Nirma University

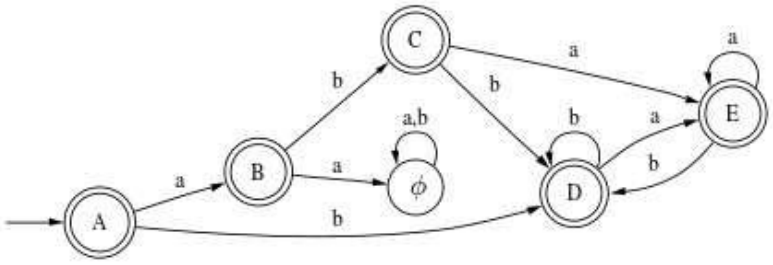
B Tech Sem V (CSE)

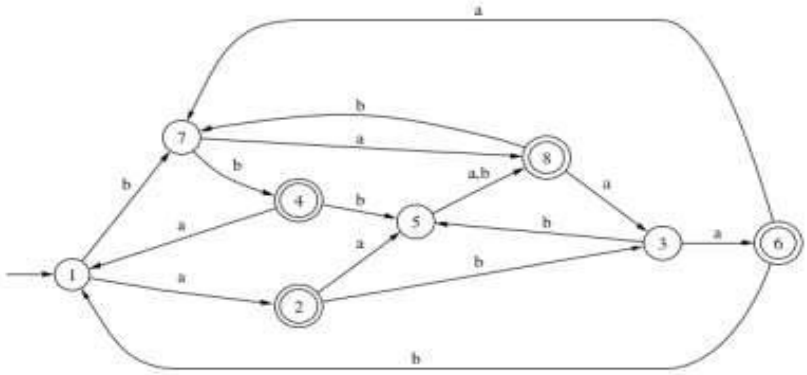
Sub: 2CS601 Theory of Computation

Tutorial No 5

Minimization of an Finite Automata and Pumping Lemma

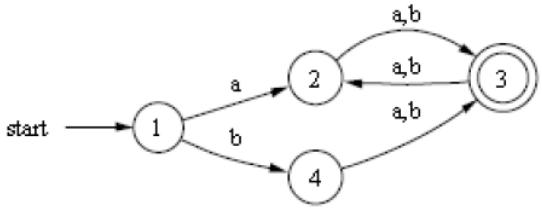
Q:1 Minimize the following FAs



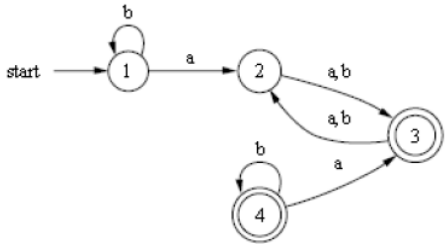


Q-2 Which languages are accepted by the following automata:

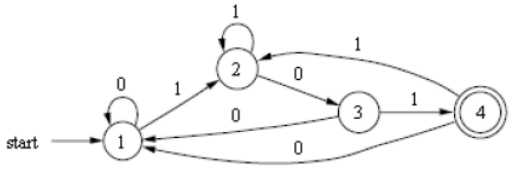
(i)



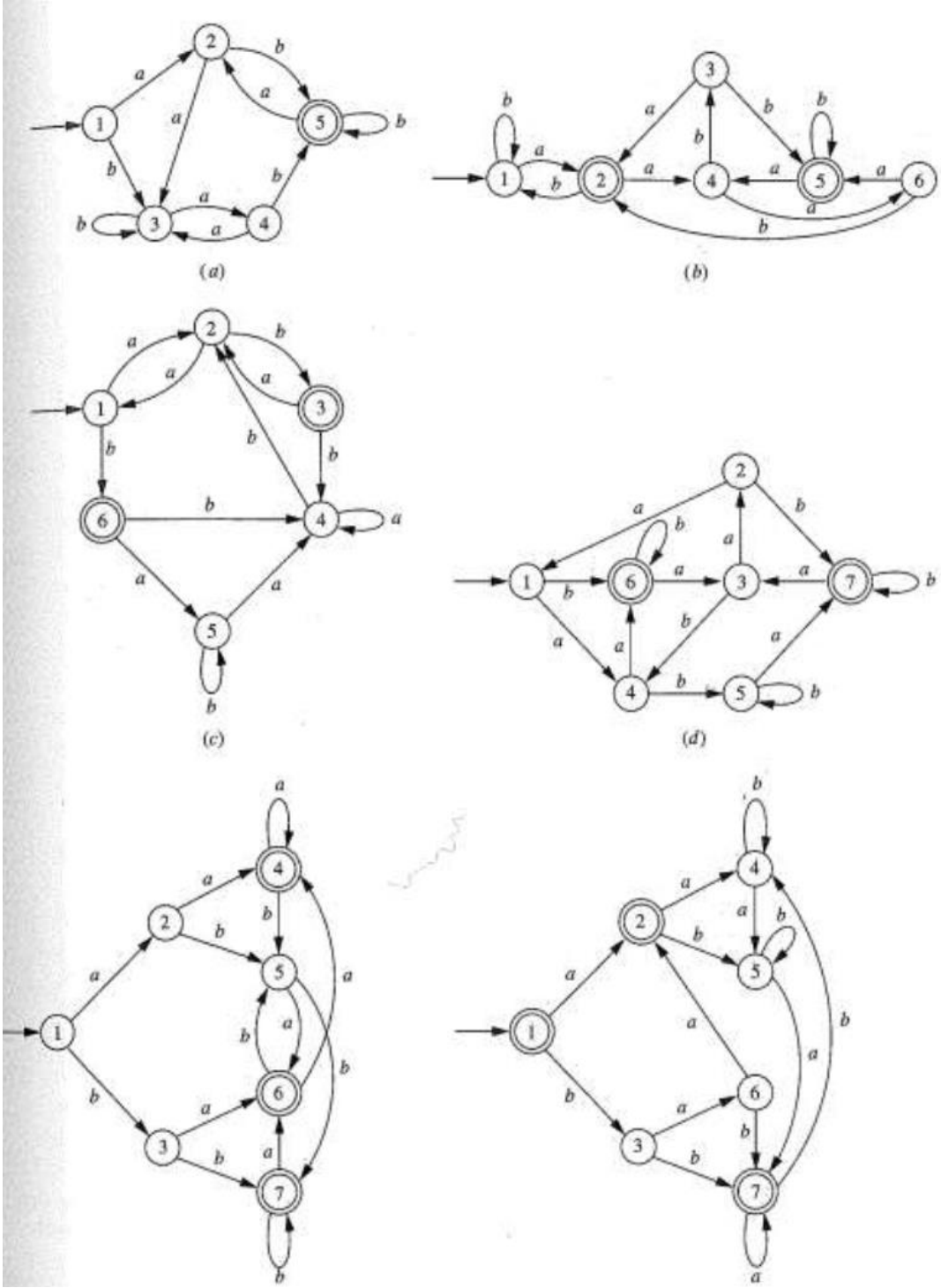
(ii)



(iii)



Q:3 Minimize the following FAs



Q:4 Prove that the following languages are regular or not.

1. L = $\{a_i b_i \mid i \geq 0\}$
2. L = $\{xx \mid x \in \{0, 1\}^*\}$
3. L = $\{WW_r \mid W \in \{a,b\}^*$ and $|W| = 2\}$ (Hint: W_r is a reverse of string w, $|W|$ is a length of W)
4. L = $\{a_n b_m c_k \mid n, m, k \geq 1\}$
5. L = $\{a_n \mid n$ is even$\}$
6. L = $\{a_n \mid n$ is odd$\}$
7. L = $\{a_n \mid n$ is prime number$\}$