سپهر اسکندری
تکلیف شماره ۱
SID : 810100240

سؤال ۱) الف)

$\Sigma = \{a, b\}$

$\Rightarrow L = \{x \in \Sigma_* \mid (|a(x)| - |b(x)|) \bmod 3 \neq 0\}$

ب)

$\Sigma = \{0, 1\}$

$\Rightarrow L = \{x \in \Sigma^n_* \mid x[1] = x[n]\}$

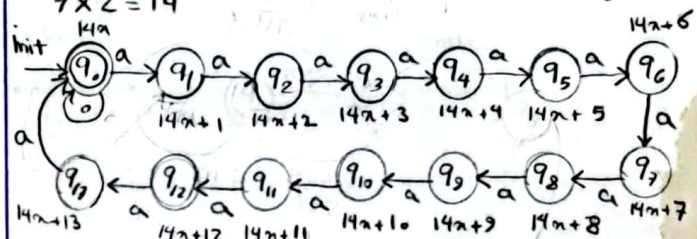
سؤال ۲) الف)

$L_1 = 7n = \{a^7, a^{14}, a^{21}, \dots\} = \{a^{7n}\}$

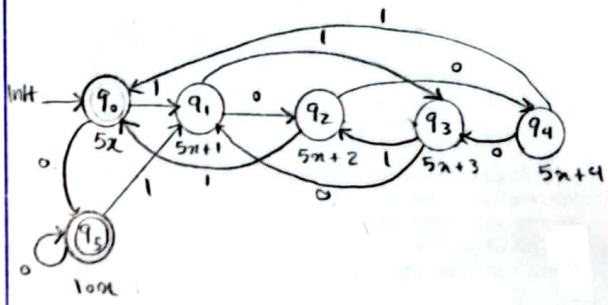
$L_2 = 2n = \{a^0, a^2, a^4, a^6, \dots\} = \{a^{2n}\}$

$\Rightarrow L = \{a^x \mid |x| \bmod 7 = 0 \text{ or } |x| \bmod 2 = 0\}$

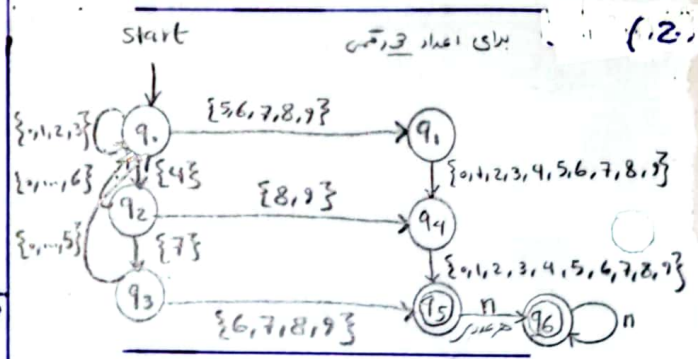
$7 \times 2 = 14$



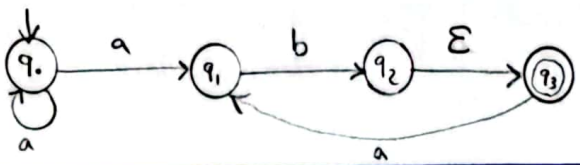
ب)



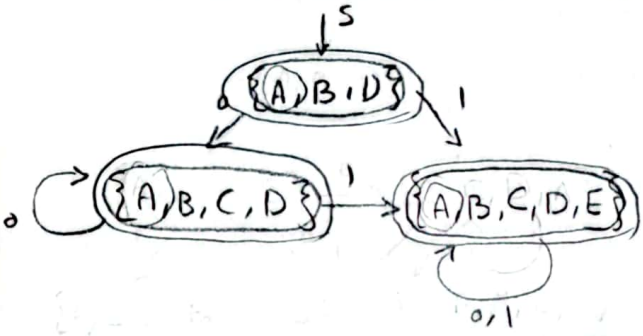
ج)



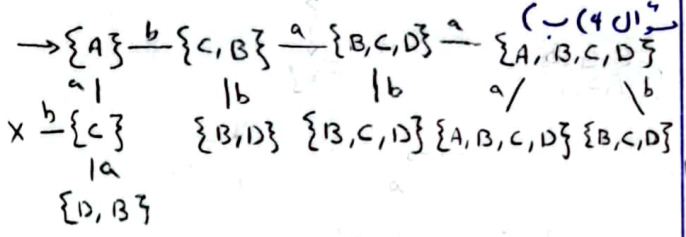
سؤال ۳) ب)

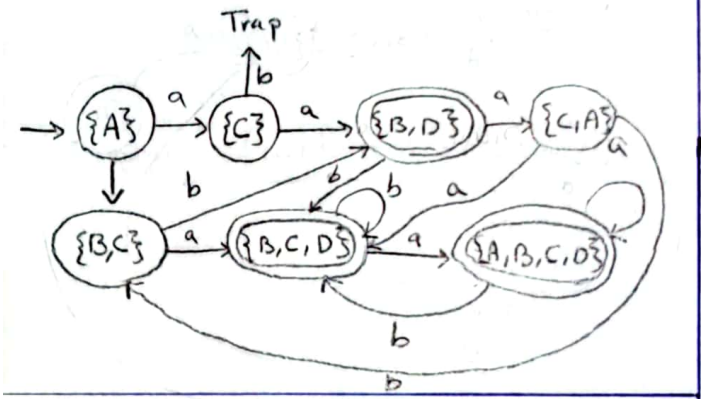


سؤال ۴) الف) از A تبدیشن های ε نیز شدنی است



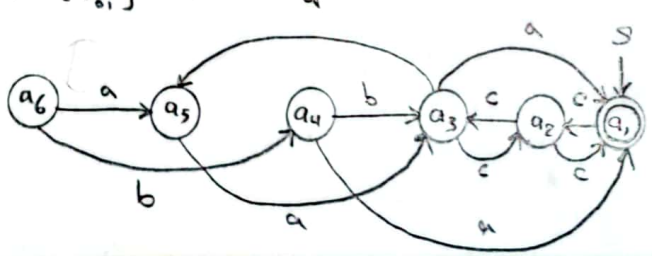
سؤال ۴) ب)





سؤال ۵)

$F_1' = \{q_{0,1}\} = a_1$



سؤال ۶) ی دایم زبان های منظم با عملیات هابرعثل اجتماع، اشتراک، متمم کلین و... همواره منظمی باشد:

$v \in \Sigma_* \Rightarrow \frac{L}{v} = \{w \mid vw \in L\}$

also $\frac{L}{a} = \{w \mid aw \in L\} \Rightarrow \text{choplefti}(L) = \bigcup_{a \in \Sigma} \frac{L}{a}$

$x \equiv_L y \iff \forall z \in \Sigma_*, xz \in L \iff yz \in L$

$\Leftarrow$ chopleft(L) منظم است.

سؤال ۳) الف)