

**Question 1 to 3 is Midterm.**

**Question 4 to 5 is CT III.**

**Answer in a single document.**

1.	Discuss with proof by taking example of a sample array as to how the worst case time complexity of quick sort algorithm can be made better. Mention the time complexity in each case. Also mention the pseudo code of the modified quick sort algorithm.	25
2.	Discuss the four properties of Graph with respect to the relation between number of vertices (n), number of edges (m), and degree of vertex [deg(v)].	12
3	Mention the differences (pros and cons) between adjacency matrix and adjacency list.	08
4	Bring out the differences between bubble sort, insertion sort, selection sort, merge sort and quick sort in terms of time complexity and applications.	10
5	For the array [38,27,43,3,9,82,10], draw the complete recursion process of merge sort algorithm by properly numbering the order in which the array gets divided and merged back.	10