COMP111 - Tutorial 5 Answers

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2. There are 7 interpretations, I, making P true and the one making P false is $I(p_1) = 1$, $I(p_2) = 0$ and $I(p_3) = 1$.

p_1	p_2	p_3	$\neg p_2$	$(p_1 \wedge \neg p_2)$	$((p_1 \wedge \neg p_2) \wedge p_3)$	P
0	0	0	1	0	0	1
0	0	1	1	0	0	1
0	1	0	0	0	0	1
0	1	1	0	0	0	1
1	0	0	1	1	0	1
1	0	1	1	1	1	0
1	1	0	0	0	0	1
1	1	1	0	0	0	1

Table 1: Truth table of $P = (((p_1 \wedge \neg p_2) \wedge p_3) \Rightarrow p_2)$

3. (c) As $P \neq 1$ for all interpretations of p_1 this formula is not satisfiable.

p_1	$\neg p_1$	P
0	1	0
1	0	0

Table 2: Truth table of $(p_1 \Leftrightarrow \neg p_1)$