QUESTION 4: UNIFICATION

1. unify[t(s(s), G, s, p, t(K), s), t(s(G), G, s, p, t(K), U)]

   initially: s = {} , A= t(s(s), G, s, p, t(K), s) , B= t(s(G), G, s, p, t(K), U).

   1) s = s ° {G=s} = {G=s}
      A°s= t(s(s), s, s, p, t(K), s)
      B°s= t(s(s), s, s, p, t(K), U)
   2) s = s ° {U=s} = {G=s, U=s}
      A°s= t(s(s), s, s, p, t(K), s)
      B°s= t(s(s), s, s, p, t(K), s)

   Answer: s = {G=s, U=s}

2. unify[g(l, M, g, G, U, g, v(M)), g(l, v(U), g, v(M), v(G), g, v(M))]

   initially: s = {} , A= g(l, M, g, G, U, g, v(M)), B=g(l, v(U), g, v(M), v(G), g, v(M)).

   1) s = s ° {M=v(U)} = {M=v(U)}
      A°s= g(l, v(U), g, G, U, g, v(v(U))).
      B°s = g(l, v(U), g, v(v(U)), v(G), g, v(v(U))).
   2) s = s ° {G=v(v(U))} = {M=v(U), G=v(v(U))}
      A°s= g(l, v(U), g, v(v(U)), U, g, v(v(U))).
      B°s = g(l, v(U), g, v(v(U)), v(v(v(U))), g, v(v(U))
   3) s = s ° {U= v(v(v(U)))} => not possible, circular occurrence (occurs check will fail)

   Answer: No MGU

3. unify[m(M, N), n(M, N)]
   Answer: There isn't a unifier for 2 different predicates m and n.

4. unify[p([v | [V | VV]]), p([[v | V] | VV])]

   Initially: s = {}, A = p([v | [V | VV]]), B= p([[v | V] | VV]).

   1) s = s ° {v = [v|V]} => illegal substitution

   Answer: No such substitution.

5. unify[g([T]), g(T)]

   Initially: s = {}, A = g([T]), B= g(T).

   4) s = s ° {T = [T]} => not possible, circular occurrence (occurs check will fail on T)

   Answer: No such substitution.