1. Diberikan Regular Expression (RE) Berikut ini:
   X (xy | yx) $^{+}$x* y
   a. Tentukanlah followpos dalam RE tersebut.
   b. Buatlah syntax tree lengkap dengan firstpos, lastpos, dan nullable.
   c. Buatlah tabel DFA dan gambarkan hasil dari DFA tersebut.

JAWABAN :

RE : X .(x.y | y.x) + .x* .y. #

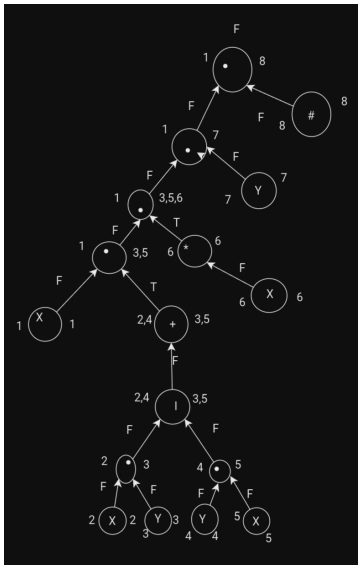
NO : 1 2 3 4 5 6 7 8

A.

- Followpos (1) = 2,4
- Followpos (2) = 3
- Followpos (3) = 2,4,6,7,8
- Followpos (4) = 5
- Followpos (5) = 2,4,6,7,8
- Followpos (6) = 7,8
- Followpos (7) = 8
- Followpos (8) = -

B.

TREE :

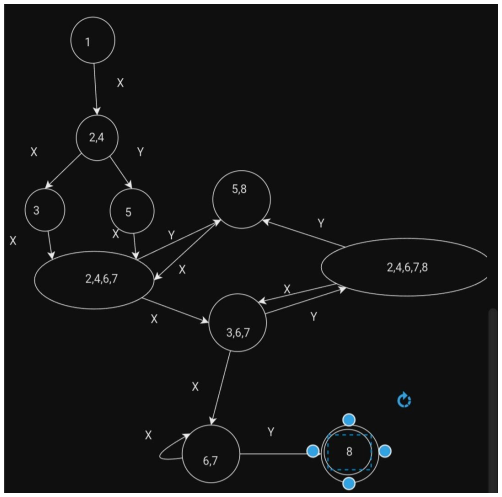


C.

1. Tabel state :

State	X	Y
-> 1	2,4	-
2,4	3	5
3	-	2,4,6,7
5	2,4,6,7	-
2,4,6,7	3,6,7	5,8
3,6,7	6,7	2,4,6,7,8
*5,8	2,4,6,7	-
*6,7	6,7	8
2,4,6,7,8	3,6,7	5,8
*8	-	-

2. Diagram DFA :



2. Diberikan Regular Expression (RE) berikut ini:
   $(a \mid b)^{*}\ a\ (b \mid ab)^{+}$

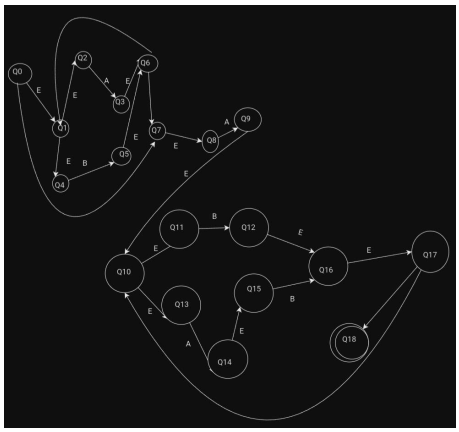
a. Buatlah Thomson’s Construction dari RE tersebut.
b. Buatlah bentuk DFA dari Ɛ-NFA yang didapatkan dari penyelesaian pada poin a

JAWABAN :

A.

RE : (a | b)* a (b | ab) +

Thimson’s :



B. Dfa -> E-nfa

- Eclose q0 = 0,1,2,4,7,8
- Eclose q1 = 1,2,4
- Eclose q2 = 2
- Eclose q3 = 1,2,3,4,6,7,8
- Eclose q4 = 4
- Eclose q5 = 1,2,4,5,6,7,8
- Eclose q6 = 1,2,4,6,7,8
- Eclose q7 = 7,8
- Eclose q8 = 8
- Eclose q9 = 9,10,11,13
- Eclose q10 = 10,11,13
- Eclose q11 = 11
- Eclose q12 = 10,11,13,17,18
- Eclose q13 = 13
- Eclose q14 = 14,15
- Eclose 15 = 15
- Eclose 16 = 10,11,13,16,17,18

- Eclose 17 = 17,18
- Eclose 18 = 18

Diagram :