## CS & IT ENGINEERING



**DPP** 01 Discussion Notes





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TOPICS TO BE COVERED

01 Question

02 Discussion

Let 
$$L_1 = \phi$$
,  $L_2 = \{\epsilon\}$ ,  $L_3 = \{a, \epsilon\}$ .



 $L_1$ ,  $L_2$ ,  $L_3$  are languages defined over  $\Sigma = \{a\}$  then,  $L_3.L_2.L_1^* + L_1.L_3$  is\_\_\_\_.

[MCQ]

φ

$$(\alpha+\epsilon)$$
.  $\epsilon$ .  $\phi^*$  +  $\phi$ .  $(\alpha+\epsilon)$ 

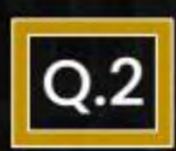
В.

{a}

c. {a, ε}

D.

 $\{a^n\mid n\geq 2\}$ 



## Consider the following given grammar



$$S \rightarrow AB$$

$$A \rightarrow AS \mid a$$

$$B \rightarrow BA | SB | b$$

Which of the following string generated by above grammar?



bbaa





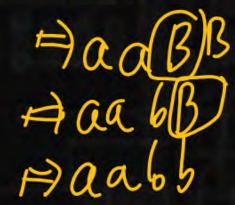


baba

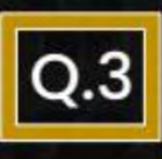




aabb

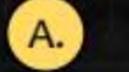


baab



If the finite automaton M has 100 states and all the states are Non final except initial state over the alphabet  $\Sigma = \{0, 1\}$  then the set L(M) can be:

E # L(M)



φ



**C.** {ε}

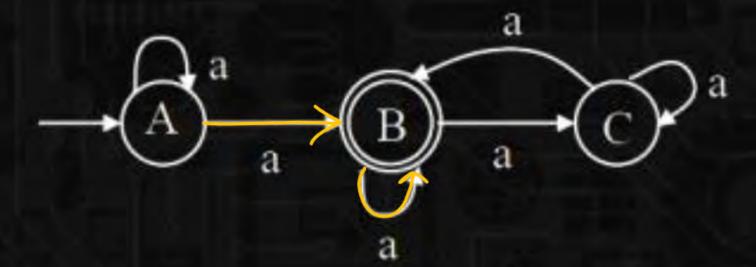


Subset of  $\Sigma$ 



Consider the following finite automata.





Find the language accepted by above FA?









Q.5

## Which of the following language does not satisfy the prefix



$$L = \{ \underbrace{wxw^R}_{a \ b \ a} | kw \in (0+1)^* \}$$

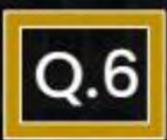


$$L = \{a^m b^{2m} \mid m \ge 1\} = \{a^{\frac{1}{2}}, a^{\frac{1}{2}}, \dots\}$$



$$L = \{w \in (0+1)^* \mid n_0(w) = n_1(w)\}$$

$$= \{ \varepsilon, (0) \mid 0 \text{ or } 0 \}$$



Consider the following left linear Grammar.



$$S \rightarrow Sa|Sb|A \Rightarrow S \rightarrow Sa|Sb|(ab)^*$$
  
 $A \rightarrow Aab|\epsilon \Rightarrow L(A) = (ab)^*$ 

Choose the correct language generated by the above grammar.

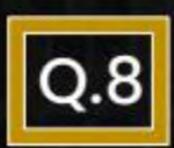
Consider a language  $L = \{w \mid w \in \{a, b\}^*, 5^{th} \text{ symbol from end is } \mathbb{W} \}$ 



'a'}

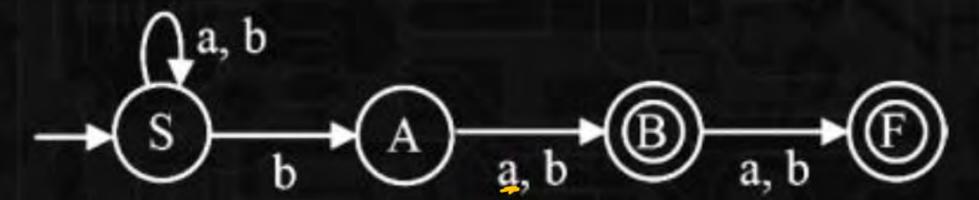
If number of state in NFA is P and Number of states in MDFA (minimal DFA) is Q then the value of PXQ is \_\_\_\_. [NAT]

$$P = 5+1 = 6$$
 $Q = 2^5 = 32$ 
 $192$ 

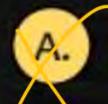


## Consider the following finite automaton:





Which one of the following is correct representation of above finite automaton? [MCQ]



Second symbol from ends is 'b'.

ba



Containing (b + ab + ba) as a substring.



Third symbol from ends is 'b'



None of these.



