Latihan IF2121 Logika Komputasional – RL: Syntax & Semantics

1. Apakah ekpresi logika relasional di bawah ini legal atau tidak ? Jika tidak, jelaskan dimana letak kesalahannya dan mengapa, dengan ketentuan variabel dan konstanta sebagai berikut:
   - *variables: x, y, z*
   - *object constants: patrick, joe, kevinKW, PR, cemilan*
   - *function constants: mother, anak, plus*
   - *relational constants dengan aritas satu: hantu, biru, ramah, senang, sepupu*
   - *relational constants dengan aritas dua: takutpada, suka, mengerjakan, teman*

   a) suka(joe, cemilan) ∧ suka(kevinKW, cemilan) → teman(kevinKW)
   b) takutpada(joe, sepupu(patrick))
   c) teman(patrick, joe) ∧ ~takutpada(kevinKW, hantu(patrick))
   d) suka(kevinKW, mother(x)) ∧ teman(kevinKW, x) → hantu(x) ∧ biru(y)
   e) plus(mother(anak(z)), anak(anak(anak(cemilan)))) ∧ plus(joe, kevinKW)

2. Relation Constants:
   - person(x)
   - femur(x)
   - leg(x)
   - eye(x)
   - part_of(x, y): x part of y
   - has(x, y)
   - heart(x)
   - sinus_rhythm(x)
   - seeing(x)
   - living(x)
   - rhythm(x)
   - regular(x)
   - differ(x,y): x and y are different

   Translate into FOL:

   a) All living hearts have a rhythm
   b) All people have two eyes

3. Relation Constants:
   - person(x)
   - child(x)
   - parent(x,y): x is the parent of y
   - male(x)
   - female(x)

- ancestor(x,y): x is the ancestor of y
- sibling(x,y)
- differ(x,y): x and y are different

Translate into FOL

a) All people have two parents
b) No person is both male and female
c) All people have one male parent and one female parent
d) One child is a sibling of another if they both have the same two parents