Izpit 9.2.2016

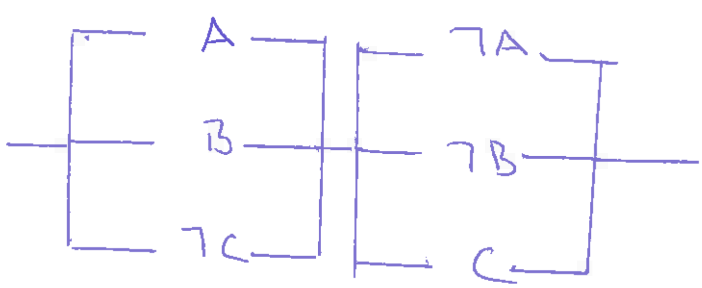
1)

A	B	C	$B\vee C$	$A\wedge(B\vee C)$	$A\vee\neg B$	$(A\vee\neg B)\wedge C$	I		
0	0	0	0	0	1	0	1	$\neg A\wedge\neg B\wedge\neg C$	
0	0	1	1	0	1	1	0		$A\vee B\vee\neg C$
0	1	0	1	0	0	0	1	$\neg A\wedge B\wedge\neg C$	
0	1	1	1	0	0	0	1	$\neg A\wedge B\wedge C$	
1	0	0	0	0	1	0	1	$A\wedge\neg B\wedge\neg C$	
1	0	1	1	1	1	1	1	$A\wedge\neg B\wedge C$	
1	1	0	1	1	1	0	0		$\neg A\vee\neg B\vee C$
1	1	1	1	1	1	1	1	$A\wedge B\wedge C$	

Izbrana konjunktivna oblika: $(A\vee B\vee\neg C)\wedge(\neg A\vee\neg B\vee C)$

izbrana disjunktivna oblika: $(\neg A\wedge\neg B\wedge\neg C)\vee(\neg A\wedge B\wedge\neg C)\vee$
$(\neg A\wedge B\wedge C)\vee(A\wedge\neg B\wedge\neg C)\vee$
$(A\wedge\neg B\wedge C)\vee(A\wedge B\wedge C)$

vezje:



2) a) komutativnost

b) asociativnost

c) distributivnost

d) idempotentnost

3) a) $\neg A \wedge A \Rightarrow B$

$\neg A \wedge A$ je protislovje

torej je izjava tavtologija

$\boxed{\text{implikacija je pravilna}}$

b) $A \wedge (A \Leftrightarrow B) \Rightarrow B$

Dokaz z protislovjem

$B = 0 \quad A \wedge (A \Leftrightarrow B) = 1$

$\cancel{A = 0} \quad (A \Leftrightarrow 0) = 1 \Rightarrow A = 0$

$A \wedge (A \Leftrightarrow B) \neq 1$

$\boxed{\text{implikacija je pravilna}}$

c) $((A \Rightarrow B) \wedge (C \Rightarrow A)) \Rightarrow (C \Rightarrow B)$

Dokaz z protislovjem

$C \Rightarrow B = 0 \qquad (A \Rightarrow B) \wedge (C \Rightarrow A) = 1$

$\Rightarrow \qquad \Rightarrow A \Rightarrow B = 1 \quad \Rightarrow \quad (A \Rightarrow 0) = 1$

$B = 0 \qquad C \Rightarrow A = 1 \qquad \Rightarrow A = 0$

$C = 1$

$C \Rightarrow 0$

$\boxed{1 \Rightarrow 0}$ protislovje

$\boxed{\text{implikacija je pravilna}}$

d) $(A \vee C \Rightarrow B \vee C) \Rightarrow (A \Rightarrow B)$

$\boxed{\text{implikacija ni pravilna}}$

$A = 1$

$B = 0$

$C = 1$

4) $A \setminus (B \cup C) = (A \setminus B) \cap (A \setminus C)$

$\cdot\ x \in A \wedge \neg(x \in B \cup C) \iff x \in A \wedge \neg(x \in B \vee x \in C)$

$\iff x \in A \wedge \neg(x \in B) \wedge \neg(x \in C)$

$\iff (x \in A) \wedge \neg(x \in B) \wedge (x \in A) \wedge \neg(x \in C)$

$\iff (A \setminus B) \cap (A \setminus C)$

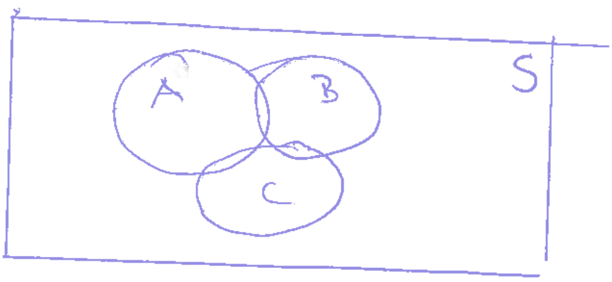
5) a) DA

b) NE

c) NE

d) NE

6) a)



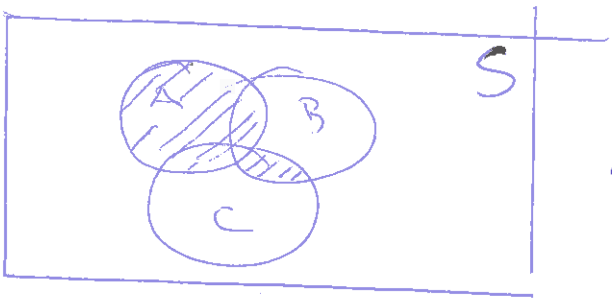
$A \cap B \neq \emptyset$

$B \cap C \neq \emptyset$

$A \cap C \neq \emptyset$

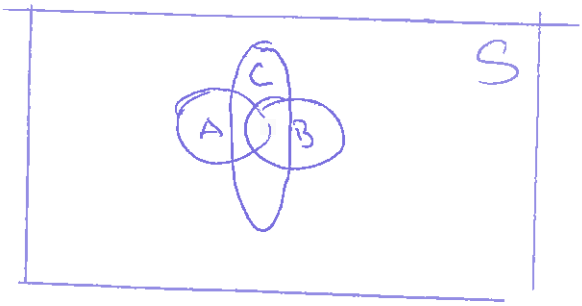
$A \cap B \cap C = \emptyset$

b)



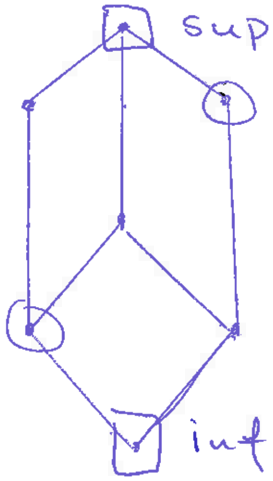
$A \cup (B \cap C)$

c)

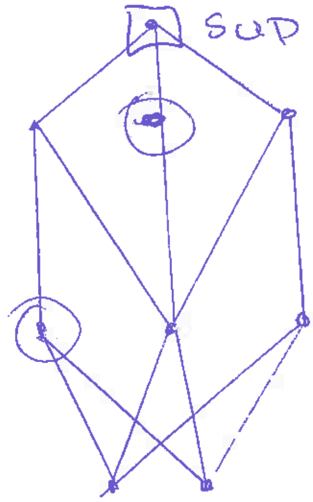


$A \cap B \subseteq C$

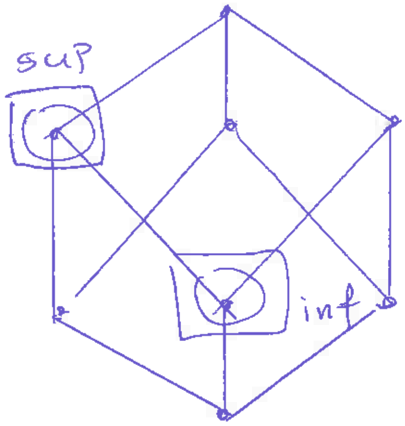
7)



je mreža

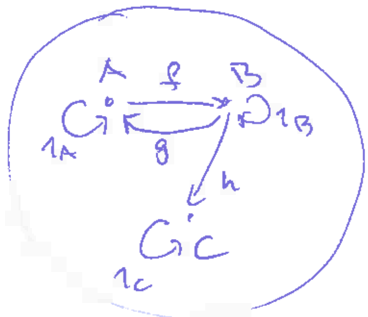


inf ne obstaja
ni mreža

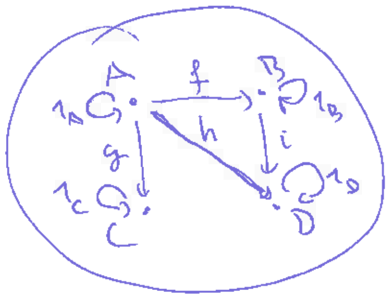


je mreža

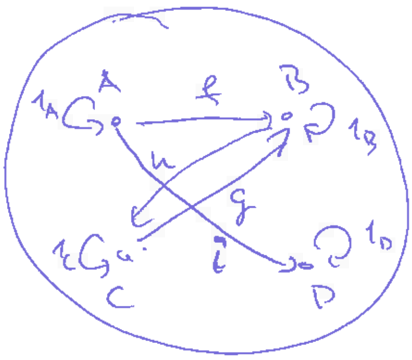
8) a)



b)



c)



9) a) $g \circ f = \{(1,2),(2,2),(3,1),(4,1)\}$

domena = $\{1,2,3,4\}$

slika = $\{1,2\}$

ni injektivna in ni surjektivna (nič)

b) $g \circ f = \{(1,5),(2,2),(3,1),(4,6)\}$

domena = $\{1,2,3,4\}$

slika = $\{1,2,5,6\}$

injektivna

c) $f \circ f = \{(1,4),(2,5),(3,3),(4,1),(5,2)\}$

domena = $\{1,2,3,4,5\}$

slika = $\{1,2,3,4,5\}$

bijektivna

10) $\bigcap_{\lambda \in J} A_\lambda = \{x ; \cancel{x} \in J \Rightarrow x \in A_\lambda\}$

11) $f^{-1}(E \cup F) = f^{-1}(E) \cup f^{-1}(F)$

$f(x) \in E \cup F \Leftrightarrow f(x) \in E \cup f(x) \in F \Leftrightarrow f^{-1}(E) \cup f^{-1}(F)$

12)