CS & IT ENGINEERING

Regular Languages & Non Regular Languages

Theory of Computation

DPP 08 Discussion Notes

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01 Question

02 Discussion

Q.1

[MCQ]

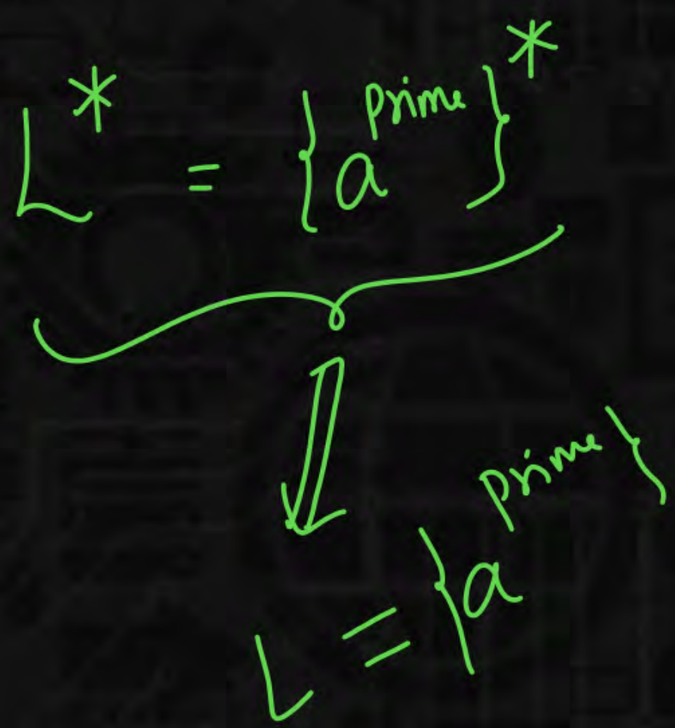
Consider a regular language L.
If $L^* = \{a^{prime}\}^*$ is regular, then which of the following is true?

A. $L = \{a^{prime}\}$ is regular

B. $L = \{a^{prime}\}$ is not regular

C. $L = \{a^{prime}\}$ is regular and finite.

D. None of these.



Q.2 Consider a regular language L, which of the following statements are true regarding L. **[MSQ]**

A. Prefix(L) = $\{w \mid ww_1 \in L, w_1 \in \Sigma^*\}$ is regular.

B. Suffix(L) = $\{w \mid w_1 w \in L, w_1 \in \Sigma^*\}$ is regular.

C. Half(L) = $\{w \mid ww_1 \in L, |w| = |w_1|\}$ is regular.

D. L is closed under infinite intersection.

Q.3

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

[MCQ]

A. $L_1 \cap L_2$ is irregular

B. $L_1 \cup \overline{L_2}$ is not regular

C. L_1^* is not regular

D. $\Sigma^* - L_1$ is regular

Q.4

Let's suppose the languages L1 = {a} & L_2 = {ϕ}. Then $L_2 L_1^* \cup L_2^*$?

[MCQ]

A. {ϕ}

B. {∈}

C. {a*}

D. {a}

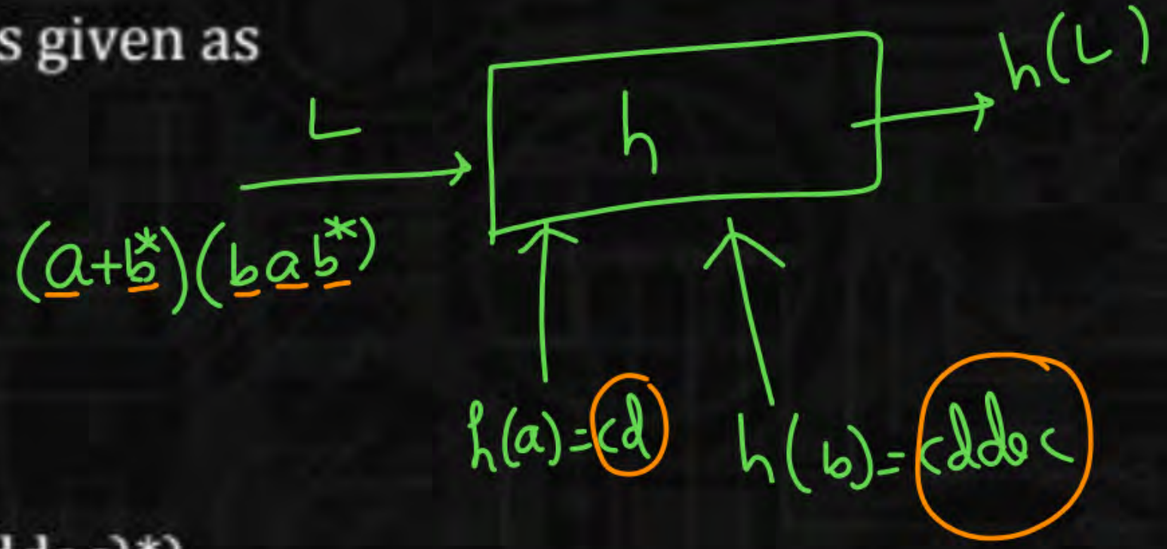
$\phi \, a^* \cup \phi^*$

$\phi \cup \{\varepsilon\} = \{\varepsilon\}$

Q.5

[MCQ]

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



A. (cd + cddec) (cddec cd cddec)

B. (cddec) (cd + cddec*)

C. (cd + (cddec)*) ((cddec) (cd) (cddec)*)

D. None of these

Q.6

[MCQ]

Consider the following statements:

S_1: if $L_1 \cup L_2$ is regular, then both L_1 and L_2 are regular. ✗ → FALSE

S_2: Regular language is closed under infinite union. ✗

A. S_1 is true.

B. S_2 is true

C. Both S_1 and S_2 are true

D. Both S_1 and S_2 are false.

Q.7

Regular languages are closed under

[MCQ]

A. Subset

B. Complement

C. Finite union

D. Infinite Intersection


THANK YOU GW
SOLDIERS !