

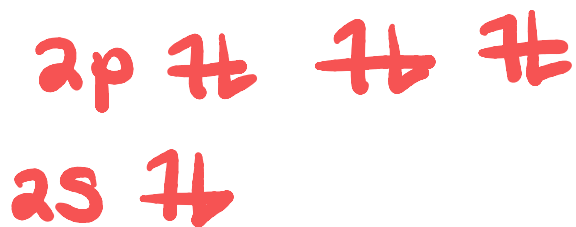
## CHEM 2300 SI Solution 1

- List the number of protons, neutrons, electrons, atomic number, and atomic weight in each atom.

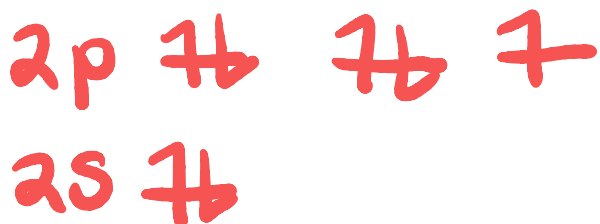
	$^{42}\text{Ca}^{2+}$	$^{20}\text{F}^{-}$	$^{14}\text{N}^{3-}$	$^{13}\text{C}^{4+}$
$p^{+} = \text{atomic \#}$	20	9	7	6
$n^{\circ}$	22	11	7	7
$e^{-}$	18	10	10	2
atomic weight	42	20	14	13

- Write out the valence orbital diagram for

- Carbon that has gained 4 electrons



- Fluorine

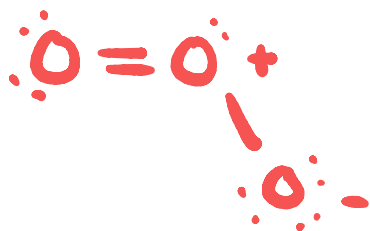


- Beryllium that has lost 1 electrons

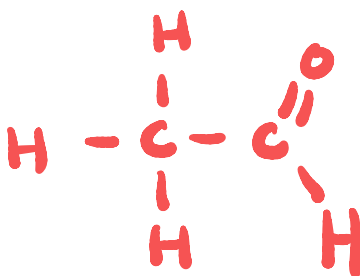


3. Draw the most stable lewis dot structure for

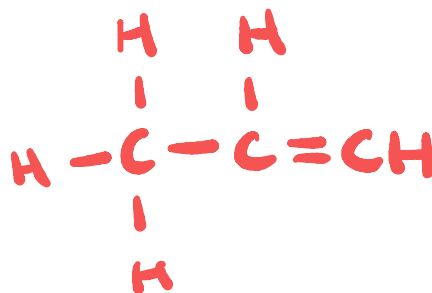
a.  $O_3$



b.  $CH_3CHO$



c.  $C_3H_6$



4. Give the valence electrons and valence for carbon, nitrogen, hydrogen, bromine, oxygen, and sulfur. What does this say about how many bonds each of these atoms want?

$C \rightarrow 4 \text{ valence } e^-, \text{ valence of } 4$

$N \rightarrow 5 \text{ valence } e^-, \text{ valence of } 3$

$H \rightarrow 1 \text{ valence } e^-, \text{ valence of } 1$

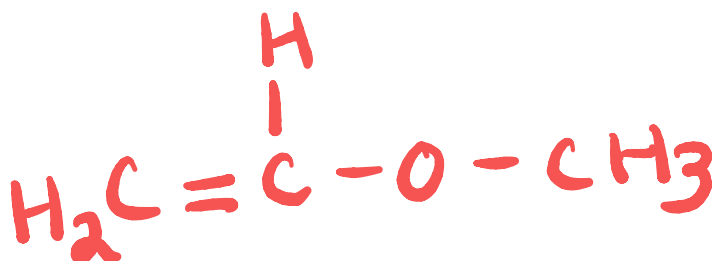
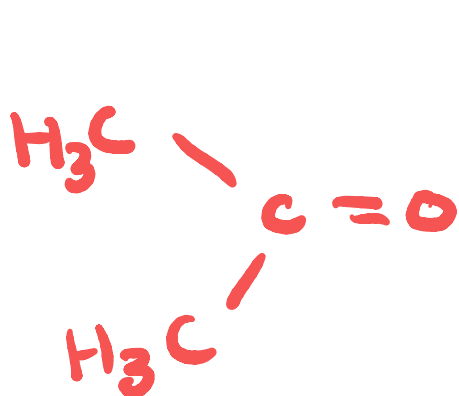
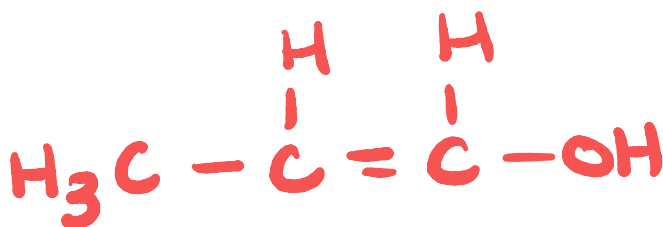
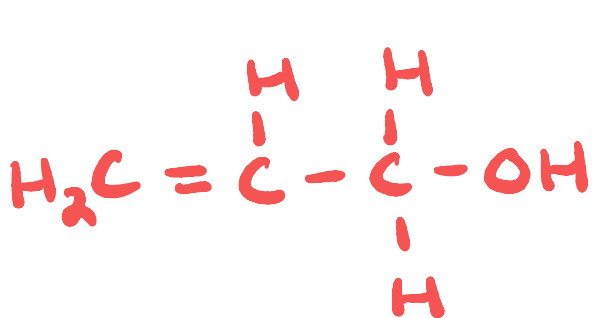
$Br \rightarrow 7 \text{ valence } e^-, \text{ valence of } 1$

$O \rightarrow 6 \text{ valence } e^-, \text{ valence of } 2$

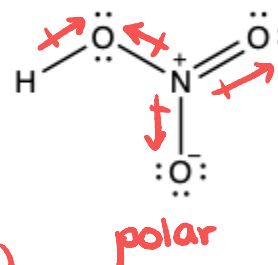
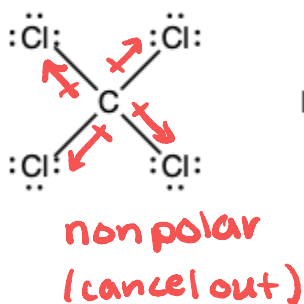
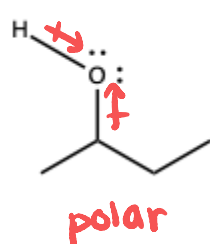
$S \rightarrow 6 \text{ valence } e^-, \text{ valence of } 2$

how many  
bonds it  
wants

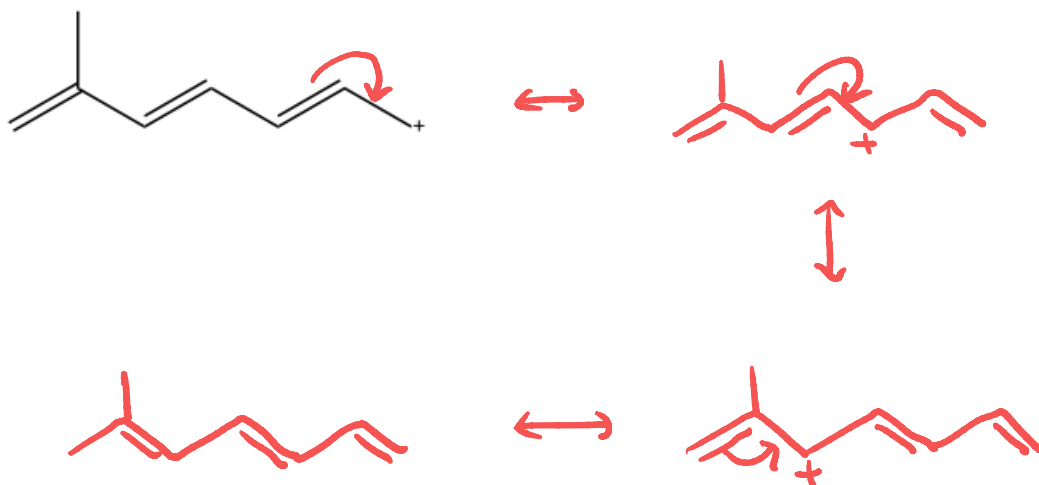
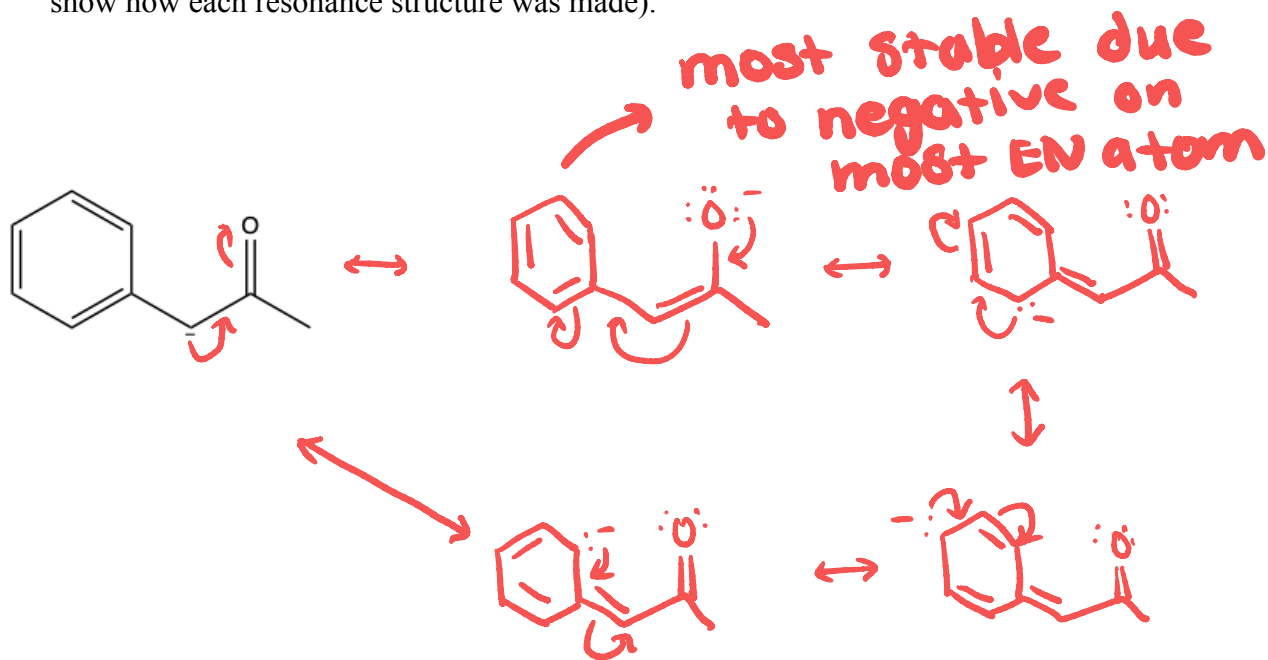
5. Draw four structural isomers for  $C_3H_6O$



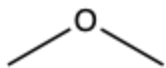
6. Show bond polarities and whether the compound is polar or nonpolar



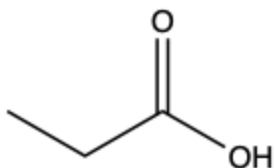
7. Draw all the resonance structures, including the formal charge of each atom (unless neutral). Then state which is the most stable and why (make sure to include arrows to show how each resonance structure was made).



8. Name the function groups



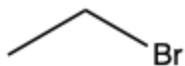
ether



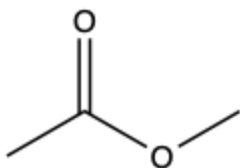
carboxylic acid



alkyne



haloalkane



ester