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Predicate Calculus for Boolean Valued Functions. Part V

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Summary. In this paper, we proved some elementary predicate calculus formulae containing the quantifiers of Boolean valued functions with respect to partitions. Such a theory is an analogy of usual predicate logic.

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The articles [5], [7], [6], [4], [3], [1], and [2] provide the notation and terminology for this paper.

For simplicity, we follow the rules: Y denotes a non empty set, a denotes an element of $Boolean^Y$, G denotes a subset of PARTITIONS(Y), and A, B denote partitions of Y.

Next we state a number of propositions:

(1) If G is independent, then $\forall_{\neg\forall_{a,A}G,B}G \Subset \neg\forall_{\forall_{a,B}G,A}G$.

(2) $\forall_{\forall_{\neg a,A}G,B}G \Subset \neg\forall_{\forall_{a,B}G,A}G$.

(3) $\forall_{\neg\exists_{a,A}G,B}G \Subset \neg\forall_{\forall_{a,B}G,A}G$.

(4) If G is independent, then $\forall_{\exists_{\neg a,A}G,B}G \Subset \neg\forall_{\forall_{a,B}G,A}G$.

(6)[1] If G is independent, then $\exists_{\forall_{\neg a,A}G,B}G \Subset \neg\forall_{\forall_{a,B}G,A}G$.

(7) If G is independent, then $\exists_{\neg\exists_{a,A}G,B}G \Subset \neg\forall_{\forall_{a,B}G,A}G$.

(9)[2] If G is independent, then $\neg\forall_{\exists_{a,A}G,B}G \Subset \neg\exists_{\forall_{a,B}G,A}G$.

(10) If G is independent, then $\neg\exists_{\exists_{a,A}G,B}G \Subset \neg\exists_{\forall_{a,B}G,A}G$.

(11) $\neg\exists_{\exists_{a,A}G,B}G \Subset \neg\forall_{\exists_{a,B}G,A}G$.

(14)[3] If G is independent, then $\neg\exists_{\forall_{a,A}G,B}G \Subset \neg\forall_{\forall_{a,B}G,A}G$.

(15) If G is independent, then $\neg\forall_{\exists_{a,A}G,B}G \Subset \neg\forall_{\forall_{a,B}G,A}G$.

(16) $\neg\exists_{\exists_{a,A}G,B}G \Subset \neg\forall_{\forall_{a,B}G,A}G$.

(17) If G is independent, then $\neg\exists_{\forall_{a,A}G,B}G \Subset \exists_{\neg\forall_{a,B}G,A}G$.

[1] The proposition (5) has been removed.
[2] The proposition (8) has been removed.
[3] The propositions (12) and (13) have been removed.

(18) If G is independent, then $\neg\forall_{\exists_{a,A}G,B}G \Subset \exists_{\neg\forall_{a,B}G,A}G$.

(19) $\neg\exists_{\exists_{a,A}G,B}G \Subset \exists_{\neg\forall_{a,B}G,A}G$.

(20) If G is independent, then $\neg\forall_{\exists_{a,A}G,B}G \Subset \forall_{\neg\forall_{a,B}G,A}G$.

(21) If G is independent, then $\neg\exists_{\exists_{a,A}G,B}G \Subset \forall_{\neg\forall_{a,B}G,A}G$.

(22) $\neg\exists_{\exists_{a,A}G,B}G \Subset \exists_{\neg\exists_{a,B}G,A}G$.

(23) If G is independent, then $\neg\exists_{\exists_{a,A}G,B}G = \forall_{\neg\exists_{a,B}G,A}G$.

(24) If G is independent, then $\neg\forall_{\exists_{a,A}G,B}G \Subset \exists_{\exists_{\neg a,B}G,A}G$.

(25) $\neg\exists_{\exists_{a,A}G,B}G \Subset \exists_{\exists_{\neg a,B}G,A}G$.

(26) If G is independent, then $\neg\forall_{\exists_{a,A}G,B}G \Subset \forall_{\exists_{\neg a,B}G,A}G$.

(27) If G is independent, then $\neg\exists_{\exists_{a,A}G,B}G \Subset \forall_{\exists_{\neg a,B}G,A}G$.

(28) $\neg\exists_{\exists_{a,A}G,B}G \Subset \exists_{\forall_{\neg a,B}G,A}G$.

(29) If G is independent, then $\neg\exists_{\exists_{a,A}G,B}G = \forall_{\forall_{\neg a,B}G,A}G$.

(30) If G is independent, then $\exists_{\neg\exists_{a,A}G,B}G \Subset \neg\exists_{\forall_{a,B}G,A}G$.

(31) $\forall_{\neg\exists_{a,A}G,B}G \Subset \neg\exists_{\forall_{a,B}G,A}G$.

(32) $\forall_{\neg\exists_{a,A}G,B}G \Subset \neg\forall_{\exists_{a,B}G,A}G$.

(33) If G is independent, then $\forall_{\neg\exists_{a,A}G,B}G = \neg\exists_{\exists_{a,B}G,A}G$.

(34) If G is independent, then $\exists_{\neg\forall_{a,A}G,B}G = \exists_{\neg\forall_{a,B}G,A}G$.

(35) If G is independent, then $\forall_{\neg\forall_{a,A}G,B}G \Subset \exists_{\neg\forall_{a,B}G,A}G$.

(36) If G is independent, then $\exists_{\neg\exists_{a,A}G,B}G \Subset \exists_{\neg\forall_{a,B}G,A}G$.

(37) $\forall_{\neg\exists_{a,A}G,B}G \Subset \exists_{\neg\forall_{a,B}G,A}G$.

(38) If G is independent, then $\exists_{\neg\exists_{a,A}G,B}G \Subset \forall_{\neg\forall_{a,B}G,A}G$.

(39) If G is independent, then $\forall_{\neg\exists_{a,A}G,B}G \Subset \forall_{\neg\forall_{a,B}G,A}G$.

(40) $\forall_{\neg\exists_{a,A}G,B}G \Subset \exists_{\neg\exists_{a,B}G,A}G$.

(41) If G is independent, then $\forall_{\neg\exists_{a,A}G,B}G = \forall_{\neg\exists_{a,B}G,A}G$.

(42) If G is independent, then $\exists_{\neg\exists_{a,A}G,B}G \Subset \exists_{\exists_{\neg a,B}G,A}G$.

(43) $\forall_{\neg\exists_{a,A}G,B}G \Subset \exists_{\exists_{\neg a,B}G,A}G$.

(44) If G is independent, then $\exists_{\neg\exists_{a,A}G,B}G \Subset \forall_{\exists_{\neg a,B}G,A}G$.

(45) If G is independent, then $\forall_{\neg\exists_{a,A}G,B}G \Subset \forall_{\exists_{\neg a,B}G,A}G$.

(46) $\forall_{\neg\exists_{a,A}G,B}G \Subset \exists_{\forall_{\neg a,B}G,A}G$.

(47) If G is independent, then $\forall_{\neg\exists_{a,A}G,B}G = \forall_{\forall_{\neg a,B}G,A}G$.

(48) If G is independent, then $\exists_{\forall_{\neg a,A}G,B}G \Subset \neg\exists_{\forall_{a,B}G,A}G$.

(49) If G is independent, then $\forall_{\forall_{\neg a,A}G,B}G \Subset \neg\exists_{\forall_{a,B}G,A}G$.

(50) $\forall_{\forall_{\neg a,A}G,B}G \Subset \neg\forall_{\exists_{a,B}G,A}G$.

(51) If G is independent, then $\forall_{\forall_{\neg a,A}G,B}G \Subset \neg\exists_{\exists_{a,B}G,A}G$.

(52) If G is independent, then $\exists_{\exists_{\neg a,A}G,B}G \Subset \exists_{\neg\forall_{a,B}G,A}G$.

(53) If G is independent, then $\forall_{\exists_{\neg a,A}G,B}G \Subset \exists_{\neg\forall_{a,B}G,A}G$.

(54) If G is independent, then $\exists_{\forall_{\neg a,A}G,B}G \Subset \exists_{\neg\forall_{a,B}G,A}G$.

(55) $\forall_{\forall_{\neg a,A}G,B}G \Subset \exists_{\neg\forall_{a,B}G,A}G$.

(56) If G is independent, then $\exists_{\forall_{\neg a,A}G,B}G \Subset \forall_{\neg\forall_{a,B}G,A}G$.

(57) If G is independent, then $\forall_{\forall_{\neg a,A}G,B}G \Subset \forall_{\neg\forall_{a,B}G,A}G$.

(58) $\forall_{\forall_{\neg a,A}G,B}G \Subset \exists_{\neg\exists_{a,B}G,A}G$.

(59) If G is independent, then $\forall_{\forall_{\neg a,A}G,B}G = \forall_{\neg\exists_{a,B}G,A}G$.

(61)[4] $\forall_{\exists_{\neg a,A}G,B}G \Subset \exists_{\exists_{\neg a,B}G,A}G$.

(62) If G is independent, then $\exists_{\forall_{\neg a,A}G,B}G \Subset \exists_{\exists_{\neg a,B}G,A}G$.

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[4] The proposition (60) has been removed.