

Rules to Answer Accurate answer supported by evidence, and reasoning links answer and evidence. Response is specific and detailed. Presence of keywords and scientific terminology.	Rules to Answer Refer content if unable to recall after 15-30sec of trying, then again retrieve from memory without help.	Recurrence Main idea	Recurrence A recurrence relation is an equation that recursively defines a sequence or multidimensional array of values
Recursion vs Recurrence Explain	Recursion vs Recurrence A recurrence relation uses recursion to create a sequence. Recursion is not limited to generation of sequences.	Recursion Recursion is the repeated use of a procedure or action	Recurrence In fact, a recurrence relation uses recursion to define a sequence.
Recurrence This sequence is built in such a way that each term is defined as a combination of previous terms. The generation of such a sequence is a requirement in the definition	Recurrence Recurrence is analyzed by telescoping	Binary Search Main Idea	Binary Search Search algorithm that finds the position of a target value within a sorted array
Binary Search Elements are already sorted in ascending order Divide and Conquer algorithm is used	Binary Search Element x is either in the left half of the array or in the right half or not there at all	Binary Search Compare x to middle element k, $x > k$ (x not in left half), $x < k$ (x not in right half)	Running time of Binary Search Explain
Running time of Binary Search $\lg_2 N$ binary search runs in $O(\lg N)$	One word answer In computer science you use $\lg_2 N$ or $\lg_{10} N$	In computer science you use $\lg_2 N$ or $\lg_{10} N$ $\lg_2 N$	Merging Elaborate
Merging Merging is not a divide and conquer algorithm, but part of mergesort algorithm	Merge Sort Merge Sort is a divide and conquer algorithm	Merging Take two sorted arrays of numbers and make a single array which is sorted of all of those numbers	Merge Sort Type of Algorithm
Merge Sort Explain the complete algorithm	Mergesort First divide the list into smallest unit (1 element), then compare each element with the adjacent list to sort and merge two adjacent lists. Finally all the elements are sorted and merged.	Run time for mergesort	Run time for mergesort $O(n \cdot \lg n)$
Insertion sort vs Mergesort Which one is better and why?	Insertion sort vs Mergesort Insertion sort is $O(n^2)$. Mergesort is $O(n \cdot \log n)$. So, merge-sort is a superior algorithm in terms of its running time on large datasets.		