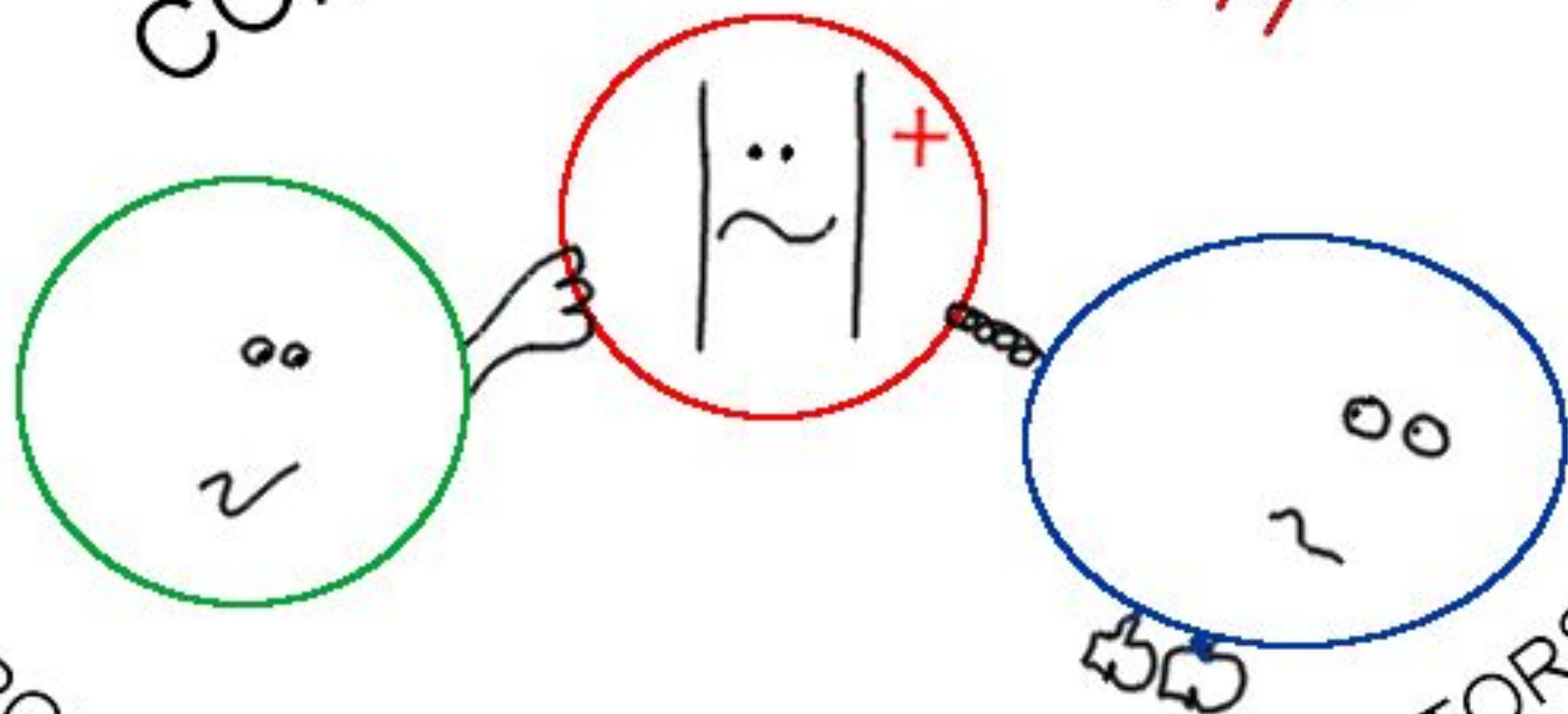


## Acid Base Chemistry

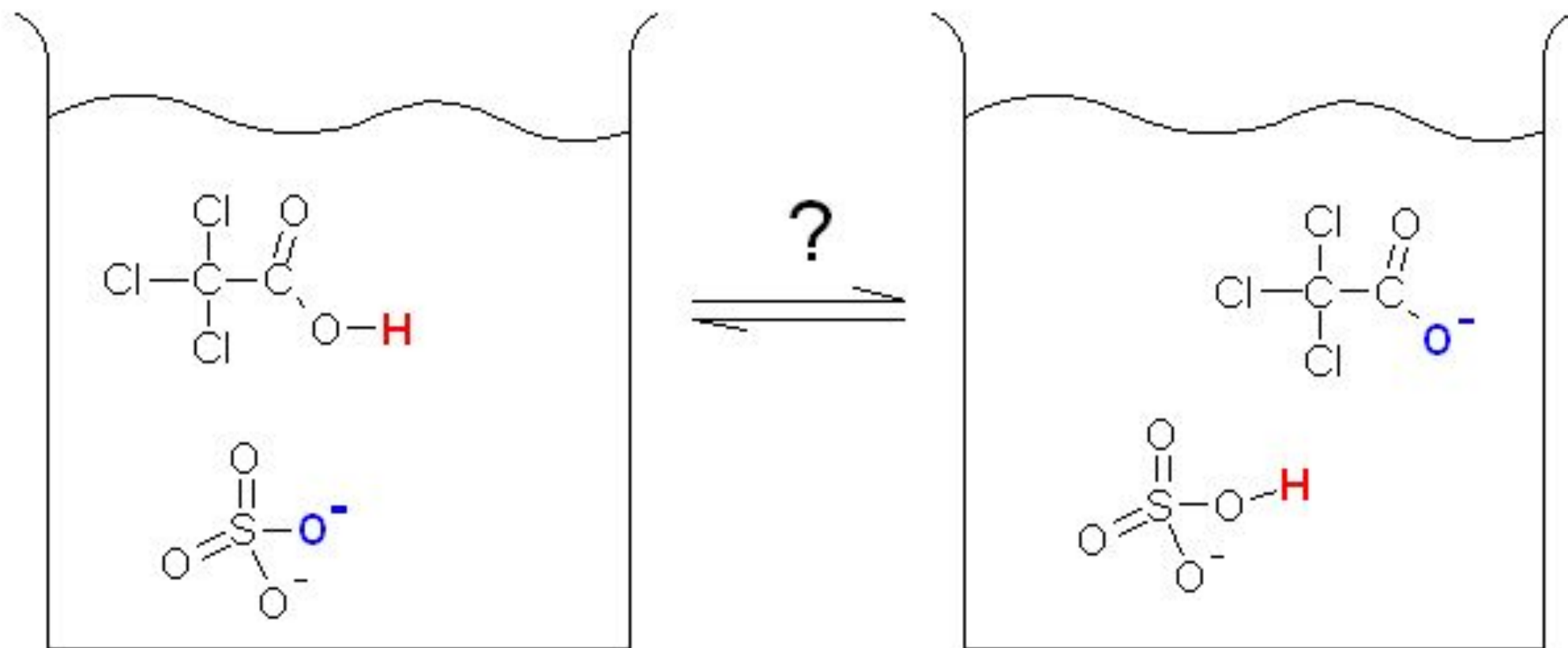
1. Foundation knowledge
2. The pH scale
3. The pH of Water
4. Acids
5. Bases
6. Acid base titrations
7. Relative acidity and basicity – competition for  $H^+$ 
  - a.  $pK_a$  and  $pK_b$  of conjugate acids and bases
  - b. Competition for  $H^+$

# COMPETITION FOR $H^+$

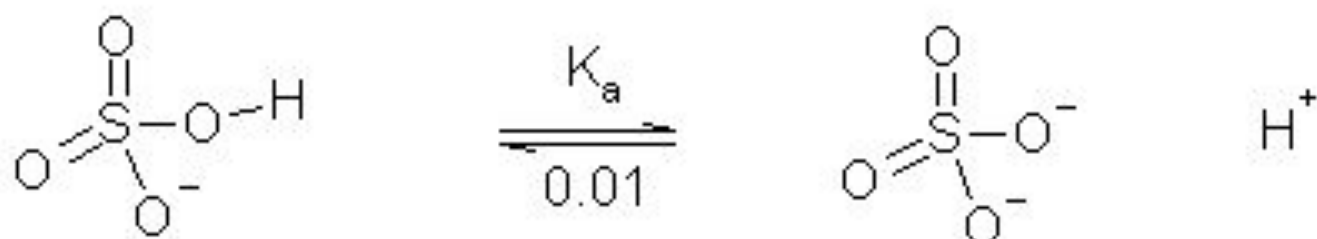
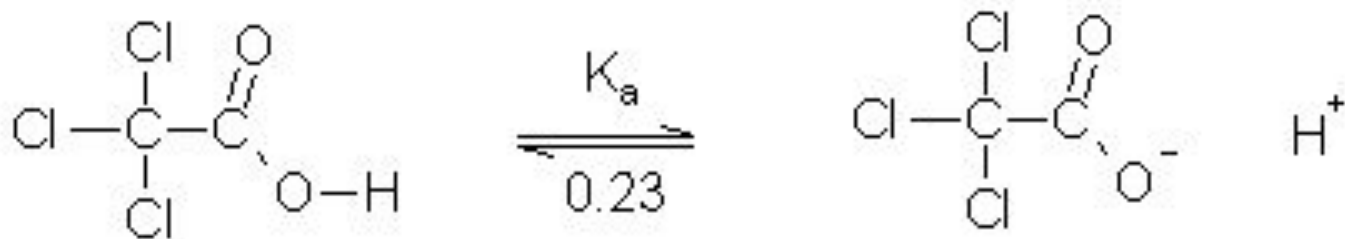


PROTON DONORS AND PROTON ACCEPTORS

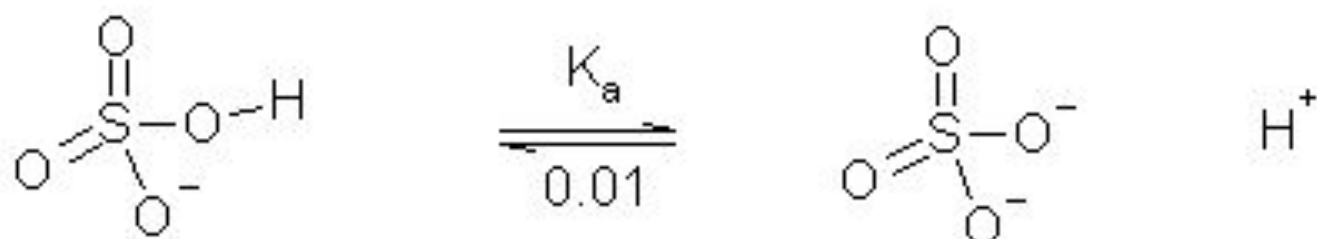
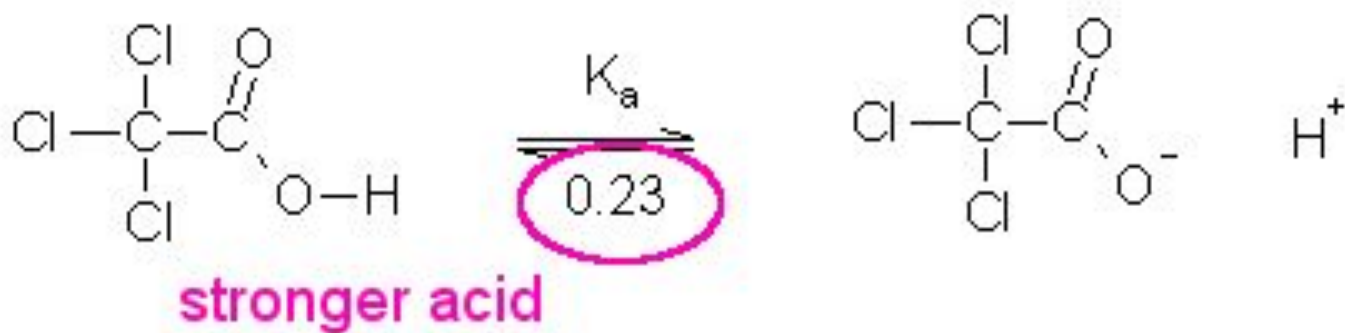
Which species will gain the proton?



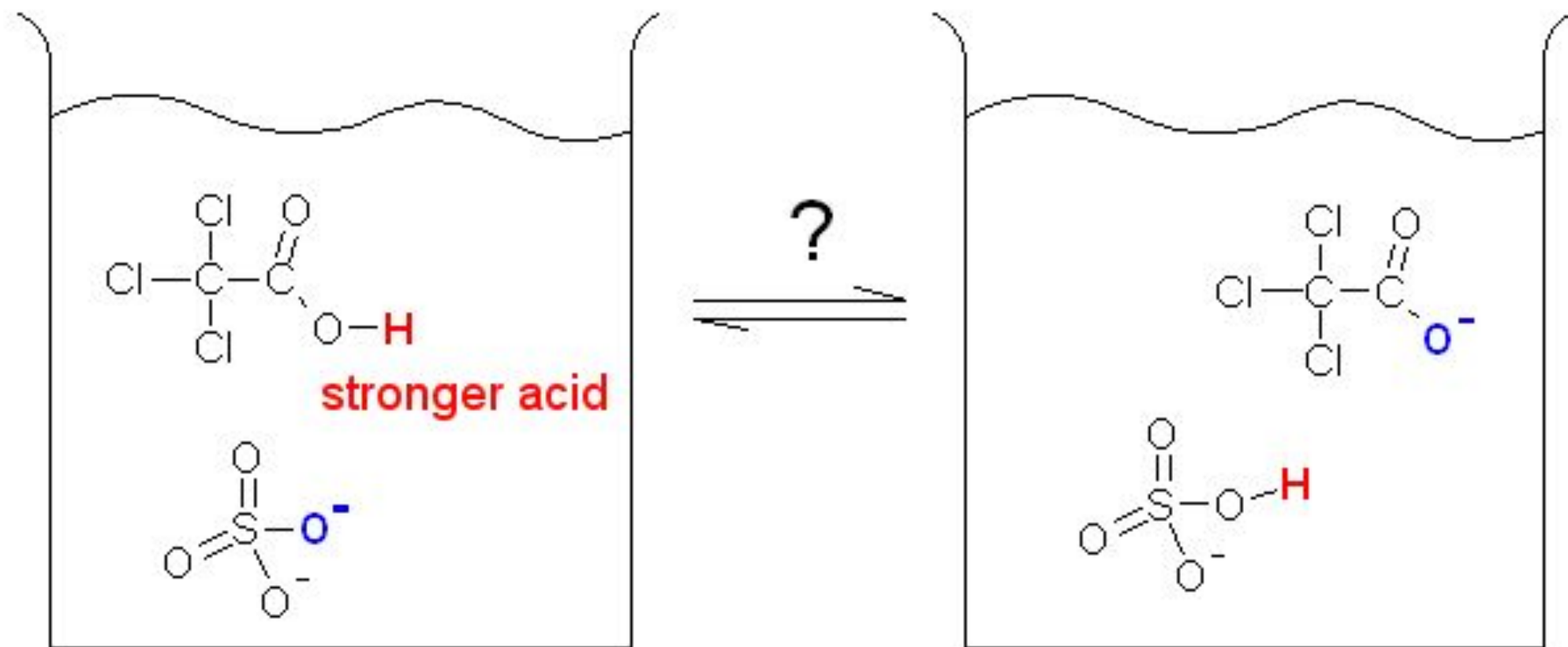
Which species will gain the proton?



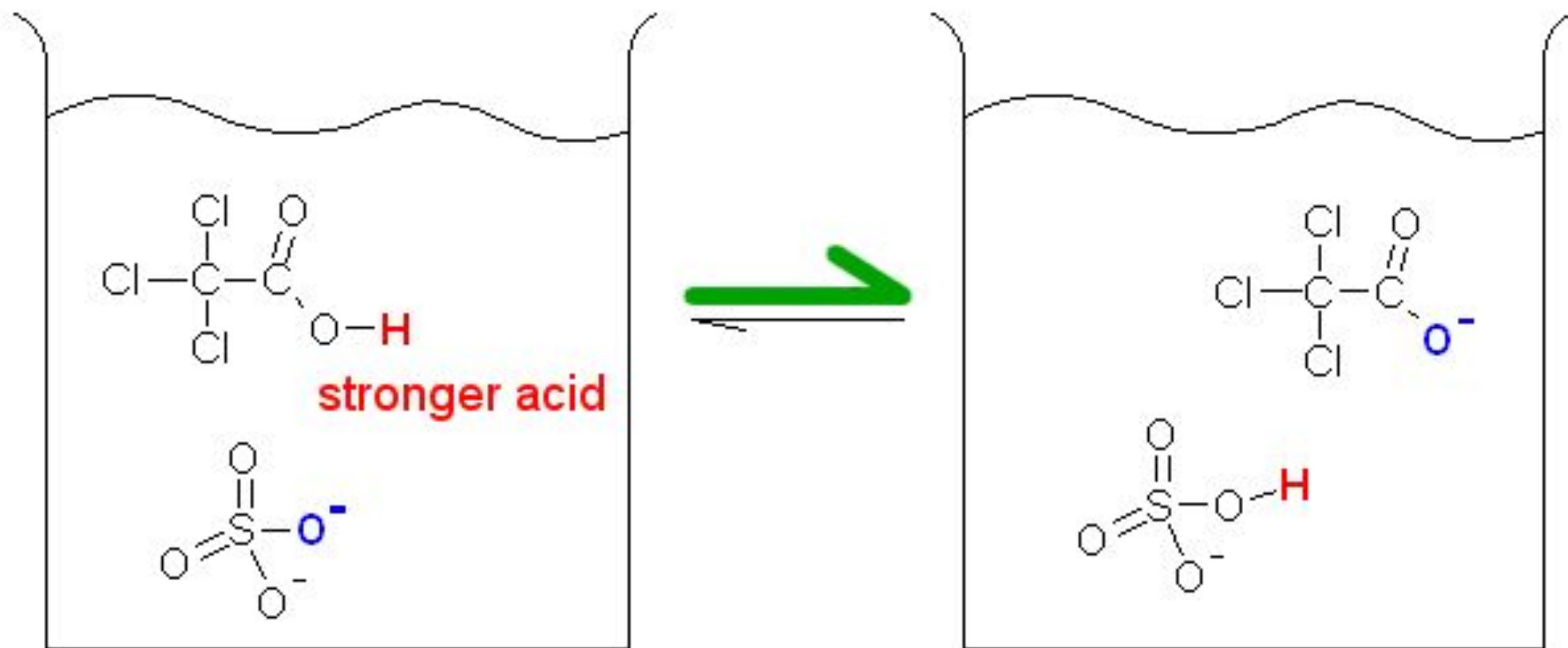
Which species will gain the proton?



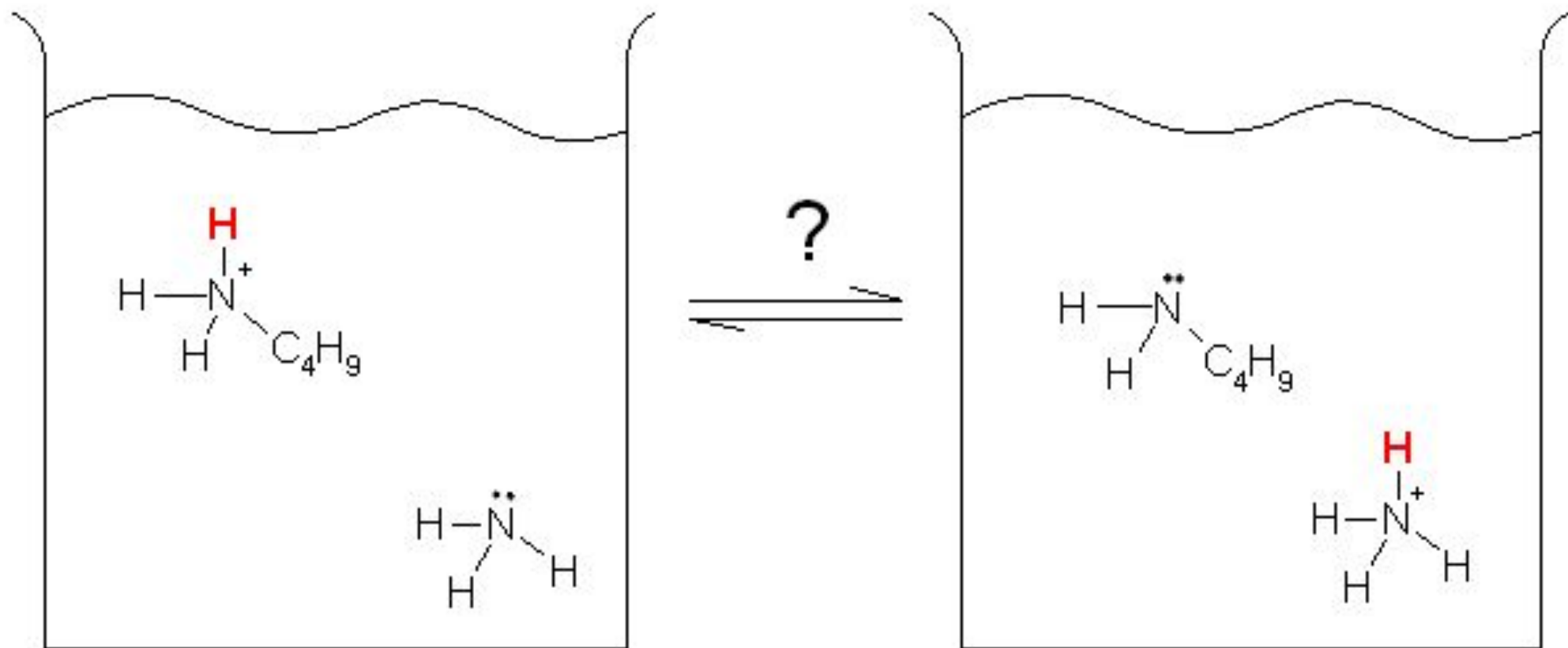
Which species will gain the proton?



Which species will gain the proton?

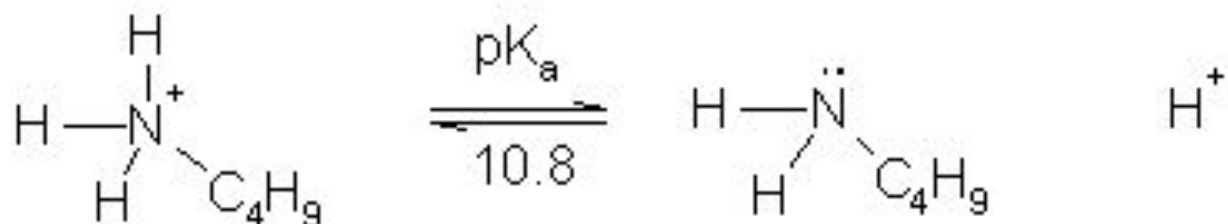
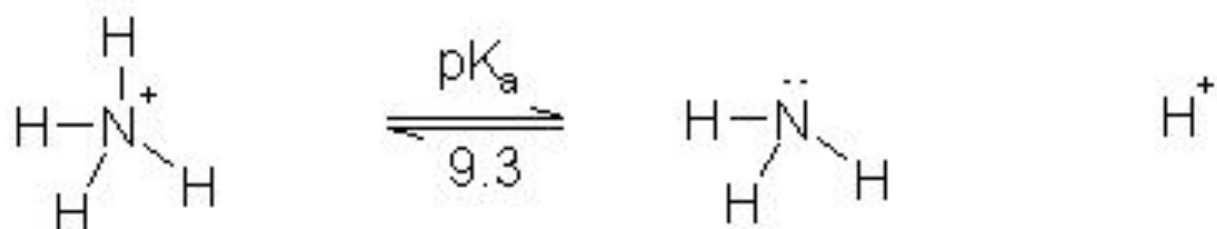


Which species will gain the proton?

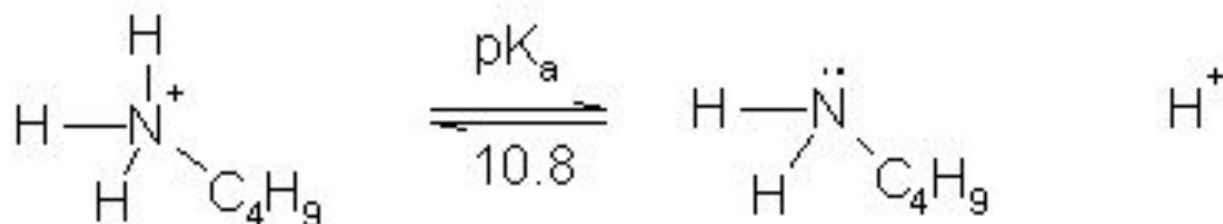
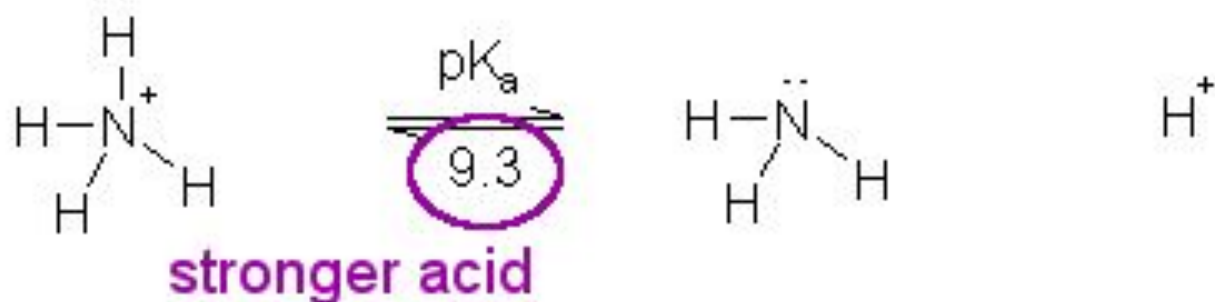




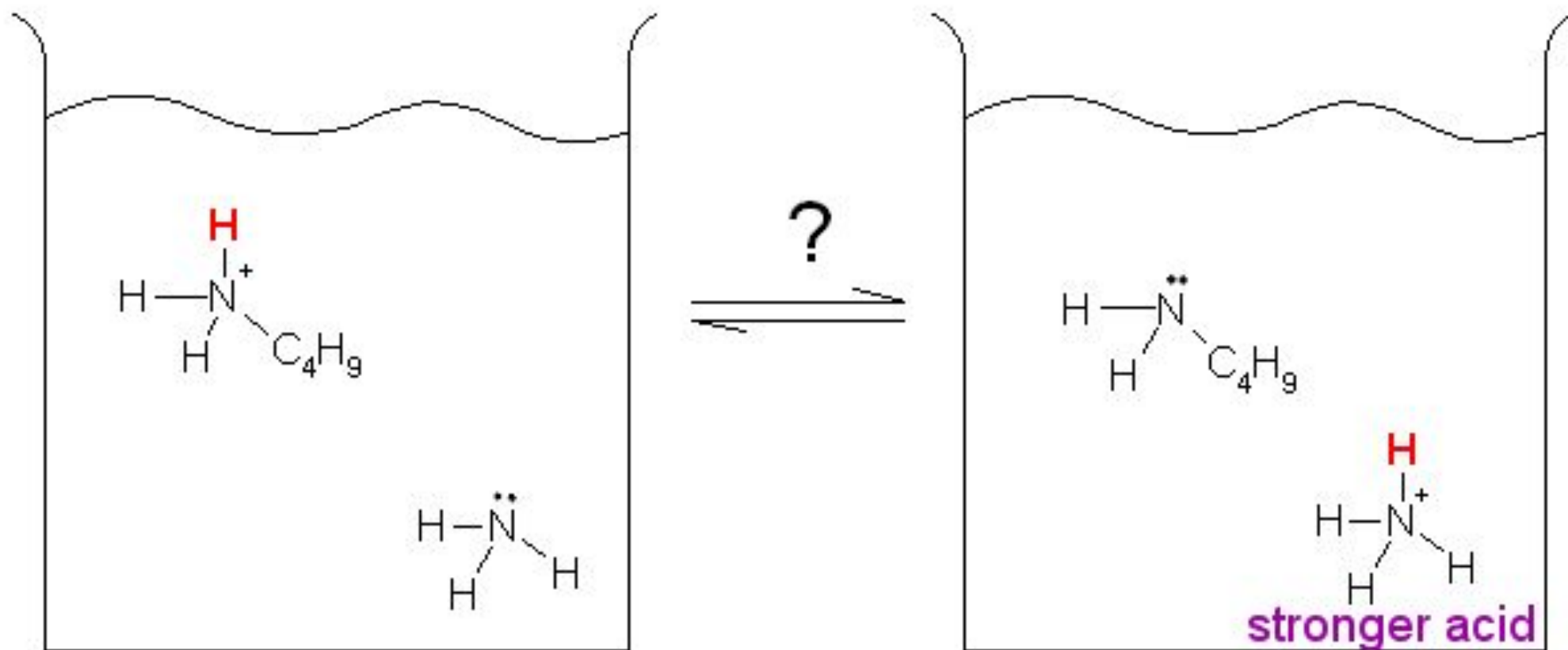
Which species will gain the proton?



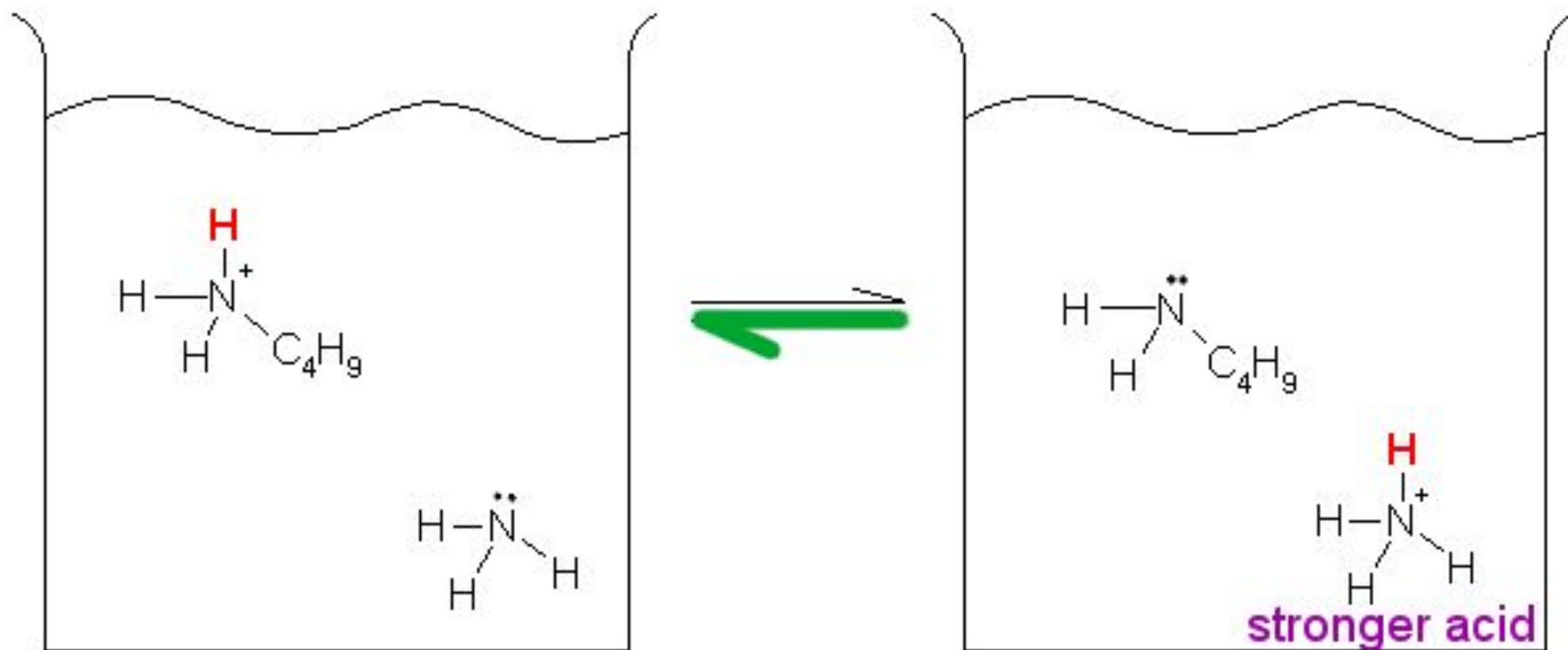
Which species will gain the proton?



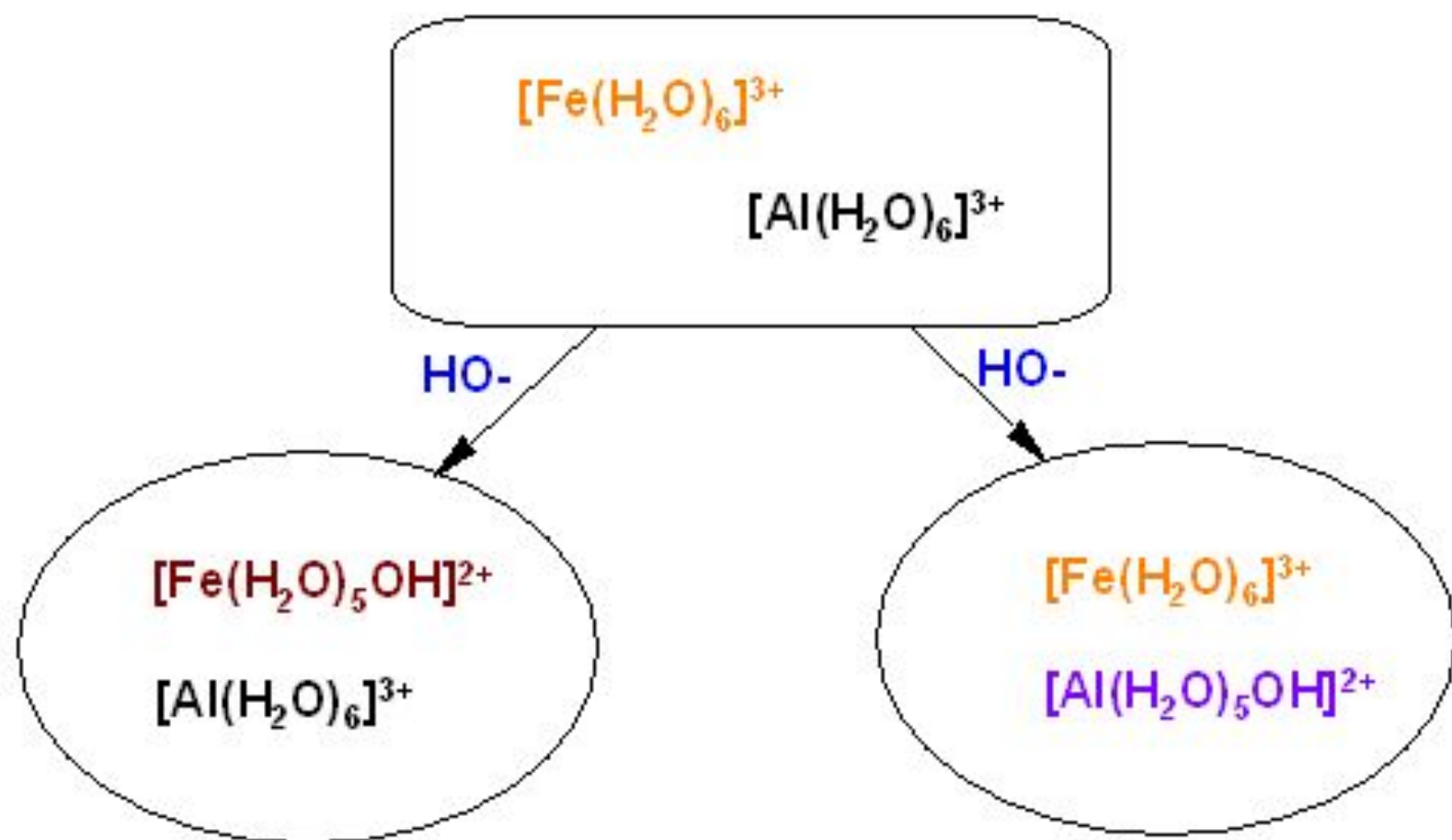
Which species will gain the proton?



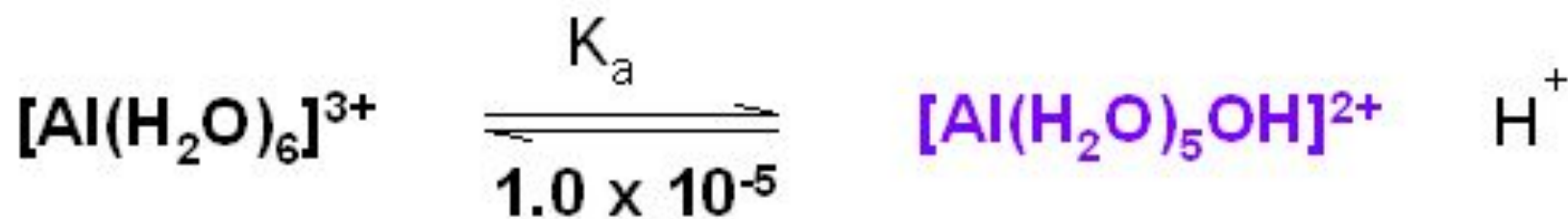
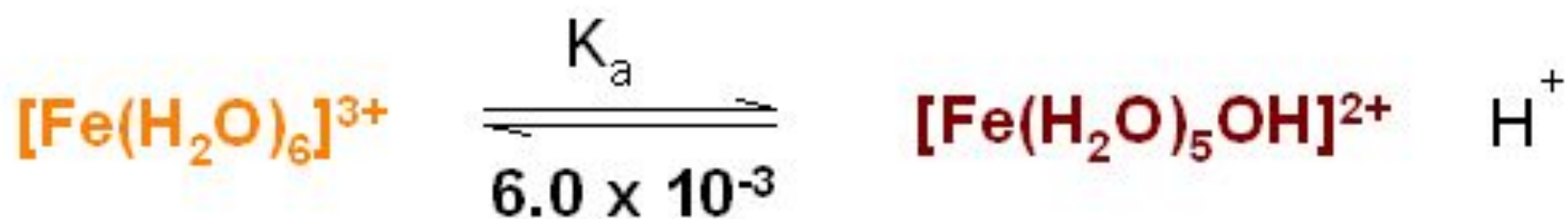
Which species will gain the proton?



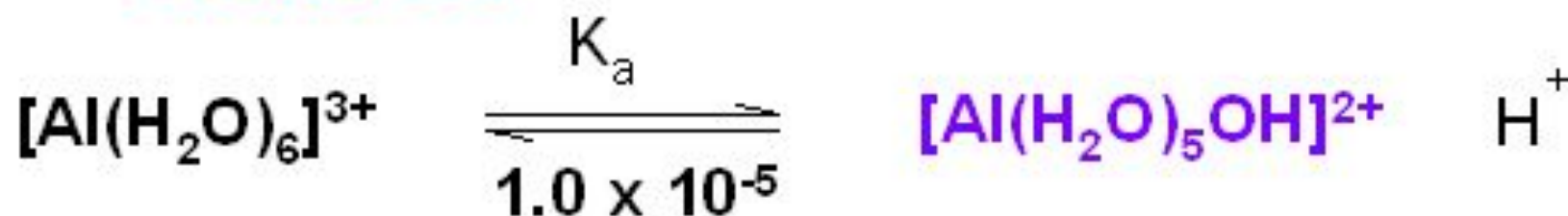
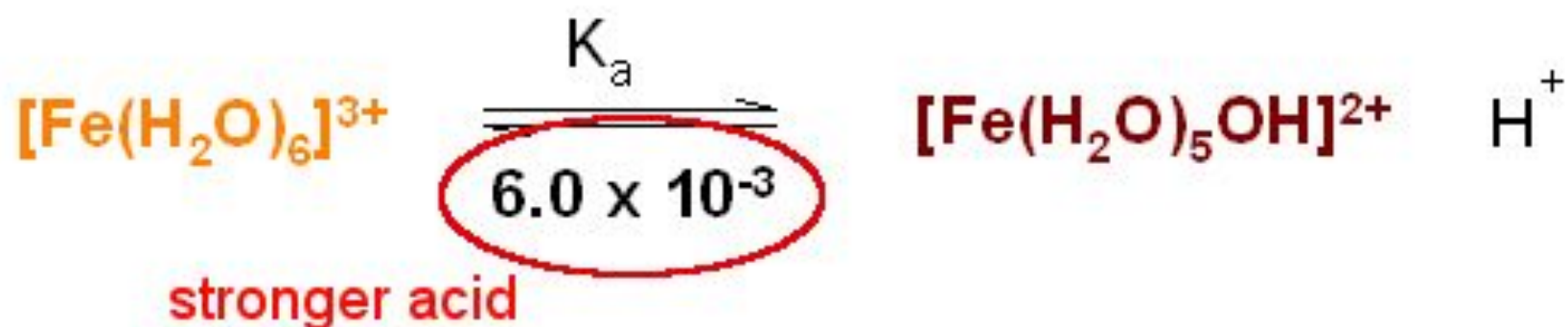
Which would deprotonate first?



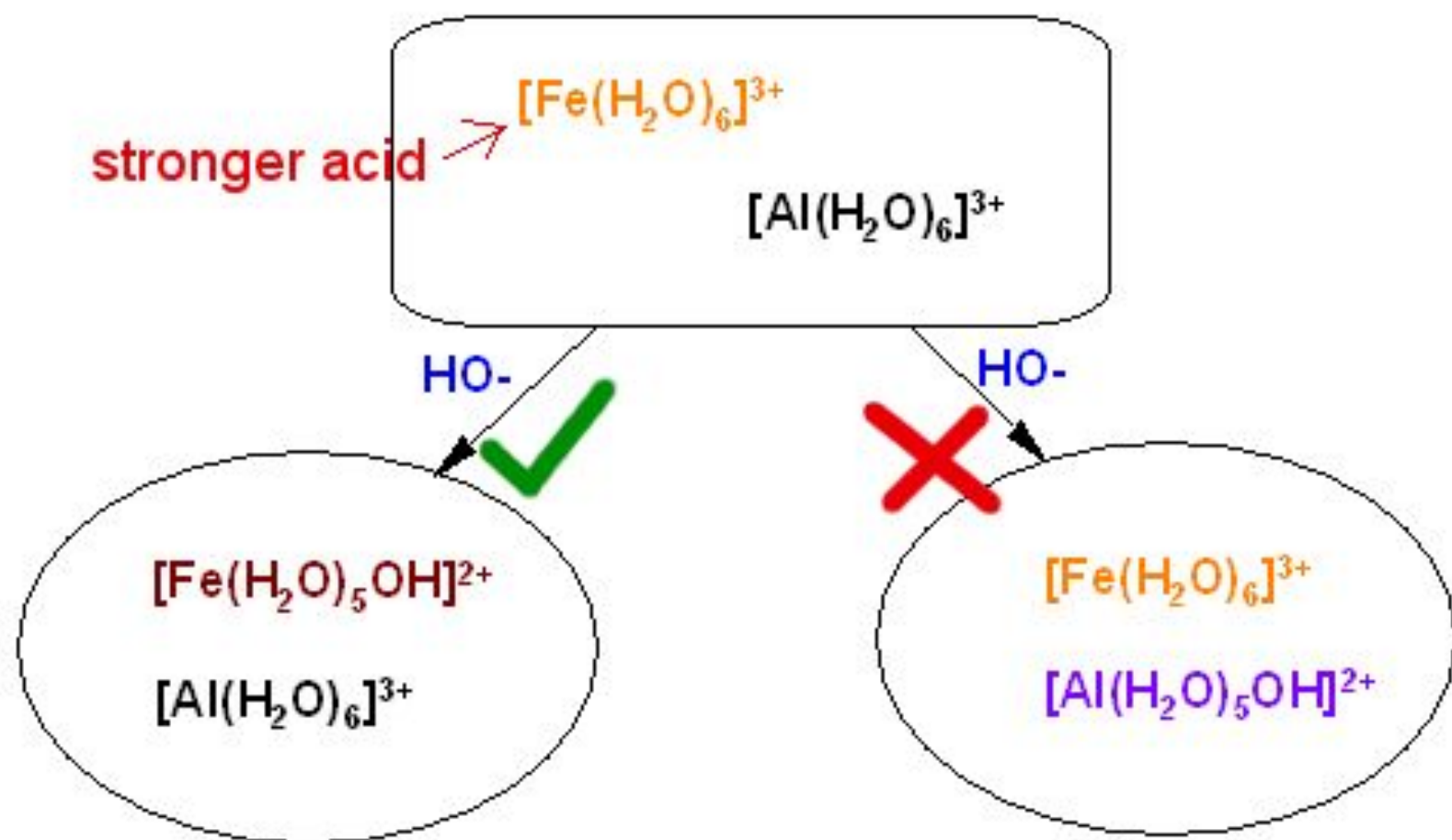
Which would deprotonate first?



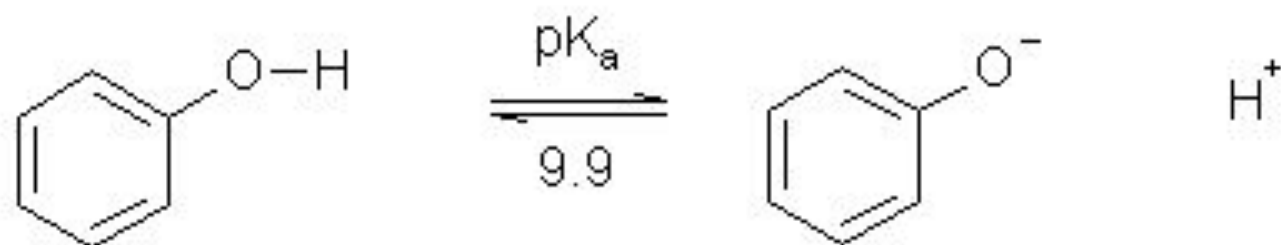
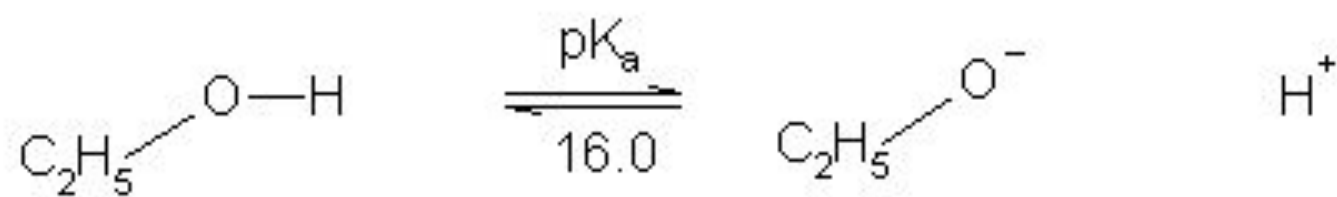
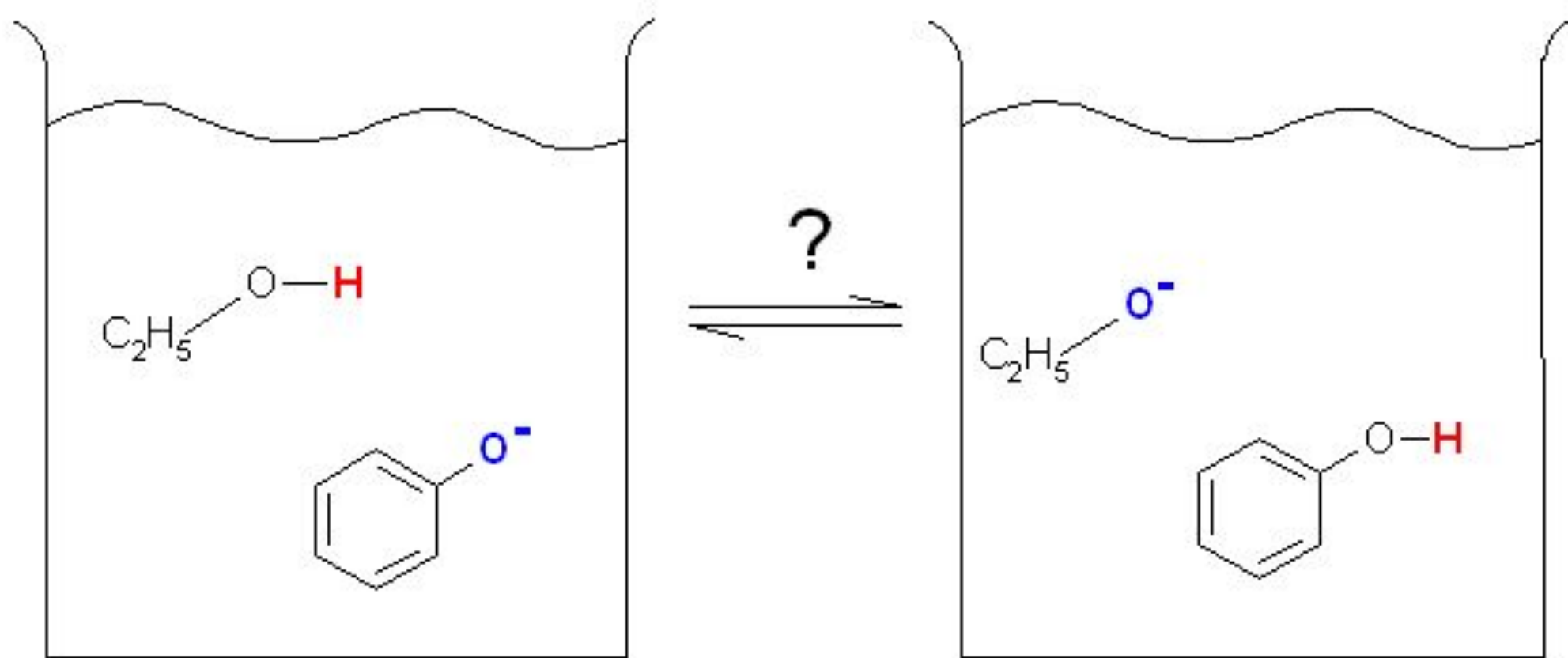
Which would deprotonate first?

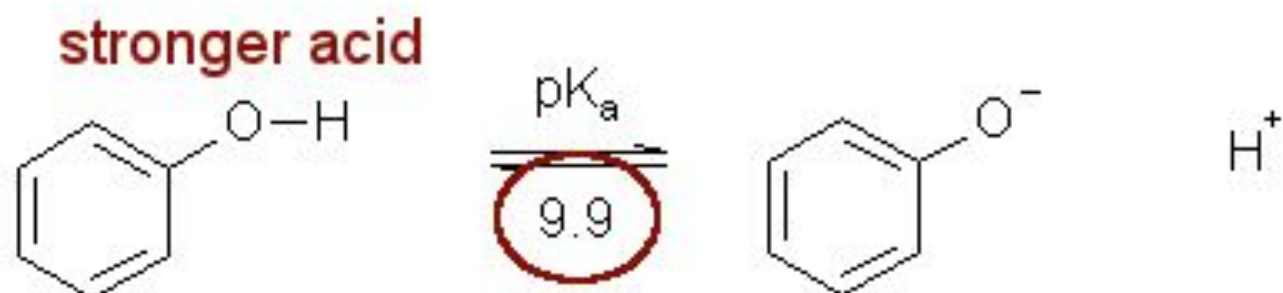
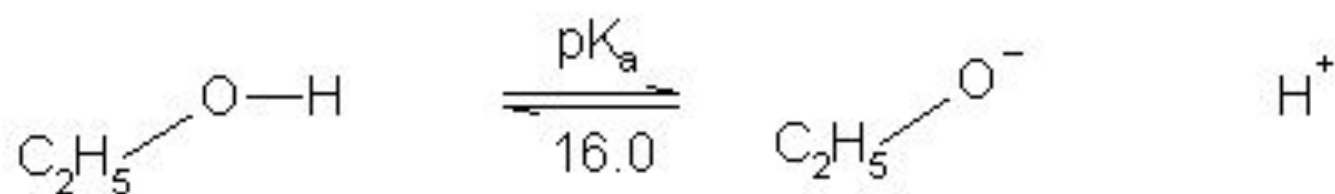
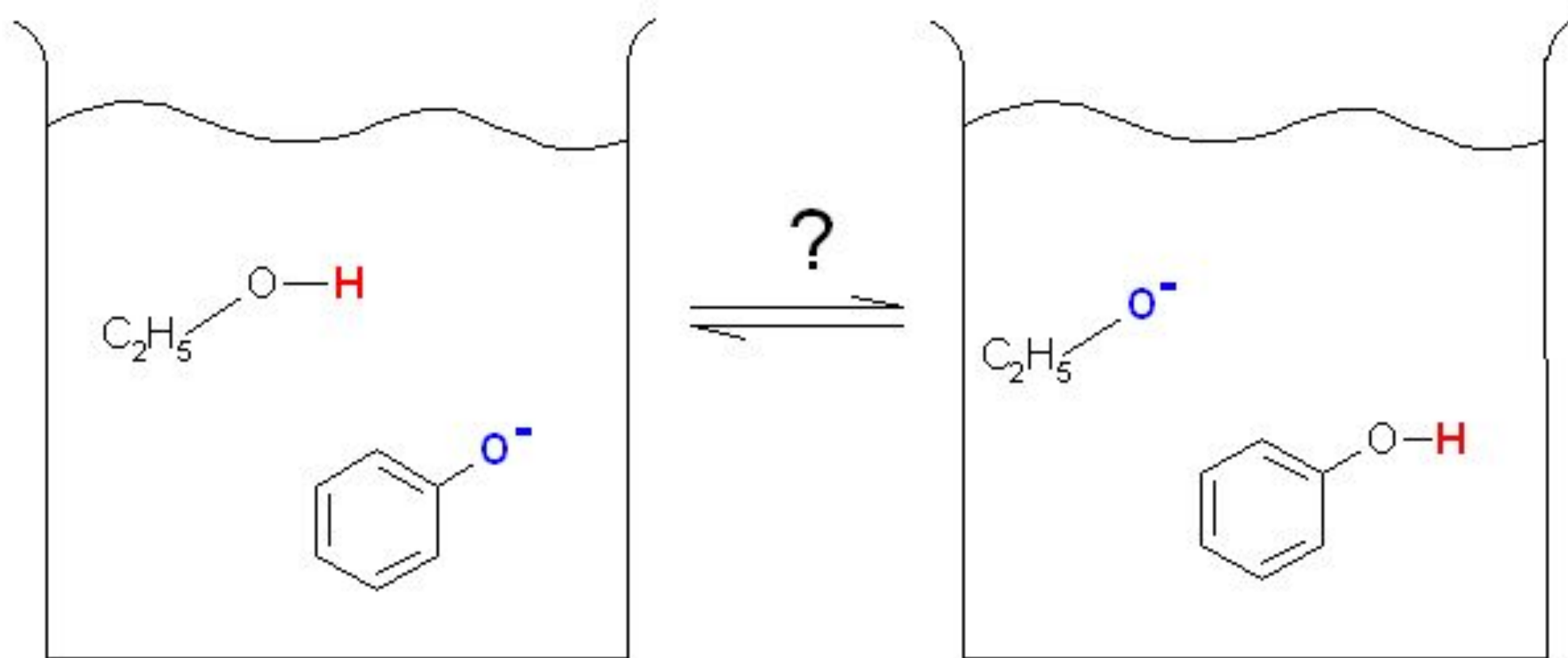


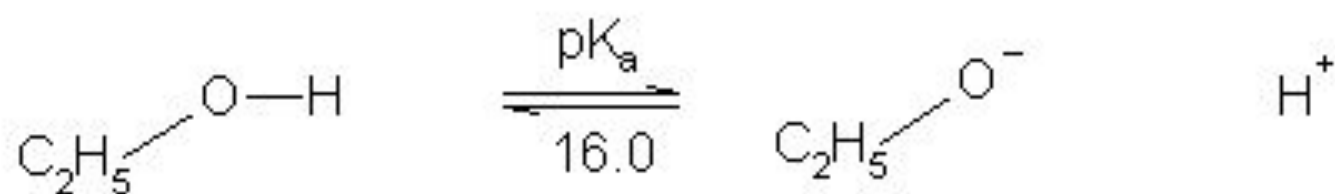
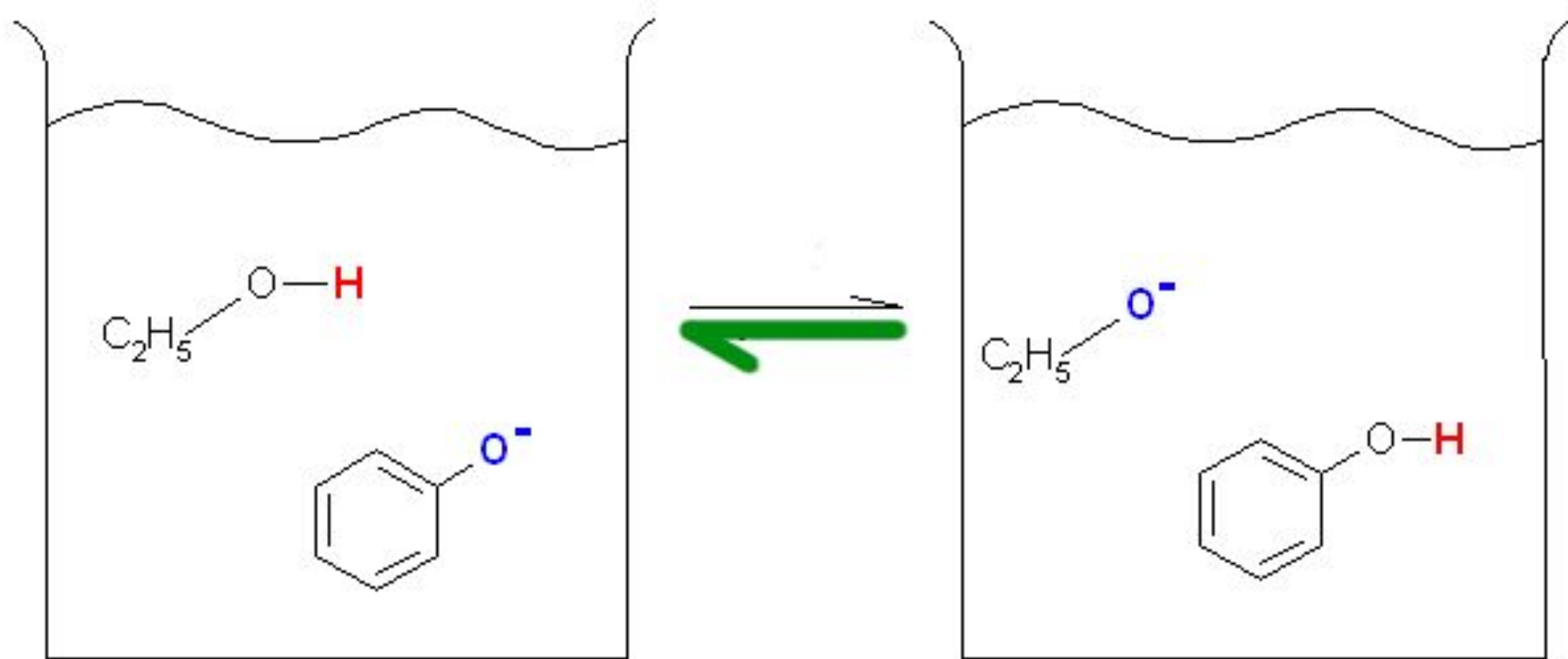
Which would deprotonate first?



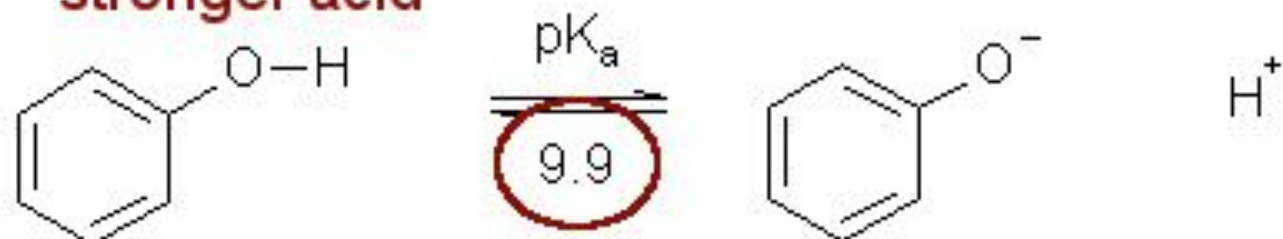




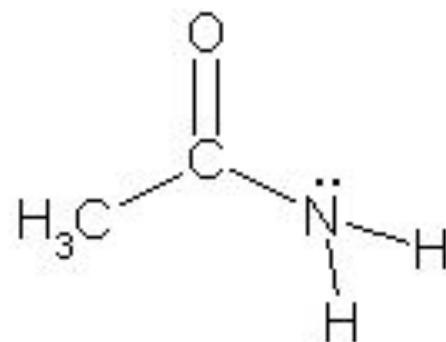
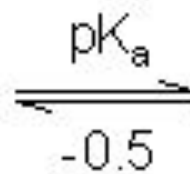
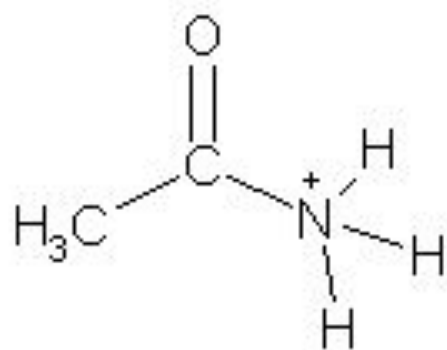
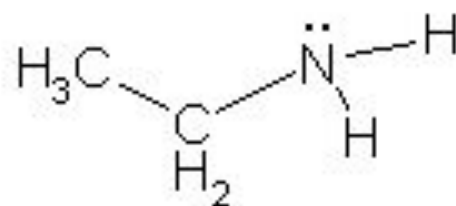
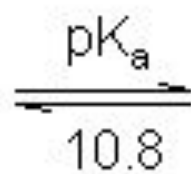
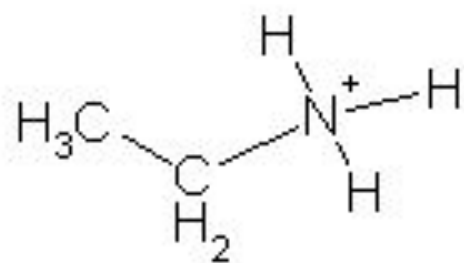
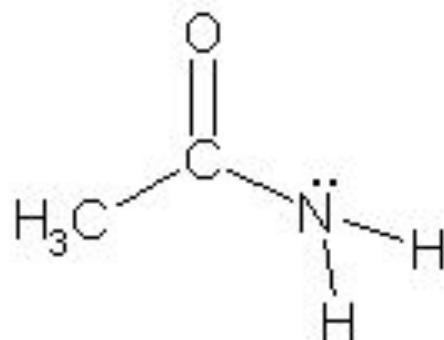
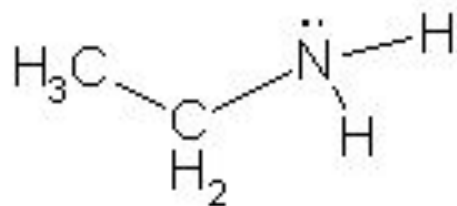




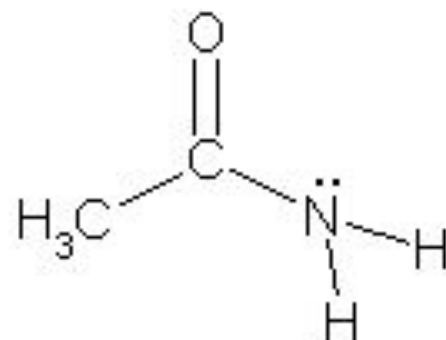
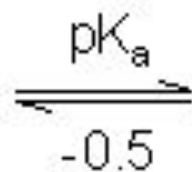
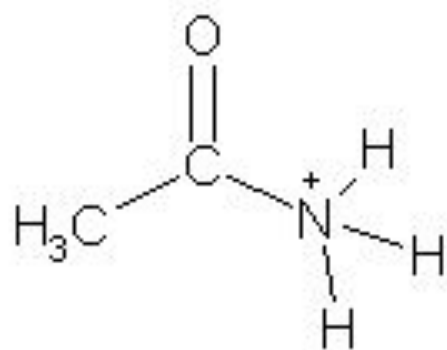
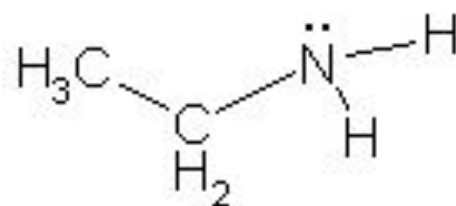
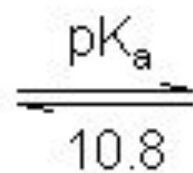
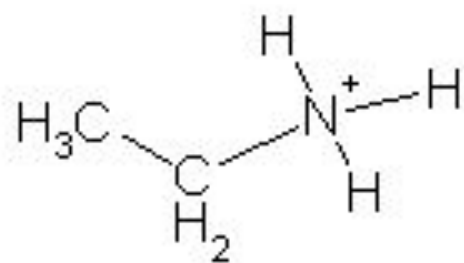
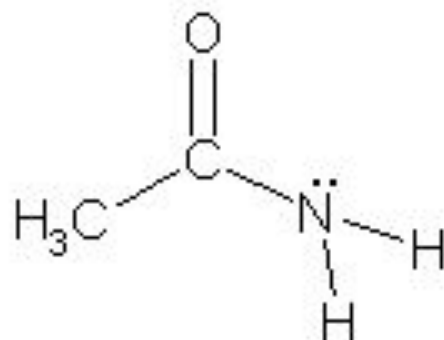
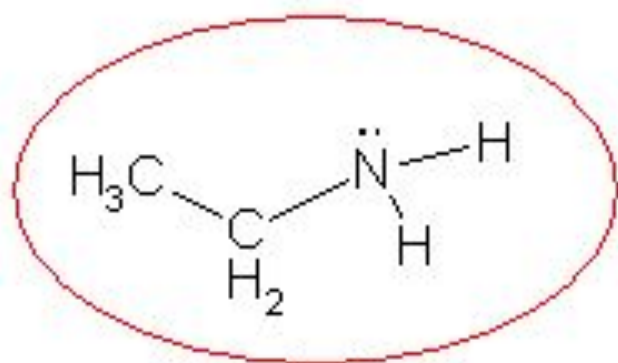
**stronger acid**



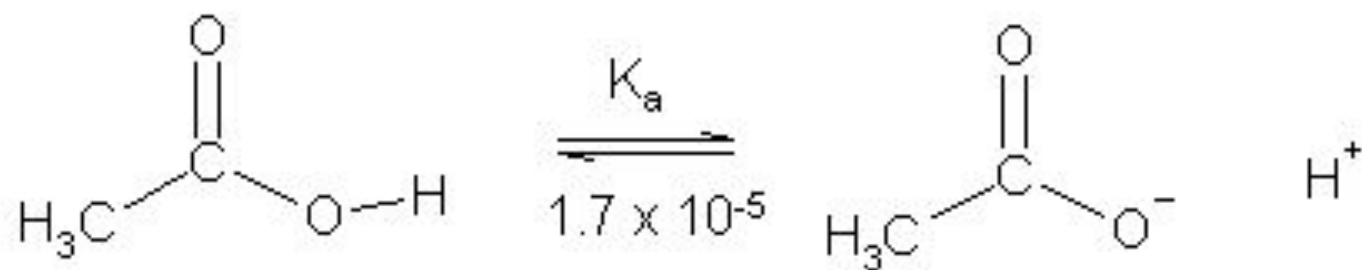
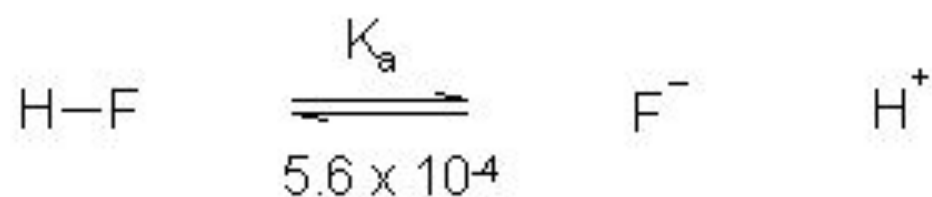
Which species would be protonated first?



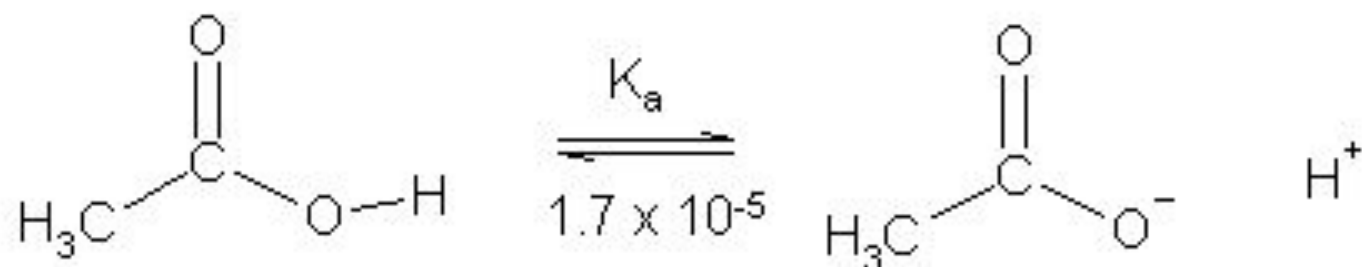
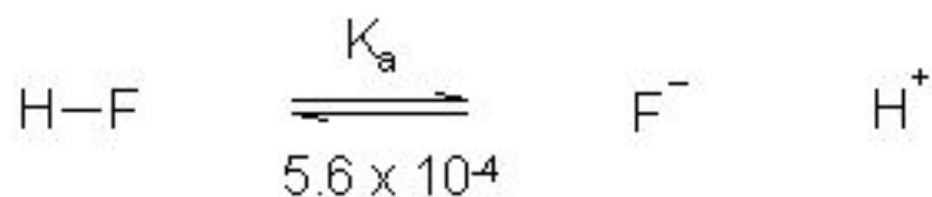
Which species would be protonated first?



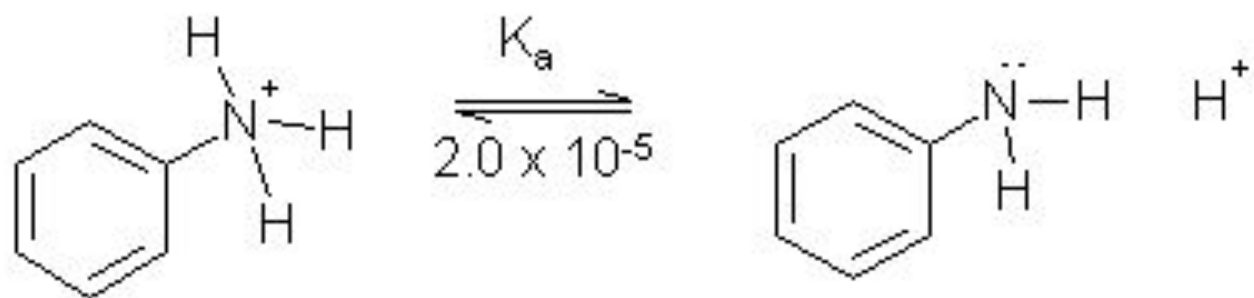
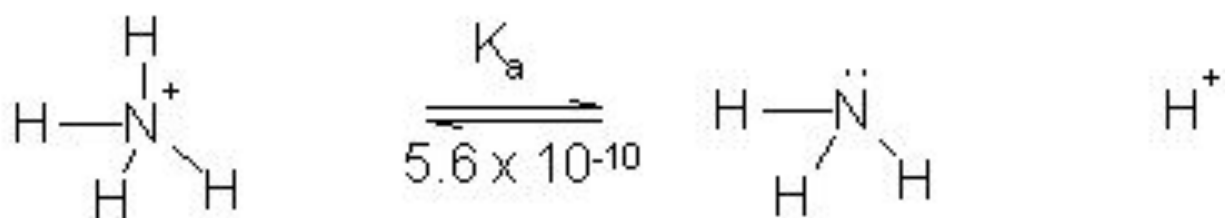
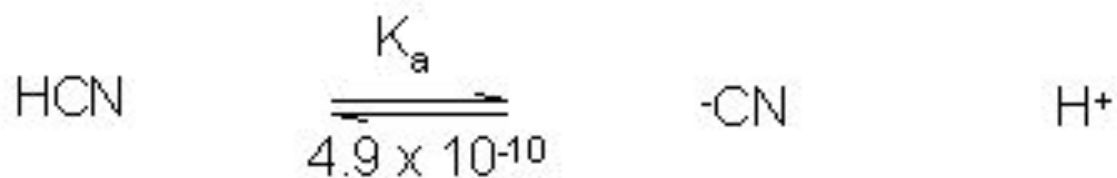
Which way would this equilibrium lie?



Which way would this equilibrium lie?



Put these bases in order of increasing basicity:  $\text{-CN}$ ,  $\text{NH}_3$ ,  $\text{Ph-NH}_2$





Put these bases in order of increasing basicity:  $\text{-CN}$ ,  $\text{NH}_3$ ,  $\text{Ph-NH}_2$

