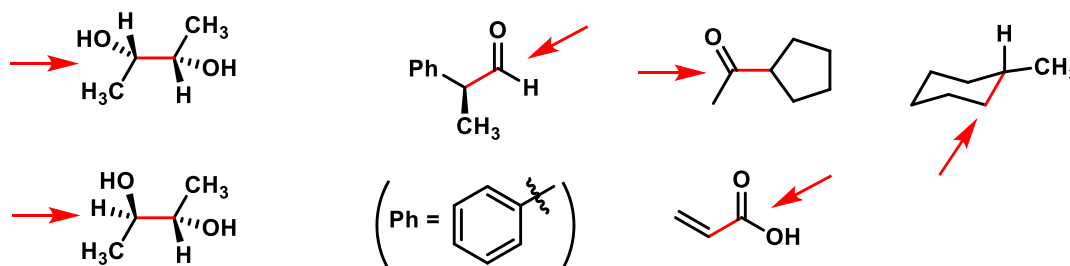
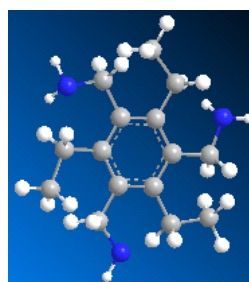
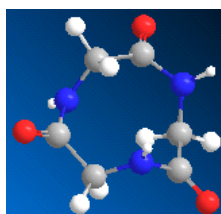
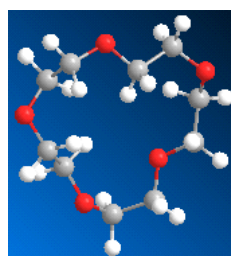
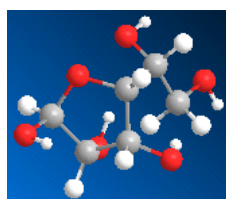
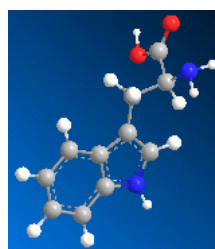
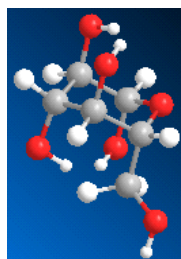
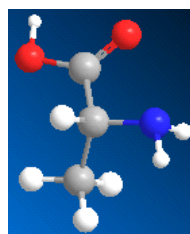
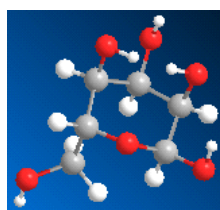


## Homework 2 – 2017/04/03

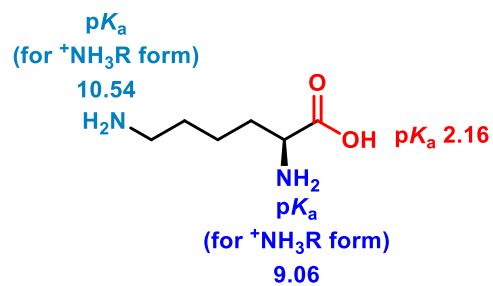
1) Draw Newman projections for these as seen along the **red** arrow:



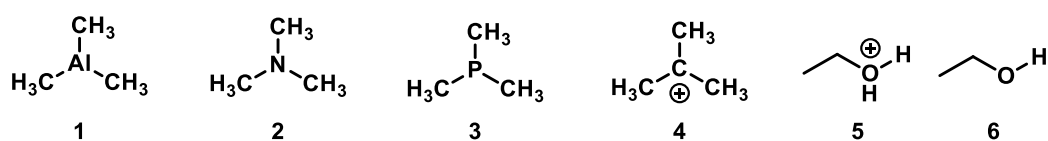
2) Draw the structures (in ChemDraw or by hand) that correspond to the following models!  
(Code: white: H, red: O, blue: N, grey: C)



3) Draw the dominant structure of lysine (an amino acid, see below) in water at pH 1 and at pH 12.



4) Lewis acid or Lewis base?



5) a) Which one of the pairs is a stronger Lewis acid?

$Ca^{2+}$  or  $Mg^{2+}$

$Na^+$  or  $Mg^{2+}$

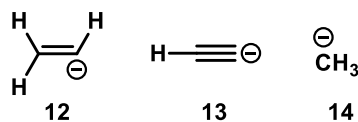
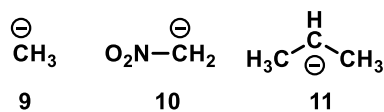
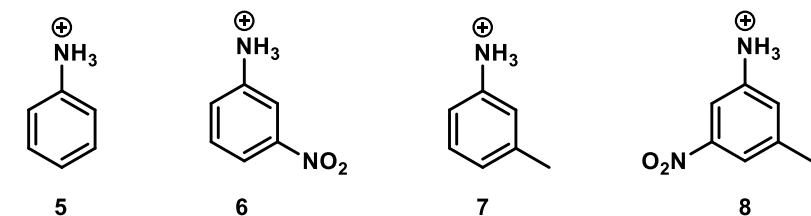
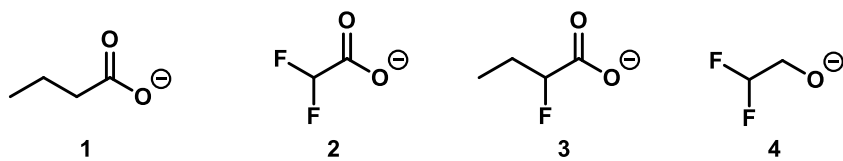
$Cu^+$  or  $Cu^{2+}$

$Li^+$  or  $Na^+$

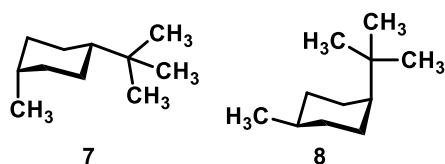
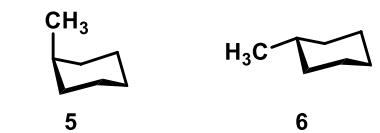
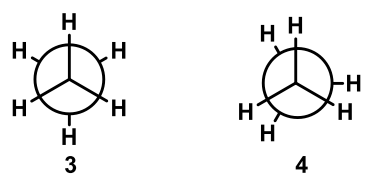
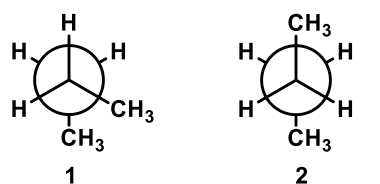
$Ag^+$  or  $[Ag(NH_3)_2]^+$

b) Place the lanthanide trications ( $Ln^{3+}$ ) in order of increasing Lewis acidity! (Yay, lanthanides!)

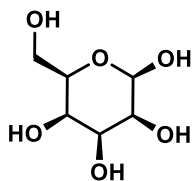
6) Place these in increasing order of stability:



7) In each pair, pick the more stable conformation, and explain your choice.



8) What is the most stable conformation of  $\beta$ -D-talose?



9) Draw the alkene with the lowest molecular weight for which *cis/trans* isomers are possible.

Solutions can be handed in to Daniel Kovacs or to me in person, or you can mail them to [eszter.borbas@kemi.uu.se](mailto:eszter.borbas@kemi.uu.se)

As long as you attempt to answer at least one question you will get feedback.

/Eszter

