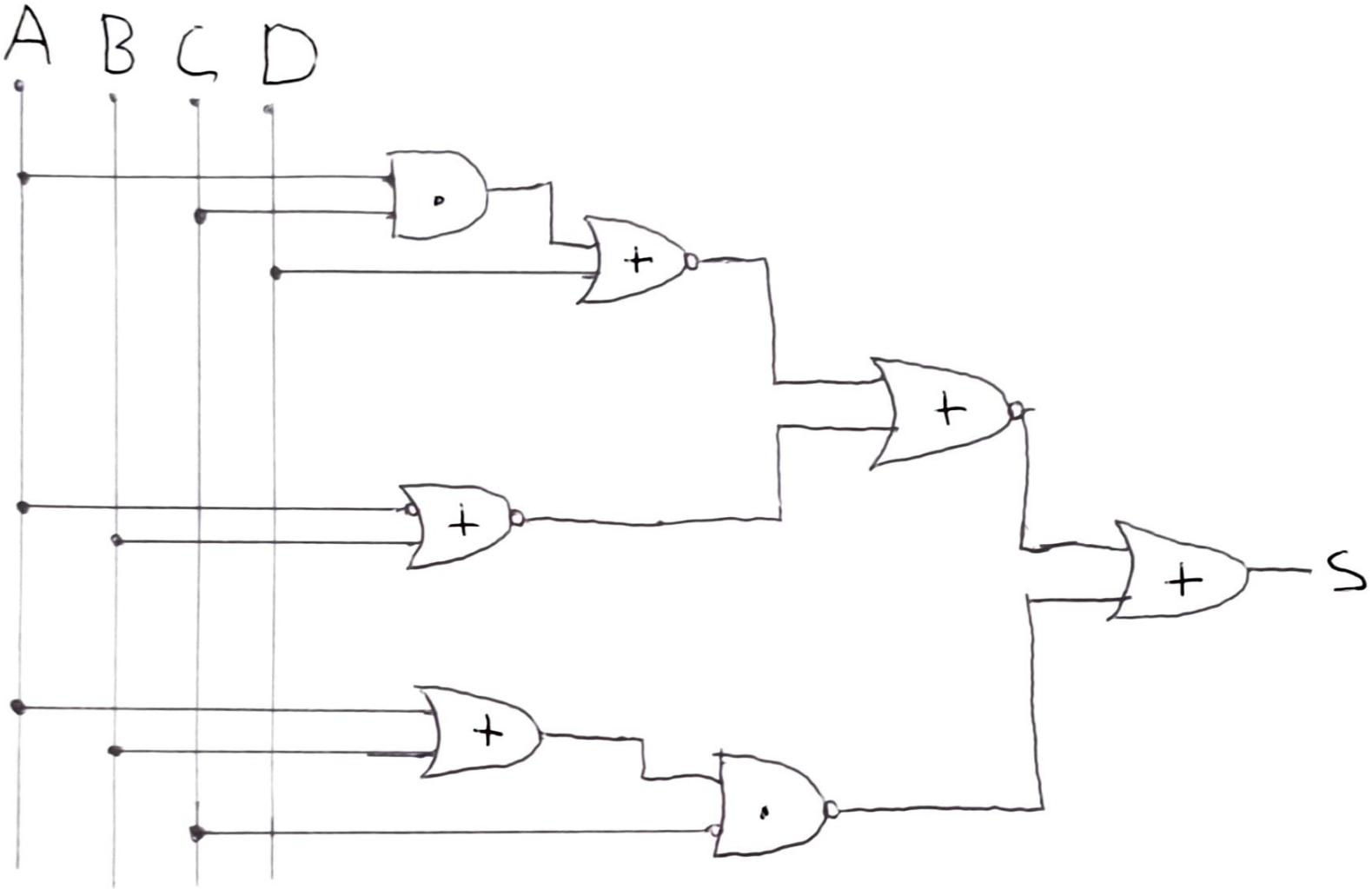
1.-

a) $S = \overline{\overline{\overline{AC + D}} + \overline{\overline{\bar{A} + B}} + \overline{\bar{C}\,(A+B)}}$

1.1) Circuito da expressão



1.2) Simplificação

$$S = \overline{\overline{(AC)+D} + \overline{\bar{A}+B}} + \overline{\bar{C}(A+B)}$$

$$S = \overline{\overline{(AC)+D}}\ \overline{\overline{\bar{A}+B}} + \bar{\bar{C}} + \overline{(A+B)}$$

$$S = ((AC)+D)\ (\bar{A}+B) + C + (\bar{A}\,\bar{B})$$

$$S = AC\bar{A} + ACB + D\bar{A} + DB + C + \bar{A}\,\bar{B}$$

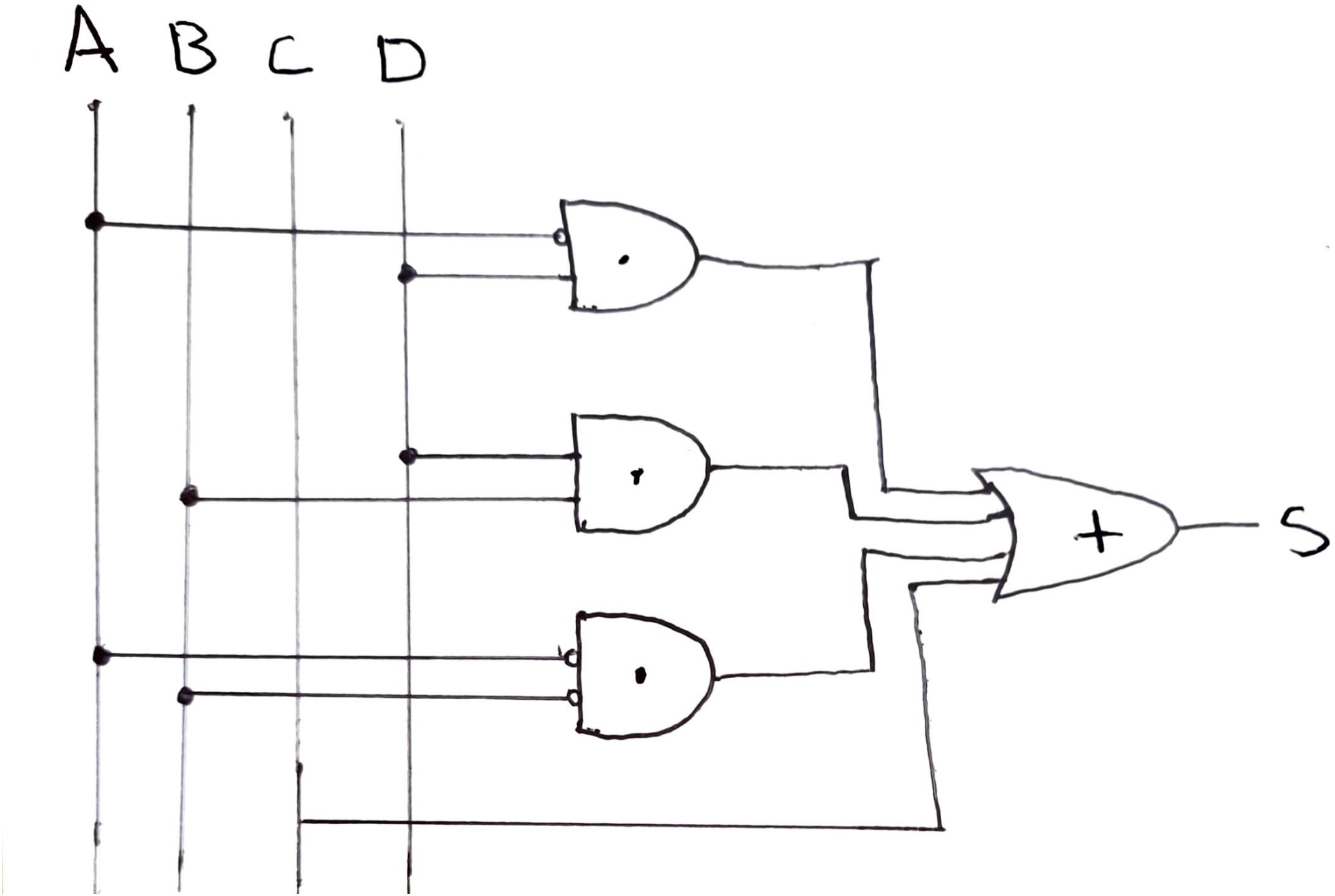
$$S = ACB + C + D\bar{A} + DB + \bar{A}\,\bar{B}$$

$$S = C(1+AB) + D\bar{A} + DB + \bar{A}\,\bar{B}$$

$$S = C\,1 + D\bar{A} + DB + \bar{A}\,\bar{B}$$

$$S = C + D\bar{A} + DB + \bar{A}\,\bar{B}$$

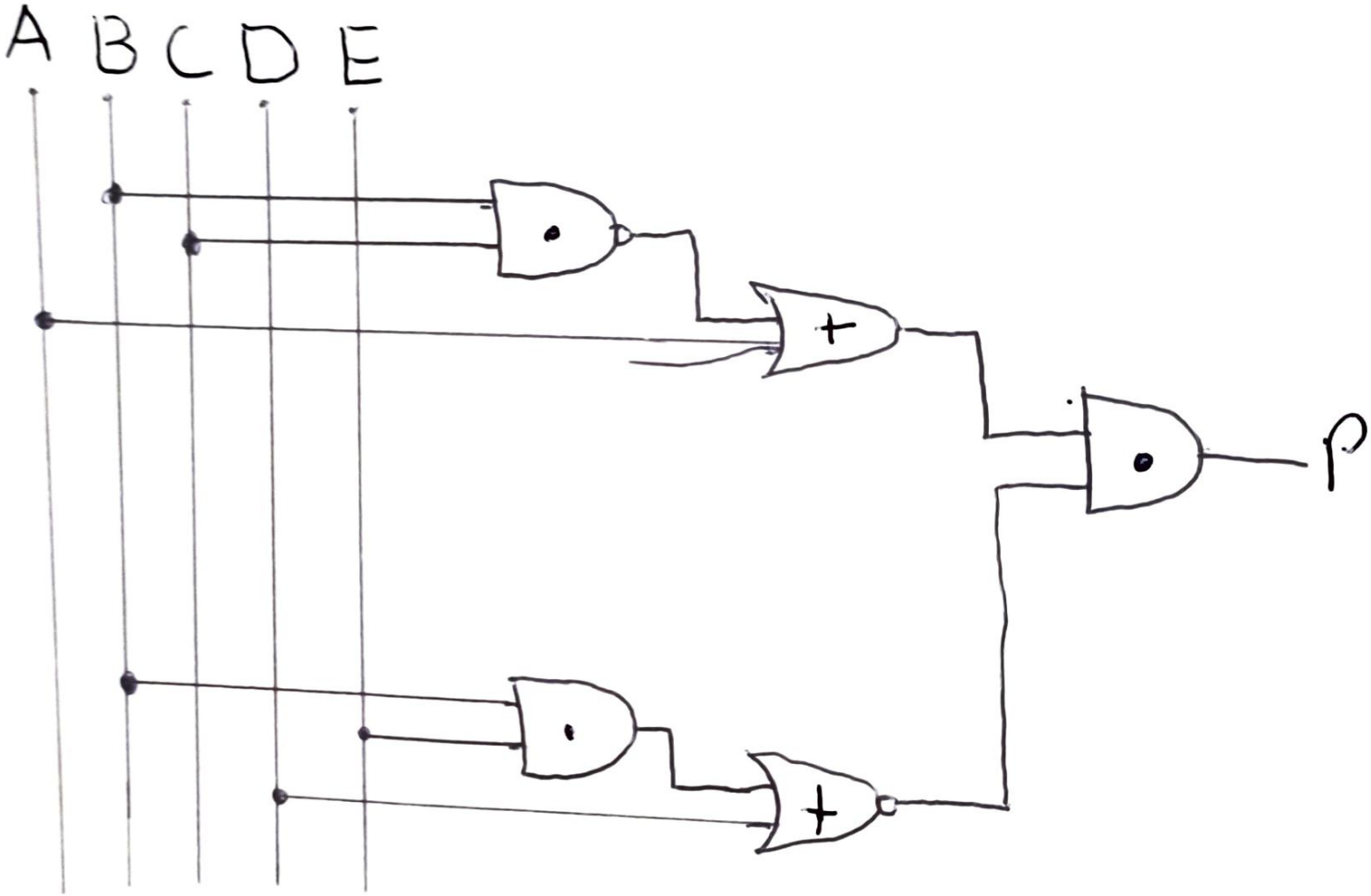
1.3) Circuito da Simplificação



1 -

b) $P = (A + (\overline{B \cdot C})) \cdot (\overline{D + B \cdot E})$

1.1) Circuito da expressão



1.2) Simplificação

$$P = (A + (\overline{BC})) \cdot \overline{(D + BE)}$$

$$P = (A + (\overline{B} + \overline{C})) \cdot (\overline{D} \cdot \overline{BE})$$

$$P = (A + \overline{B} + \overline{C}) \cdot (\overline{D} \cdot (\overline{B} + \overline{E}))$$

$$P = (A + \overline{B} + \overline{C}) \cdot (\overline{D}\,\overline{B} + \overline{D}\,\overline{E})$$

$$P = A\overline{D}\,\overline{B} + A\overline{D}\,\overline{E} + \overline{B}\,\overline{D}\,\overline{B} + \overline{B}\overline{D}\,\overline{E} + \overline{C}\,\overline{D}\,\overline{B} + \overline{C}\,\overline{D}\,\overline{E}$$

$$P = A\overline{D}\,\overline{B} + A\overline{D}\,\overline{E} + \overline{B}\overline{D} + \overline{B}\overline{D}\,\overline{E} + \overline{C}\,\overline{D}\,\overline{B} + \overline{C}\,\overline{D}\,\overline{E}$$

$$P = \overline{D}(A\overline{B} + A\overline{E} + \overline{B} + \overline{B}\,\overline{E} + \overline{C}\,\overline{B} + \overline{C}\,\overline{E})$$

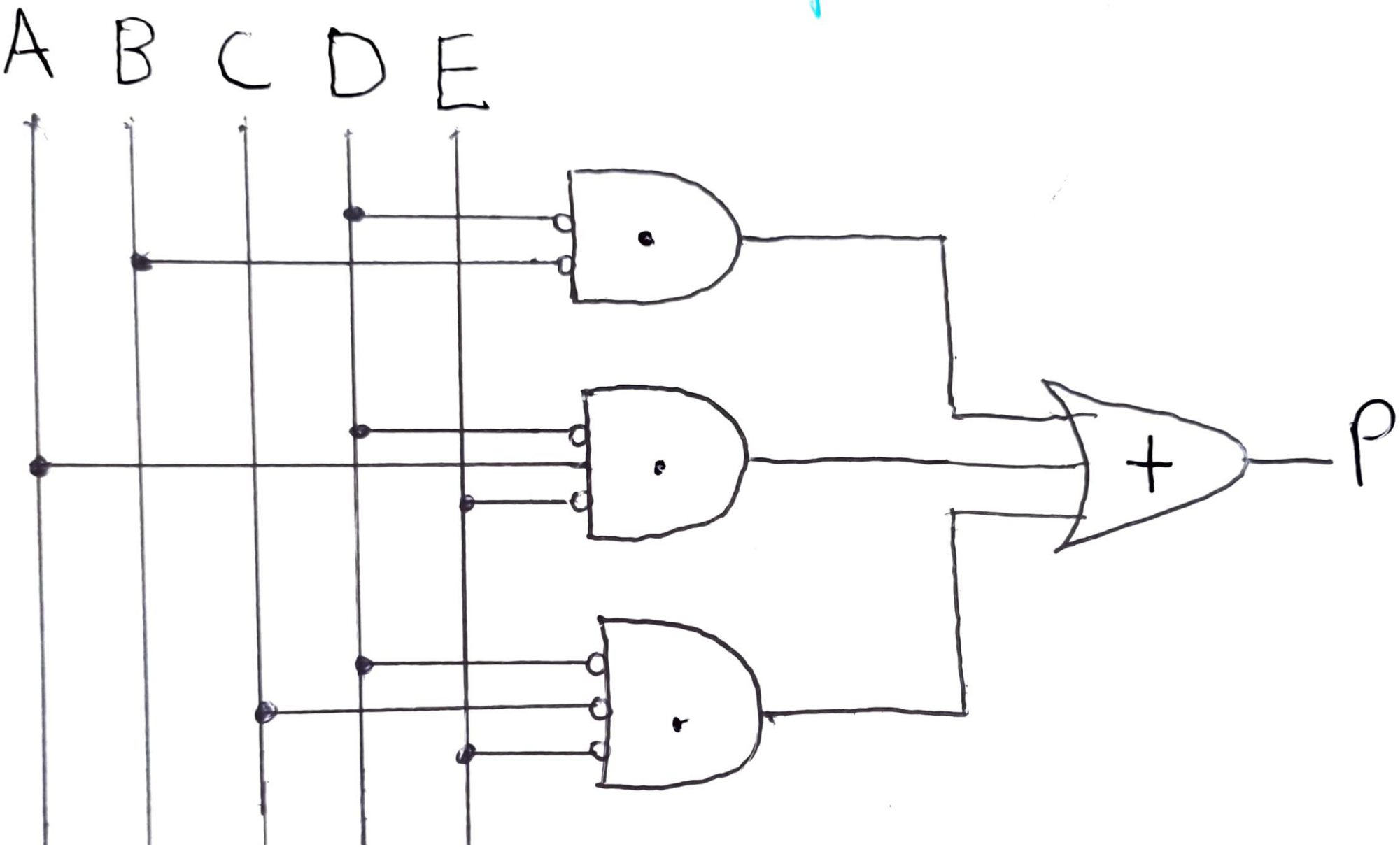
$$P = \overline{D}(A\overline{B} + A\overline{E} + \overline{B} + \overline{C}\,\overline{B} + \overline{C}\,\overline{E})$$

$$P = \overline{D}(A\overline{B} + A\overline{E} + \overline{B} + \overline{C}\,\overline{E})$$

$$P = \overline{D}(\overline{B} + A\overline{E} + \overline{C}\,\overline{E})$$

$$P = \overline{D}\,\overline{B} + \overline{D}A\overline{E} + \overline{D}\overline{C}\,\overline{E}$$

L.3) Circuito da Simplificação



2- $S = (BD) + (\bar{A}\bar{C}) + (\bar{B}C\bar{D})$

$$S = \overline{\overline{(BD) + (\bar{A}\bar{C}) + (\bar{B}C\bar{D})}}$$

$$S = \overline{\overline{(BD)}\,\overline{(\bar{A}\bar{C})}\,\overline{(\bar{B}C\bar{D})}}$$