Nabin Shrestha
1001746226

Problem 1 :

1) True
2) False
3) False
4) False
5) False
6) True
7) False
8) False
9) False
10) True

Problem 2 :

a) prime paths

1) n0, n2, n3, n4, n1
2) n4, n1, n3, n0, n2
3) n2, n3, n0, n1
4) n2, n3, n0, n2
5) n0, n1, n3, n0
6) n0, n1, n3, n4
7) n0, n2, n3, n0
8) n3, n0, n1, n3
9) n1, n3, n0, n1
10) n1, n3, n4, n1
11) n4, n1, n3, n4
12) n3, n0, n2, n3
13) n3, n4, n1, n3

b) test path

1) [n0, n2, n3, n4, n1, n3, n4]
2) [n0, n2, n3, n4, n1, n3, n0, n2, n3, n4]
3) [n0, n1, n3, n0, n1, n3, n4]
4) [n0, n1, n3, n4, n1, n3, n4]
5) [n0, n1, n3, n0, n2, n3, n4]
6) [n0, n2, n3, n0, n2, n3, n4]
7) [n0, n2, n3, n0, n1, n3, n4]

Problem 3:

a) $P_a = b \vee (c \wedge \neg d)$

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

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

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

b)

	a	b	c	d	P	P_a	P_b	P_c	P_d
1	T	T	T	T			T		T
2	T	T	T	F	T			T	T
3	T	T	F	T			T		
4	T	T	F	F			T	T	
5	T	F	T	T	T	T	T		
6	T	F	T	F	T				
7	T	F	F	T	T	T	T		
8	T	F	F	F	T	T	T		
9	F	T	T	T					T
10	F	T	T	F	T			T	T
11	F	T	F	T					
12	F	T	F	F				T	
13	F	F	T	T		T			T
14	F	F	T	F	T			T	T
15	F	F	F	T		T			
16	F	F	F	F		T		T	

Problem 3 :

continue

c) General Active clause Coverage (GACC) wrt C

$\{2, 10, 14\} \times \{4, 12, 16\}$

d) Correlated Active clause Coverage (CACC) wrt C

$\{2, 10, 14\} \times \{4, 12, 16\}$

e) Restricted Active clause Coverage (RACC) wrt C

(2, 4), (10, 12), (14, 16)

Problem 4

mutant : if $((m4 != 0) \,||\, (m100 == 0)) \;\&\&\; (m400 != 0))$

1) reachability = true

2) infection = $m4 == 0$ && $m100 != 0$

3) propagation = true

4) test cases : month 1 = 1
month 2 = 5
year = 2000
day 1 = 1
day 2 = 15

Problem 5

	1	2	3	4	5	6
t1	1	0	1	1	0	0
t2	1	0	0	0	0	1
t3	0	1	0	1	0	0
t4	1	1	0	0	1	0
t5	1	0	0	0	0	0
t6	1	0	1	0	1	0

here,

minCov = ϕ , remain = 6

for LC, we have to look for column with least number of 1's

Step 1:

LC = {6}, S = t2

minCov = {t2}

markedCols = {1, 6}

remain = 6 - 2 = 4

Step 2:

LC = {2}, S = t4

minCov = {t2, t4}

markedCols = {1, 6, 2, 5}

remain = 4 - 2 = 2

Step 3

LC = {3}, S = t1

minCov = {t2, t4, t1}

markedCols = {1, 6, 2, 5, 3, 4}

remain = 2 - 2 = 0

Here, Minimal Cover Set = {t2, t4, t1}