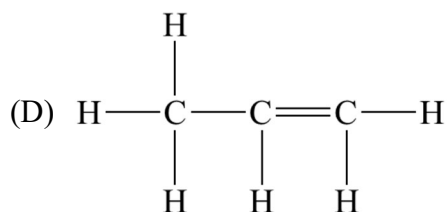
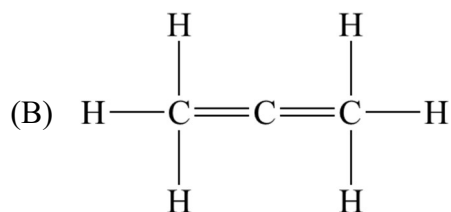
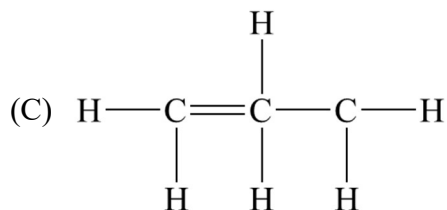
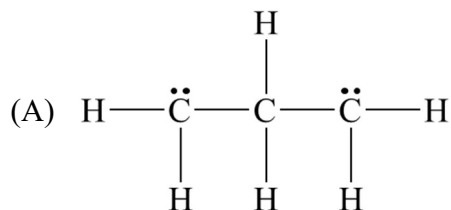
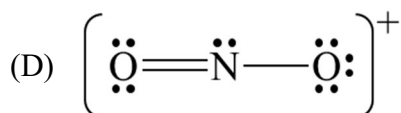
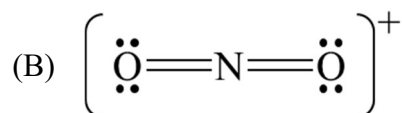
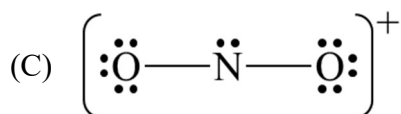
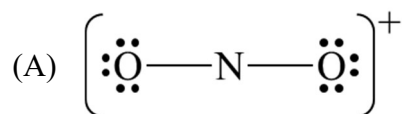


Topics 2.5 – 2.7: MCQ Practice

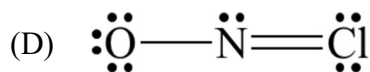
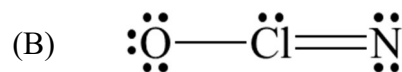
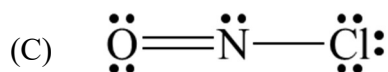
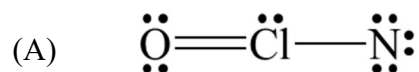
1. Which of the following is a valid Lewis diagram for the molecule C_3H_6 ?



2. Which of the following is a valid Lewis diagram for the polyatomic ion NO_2^+ ?



3. Based on formal charges, which of the following Lewis diagrams is the best representation of the bonding in the molecule NOCl ?



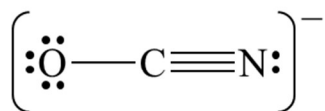


Diagram 1

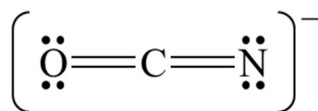


Diagram 2

4. Two proposed Lewis diagrams for the OCN^- ion are shown above. Which of the following indicates the more favorable representation of the bonding in the OCN^- ion and provides the correct justification?

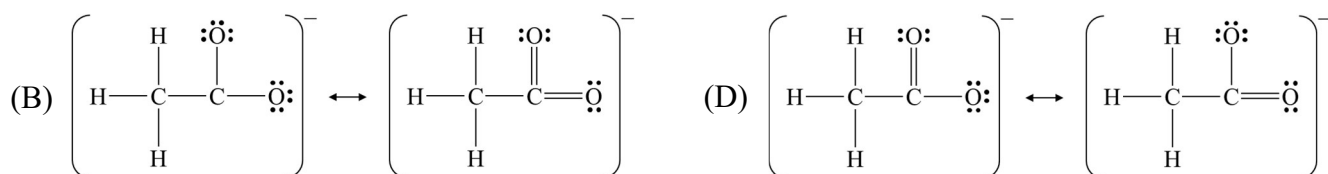
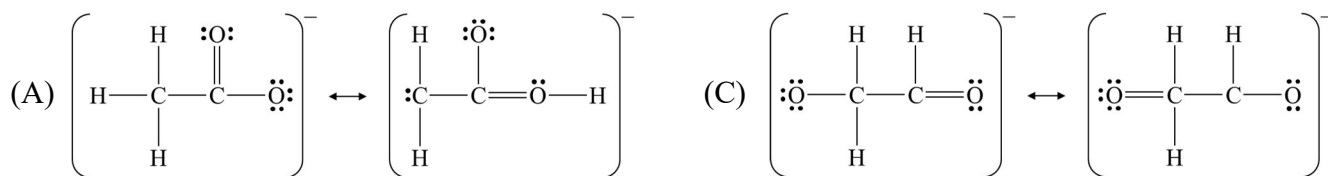
	More Favorable Representation	Justification
(A)	Diagram 1	Each atom in the Lewis diagram is assigned a formal charge of zero.
(B)	Diagram 1	It places the negative formal charge on the most electronegative atom.
(C)	Diagram 2	Each atom in the Lewis diagram is assigned a formal charge of zero.
(D)	Diagram 2	Each bond in the Lewis diagram has the same bond order.



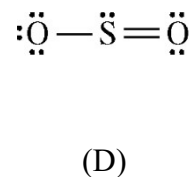
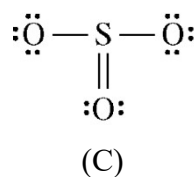
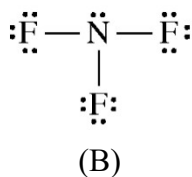
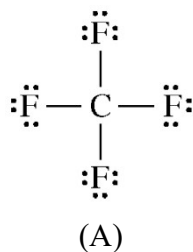
5. The connectivity between the oxygen atoms in the O_3 molecule is shown in the diagram above. Which of the following best describes the electron arrangement in the O_3 molecule and the bond orders of the two oxygen-oxygen bonds?

	Electron Arrangement	Bond Orders of the Two Oxygen-Oxygen Bonds
(A)	O_3 can be described with a single Lewis structure.	1.0 and 2.0
(B)	O_3 can be described with a single Lewis structure.	1.5 and 1.5
(C)	O_3 can be described as an average of two equivalent Lewis structures.	1.0 and 2.0
(D)	O_3 can be described as an average of two equivalent Lewis structures.	1.5 and 1.5

6. The two carbon-oxygen bonds in the acetate ion, $\text{C}_2\text{H}_3\text{O}_2^-$, have the same length. Which of the following sets of Lewis diagrams best supports the explanation for this observation?



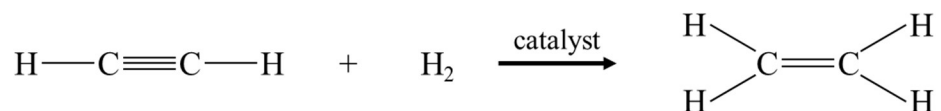
7. Which of the following Lewis electron-dot diagrams represents the molecule that contains the smallest bond angle?



8. The BF_3 molecule is nonpolar, whereas the NF_3 molecule is polar. Which of the following statements accounts for the difference in polarity of the two molecules?
- (A) The NF_3 molecule consists of $\text{N}=\text{F}$ double bonds, whereas the BF_3 molecule consists of $\text{B}-\text{F}$ single bonds.
- (B) $\text{N}-\text{F}$ bonds are polar, whereas $\text{B}-\text{F}$ bonds are nonpolar.
- (C) NF_3 is an ionic compound, whereas BF_3 is a molecular compound.
- (D) Unlike BF_3 , NF_3 has nonplanar geometry due to an unshared pair of electrons on the N atom.

9. Which of the following indicates the correct molecular geometry and polarity for the molecule chlorine trifluoride, ClF_3 ?

	Molecular Geometry	Is the Molecule Polar or Nonpolar?
(A)	T-shaped	polar
(B)	T-shaped	nonpolar
(C)	trigonal planar	polar
(D)	trigonal planar	nonpolar



10. In the reaction represented by the equation above, which of the following correctly identifies the hybridization of the C atoms before and after the reaction occurs?

	Before Reaction	After Reaction
(A)	sp	sp^2
(B)	sp	sp^3
(C)	sp^2	sp^3
(D)	sp^3	sp^3