**Question 1**

Use the tableau algorithm to test the satisfiability of ​∃​S.C ​⊓​ ​∀​S.(¬C ​⊔​ ¬D) ​⊓​ ​∃​R.C

(Hint: to test the satisfiability of a concept X, you have to show that it is possible for some element y to be member of X, in other words you have to use a tableau to construct a model for y:X).

**Question 2**

Given the following interpretation of the concepts

Person = {Daisy, Dan, Dirk, Pat, Paul}

Doctor = { Daisy, Dan, Dirk}

Patient = {Pat, Paul, Dan}

Treats = { (Daisy, Pat), (Dan, Paul), (Dirk, Dan), (Dan, Dan)}

Suffers\_from ={ (Pat, pain), (Paul,pain), (Dan, pain), (Dan, sickness)}

Compute the interpretation of the following expressions

1. Doctor ⊓ Patient
2. Person ⊓ ∃treats.Doctor

**Question 3**

Show that from the knowledge base   
P ⊑ (E ⊓ U) ⊔ (E ⊓ ¬ D)  
we can derive that P ⊑ E