

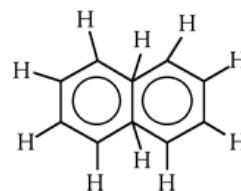
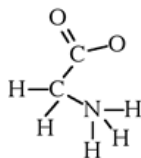
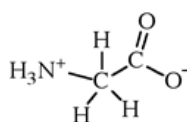
7.01x Chemistry Self-Evaluation

7.012/7.013/7.014 Chemistry Self-Evaluation:

The following problems are designed to indicate the level of chemistry required for Introductory Biology classes 7.012, 7.013, and 7.014. Answers are on [page 2](#)

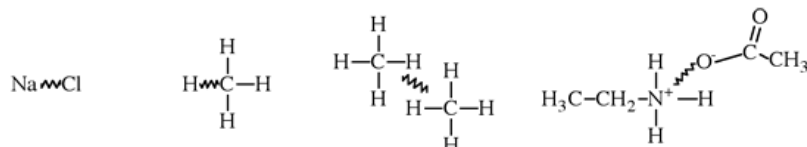
1) Covalent bonds - number of bonds per atom/charge on atoms:

What is wrong with the following structures? (correct the mistakes)



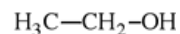
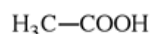
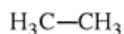
2) Bond types:

What type of bond (ionic, covalent, hydrogen, VanDer Waals) is indicated by the squiggle?



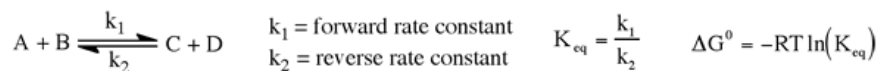
3) Hydrophobicity/Hydrophilicity:

Which of the following would you expect to be water-soluble?



4) Thermodynamics

Given the reversible chemical reaction where $\Delta G^\circ = -5.0 \frac{\text{kcal}}{\text{mol}}$

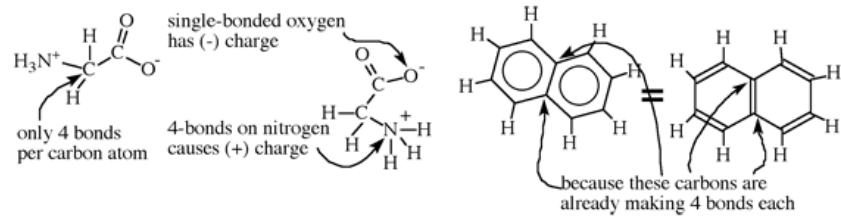


Which of the following statements are true and which are false?

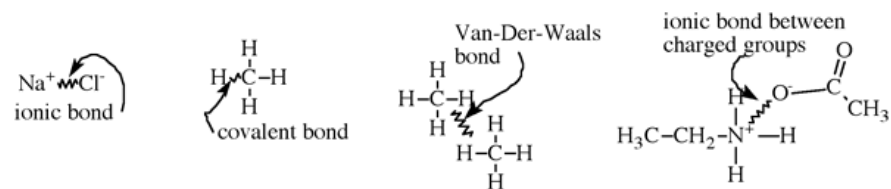
- At equilibrium, $[\text{A}]=[\text{B}]=[\text{C}]=[\text{D}]$.
- Starting with $[\text{A}]=[\text{B}]=[\text{C}]=[\text{D}]=1\text{M}$, there will be a net reaction to the right.
- Starting with $[\text{A}]=1\text{M}$, $[\text{B}]=1\text{M}$, $[\text{C}]=0$, and $[\text{D}]=0$, there will be a net reaction to the right.
- Starting with $[\text{A}]=0$, $[\text{B}]=0$, $[\text{C}]=1\text{M}$, and $[\text{D}]=1\text{M}$, there will be a net reaction to the right.

Solutions

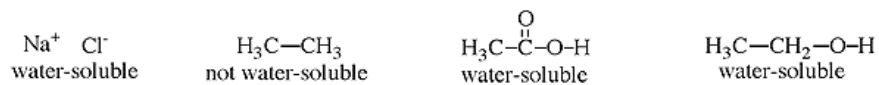
1) Covalent Bonds



2) Bond Types



3) Hydrophobicity/Hydrophilicity



4) Thermodynamics

- a) False
- b) True
- c) True
- d) False