Assignment #6-key

1. (a) $(Fh \wedge Gh)$ (b) $\forall x(Fx \supset Gx)$ (c) $(Fh \supset \exists x(Fx \wedge \neg Gx))$

2.

(a) Not everyone who ate rice got sick.
Not All S are P.
Subject: People who ate rice. $(Px \wedge Rx)$
Predicate: Things that got sick Sx
$\neg\forall x((Px \wedge Rx) \supset Sx)$ or $\exists x((Px \wedge Rx) \wedge \neg Sx)$

(b) Some beautiful people are not good and will not get to heaven.
Some S are not P.
Subject: Beautiful people. $(Px \wedge Bx)$
Predicate: Things that are either good or will get to heaven. $(Gx \vee Wx)$
$\exists x((Px \wedge Bx) \wedge \neg(Gx \vee Wx))$ or $\neg\forall x((Px \wedge Bx) \supset (Gx \vee Wx))$

(c) No one will be appreciated unless they are either beautiful or rich.
In other words: If you are a person and you are not beautiful or rich, then you will not be appreciated.
Subject: People who are not either beautiful or rich. $(Px \wedge \neg(Bx \vee Dx))$
Predicate: Things that are not appreciated. $\neg Ax$
$\forall x((Px \wedge \neg(Bx \vee Dx)) \supset \neg Ax)$ (No S are P.)
equivalent to
$\neg\exists x((Px \wedge \neg(Bx \vee Dx)) \wedge Ax)$ (Not some S are not P)

OR

Subject: People. Px
Predicate: Things that, if not beautiful or rich, are not appreciated. $(\neg(Bx \vee Dx) \supset \neg Ax)$
$\forall x(Px \supset (\neg(Bx \vee Dx) \supset \neg Ax))$ (All S are P.)
equivalent to
$\neg\exists x(Px \wedge \neg(\neg(Bx \vee Dx) \supset \neg Ax))$ (Not some S are not P)

3. Translate the following from **QL** into English using the translation key from #2.

(a) $\neg\forall x((Px \wedge (Bx \wedge Gx)) \supset (Dx \vee Ax))$
Not everyone who is beautiful and good is either rich or appreciated.
There are people who are beautiful and good and neither rich nor appreciated.

(b) $\forall x((Px \wedge ((Dx \wedge Fx) \vee Ax)) \supset (Gx \vee Bx))$
Everyone who is either rich and famous or appreciated is either good or beautiful.
There is no one who is either rich and famous or appreciated and who isn't either good or beautiful.

4. (a) Some professors listen to some of their students.
(b) Some professors don't read the poetry they haven't written.
(c) $\exists x(Sx \wedge \exists y((By \wedge Rxy) \wedge \exists z((Fz \wedge Hxz) \wedge Azyx)))$
(d) $\exists x((Sx \wedge Dx) \wedge \neg Gx) \wedge (\exists y(Py \wedge Rxy) \wedge \exists z(Pz \wedge Wxz)))$