For which kinds of specifications \( P \) and \( Q \) is the following a theorem:

(a) \( \neg(P. \neg Q) \iff P. Q \)

§ First, rewrite the two sides.
\[
\neg(P. \neg Q) = \forall \sigma'''. (\sigma' \rightarrow P)\sigma''' \Rightarrow (\sigma \rightarrow Q)\sigma''
\]
\[
P. Q = \exists \sigma'''. (\sigma' \rightarrow P)\sigma''' \land (\sigma \rightarrow Q)\sigma''
\]

If, for all prestates, \( P \) is deterministic, then (a) is a theorem. (That's sufficient, but not necessary.)

(b) \( P. Q \iff \neg(P. \neg Q) \)

§ If, for all prestates, \( P \) is satisfiable (\( P \) is implementable), then (b) is a theorem.

(c) \( P. Q = \neg(P. \neg Q) \)

§ If, for all prestates, \( P \) is satisfiable and deterministic, then (c) is a theorem.