Illustrate the binary search process to search 99 in an example array {15, 27, 33, 83, 92, 99}.
- Q2 State worst-case, best-case and average-case for insertion sort algorithm. Compute the time complexity for all the cases.
- Q3 Illustrate the Insertion sort process on an example array {5, 1, 6, 2, 4, 3}.
- Q4 Illustrate the complete Quick sort process for an example array {3, 1, 4, 1, 5, 9, 2, 6, 5, 4}.
- Q5 Illustrate the complete merge sort process for an example array {6, 42, 2, 32, 15, 8, 23, 4}.