

pKs

1) You have one acid with a pK of 7. How many ionization microstates are there? What are they? Assuming the neutral state as the reference ($G=0$) graph the energy of the other state from pH 3 to 10? Plot out the occupancy of ionized and neutral acid over this pH range.

What is the amount of A^- and AH at pH 3, 5, 7, 9?

2) You have 2 acids, one with a pK of 7 the other at 8. What are the different microstates of the system? They interact with each other with an unfavorable energy of 1.36×3 kcal/mol when both are ionized. (Assume their interaction = 0 when one is neutral). Write down the expression for the energy of the different microstates.