Boolean Reasoning: The Logic of Boolean Equations

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1 The Blake Canonical Form

1.1 Definitions and Terminology

An SOP formula F will be called **absorptive** in case no term in F is absorbed by any other term in F. If F is not absorptive, then an equivalent absorptive formula, which we call $ABS(F)$, may be obtained from F by successive deletion of terms absorbed by other terms in F.

1.2 Syllogistic & Blake Canonical Formulas

Let F and G be SOP formulas. We say that G is **formally included** in F written $G \ll F$,in case each term of G is inclused in some term of F. Formal inclusion implies inclusion, i.e., $G \ll F \Rightarrow G \leq F$ for any F, G pair.

Example 1.1. Let

$$F_1 = wy' + w'z + w'x'y + wx'yz' G = w'y'z + w'x'y H = xy'z + x'yz'$$

$G \leq F_1$ and $H \leq F_1$. Also $G \ll F_1$ and $H \not\ll F_1$