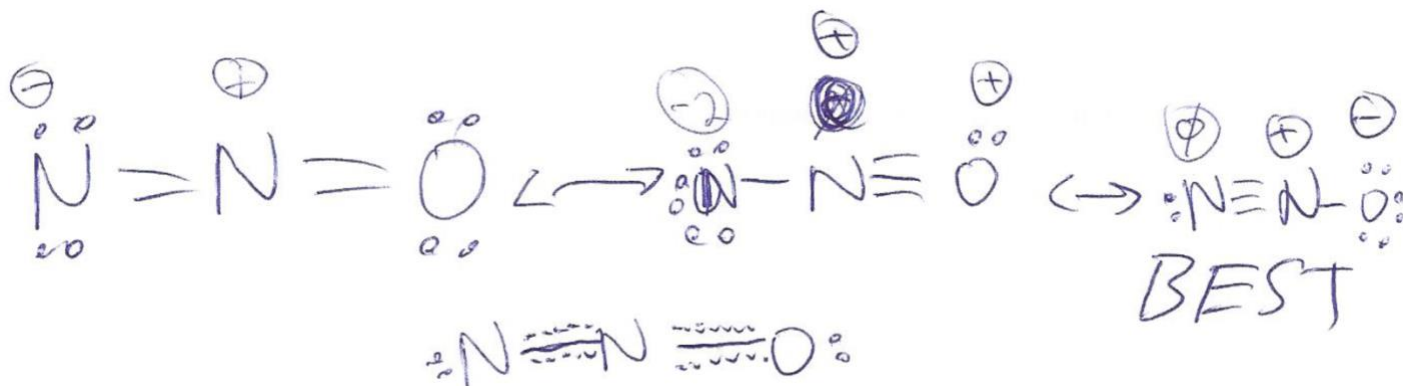
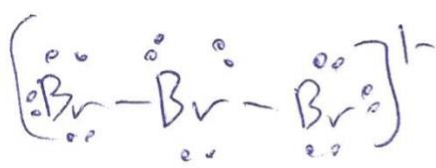


1. There are (3) possible resonance structures for N_2O , where N is the central atom.
 - a. Draw all resonance structures.
 - b. Determine which is the best resonance contributor. CIRCLE and EXPLAIN your answer(s).
 - c. Draw the resonance hybrid.



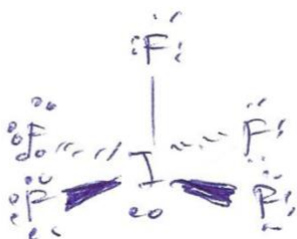
2. For each of the following:

- Predict the molecular geometry and bond angle(s).
- Also, state if the molecule is polar or nonpolar.

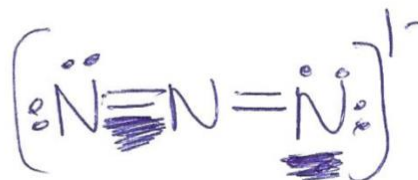


linear, 180°
nonpolar

"(⊥ - ⊥)"

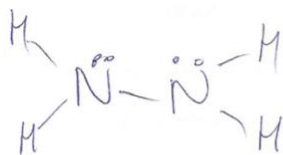


sq. pyr.
 90°
polar



linear,
 180°
nonpolar

3. Which molecule has the STRONGEST nitrogen-nitrogen bond: N_2H_4 or N_2H_2 ?



strongest

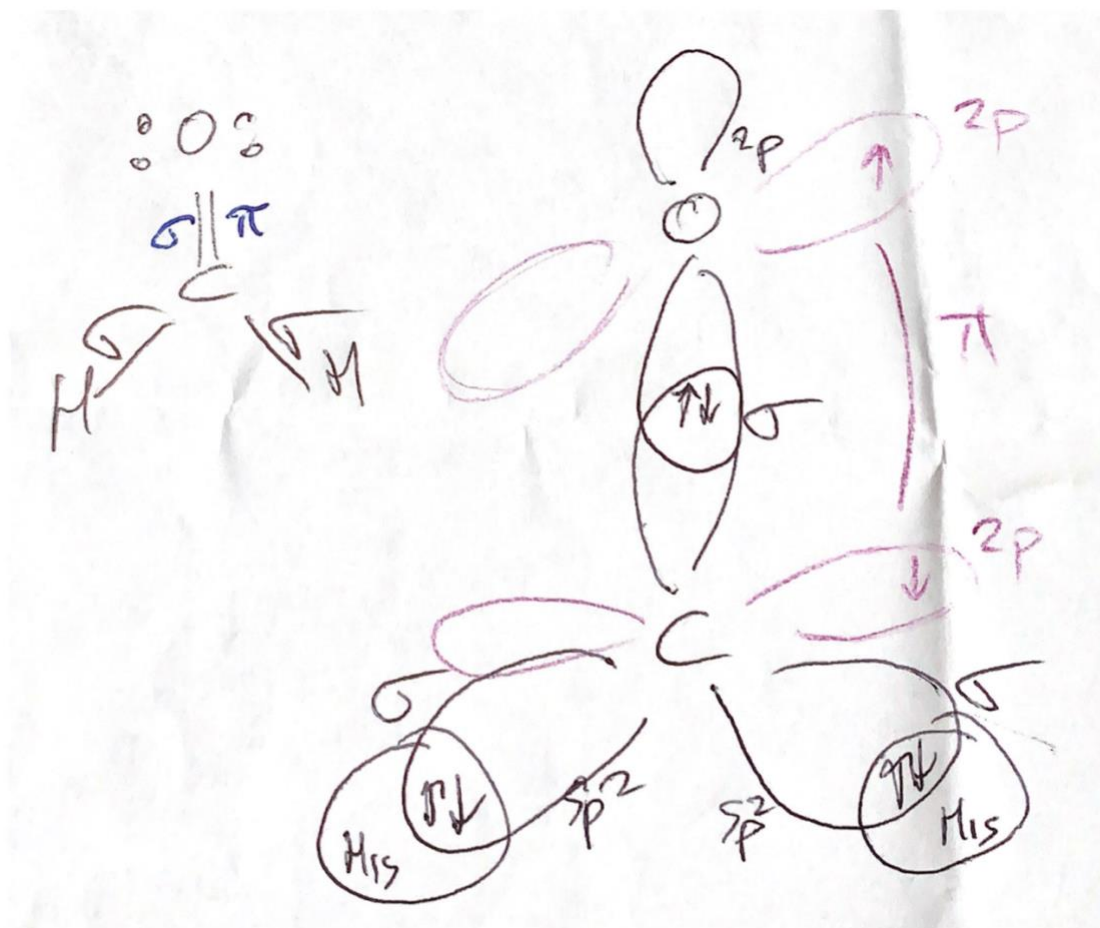
4. Rank the following by boiling point. EXPLAIN your ranking.

CH ₄	CH ₃ OH	H ₂ S
Lowest	highest	2 nd highest

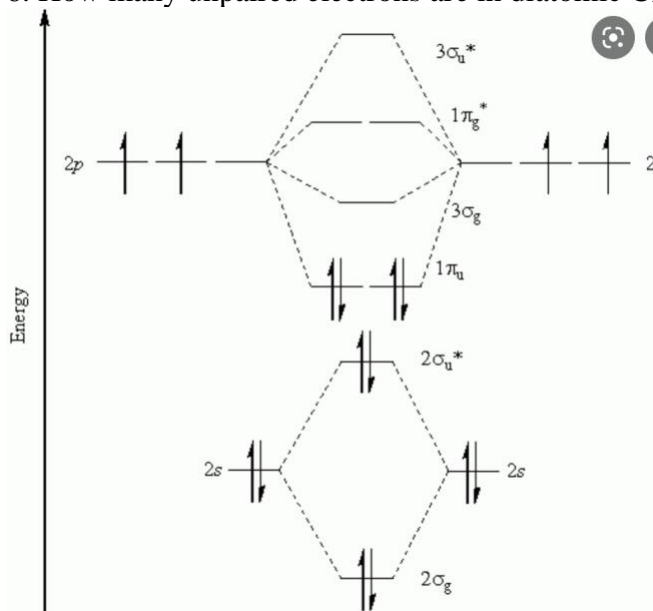
Dispersion	H-bonding	dipole-dipole
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5. Describe the bonding scheme in formaldehyde, CH₂O.

- Hybridize only the central atom.
- Draw/label all bonding orbitals.
- Label all sigma and pi bonds.

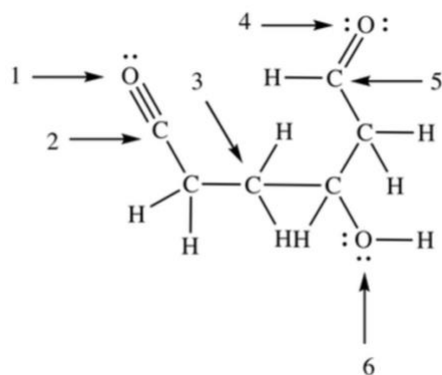


6. How many unpaired electrons are in diatomic C_2 ? Your answer must be supported with work.



There are 0 unpaired electrons.

7. Consider the following compound:



To answer this question, enter one of these choices- sp, sp², sp³, sp³d, or sp³d² - into the appropriate blank.

The oxygen atom labeled 1 is a(n) hybrid.

The carbon atom labeled 2 is a(n) hybrid.

The carbon atom labeled 3 is a(n) hybrid.

The oxygen atom labeled 4 is a(n) hybrid.

The carbon atom labeled 5 is a(n) hybrid.

The oxygen atom labeled 6 is a(n) hybrid.

The oxygen atom labeled 1 is an sp (sp) hybrid.

The carbon atom labeled 2 is an sp (sp) hybrid.

The carbon atom labeled 3 is an sp^3 (sp^3) hybrid.

The oxygen atom labeled 4 is an sp^2 (sp^2) hybrid.

The carbon atom labeled 5 is an sp^2 (sp^2) hybrid.

The oxygen atom labeled 6 is an sp^3 (sp^3) hybrid.