5. Basis Step:

Let T_0 be the FBT that is just the root.

Then, $e(T_0) = 1$ and $i(T) = 0$

so, $1 = 0 + 1$ ✓

Inductive Step:

Let T_1 and T_2 be FBTs and $T_3 = T_1 \cdot T_2$

Assume as the IH that $e(T_1) = i(T_1) + 1$

and $e(T_2) = i(T_2) + 1$

$$e(T_3) = e(T_1) + e(T_2)$$
$$= i(T_1) + i(T_2) + 1 + 1 \quad \text{by IH}$$
$$= i(T_3) + 1 \quad (i(T_3) = i(T_1) + i(T_2) + 1)$$