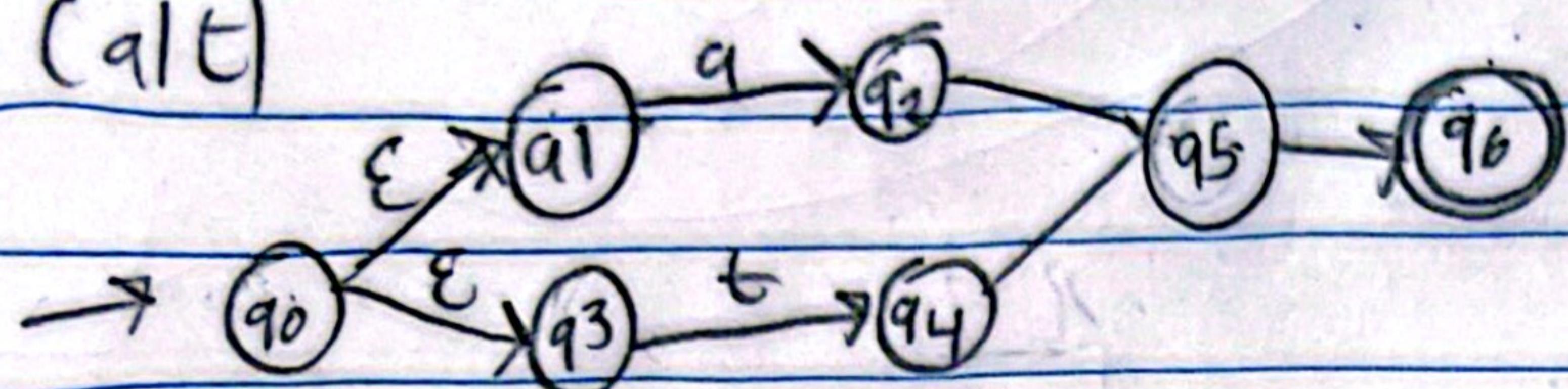


# Ejercicio 1

a) (a | t) c

Thompson:

(a | t)



(a | t)

Estado

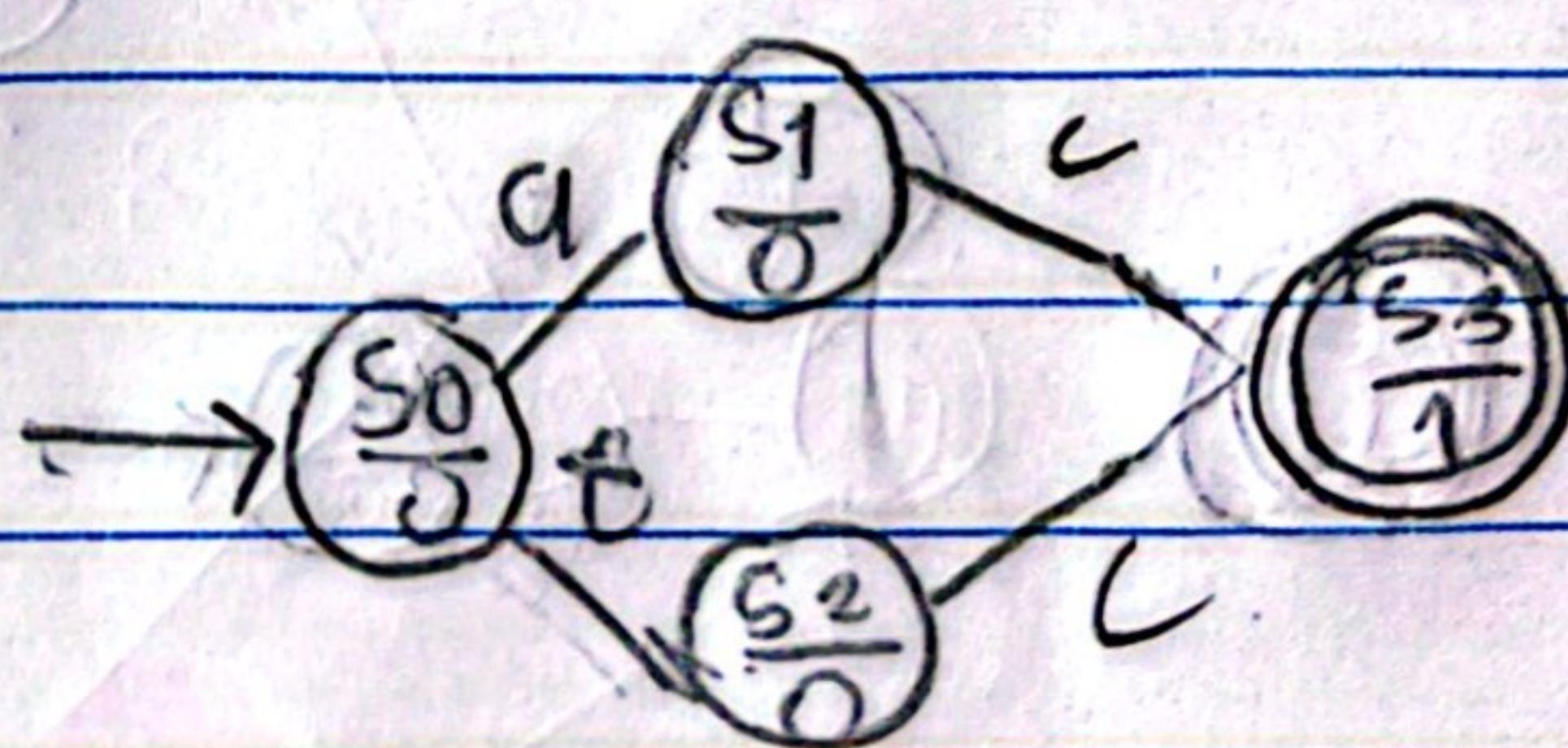
|    | a  | t  | c  | ε        |
|----|----|----|----|----------|
| q0 | -  | -  | -  | (q1, q3) |
| q1 | q2 | -  | -  | -        |
| q2 | -  | -  | -  | q5       |
| q3 | -  | q4 | -  | -        |
| q4 | -  | -  | -  | q5       |
| q5 | -  | -  | q6 | -        |

$$S_0 = \text{con } \epsilon \doteq \{q_0, q_1, q_2\}$$

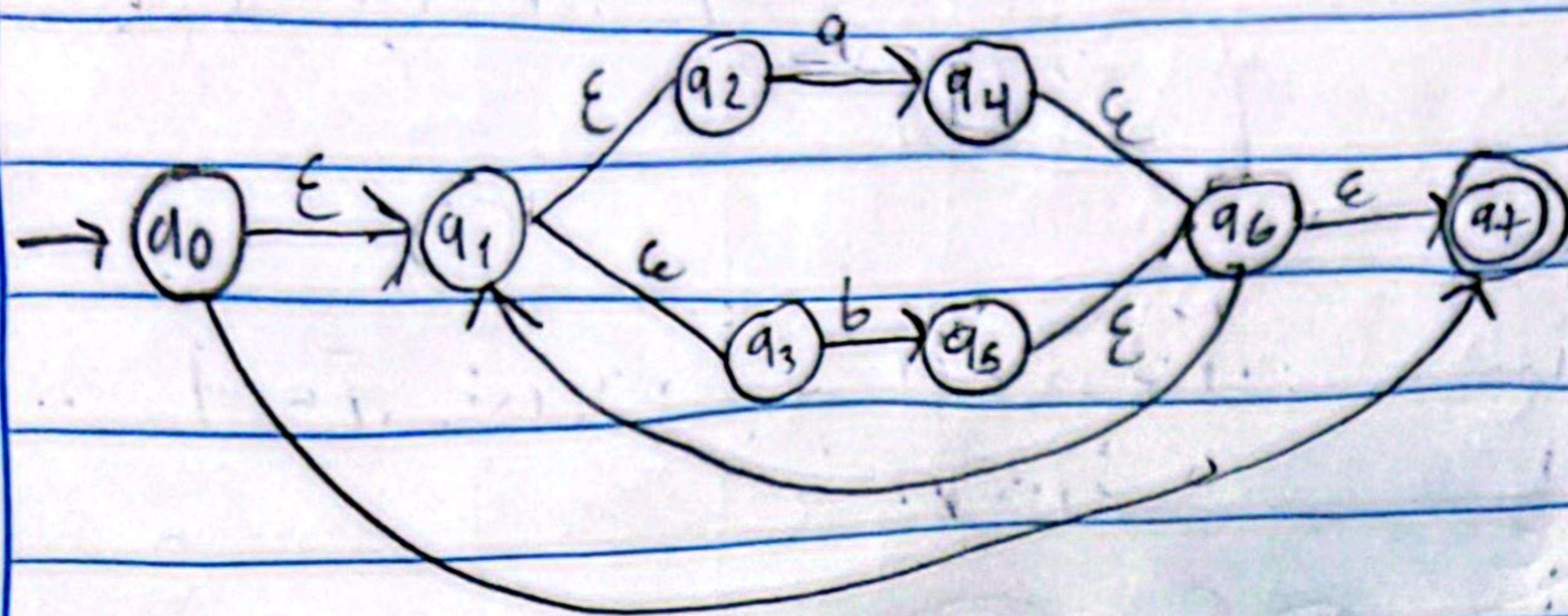
$$S_1 = \text{conta} \doteq \{q_3, q_5\}$$

$$S_2 = \text{cont} \doteq \{q_4, q_5\}$$

$$S_3 = \text{conc} \doteq \{q_6\}$$



b)  $(q|b)*$



| Estado | a         | b         | ε              |
|--------|-----------|-----------|----------------|
| $q_0$  | -         | -         | $\{q_1, q_3\}$ |
| $q_1$  | -         | -         | $\{q_2, q_3\}$ |
| $q_2$  | { $q_4$ } | -         | -              |
| $q_3$  | -         | { $q_5$ } | -              |
| $q_4$  | -         | -         | { $q_6$ }      |
| $q_5$  | -         | -         | { $q_6$ }      |
| $q_6$  | -         | -         | { $q_1, q_7$ } |

$$S_0 = \text{Con } \epsilon = \{q_0, q_1, q_2, q_3, q_4, q_5\}$$

$$S_1 = \text{Con } a = \{q_6, q_7, q_1, q_2, q_3, q_4\}$$

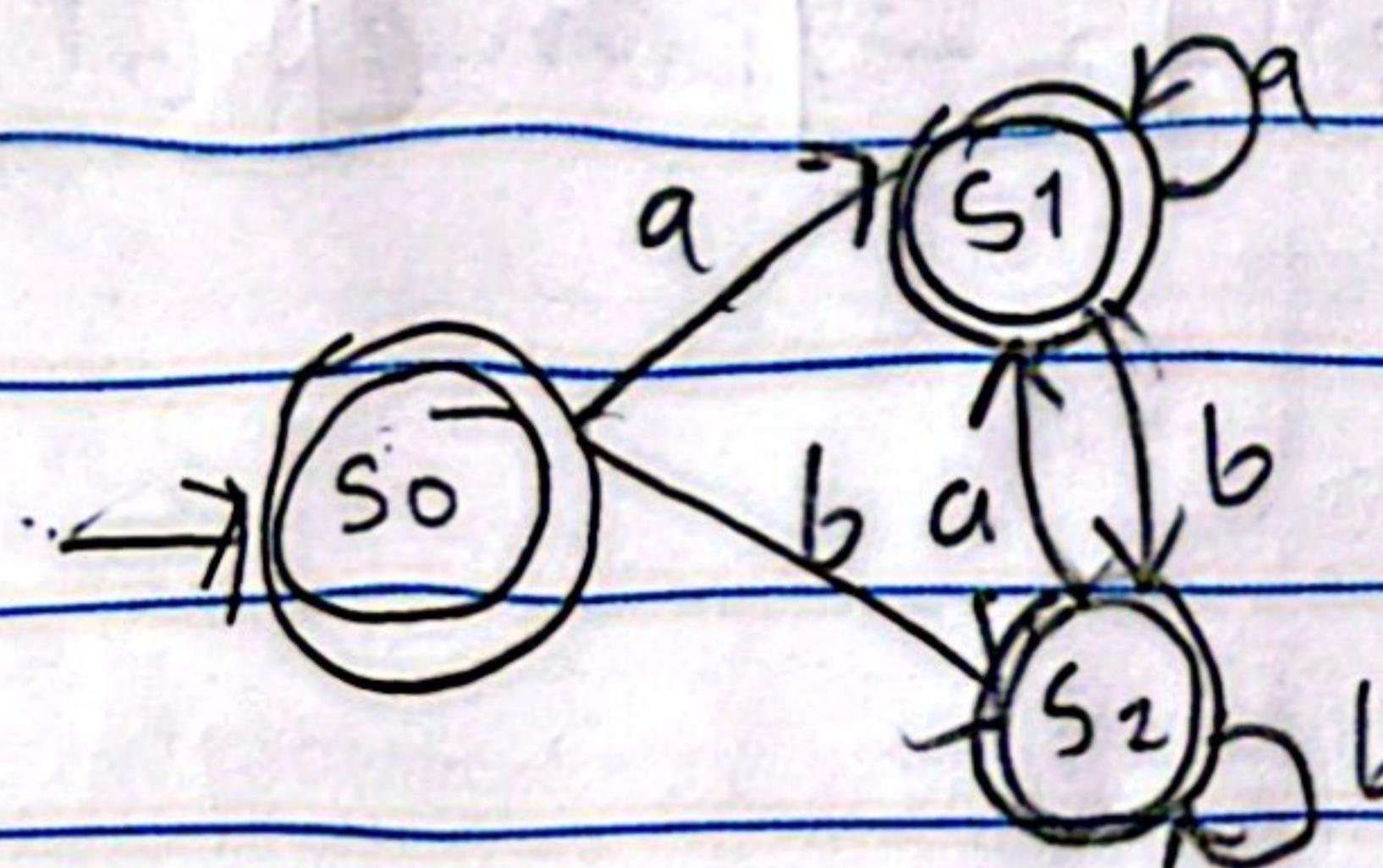
$$S_2 = \text{Con } b = \{q_6, q_7, q_1, q_2, q_3, q_5\}$$

$$S_1 \text{ con } a = S_1$$

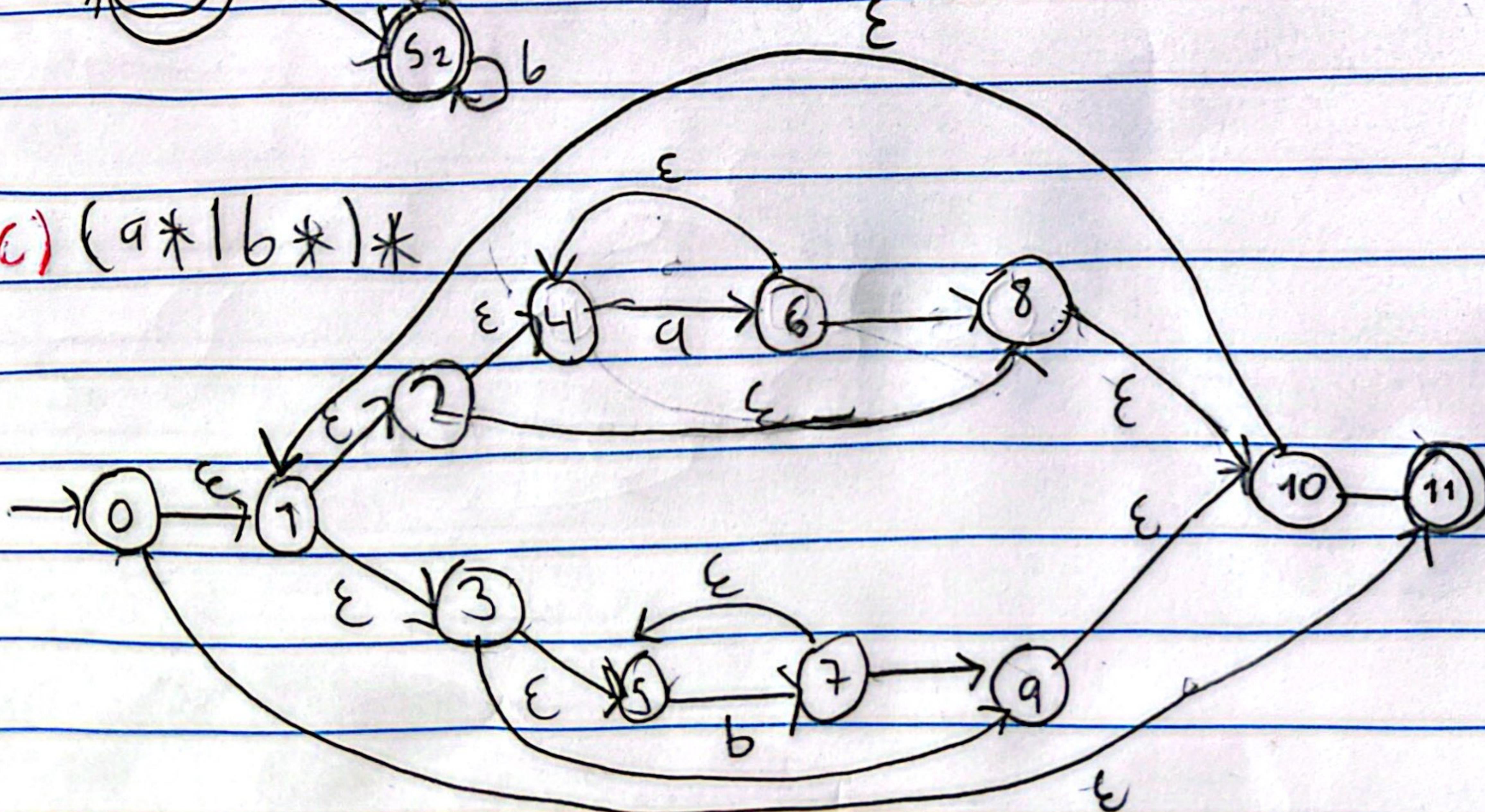
$$S_1 \text{ con } b = S_2$$

$$S_2 \text{ con } a = S_1$$

$$S_2 \text{ con } b = S_2$$



c)  $(q*|b*)^*$



| Estado | a   | b   | c     |
|--------|-----|-----|-------|
| 0      | -   | -   | (1,1) |
| 1      | -   | -   | (2,3) |
| 2      | -   | -   | (4,8) |
| 3      | -   | -   | 95,91 |
| 4      | 167 | -   | -     |
| 5      | -   | 173 | -     |
| 6      | -   | -   | 14,81 |
| 7      | -   | -   | 95,91 |
| 8      | -   | -   | -     |
| 9      | -   | -   | -     |
| 10     | -   | -   | 9717  |

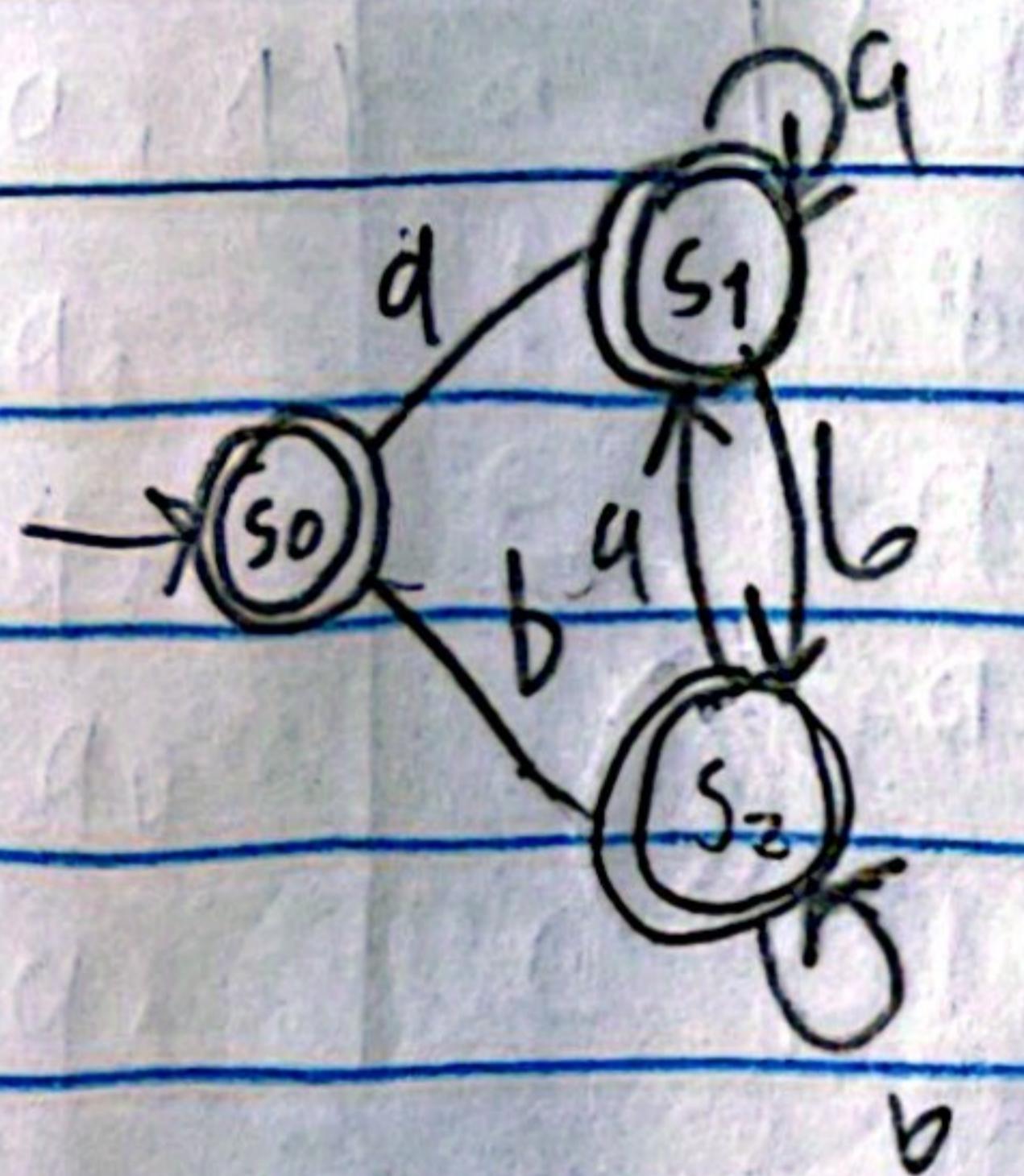
$S_6 = \text{con } \epsilon = \{0, 1, 2, 3, 4, 5, 8, 9, 10\}$

$$S_1 = S_0 \text{ con } q = \{6, 8, 10, 1, 2, 4, 3, 5, 9, 11\}$$

$$S_2 = S_{\text{comb}} \equiv \{7, 9, 10, 1, 2, 4, 8, 3, 5, 11\}$$

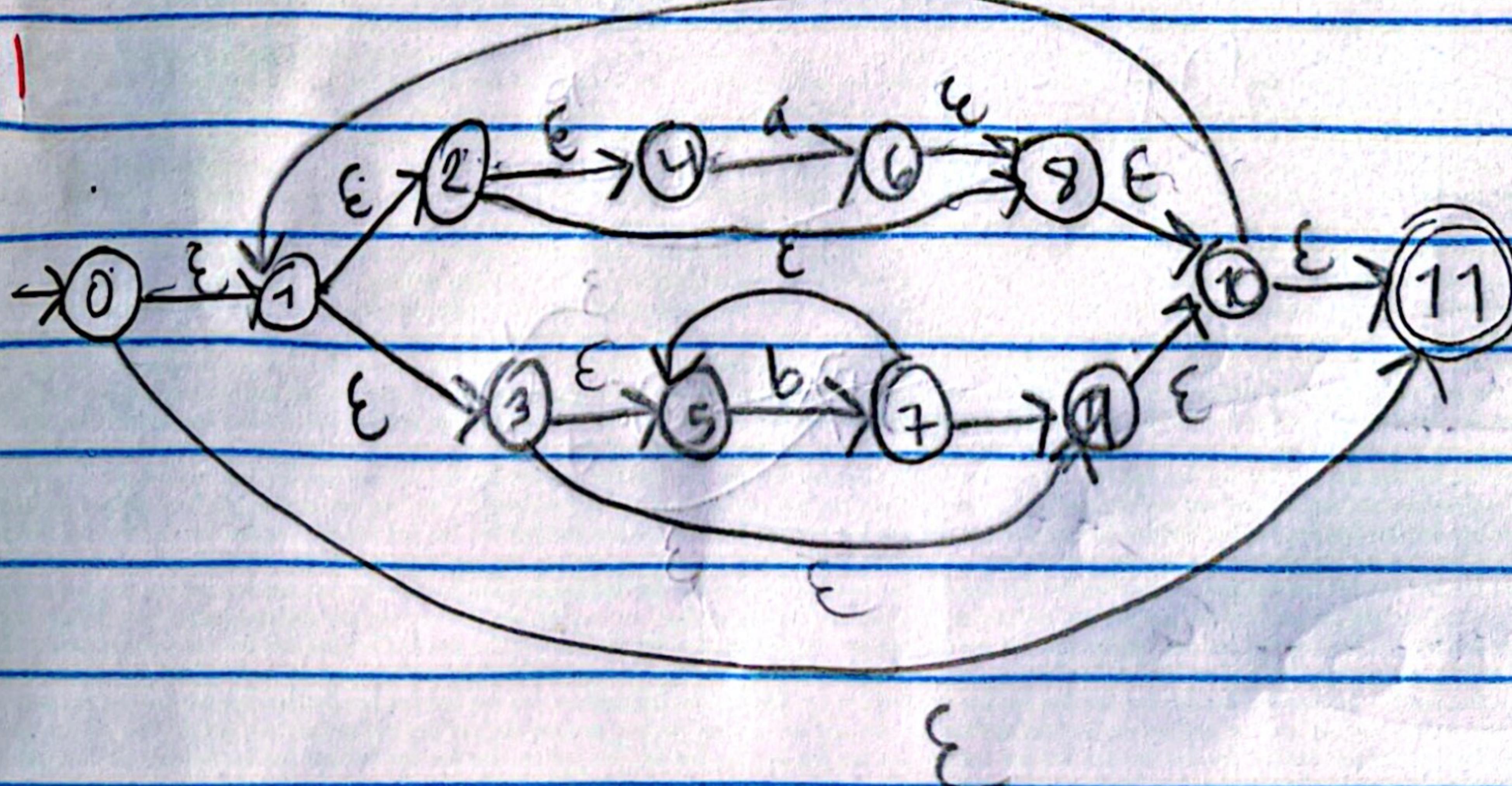
$$S_1^{\text{cong.}} = S_1$$

$$S_1 \text{ comb} = S_2$$



$$\begin{array}{l} \text{S}_2 \text{ cona} = \text{S}_1 \\ \text{S}_2 \text{ comb} = \text{S}_2 \end{array}$$

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| Estado | a | b | $\epsilon$ | $S_0 = \epsilon^*(\{0\}) = \{0, 1, 2, 3, 4, 5, 8, 9, 10\}$                 |
|--------|---|---|------------|--|
| 0      |   |   | 1, 11      | 10, 11   |
| 1      |   |   | 2, 3       | $S_1 = \epsilon^*(S_0, a) = \epsilon^*\{6\} = \{6, 8, 10\}$                |
| 2      |   |   | 4, 8       | 10, 11, 1, 3, 9  |
| 3      |   |   | 5, 9       | $S_2 = \epsilon^*(S_1, b) = \epsilon^*\{7\} = \{7, 9, 10, 1, 3, 2, 4, 8\}$ |
| 4      | 6 |   |            | $\epsilon^*(f(S_1, a)) = \epsilon^*\{6\} = S_1$                            |
| 5      | 7 |   | 8          | $\epsilon^*(g(S_1, b)) = \epsilon^*\{7\} = S_2$                            |
| 7      |   |   | 5, 9       | $\epsilon^*(f(S_2, a)) = \epsilon^*\{6\} = S_1$                            |
| 8      |   |   | 10         | $\epsilon^*(g(S_2, b)) = \epsilon^*\{7\} = S_2$                            |
| 9      |   |   | 10         |  |
| 10     |   |   | 1, 11      |  |

