**Question 4:**

**1)**

A = t(s(s), G, s, p, t(K), s)

B = t(s(G), G, s, p, t(K), U)

1. sub = {G = s} A\*sub = t (s(s), s, s, p, t(K), s)

B\*sub = t(s(s), s, s, p, t(K), U)

1. sub = {G=s, U=s} A\*sub = t(s(s), s, s, p, t(K), s)

B\*sub = t(s(s), s, s, p, t(K), s)

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

**2)**

A = g(l, M, g, G, U, g, v(M))

B = g(l, v(U), g, v(M), v(G), g, v(M)

1. sub = {M=v(U)} A\*sub = g(l, v(U), g, G, U, g, v(v(U)))

B\*sub = g(l, v(U), g, v(v(U)), v(G), g, v(v(U)))

1. sub = {M=v(U), G=v(v(U))} A\*sub = g(l, v(U), g, v(v(U)), U, g, v(v(U)))

B\*sub = g(l, v(U), g, v(v(U)), v(v(v(U))), g, v(v(U)))

Answer: there is none because U=v(v(v(U)))).

**3)**

A = m(M, N)

B = n(M, N)

Answer: there is no substitution because there is no unification between n and m.

**4)**

A = p([v | [V | VV]])

B = p([[v | V] | VV])

Answer: there is no substitution because there is circular occurrence v=[v | V].

**5)**

A = g([T])

B = g(T)

Answer: there is no substitution because there is circular occurrence T=[T].

**Question 5:**

b. The answer is X = s(zero).

c. it is a success tree because it has a success leaf – and therefore at least one successful route to the root node.

d. it is a finite tree. There no recursions that will cause an infinite substitution in this tree.