Homework: Organic quemistry

1. What is the pKa of hydrogen HA?



1. What is the pKa of hydrogen HB?
2. What is the pKa of hydrogen HC?
3. What is the pKa of hydrogen HD?
4. The epoxyserinones represent some of the first compounds discovered from fungi cultured from deep-ocean sediment collections. What is the hybridization of the atom labeled A?



1. What is the formal charge of the atom labeled B?
2. What is the magnitude of the bond angle labeled C?
3. What set of equilibrium arrows indicates the equilibrium position of the following reaction?



1. Rank the following compounds from 1 to 4 by the strongest acid (1) to weakest acid (4). Blackboard will ask you to assign the appropriate position number (1, 2, 3, or 4) to each compound.



1. What is the hybridization of the atom labeled X?



1. What is the best estimate of the magnitude of the bond angle labeled Y?
2. What are the correct partial charges of the atoms labeled Z1 and Z2?
3. Calculate the G° of a reaction at T = 25°C that has an equilibrium constant (K) of 0.56. Is the G° value negative, positive, or zero?
4. The strain energy (kcal/mole) of a single CH3:R gauche interaction (where R represents a generic alkyl group) for the following compound is \_\_\_\_\_\_\_\_\_ kcal/mole. *Please enter the numerical value, rounded to two decimal places and without units, into the Blackboard answer.*

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1. Assemble a model of the compound below in the conformation shown. What is the correct position of the amine substituent?



1. Which of the following statements is correct?

Compound P is a stronger acid than compound Q.

Compound P is a weaker acid than compound Q.

Compound P and compound Q have equal strength as acids.

