

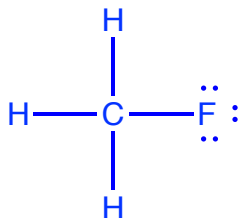
LECTURE 10

1. Write the Lewis Structure for the following compounds:

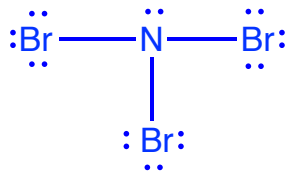
(a) CH_3F

(b) NBr_3

(a)

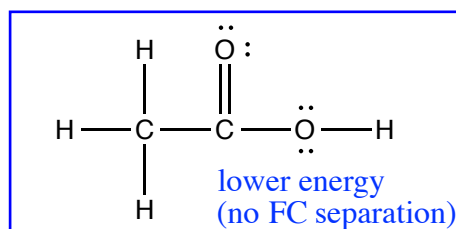
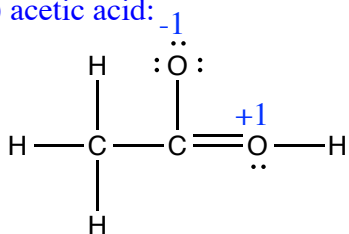


(b)

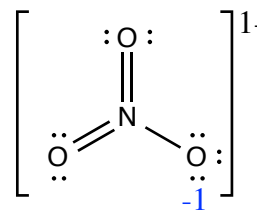
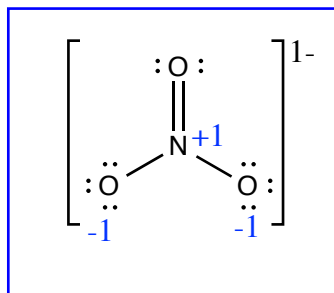
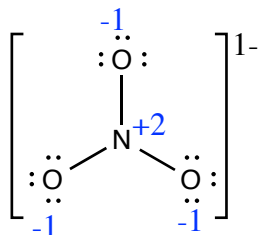


2. Determine the formal charge on each atom and label all non-zero formal charges in the following molecules. Identify most stable (lowest energy) structure for each case.

(a) acetic acid:

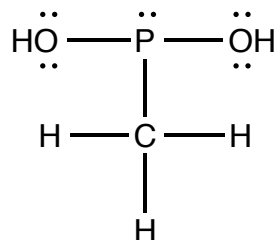
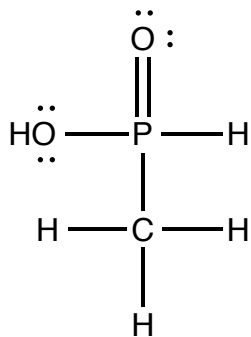


(b) nitrate ion:



note: not a valid structure!
N can't have 5 bonds!

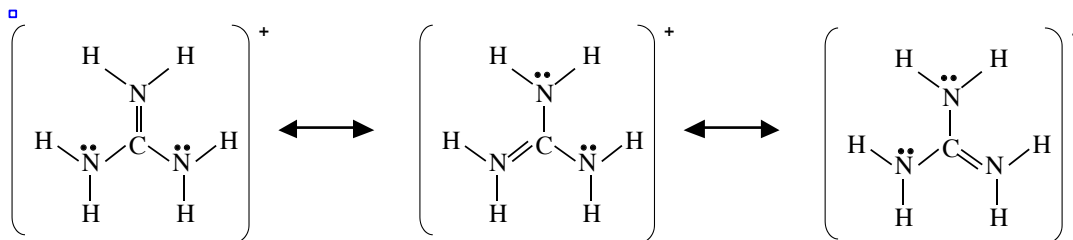
3. Are the molecules below a pair of resonance structures? Briefly explain.



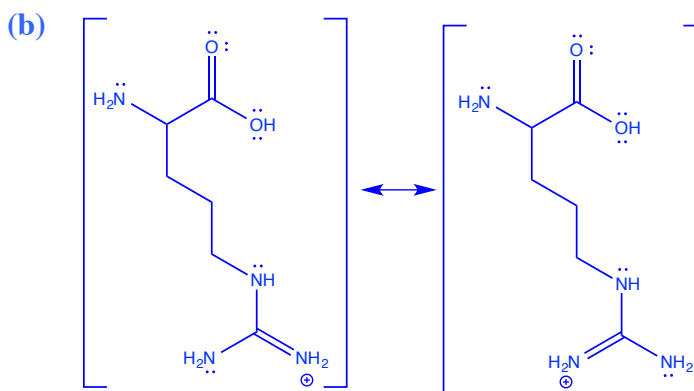
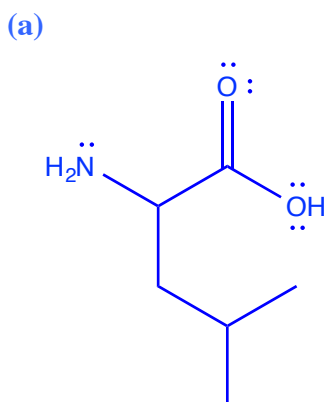
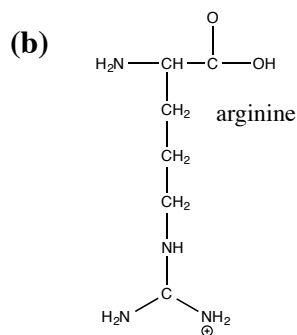
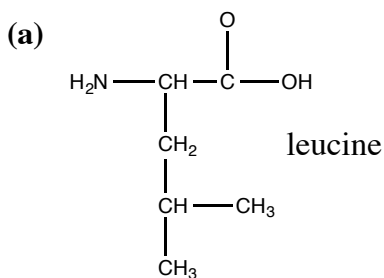
No. In order to be resonance structures, only the electrons can be rearranged. When atoms are in a different relationship to each other, the two structures are not resonance forms, they are different molecules.

LECTURE 10

4. Write the Lewis structure for the guanadinium ion, $C(NH_2)_3^+$, and include all relevant resonance forms. (Note that the C is bonded to three N atoms.) *Note that you do not need to indicate FC for this problem, but you should always consider FC when writing Lewis structures.*



5. The **skeletal structures** of two amino acids, **leucine** and **arginine**, are drawn below. Non-zero formal charges are indicated. Provide the **Lewis structure(s), including double bonds and lone pairs**, for each of these molecules. If there are equivalent resonance forms (which may include moving the formal charge on N), include them.



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