Use predicates (vii) and (ix) to answer the following questions.

vii.
$$p = (a \lor b) \land (c \lor d)$$

ix. $p = a \lor b \lor (c \land d)$

- (a) List the clauses that go with predicate p.
- (b) Compute (and simplify) the conditions under which each clause determines predicate
- (c) Write the complete truth table for the predicate. Label your rows starting from 1. Use the format in the example underneath the definition of Combinatorial Coverage in Section 8.1.1. That is, row 1 should be all clauses true. You should include columns for the conditions under which each clause determines the predicate, and also a column for the value of the predicate itself.
- (d) List all pairs of rows from your table that satisfy General Active Clause Coverage (GACC) with respect to each clause.
- (e) List all pairs of rows from your table that satisfy Correlated Active Clause Coverage (CACC) with respect to each clause.
- (f) List all pairs of rows from your table that satisfy Restricted Active Clause Coverage (RACC) with respect to each clause.

vi	6.	1				(5)		34	1	- 1		a) a, b, c, d
c)		a	Ь	C	d	P	Pa	Pb	P	c	Pa 1)	b) pa = -b/ccVd
	(T	T	T	T	T	T	7				1 1 1 1
	2	T	T	T	F	T	7	T	1			$= 7d\Lambda(aVb)$
-	3	T	T	F	T	T	17	1			T	pa = TC / (aVb
	4	T	T	F	F	i	T	F	1	T	T	BOX AC NAME
	5	T	F	T	T	T	T	I	1		Part Man	- (EVE) A VEV
	6	T	F	T	F	T	T	1		T		i majori B
	7	T	F	F	T	T	7	117	1		T	The state of the
,	8	T	F	F	F	Î	7	-	-	T	T	AVE week also also also
	9	F	T	T	T	1	- 17	1				Water Comments
	10	F	T	T	F	17	-17			T		
	11	F	T	F	T	17	- 17	17	-1		T	
	12	F	T	F	F					T	T	
	13	F	F	-		F			_	_	-	
	14	F	F	17		F	-	_	-			
1	5	F	F	F	- T			-		_		
1	16	F	F	- 1	FIF	F		1				

	a) a, b, c, d
	b) pa = -1 b 1 (c Vd) Atd)
1	pb=ral(cVd)
	$p_c = \neg d \Lambda(a \lor b)$ $p_d = \neg c \Lambda(a \lor b)$
	pa = Tencard
	EGACONDO BYLCVA
	- (LVE) A TAVAD -

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b) p=(aVb) A(cVd)
  Pa=true = (TVb) 1(cVd) = cVd
  Pa= false = (FVb) 1 (cVd) = b1(cVd)
  Pa = Pa = true & pa = balse
  Pa= (cVd) (ba(cVd))
    =((cVd) 17(b1(cVd)))V(7(cVd)1(b1(cVd)))
    = ((cvd) 1(-bV-(cVd))V(-(cVd) 1b1(cVd))
    = ((cvd)17b)V((cvd)A+(cvd))
Pa = 7 b A (cVd)
  Pb=tene = (aVT)/(cVd) = cVd
 Pb = false = (a \vee F) \wedge (c \vee d) = a \wedge (c \vee d)
 Pb = Pb = true 1 Pb = false
 p_b = (c \vee d) \oplus (a \wedge (c \vee d))
   =((cVd) An(aA(cVd))) V(n(cVd) A(aA(cVd)))
 = ((cVd) A(7aV7(cVd)))V(7(cVd)AaA(cVd))
   = ((cVd) 1 7a) V(ccVd) An(cVd))
1 = -1 al (cVd)
 P_{c=true} = (a \lor b) \land (T \lor d) = a \lor b

P_{c=Rabe} = (a \lor b) \land (F \lor d) = (a \lor b) \land d
 Pc = pc = true & pc = balse
 Pc=(aVb) + ((aVb) Ad
   = ((aVb) 17 ((aVb) 1d)) V(7(aVb) 1 ((aVb) 1d)))
   = ((aVb) 1 (¬(aVb) V¬d)) V(¬(aVb) A(aVb) 1d)
   = ((a V b) / 7(a V b)) V ((a V b) / 7d)
  = nd 1 (aVb)
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(vii) cont.
b) p = (a \lor b) \land (c \lor d)
  Pa=true = (aVb)/(cVT) = aVb
 Pd=false = (aVb) 1 (cVF) = (aVb)1c
 Pd = Pd = true & Pd = false
Pa = (a \lor b) \oplus ((a \lor b) \land c)
Pd = ((aVb) A ~ ((aVb) Ac)) V (~(aVb) A ((aVb) Ac))
    = ((aVb) 1(\(\alpha(aVb)V\rc))V(\(\alpha(\alphaVb)\lambda(\alphaVb)\lambda(\alphaVb)\lambda(\alpha)\)
    = ((aVb) 17(aVb)) V((aVb) 17c)
```

Pa=TcA(aVb)

d) GACC

Clause a: {5, 6, 7} × {13, 14, 15} Clause b: {9, 10, 11} x {13, 14, 15} Clause c: {2, 6, 103 x {4, 8, 12} Clause d: {3, 7, 11} x {4, 8, 12}

e) CACC

Clause a: {5,6,7} x {13,14,15} Clause b: {9, 10, 11} x { 13, 14, 15} Clause c: {2,6,10} x {4,8,12} Clause d: {3, 7, 113× {4, 8, 123

F) RACC

Clause a: {{5, 13}, {6, 14}, {7, 15}} Clause b: { {9, 133, {10, 14}, {11, 15}} Clause c: {{2, 4}, {6, 83, {10, 1233} Clause d: { { 3, 4 3, { 7, 8 3, { 11, 12 3 3}

-)	a	Ь	C	d	p	Pa	Pb	Pc	Pd
l	T	T	T	T	T				
2	T	T	T	F	T				
3	T	T	F	T	T	7.13			
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		
(1	F	T	F	T	T	1	T		
12	F	T	F	F	T		T		ACA
13	F	F	T	T	T	110		+	T
14	F	F	T	F	7	T	T		T
15	F	F	F	T	=	T	T	T	
16	F	F	F	F	-	T	+	-	

b)
$$p_a = \neg b \land \neg (c \land d)$$

 $p_b = \neg a \land \neg (c \land d)$
 $p_c = d \land \neg (a \lor b)$
 $p_d = c \land \neg (a \lor b)$

b)
$$p = a \lor b \lor (c \land d)$$

$$p_b = \neg (aV(c\Lambda d))$$

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

$$T \oplus a = (T \wedge \neg a) \vee (F \wedge a)$$

$$= \neg a$$

$$F \oplus a = (F \wedge \neg a) \vee (T \wedge a)$$

$$= a$$

Pc=true = a V b V (TAd) = a V b V d $P_{c=false} = aVbV(F \wedge d) = aVb$ Pc = Pc=true + Pc=galse pc=(a Vb Vd) (+) (a Vb) $Pc = ((a \lor b \lor d) \land \neg (a \lor b)) \lor (\neg (a \lor b \lor d) \land (a \lor b))$ $= (((a \lor b) \lor d) \land \neg (a \lor b)) \lor (\neg ((a \lor b) \lor d) \land (a \lor b))$ =(((aVb)A+(aVb)))V(dA7(aVb)))V((1(aVb)A-1d)A(aAb)) Pe = (d 1 - (a V b)) Pa=tace = a V b V (c AT) = a V b V c Pd=folse = a V b V (c A F) = a V b Pd = Pa = true Pd = false Pa= (aVbVc) (aVb) Pa=((aVbVc)/-(aVb))V(-(aVbVd)/(aVb))) =(((aVb)Vc) 1~(aVb)) V(~(aVb)Vd) 1(aVb)) = ((cavb) A= (avb)) V ((= (avb) A=d) A (avb)) Pa=cA¬(aVb) d) GACC Clause a: {6,7,8}×{14,15,16} Clause b: {10,11,12}x {14,15,16} Clause c: { 133 x { 15} Clause d: {13} x { 14} Clause a: {6, 7, 8} × {14, 15, 16} e) CACC Clause b: {10, (1, 12} × {14, 15, 16} Clause c ! {13} x {15} Clause d: {13} × {14}

f) RACC

Clause c: {{13,15}} Clause d: { {13, 14}}

Clause a: {{6, 14}, {7, 15}, {8, 16}}

Clause b: {{10, 143, {11, 153, {12, 16}}}