

## Green Handout Question.

We know that every compound statement with at least one "T" in output column has a DNF

$$\bigvee_i (\bigwedge_j Q_{ij})$$

Take this statement which is not a tautology

Its negation is not a contradiction  $\Rightarrow$  at least one "T" in output column in Truth Table

$\Rightarrow$  Negation has DNF expression  $\bigvee_i (\bigwedge_j Q_{ij})$

$\Rightarrow$  Original statement has  $\neg (\bigvee_i (\bigwedge_j Q_{ij}))$  expression

By De Morgan's Law<sup>(applying twice)</sup>, this becomes

$$\bigwedge_i (\bigvee_j \neg Q_{ij})$$

This is a CNF