CS & IT ENGINEERING

Theory of Computation

Finite Automata

DPP 14 Discussion Notes



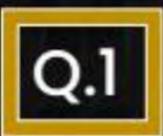
Mallesham Devasane Sir



TOPICS TO BE COVERED

01 Question

02 Discussion

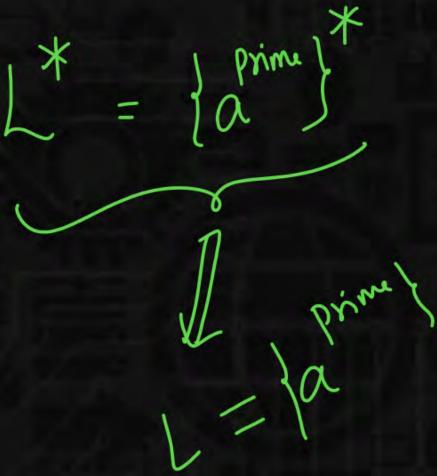


Consider a regular language L.

If L* = {a^{prime}}* is regular, then which of the following is true?



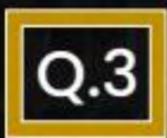
- A. $L = \{a^{prime}\}$ is regular
- B. $L = \{a^{prime}\}$ is not regular \sim
- C. $L = \{a^{prime}\}$ is regular and finite.
- D. None of these.



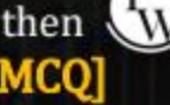
Consider a regular language L, which of the following statements are true regarding L.



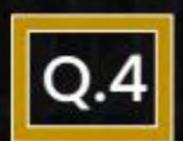
- A. Prefix(L) = {w | $w_1 \in L$, $w_1 \in \Sigma^*$ } is regular.
- B. Suffix(L) = $\{w \mid w_1 | w \in L, w_1 \in \Sigma^*\}$ is regular.
- Half(L) = $\{w \mid ww_1 \in L, |w| = |w_1|\}$ is regular.
- D. L is closed under infinite intersection.



Let's consider L_1 and L_2 are two regular sets defined over (Σ = a, b), then

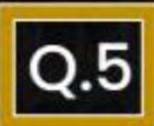


- A. $L_1 \cap L_2$ is irregular
- B. $L_1 \cup \overline{L_2}$ is not regular \swarrow
- L_1^* is not regular
- Σ^* L₁ is regular

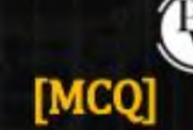


Let's suppose the languages L1 = {a} & L₂ = {6}. Then L₂L₁* \cup L₂*?





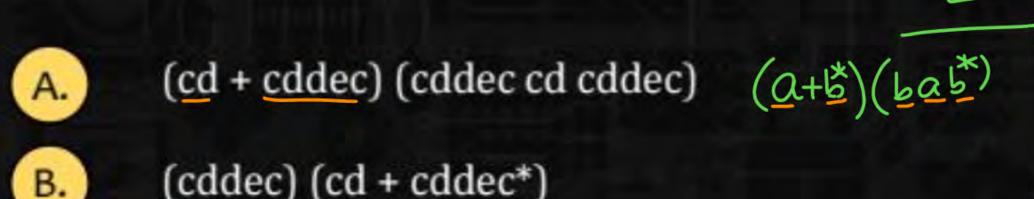
Consider a regular language L over the alphabet $\Sigma = \{a, b\}$. L is defined as $x = (a + b^*)$ (bab*). If homomorphism h is defined over $T = \{c, d, e\}$ and



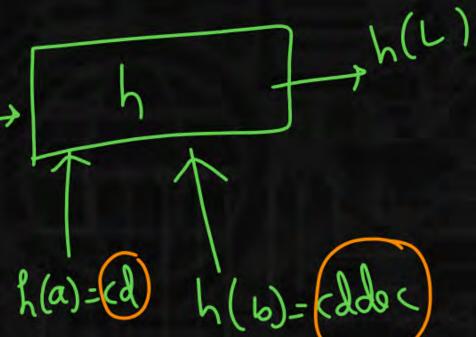
$$h(a) = cd$$

$$h(b) = cddec$$

Then the regular language h(L) is given as



D. None of these



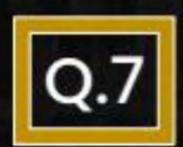


Consider the following statements:

if $L_1 \cup L_2$ is regular, then both L_1 and L_2 are regular. S₂: Regular language is closed under infinite union.



- S_1 is true.
- S₂ is true
- Both S₁ and S₂ are true
- Both S₁ and S₂ are false.



Regular language is closed under



- A. Subset X
- B. Complement
- C. Finite union
- D. Infinite Intersection



