Assignment-1

Q.1 Determine a tight asymptotic lower bound for the following recurrence using Substitution method:

$$T(n)=4T(n/2)+n^2.$$

Q.2 Let $\{a_i\}$ be the sequence given by: $a_k = a_{k-1} + k$ with $a_0 = 0$. Solve this recurrence relation and find a_{100}.

Q.3 Create a red black tree by inserting following sequence of number :- **8, 18, 5, 15, 17, 25, 40, and 80?**

Q.4 Input: 65 70 75 80 85 60 55 50 45 is given. Sort these elements using Quick sort algorithm?

Q.5 Construct a B- tree of minimum degree 't' as **3** and a sequence of integers **10, 20, 30, 40, 50, 60, 70, 80 and 90** in an initially empty B-Tree.