$P(A \cup B) = P(A \cap B)$ if and only if the relation between $P(A)$ and $P(B)$ is ....

Given that $P(A \cup B) = P(A \cap B)$

$\Rightarrow \quad P(A) + P(B) - P(A \cap B) = P(A \cap B)$

$\Rightarrow \quad [P(A) - P(A \cap B)] + [P(B) - P(A \cap B)] = 0$

But $P(A) - P(A \cap B), P(B) - P(A \cap B) \geq 0$

$[\because \quad P(A \cap B) \leq P(A), P(B)]$

$\Rightarrow \quad P(A) - P(A \cap B) = 0$ and $P(B) - P(A \cap B) = 0$

[$\because$ Sum of two non-negative no's can be zero only when these no's are zeros]

$\Rightarrow \quad P(A) = P(B) = P(A \cap B)$

which is the required relationship.