# II Esonero del corso di
# Rappresentazione della Conoscenza e Logica Computazionale: Fondamenti
# 13 Giugno 2014

1) Describe the main features of Description Logic and, in particulare, describe how concepts are built. Given the atomic concepts: Doctor, Young, Famous and the roles Has_patient define the following concepts:
   (a) "The doctors whose patients are all young "
   (b) "The famous doctors whose patients are all young "
   (c) "The doctors whose patients are all young or famous "
   (d) "The doctors having a patient who is a young doctor whose patients are all not young"
   (e) "The doctors who are not young"

What does it mean that concept C1 subsumes concept C2?
Is it true that:
   1) Concept (a) subsumes concept (b)?
   2) Concept (b) subsumes concept (a)?
   3) Concept (c) subsumes concept (a)?
   4) Concept Doctor subsumes concept (e)?
   5) Concept (e) subsumes concept Doctor?

Which is the relation of Description Logics with classical logic? Which are the advantages of using Description Logics?

3) Given the system description SD

   light_onl ← on1
   light_on1 ← on2
   on1 ← down_1 ∧ ok(switch1)
   on2 ← down_2 ∧ ok(switch2)

and the observations OBS:

   { ¬ light_onl, down1, down2}

What is "consistency based diagnosis"? Compute the diagnoses and minimal diagnosis for the above example. Which kind of knowledge can be modelled with these logicsl?

2) Describe inheritance networks and the problem of inheritance with exceptions through an example.