SNS COLLEGE OF TECHNOLOGY

Coimbatore-36.

An Autonomous Institution

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Grade Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

COURSE CODE& NAME : *19CSB301* &AUTOMATA THEORY AND COMPILER DESIGN

III YEAR/ V SEMESTER

UNIT – I FINITE AUTOMATA AND REGULAR LANGUAGES

Topic: Regular Expression

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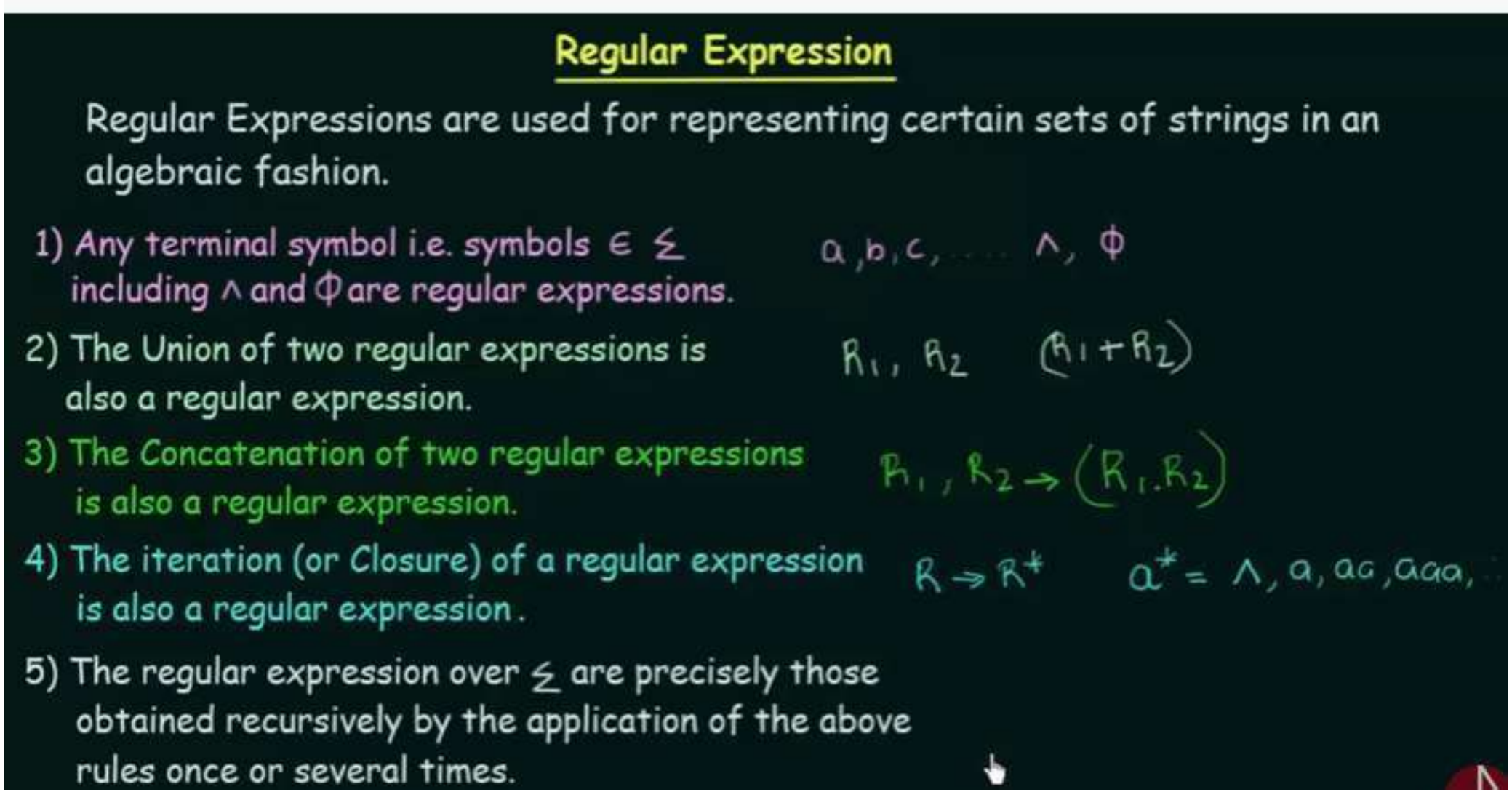
Regular Expression



Regular Expression

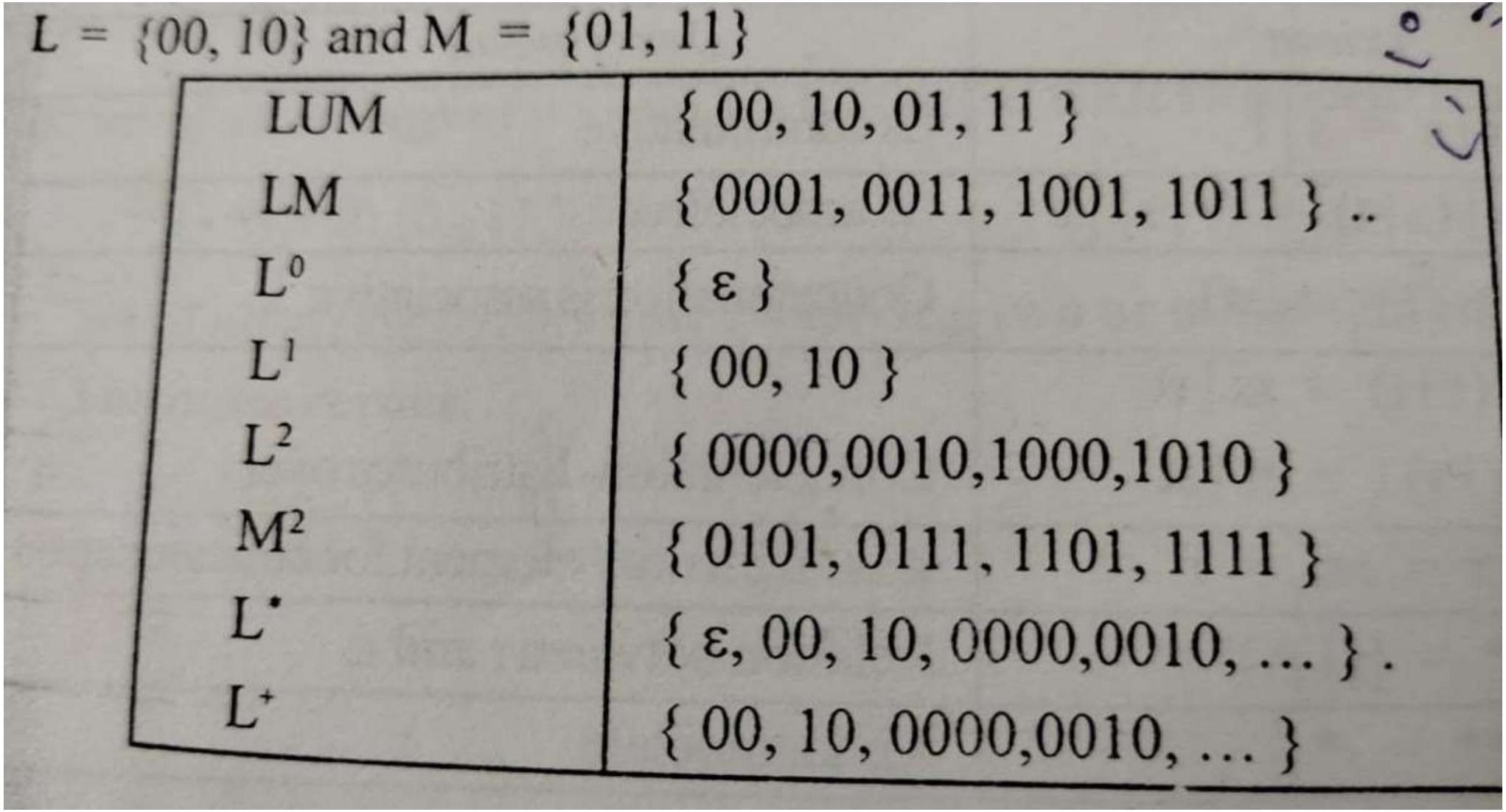
The language $L(r)$ denoted by any regular expression r is defined by the following rules.

1. $\varnothing$ is a regular expression denoting the empty set,
2. λ is a regular expression denoting $\{\lambda\}$,
3. For every $a \in \Sigma$, a is a regular expression denoting $\{a\}$.

   If r_1 and r_2 are regular expressions, then

4. $L(r_1 + r_2) = L(r_1) \cup L(r_2)$,
5. $L(r_1 \cdot r_2) = L(r_1)\, L(r_2)$,
6. $L((r_1)) = L(r_1)$,
7. $L(r_1^*) = (L(r_1))^*$.

Regular Expression



$L = \{00, 10\}$ and $M = \{01, 11\}$

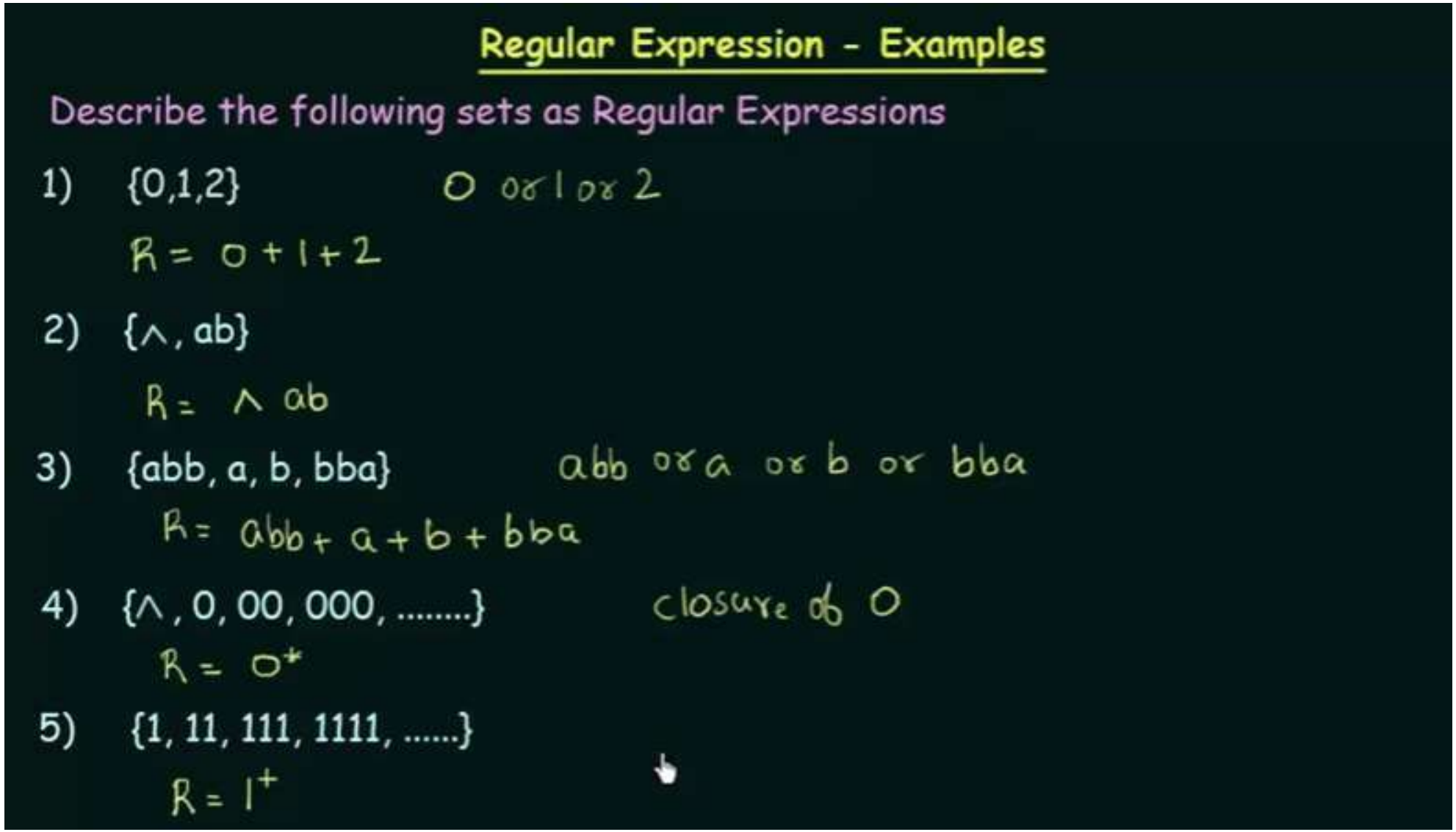
LUM	{ 00, 10, 01, 11 }
LM	{ 0001, 0011, 1001, 1011 } ..
L^0	{ ε }
L^1	{ 00, 10 }
L^2	{ 0000,0010,1000,1010 }
M^2	{ 0101, 0111, 1101, 1111 }
L^*	{ ε, 00, 10, 0000,0010, ... } .
L^+	{ 00, 10, 0000,0010, ... }

Regular Expression

Let $\Sigma = \{a, b\}$. Give the regular set for the following regular expressions.

$a \mid b$	=	$\{a, b\}$
$(a \mid b)(b \mid a)$	=	$\{ab, aa, ba, bb\}$
a^*	=	$\{\varepsilon, a, aa, aaa, \ldots\}$
$a \mid a^* b$	=	$\{a, b, ab, aab, \ldots\}$

Regular Expression



References

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Thank
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