

Answers

1. (a)

driver_present	buckled_up	ignition_on	warning_light
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	0

(b) $\text{warning_light} = (\text{driver_present}) (\text{buckled_up})' (\text{ignition_on})$

2. (a)

driver_present*	buckled_up*	ignition_on*	warning_light*
0	0	0	1
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	1

(b) $\text{warning_light}^* = \text{driver_present}^* + (\text{buckled_up}^*)' + \text{ignition_on}^*$

3. (a)

driver_present*	buckled_up*	ignition_on	warning_light
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	0

(b) $\text{warning_light} = (\text{driver_present}^*)' (\text{buckled_up}^*) (\text{ignition_on})$

or $\text{warning_light} = [\text{driver_present}^* + (\text{buckled_up}^*)' + \text{ignition_on}']'$

4. $F=1$ when $A=1$ or $C^*=0$ but not both; and $B=0$ or $D^*=1$ but not both.

A	B	C*	D*	F
0	0	0	0	1
0	0	0	1	0
0	0	1	0	0
0	0	1	1	0
0	1	0	0	0
0	1	0	1	1
0	1	1	0	0
0	1	1	1	0
1	0	0	0	0
1	0	0	1	0
1	0	1	0	1
1	0	1	1	0
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	1

$$F(A,B,C^*,D^*) = \sum m(0, 5, 10, 15)$$