Assignment Problems (String Matching)

1. Write pseudo code to Extend the Rabin Karp for problem of searching a text string for an occurrence of any one of given set of K patterns. Assume the same length pattern.

2. Give an $O(m|\Sigma|)$ time algorithm for computing the transition function value for string matching automaton corresponding to a given pattern. Write pseudo code also.

3. Give a linear time algorithm to determine whether a text T is a cyclic rotation of another string T_1. For example arc and car are cyclic rotations of each other.

4. Let pattern $P[1\ldots7]$ = "1201120" and text $T[1\ldots16]$ = "1120112011201120". Trace the execution of following three string matching algorithms for a given pattern and text.
   i) Rabin-Karp algorithm. Assume that algorithm is using radix d=3 and prime q=5
   ii) Finite Automata based algorithm
   iii) KMP algorithm