

Logički izrazi za ponavljanje – grupni rad

1. Pojednostavni logičke operacije:

a. $\overline{\overline{A} \cdot (A+B)} =$

b. $\overline{\overline{A \cdot B} + A} =$

c. $\overline{\overline{A+B} \cdot A} =$

d. $\overline{B \cdot (A+\overline{B})} =$

e. $\overline{\overline{A} \cdot (A \cdot B)} =$

f. $\overline{(\overline{A+C}) \cdot (\overline{B+C})} =$

g. $A \cdot (A \cdot \overline{B} + \overline{A} \cdot B + \overline{B} \cdot C) =$

h. $\overline{A + (B \cdot C)} \cdot C =$

i. $A \cdot (\overline{A \cdot \overline{B} + \overline{A} \cdot B}) =$

j. $\overline{(\overline{A+B})} \cdot (A+\overline{B}) \cdot (\overline{\overline{A+B}}) =$

Rješenja:

a. $\overline{\overline{A} \cdot (A+B)} = \overline{\overline{A} \cdot A + \overline{A} \cdot B} = \overline{0 + \overline{A} \cdot B} = \overline{\overline{A} \cdot B} = \overline{\overline{A}} + \overline{\overline{B}} = A + \overline{B}$

b. $\overline{\overline{A \cdot B} + A} = \overline{\overline{A} \cdot \overline{B} + A} = \overline{A \cdot B \cdot \overline{A} + A} = \overline{A \cdot \overline{A} \cdot B + A} = \overline{0 \cdot B + A} = \overline{A} = \overline{A}$

c. $\overline{\overline{A+B} \cdot A} = \overline{\overline{A+B} + \overline{A}} = \overline{A+B+\overline{A}} = \overline{A+B+\overline{A}} = \overline{A+\overline{A}+B} = \overline{1+B} = \overline{1} = 0$

d. $\overline{B \cdot (A+\overline{B})} = \overline{B \cdot A + B \cdot \overline{B}} = \overline{B \cdot A + \overline{B}} = \overline{B+A}$

e. $\overline{\overline{A} \cdot (A \cdot B)} = \overline{\overline{A} \cdot A \cdot B} = \overline{0 \cdot B} = \overline{0} = 1$

f. $\overline{(\overline{A+C}) \cdot (\overline{B+C})} = \overline{(\overline{A} \cdot \overline{C}) \cdot (\overline{B} \cdot \overline{C})} = \overline{(\overline{A} \cdot \overline{C}) \cdot (\overline{B} \cdot \overline{C})} = \overline{A \cdot \overline{B} \cdot \overline{C} \cdot \overline{C}} = \overline{A \cdot \overline{B} \cdot 0} = \overline{0} = 1$

$$A \cdot (A \cdot \bar{B} + \bar{A} \cdot B + \bar{B} \cdot C) = A \cdot A \cdot \bar{B} + A \cdot \bar{A} \cdot B + A \cdot \bar{B} \cdot C =$$

g. $A \cdot \bar{B} + 0 + A \cdot \bar{B} \cdot C = A \cdot \bar{B} + A \cdot \bar{B} \cdot C = A \cdot \bar{B} \cdot (1 + C) = A \cdot \bar{B}$
 $\frac{A \cdot \bar{B} + 0 + A \cdot \bar{B} \cdot C}{A + (B \cdot C)} \cdot C = \bar{A} \cdot \bar{B} \cdot C \cdot C = \bar{A} \cdot (\bar{B} + \bar{C}) \cdot C = \bar{A} \cdot C \cdot (\bar{B} + \bar{C}) =$

h. $\bar{A} \cdot C \cdot \bar{B} + \bar{A} \cdot C \cdot \bar{C} = \bar{A} \cdot C \cdot \bar{B} + 0 = \bar{A} \cdot C \cdot \bar{B}$
 $A \cdot (\overline{A \cdot \bar{B} + \bar{A} \cdot B}) = A \cdot (\overline{A \cdot \bar{B}} \cdot \overline{\bar{A} \cdot B}) = A \cdot (\bar{A} + \bar{\bar{B}}) \cdot (\bar{\bar{A}} + \bar{B}) = (A \cdot \bar{A} + A \cdot B) \cdot (A + \bar{B}) =$

i. $A \cdot B \cdot (A + \bar{B}) = A \cdot B \cdot A + A \cdot B \cdot \bar{B} = A \cdot B + 0 = A \cdot B$

$$(\overline{A + B}) \cdot (A + \bar{B}) \cdot (\overline{\overline{A + B}}) = \bar{A} \cdot \bar{B} \cdot (A + \bar{B}) \cdot \bar{\bar{A}} \cdot \bar{\bar{B}} = \bar{A} \cdot \bar{B} \cdot \bar{\bar{A}} \cdot \bar{\bar{B}} \cdot (A + \bar{B}) =$$

j. $\bar{A} \cdot A \cdot \bar{B} \cdot \bar{B} \cdot (A + \bar{B}) = 0 \cdot (A + \bar{B}) = 0$