Axioms

A1. B contains two elements, 0 and 1, such that $0 \neq 1$

A2. Definition of NOT

(i) $0' = 1$

(ii) $1' = 0$

$$\left.\begin{array}{ll} \text{A3 (i)} & 0 \cdot 0 = 0 \\ \text{A4 (i)} & 1 \cdot 1 = 1 \\ \text{A5 (i)} & 0 \cdot 1 = 1 \cdot 0 = 0 \end{array}\right\} \text{Definition of AND}$$

$$\left.\begin{array}{ll} \text{A3 (ii)} & 1 + 1 = 1 \\ \text{A4 (ii)} & 0 + 0 = 0 \\ \text{A5 (ii)} & 1 + 0 = 0 + 1 = 1 \end{array}\right\} \text{Definition of OR}$$

Laws

L1: $X \cdot 1 = X$	L1D: $X + 0 = X$
L2: $X \cdot 0 = 0$	L2D: $X + 1 = 1$
L3: $X \cdot X = X$	L3D: $X + X = X$
L4: $(X')' = X$	
L5: $X \cdot X' = 0$	L5D: $X + X' = 1$
L6: $X \cdot Y = Y \cdot X$	L6D: $X + Y = Y + X$
L7: $(X \cdot Y) \cdot Z = X \cdot (Y \cdot Z)$	L7D: $(X + Y) + Z = X + (Y + Z)$
L8: $X \cdot (Y + Z) = (X \cdot Y) + (X \cdot Z)$	L8D: $X + (Y \cdot Z) = (X + Y) \cdot (X + Z)$
L9: $X \cdot (X + Y) = X$	L9D: $X + X \cdot Y = X$
L10: $X \cdot Y + X \cdot Y' = X$	L10D: $(X + Y) \cdot (X + Y') = X$
L11: $(X + Y') \cdot Y = X \cdot Y$	L11D: $(X \cdot Y') + Y = X + Y$
L12: $(X \cdot Y \cdot Z \cdot \ldots)' = X' + Y' + Z' + \ldots$	L12D: $(X + Y + Z + \ldots)' = X' \cdot Y' \cdot Z' \cdot \ldots$

Definitions and Principles

Definition of XOR: $X \oplus Y = X'Y + XY'$

Principle of Duality: $F^D(X_1, X_2, \ldots, X_n, +, \cdot, 0, 1, ') = F(X_1, X_2, \ldots, X_n, \cdot, +, 1, 0, ')$