

HW 6
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a) Solution (VII)

$$p = (a \vee b) \wedge (c \vee d)$$

clauses that go with predicate p are a, b, c, d

b)

$$p_a = \neg b \wedge (c \vee d)$$

$$p_b = \neg a \wedge (c \vee d)$$

$$p_c = \neg d \wedge (a \vee b)$$

$$p_d = \neg c \wedge (a \vee b)$$

c)

	a	b	c	d	p	p_a	p_b	p_c	p_d
1	T	T	T	T	T				
2	T	T	T	F	T			T	
3	T	T	F	T	T				T
4	T	T	F	F				T	T
5	T	F	T	T	T	T			
6	T	F	T	F	T	T		T	
7	T	F	F	T	T	T			T
8	T	F	F	F				T	T
9	F	T	T	T	T		T		
10	F	T	T	F	T		T	T	
11	F	T	F	T	T		T		T
12	F	T	F	F				T	T
13	F	F	T	T		T	T		
14	F	F	T	F		T	T		
15	F	F	F	T		T	T		
16	F	F	F	F					

blank cells
represented
as F

d)

GACC for clause :

$$a : \{5, 6, 7\} \times \{13, 14, 15\}$$

$$b : \{9, 10, 11\} \times \{13, 14, 15\}$$

$$c : \{2, 6, 10\} \times \{4, 8, 12\}$$

$$d : \{3, 7, 10\} \times \{4, 8, 12\}$$

e) CACC for clause :

$$a : \{5, 6, 7\} \times \{13, 14, 15\}$$

$$b : \{9, 10, 11\} \times \{13, 14, 15\}$$

$$c : \{2, 6, 10\} \times \{4, 8, 12\}$$

$$d : \{3, 7, 10\} \times \{4, 8, 12\}$$

f) RACC for clause :

$$a : (5, 13), (6, 14), (7, 15)$$

$$b : (9, 13), (10, 14), (11, 15)$$

$$c : (2, 4), (6, 8), (10, 12)$$

$$d : (3, 4), (7, 8), (11, 12)$$

Solution (ix)

$$p = a \vee b \vee (c \wedge d)$$

a) clauses that go with predicate p are a, b, c, d

b) $p_a = \neg b \wedge (\neg c \vee \neg d)$

$$p_b = \neg a \wedge (\neg c \vee \neg d)$$

$$p_c = \neg a \wedge \neg b \wedge d$$

$$p_d = \neg a \wedge \neg b \wedge c$$

c)	a	b	c	d	p	p_a	p_b	p_c	p_d
1	T	T	T	T	T				
2	T	T	T	F	T				
3	T	T	F	T	T				
4	T	T	F	F	T				
5	T	F	T	T	T				
6	T	F	T	F	T	T			
7	T	F	F	T	T	T			
8	T	F	F	F	T	T			
9	F	T	T	T	T				
10	F	T	T	F	T		T		
11	F	T	F	T	T		T		
12	F	T	F	F	T		T		
13	F	F	T	T	T			T	T
14	F	F	T	F		T	T		T
15	F	F	F	T		T	T	T	
16	F	F	F	F		T	T		

Blank cells
represented
as F

d) GACC for clause:

$$a: \{6, 7, 8\} \times \{14, 15, 16\}$$

$$b: \{10, 11, 12\} \times \{14, 15, 16\}$$

$$c: (13, 15)$$

$$d: (13, 14)$$

e) CACC for clause:

$$a: \{6, 7, 8\} \times \{14, 15, 16\}$$

$$b: \{10, 11, 12\} \times \{14, 15, 16\}$$

$$c: (13, 15)$$

$$d: (13, 14)$$

f) RACC for clause

$$a: (6, 14), (7, 15), (8, 16)$$

$$b: (10, 14), (11, 15), (12, 16)$$

$$c: (13, 15)$$

$$d: (13, 14)$$