1. a. This English sentence may well be true—people want to do all sorts of odd and even impossible things. But the proposed translation into *PL* is obviously false, for it says, in part, that there is at least one vampire when in fact there are no such creatures as vampires. A better symbolization would be

    Vj

    where ‘Vx’ symbolizes ‘x wants to catch a vampire’ rather than ‘x is a vampire’.

    c. The left conjunct is an appropriate symbolization of ‘Sue believes there are vampires’ but the right conjunct is not an appropriate symbolization of ‘Sue doesn’t want to catch a vampire’, for two reasons. First, the right conjunct is true simply because there are no vampire. Hence it does not tell us anything about Sue, unlike the sentence it is supposed to symbolize. (If we replace ‘s’ with a constant designating someone else, anyone else, the result is a true sentence, again because there are no vampires.) Secondly, ‘Sue believes there are vampires but doesn’t want to catch one’ clearly indicates that Sue does not want to be in possession of a vampire. But the proposed symbolization of the right conjunct does not say this. Rather, it tells us only that there is no specific vampire that Sue wants to catch. That is, it is compatible with Sue wanting to catch a vampire, any vampire, which she doesn’t. A better symbolization of ‘Sue doesn’t want to catch a vampire’ would be ‘~ Vs’ where, like in exercise 1a, ‘Vx’ symbolizes ‘x wants to catch a vampire’ rather than ‘x is a vampire’.

    e. This is an appropriate symbolization. The use of the existential quantifier is appropriate because the sentence being symbolized makes it clear that there is a particular moose that Sue wants to see and Jeremy wants to ride.

2. If Helen has been dealing with a sales clerk who has disappeared into the back room, and Helen is now waiting for the return of that clerk, then ‘(∃z)(Sz & Whz)’ is a correct symbolization of ‘Helen is waiting for a sales clerk’. But if Helen has not yet been helped by a sales clerk and is waiting for one, any one, of the clerks, to help her, then the proposed symbolization is not appropriate, because it says there is a particular clerk Helen is waiting for and she is not: she wants a clerk, any clerk, to help her. In this latter case a better symbolization would be ‘Wh’, where ‘h’ designates Helen and ‘Wx’ symbolizes ‘x is waiting for a sales clerk’.

3. a. (∃y)[Ry & (Cy & Ly)]
    c. ~ (∀w)[(Rw & Lw) ⊃ Cw]
    e. ~ (∀x)(∀y)[Rx & Syx) ⊃ Ry]
    g. ~ (∀x)(∀y)([Rx & (Dyx ∨ Syx)] ⊃ Ry)
    i. (∀z)[(Rz & (∃w)(Swz ∨ Dwz)) ⊃ Lz]
    k. Sr ∨ (∃y)(Ry & Dry)
    m. (Rr & (∀z)[(Dzr ∨ Szr) ⊃ Rz]) ∨ (Rj & (∀z)[(Dzj ∨ Szj) ⊃ Rz])

4. a. (∀x)[Ax ⊃ (∃y)(Fy & Exy)] & (∀x)[Fx ⊃ (∃y)(Ay & Exy)]
    c. ~ (∃y)(Fy & Eyp)

e. ~ (∃y)(Fy & Eyp) & (∃y)(Cy & Eyp)
g. ~ (∃w)(Aw & Uw) & (∃w)(Aw & Fw)
i. (∃w)[(Aw & ~ Fw) & (∀y)[(Fy & Ay) ⊃ Ewy]]
k. (∃z)[Fz & (∀y)(Ay ⊃ Dzy)] & (∃z)[Az & (∀y)(Fy ⊃ Dzy)]
m. (∀x)[(∀y)Dxy ⊃ (Px ∨ (Ax ∨ Ox))]

5. a. An even integer times any integer is even.
c. If the sum of a pair of integers is even, then either both integers are even or both are odd.
e. There is no prime that is larger than every prime.
g. There are no primes such that their product is prime.
i. There is a prime such that it times any prime is even.
k. The product of a pair of integers is odd if and only if both members of the pair are odd.
m. If a pair of integers are both odd, then their product is odd and their sum is even.
o. The sum of an odd integer and an even integer is odd, and their product is even.
q. There is an integer that is larger than one and less than three that is prime and even.