Answer on Question #63201 – Math – Discrete Mathematics

Question

Which of the following binary relations is true $a \wedge b$:
Function / injective / surjective / total / symmetric / reflexive / transitive?

Solution

It is *total,* because the domain of the relation is the full set $A = \{T, F\}$.

It is *symmetric*, because

$$a \wedge b \equiv a \wedge b.$$

It is *transitive,* because

If $a \wedge b = T$ and $b \wedge c = T$, then $a \wedge c = T$.

It is not a *function* (because every element is in relation with more than one element, for example, $T \wedge T$ and $T \wedge F$ can be regarded).

It is not *injective*, because it is not a function.

It is not *surjective*, because it is not a function.

It is not *reflexive* ($a \wedge a = F$ when $a = F$).

Answer: total, symmetric, transitive.