Laboratorio de Inteligencia Artificial

FORMA CLAUSAL

Escribir las siguientes sentencias del cálculo de predicados de primer orden en forma clausal y comprobar mediante el programa SLI que la solución alcanzada es correcta:

1. $(\forall X)(p(X) \vee q(X))$
2. $(\forall X)((\exists Y)p(X,Y) \rightarrow q(X))$
3. $(\forall X)((\exists Y)p(Y,X) \rightarrow (q(X) \wedge (\forall Y)\ t(Y,a)))$
4. $((\forall Y)(\forall X)((p(Y,X) \leftrightarrow q(X)) \vee r(X)))$
5. $(\exists X)((\forall Y) \neg (\forall X)((p(Y,X) \leftrightarrow q(X))) \vee r(X))$
6. $(\forall X)p(X) \rightarrow (\exists Z)q(Z) \wedge (\forall X)(\exists Y)r(X,Y)$
7. $(\exists X)(\exists Y)\ a(X,Y) \wedge [(\exists X)b(X) \rightarrow (\exists X)(\forall Y)(\forall Z)c(X,Y,Z)]$
8. $(\forall X)[\ \neg p(X,a) \rightarrow (\exists Y)(p(Y,g(X)) \wedge (\forall Z)(p(Z,g(X)) \rightarrow p(Y,Z)))]$
9. $(\forall X)p(X) \wedge [((\forall Y)(q(Y) \rightarrow \neg r(a,Y)) \rightarrow (\forall Y)p(Y)) \vee (\forall X)p(X)]$
10. $(\forall X)((a(X) \wedge b(X)) \rightarrow (c(X,l) \wedge (\exists Y)((\exists Z)(c(Y,Z)) \rightarrow d(X,Y)))) \vee (\forall X)(e(X))$
11. $[(\forall X)(p(X))] \rightarrow [(\forall X)(\forall Y)(\exists Z)(p(X,Y,Z) \rightarrow (\forall U)(r(X,Y,Z,U)))]$
12. $(\forall X)[(p(X) \rightarrow \neg\ (\forall Y)(q(X,Y) \rightarrow (\ \exists Z)p(Z))) \wedge (\forall Y)(q(X,Y) \rightarrow r(a))]$
13. $(\forall X)[(p(X) \rightarrow \neg\ (\forall Y)(q(X,Y) \rightarrow (\ \exists Z)p(Z))) \wedge (\forall T)(q(X) \rightarrow r(T))]$
14. $(\exists T)(\ \forall X)[p(X) \rightarrow (\ \neg\ (\forall Y)(q(X,Y) \rightarrow (\exists Z)p(Z)) \wedge (\forall Y)(q(X,Y) \rightarrow r(T)))]$
15. $(\exists W)((\forall X)a(X) \rightarrow \neg(\exists Z)\ (b(W,Z) \rightarrow (\forall Y)c(W,Y)))$