Esercizio 1. The language L contains only the binary relations $<$ and e. The theory T_0 says that $<$ is a strict linear order and that e is an equivalence relation. Let $\mathcal{M}$ consist of models of T_0 and partial isomorphisms.

1. Do rich models exist?
2. Describe T_1, the set of sentences that hold in all rich models (if they exist).
3. Does T_1 have elimination of quantifiers?
4. Is T_1 λ-categorical for some λ?

Esercizio 2. Let T_0 and $\mathcal{M}$ be as in Example 7.15 except that we restrict the language to the relations $r_0, \ldots, r_n$ for a fixed n.

1. Do rich models of T_0 exist ?
2. Describe T_1, the set of sentences that hold in all rich models (if they exist).
3. Does T_1 has elimination of quantifiers ?
4. Is T_1 λ-categorical for some λ ?

Answer the questions above if we add to the language a constant 0 to the language.

Answer the questions above when we drop the axioms $\neg\exists x \left[r_n(x) \wedge r_m(x) \right]$ from T_0.

(Rispondere sinteticamente.)