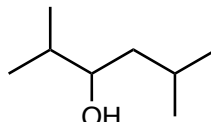
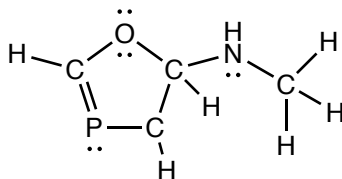
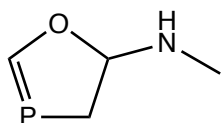


**DUE: Wednesday, Sept 13 @ 8am**

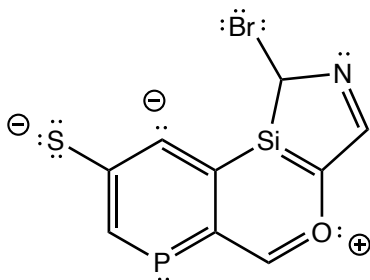
1. Draw the line-bond (i.e. skeletal) structure for the condensed structure below:



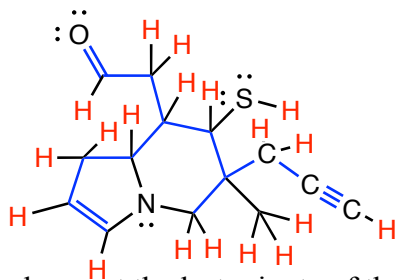
2. Redraw the following molecule as a **complete** Lewis dot structure with all atoms and lone pairs:



3. Fill any missing formal charges on the following compound:



4. How many total hydrogen atoms, lone pairs, and sigma and pi bonds are present on the following compound?

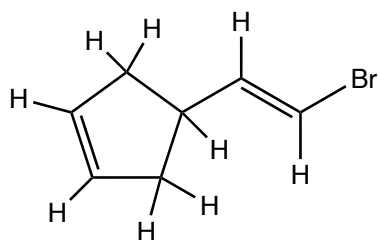


- A. # hydrogen atoms: 19
- B. # lone pairs: 5
- C. # pi bonds: 4
- D. # carbon-carbon sigma bonds: 13

5. Jimmy woke up at the last minute of the class where we discussed skeletal structures. When asked for the molecular formula for the following compound, he claimed it was  $\text{C}_7\text{H}_8\text{Br}$ . Is Jimmy correct? If not, what is the correct molecular formula?



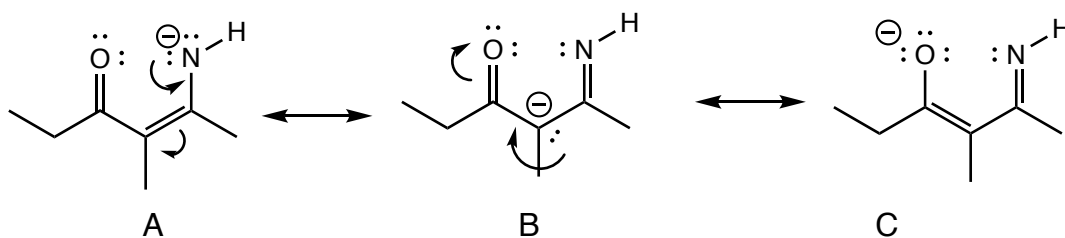
Jimmy



$\text{C}_7\text{H}_9\text{Br}$

Sorry Jimmy!!

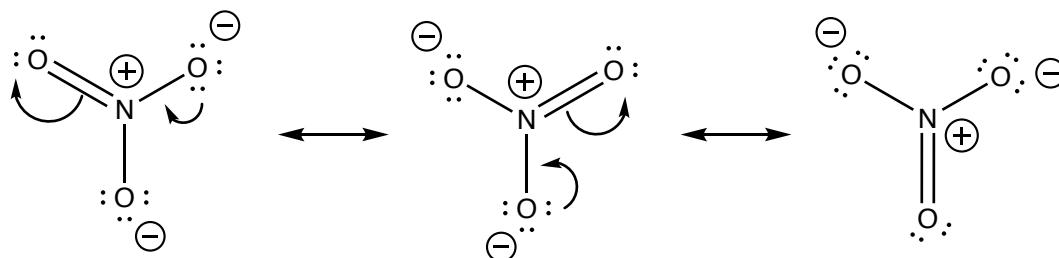
6. Draw in lone pairs for the two resonance forms below, and include proper curved arrows to show how resonance form B is formed from resonance form A. Draw another important resonance form (starting from B) that uses the pi bond (double bond) of the C=O.



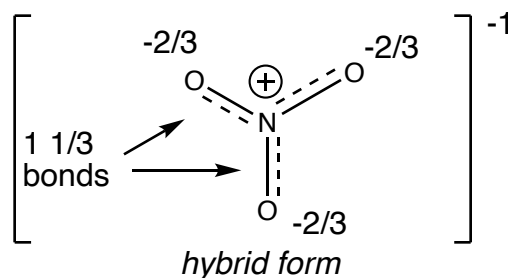
7. The most stable of the resonance forms in Question 6 is the form in which the negative charge is in the most stable situation. Which of the resonance forms is most stable, therefore, and why?

the negative charge will be most stable on the most electronegative atom. Of the 3 atoms bearing the negative charge (carbon, nitrogen and oxygen), the most electronegative is oxygen, so resonance form C will be most stable!

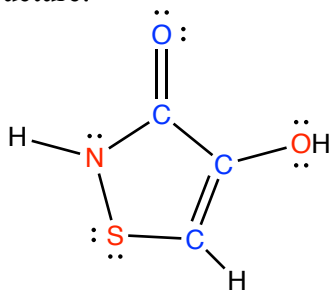
8. Draw **three** important resonance forms for the nitrate ion ( $\text{NO}_3^-$ ) using the curved arrow notation to interconvert them.



9. Based on the structures provided in Question 8, draw a **hybrid structure** for the nitrate ion.



10. Cyclosterine is an antibiotic used in the treatment of tuberculosis. Answer the following questions about its structure:



i. number of  $\text{SP}^3$  hybridized atoms? 3

ii. total number of lone pairs? 7

iii. molecular formula?  $\text{C}_3\text{H}_3\text{NO}_2\text{S}$

iv. number of atoms with trigonal planar geometry? 4