Q1.Working modulo q=11, how Rabin Karp matcher works over the text T= 3141592653589793 when looking for pattern P=26.   (4)

Q2. Give the approximation scheme for solving the travelling salesman problem with triangle inequality. Further, prove that it is polynomial time 2-approximation scheme.   (5)

Q3. Suppose algorithm A requires $O(n^2)$ decrease-key operations and $O(n)$ delete-min operations; all remaining steps takes $O(n)$ time. Suppose the decrease-key and delete-min operations are implemented using Fibonacci heaps. What is the amortized time taken by algorithm A.?   (4)

Q4. Prove that the amortized complexity of Extract_Min on Fibonacci heap is $O(D(n))$.   (2)