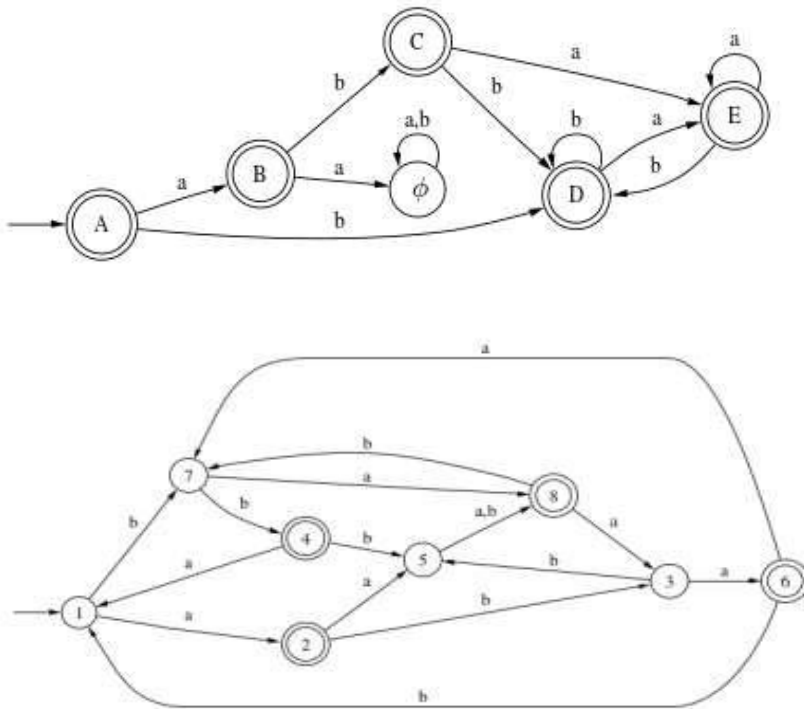


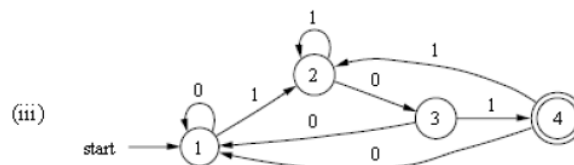
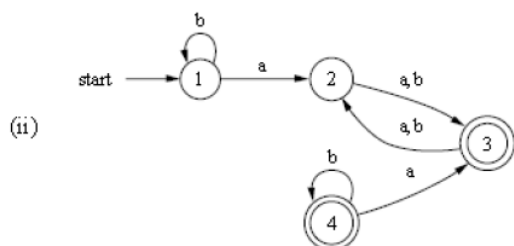
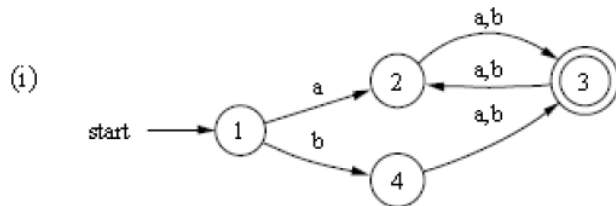
Nirma University
B Tech Sem V (CSE)
Sub: 2CS601 Theory of Computation
Tutorial No 5

Minimization of an Finite Automata and Pumping Lemma

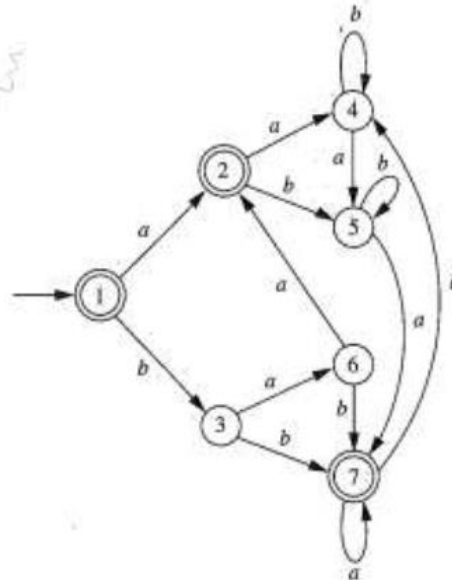
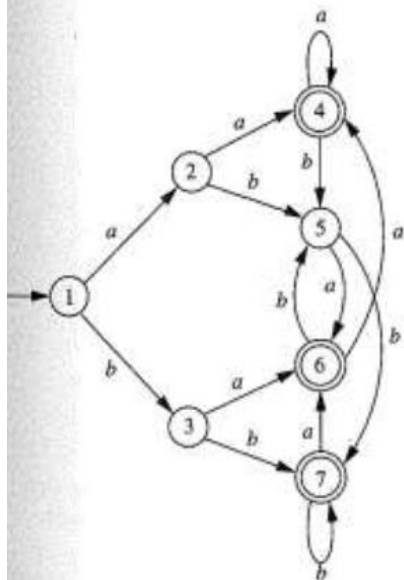
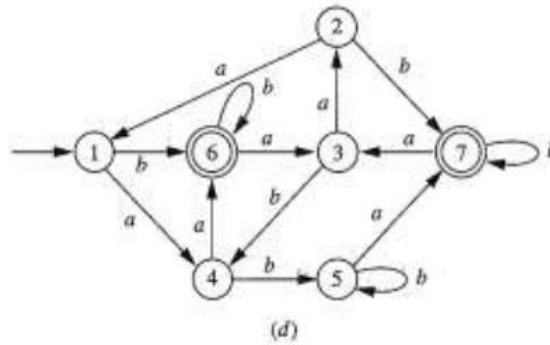
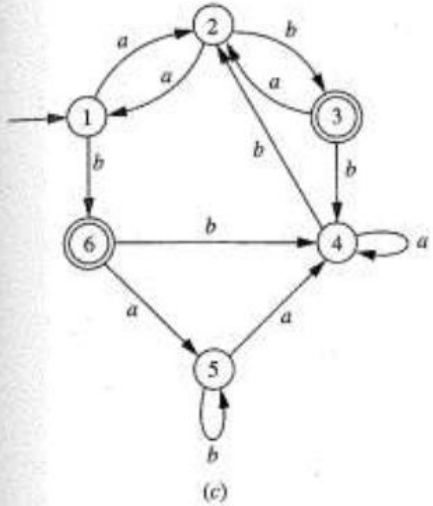
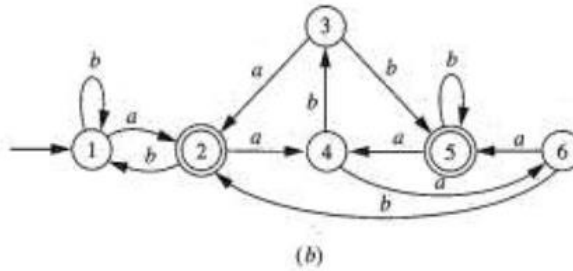
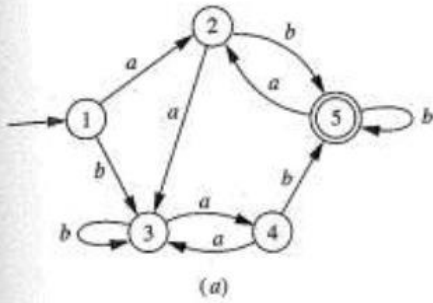
Q:1 Minimize the following FAs



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



Q:3 Minimize the following FAs



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

1. $L = \{a^i b^i \mid i \geq 0\}$ **not regular**
2. $L = \{xx \mid x \in \{0, 1\}^*\}$ **not regular**
3. $L = \{WW^r \mid W \in \{a, b\}^* \text{ and } |W| = 2\}$ (Hint: W^r is a reverse of string w , $|W|$ is a length of W) **not regular**
4. $L = \{a^n b^m c^k \mid n, m, k \geq 1\}$ **regular**
5. $L = \{a_n \mid n \text{ is even}\}$ **regular**
6. $L = \{a_n \mid n \text{ is odd}\}$ **regular**
7. $L = \{a_n \mid n \text{ is prime number}\}$ **not regular**