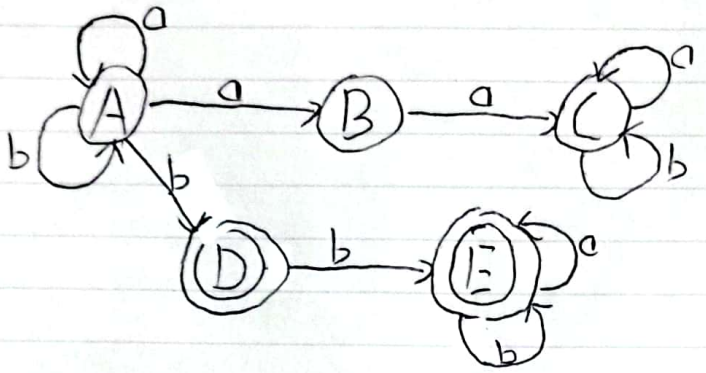
Yohanes Dimas Pratama

A11.2021.13254 - A11.4420

Latihan Soal UTS

1.



A. NFA

B. $\delta(A, "bbaaba")$
$= \delta(\delta(A,b), "baaba")$
$= \delta(\{A, D\}, "baaba")$
$= \delta(\delta(A,b) \cup \delta(D,b), "aaba")$
$= \delta(\{A,D\} \cup \{E\}, "aaba")$
$= \delta(\{A,D,E\}, "aaba")$
$= \delta(\delta(S,a) \cup \delta(D,a) \cup \delta(E,a), "aba")$
$= \delta(\{A,B\} \cup \{\} \cup \{E\}, "aba")$
$= \delta(\{A,B,E\}, "aba")$
$= \delta(\delta(A,a) \cup \delta(B,a) \cup \delta(E,a), "ba")$
$= \delta(\{A,B\} \cup \{C\} \cup \{E\}, "ba")$
$= \delta(\{A,B,C,E\}, "ba")$
$= \delta(\delta(A,b), \delta(B,b), \delta(C,b), \delta(E,b), "a")$
$= \{A,D\} \cup \{\} \cup \{C\} \cup \{E\}$
$= \{A, C, D, E\}$

2.

δ	0	1
A	A	{}
B	{}	C
C	{}	C

$\varepsilon\_cl(A) = \{A, B, C\}$
$\varepsilon\_cl(B) = \{B\}$
$\varepsilon\_cl(C) = \{C\}$

$\delta'(A,0) = \varepsilon\_cl(\delta(\varepsilon\_cl(A), 0))$
$= \varepsilon\_cl(\delta(\{A,B,C\}, 0))$
$= \varepsilon\_cl(\delta(A,0) \cup \delta(B,0) \cup \delta(C,0))$
$= \varepsilon\_cl(\{A\} \cup \{\} \cup \{\})$
$= \varepsilon\_cl(A)$
$= \{A, B, C\}$

$\delta'(A,1) = \varepsilon\text{-cl}(\delta(\varepsilon\text{-cl}(A),1))$
$= \varepsilon\text{-cl}(\delta(\{A,B,C\},1))$
$= \varepsilon\text{-cl}(\delta(A,1) \cup \delta(B,1) \cup \delta(C,1))$
$= \varepsilon\text{-cl}(\{\} \cup \{C\} \cup \{C\})$
$= \varepsilon\text{-cl}(C)$
$= \varepsilon\text{-cl}$

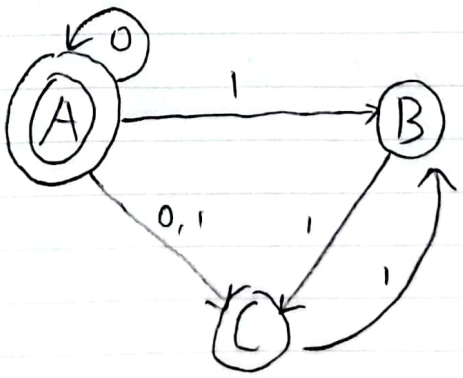
$\delta'(B,0) = \varepsilon\text{-cl}(\delta(\varepsilon\text{-cl}(B),0))$
$= \varepsilon\text{-cl}(\delta(B,0))$
$= \varepsilon\text{-cl}(\{\})$
$= \{\}$

$\delta'(B,1) = \varepsilon\text{-cl}(\delta(\varepsilon\text{-cl}(B),1))$
$= \varepsilon\text{-cl}(\delta(B,1))$
$= \varepsilon\text{-cl}(C)$
$= \{C\}$

$\delta'(C,0) = \varepsilon\text{-cl}(\delta(\varepsilon\text{-cl}(C),0))$
$= \varepsilon\text{-cl}(\delta(C,0))$
$= \varepsilon\text{-cl}(\{\})$
$= \{\}$

$\delta'(C,1) = \varepsilon\text{-cl}(\delta(\varepsilon\text{-cl}(C),1))$
$= \varepsilon\text{-cl}(\delta(C,1))$
$= \varepsilon\text{-cl}(C)$
$= \{C\}$

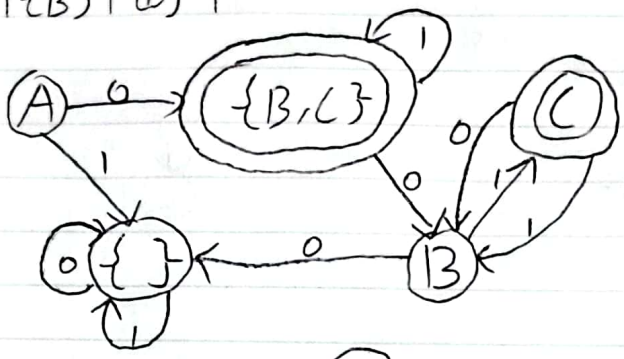
δ'	0	1
A	{A,B,C}	{C}
B	{}	{C}
C	{}	{C}



3.

δ	0	1
A	{B,C}	{ }
B	{ }	{C}
C	{B}	{B}

*



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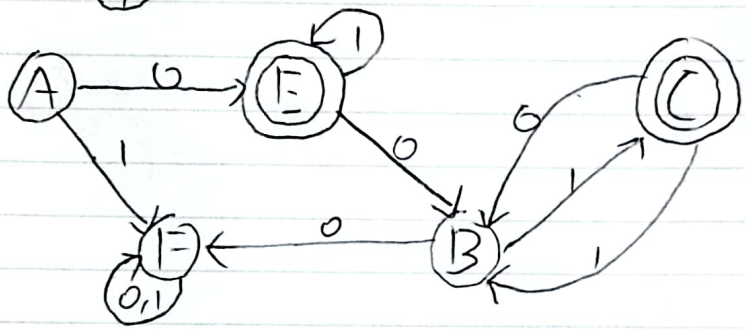
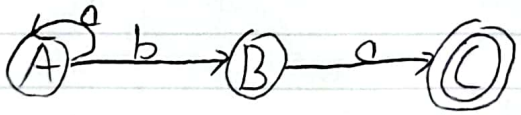


$\delta(\{B,C\},0) = \delta(B,0) \cup \delta(C,0)$
$= \{\} \cup \{B\}$
$= \{B\}$

$\delta(\{B,C\},1) = \delta(B,1) \cup \delta(C,1)$
$= \{C\} \cup \{B\}$
$= \{B,C\}$

$\delta(\{\},0) = \{\}$
$\delta(\{\},1) = \{\}$

4. A.

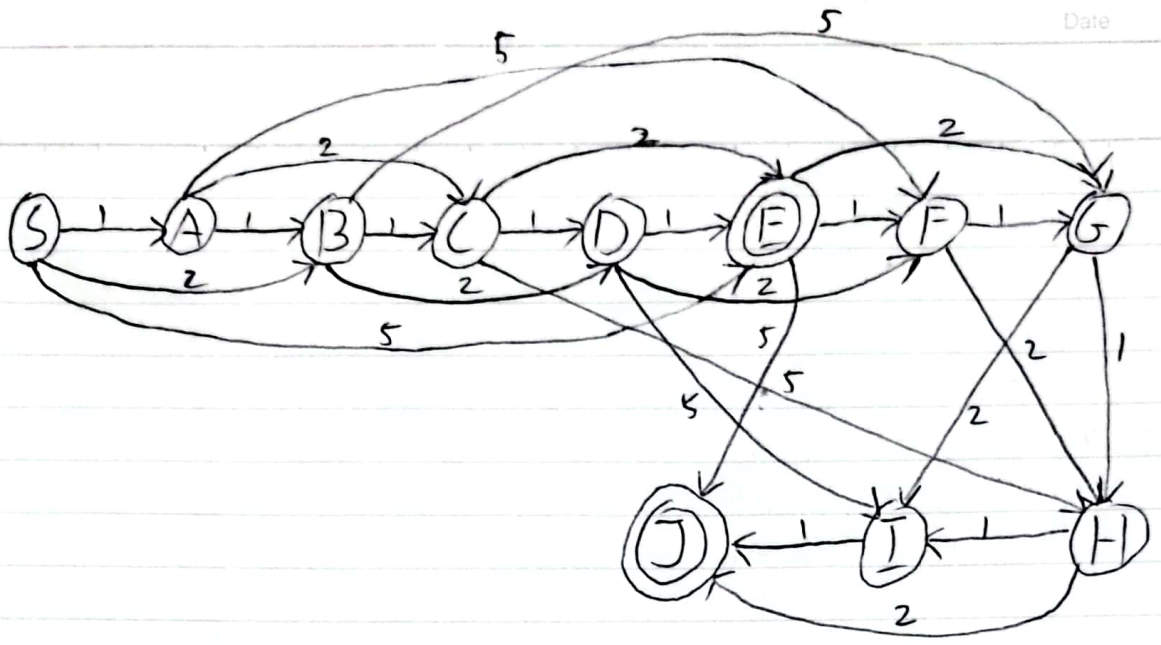


$\Sigma = \{a,b\}$
$Q = \{A,B,C\}$
$S = A$
$F = \{C\}$

δ	a	b
A	A	B
B	{ }	{ }
C	{ }	{ }

B. NFA

5. A.



B. $\Sigma = \{1, 2, 5\}$

$Q = \{S, A, B, C, D, E, F, G, H, I, J\}$

$S = S$

$F = \{J\}$

δ	1	2	5
S	A	B	E
A	B	C	F
B	C	D	G
C	D	E	H
D	E	F	I
E	F	G	J
F	G	H	{ }
G	H	I	{ }
H	I	J	{ }
I	J	{ }	{ }
J	{ }	{ }	{ }

C. $L = \{2, 2, 2, 2, 2, 2\}$

$L = \{1, 1, 2, 2, 2, 2\}$

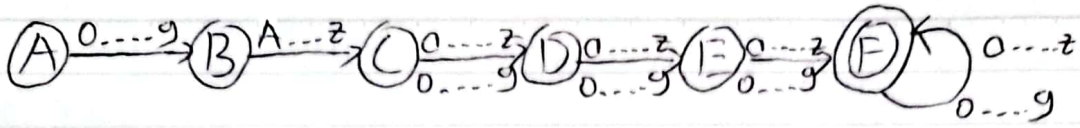
$L = \{5, 5\}$

$L = \{2, 1, 2, 5\}$

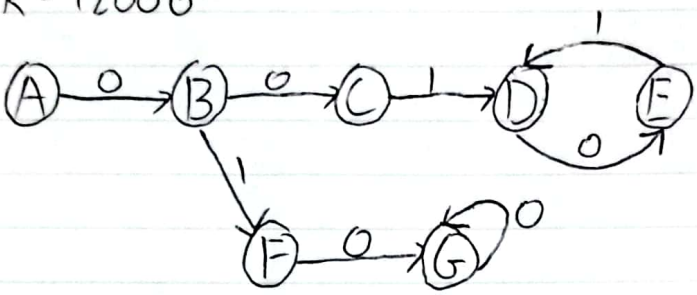
$L = \{1, 1, 1, 2, 5\}$

$L = \{1, 1, 1, 1, 1, 5\}$

$L = \{5\}$

6. A. 

0...9
A....z = z
a.... z / 0...9 = 0
ER = 12000+

B. 

$\Sigma = \{1, 0\}$
$Q = \{A, B, C, D, E, F, G\}$
$S = A$
$F = \{D, G\}$

δ	0	1
A	B	{}
B	C	F
C	{}	D
D	E	{}
E	{}	D
F	G	{}
G	G	{}