## CS & IT ENGINEERING

Theory of Computation

Regular Languages
DPP 02
DISCUSSION Notes



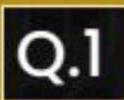
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TOPICS TO BE COVERED

01 Question

02 Discussion



## Which of the following is/are true?



(a\*b\*)\* = (b\*a\*)\* = 
$$(a+b)^*$$

$$(a + \epsilon)^+ = a^+$$
  $(\alpha + \epsilon)^+ = a^+$   $(\alpha + \epsilon)^+ = a^+$ 

$$(a+b)^{*}(ba)^{*} = (ab)^{*}(a+b)^{*} = (\alpha+b)^{*}$$

(ab + ba)\* = (ab(ab)\* + ba(ba)\*)\*
$$(x + y)^{*} (xx^{*} + yy^{*})^{*}$$

$$(x^{*} + y^{*})^{*}$$

$$(x^{*} + y^{*})^{*}$$





(I) 
$$a^*b^* + a^* = a^*b^*$$

(I) 
$$a^*b^*+a^*$$
 =  $a^*b^*$   
(II)  $(\underline{\epsilon} + aa^*)(bb^* + \epsilon) = (\epsilon + a^*)(b^* + \epsilon) - a^*b^*$ 

(Df) 
$$b'a' + a'b' + b'$$

Which the following is equivalent to a'b'?



(I) and (II) only

- (I) only

- (II) and (III) only

- (I) and (IV) only

## Which of the following is not correct?



$$\underline{a}^*\underline{b}\underline{b}^* = \underline{a}^*\underline{b}^+$$

$$a^*a^+=a^+$$
 Correct

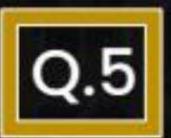


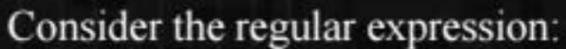


## Regular expression cases used in:



- A. Lexical Analysis
- B. Pattern matching
- C. String matching 9
- D. Syntax analysis





regular expression = 
$$a^*b(a + ba^*)^* = a^*b(a+b^*)^*$$

Above regular expression is equivalent to which of the following below regular expression?









$$a^{\prime}b(a+b)^{\prime}$$











PDA with finite stack. - Regular language





Regular expression without kleene star and kleene plus.

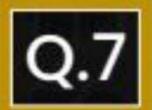


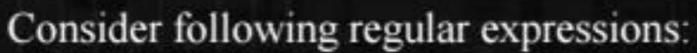
Regular expression with unary alphabet.



Regular expression with binary alphabet.







(ab)\*
$$a = a(ab)*$$

$$[H] (bb)^*b^* = b^*$$

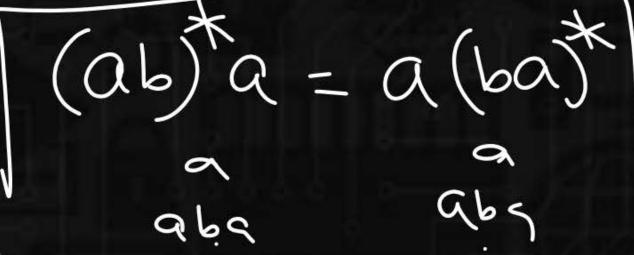
$$[][H] (b+\epsilon)^+ = b^*$$

$$(ab)^*a = a(ab)^*$$

Which of the following is correct?

- B. I and II only.
- C. All are correct.
- D. None of these are correct.





Q.8

Consider the string 
$$\left[\frac{(ab)^{10}(ab)^7((ab)^3)^2}{(ab)^4}\right]$$
 the length of the string is \_\_\_\_.

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