Eli Jones ENGR123 A1

1.

a.

P	Q	$P \cup Q$	$!P$	$!P \to Q$
1	1	1	0	1
1	0	1	0	1
0	1	1	1	1
0	0	0	1	0

b.(i)

P	Q	$P \cap Q$	$!(P \cap Q)$	$P \cup !(P \cap Q)$
1	1	T	F	1
1	0	F	T	1
0	1	F	T	1
0	0	F	T	1

(ii)

P	Q	R	$\overset{(T)}{Q \to R}$	$\overset{(S)}{P \to T}$	$\overset{(W)}{R \to P}$	$S \to W$
1	1	1	1	1	1	1
1	0	1	1	1	1	1
0	1	1	1	1	0	0
0	0	1	1	1	0	0
1	1	0	0	0	1	0
1	0	0	1	1	1	1
0	1	0	0	1	1	1
0	0	0	1	1	1	1

question statement.

2.a. b = Stay at FBH, w = WPT, P = P.P

(I) if w, then $(b \cap P)$

↳ $W \to (b \cap P)$

(II) if not W and P, b

↳ $!(W \cup P) \to b$

b.(I) $P \cap (w \to b)$ — She has pancakes and

↳ if she walks the ~~beach~~ beach, then she stays at the hotel ~~and then pancakes~~

(II) $(!b \to P) \cup W \equiv W \cup (!b \to P)$

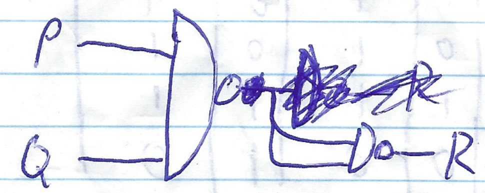
↳ She walks the beach or doesn't stay at the hotel to then have pancakes.

3. build circuits with $!\cap$ gates (nand)

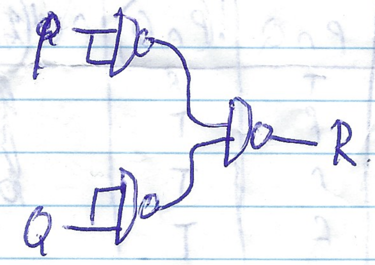
truth table for nand:

P	Q	$!(P \cap Q)$
0	0	1
0	1	1
1	0	1
1	1	0

a.



b.



4.

a. The 2 implies there is 1 bombs on both the following squares: S_4 and S_5

$$A \to (S_4 \cap S_5)$$

b. The is 1 bomb in either S_1 or S_2 (but not both)

$$B \to (S_1 \underline{\cup} S_2)$$

c. There is a bombs located within 4 of the 5 squares it is touching.

$$C \to (S_1 \cap S_2 \cap S_3 \cap S_4) \underline{\cup} (S_1 \cap S_2 \cap S_3 \cap S_5) \underline{\cup} \ldots \ldots$$ (for each combination)

D. $P_{bombs} = A \cap B \cap C \equiv (S_1 \underline{\cup} S_2) \cap S_3 \cap S_4 \cap S_5$

e. based on ↑, 2 potential outcomes:
$S_1 \cap S_3 \cap S_4 \cap S_5$
or $S_2 \cap S_3 \cap S_4 \cap S_5$
are bombs.