

Lewis Structures Quiz PDF

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Which molecules follow the octet rule?

- H₂O
- CO₂
- BF₃
- NH₃

What are common mistakes when drawing Lewis structures?

- Incorrect electron counting
- Misplacement of electrons
- Ignoring the octet rule
- Using too many resonance structures

How many valence electrons does nitrogen have?

- 3
- 5
- 7
- 8

Which element is most likely to be the central atom in a Lewis structure?

- Hydrogen
- Fluorine
- Carbon
- Oxygen

Which of the following is NOT a valid resonance structure for the nitrate ion (NO₃⁻)?

- One with a double bond between nitrogen and one oxygen
- One with a single bond between nitrogen and all oxygens

- One with two double bonds between nitrogen and two oxygens
- One with a double bond between nitrogen and a different oxygen

What is the primary purpose of a Lewis structure?

- To predict the molecular weight
- To represent the bonds and lone pairs in a molecule
- To determine the color of a compound
- To calculate the boiling point

Which of the following are steps in drawing a Lewis structure?

- Count total valence electrons
- Determine the molecular weight
- Draw single bonds between atoms
- Distribute remaining electrons to satisfy the octet rule

Which molecule does not follow the octet rule?

- CH₄
- BF₃
- H₂O
- NH₃

Explain how expanded octets are possible and give an example of a molecule that exhibits this.

Explain why hydrogen is an exception to the octet rule.

Describe the process of determining the central atom in a Lewis structure.

How does the concept of resonance contribute to the stability of a molecule?

Provide a step-by-step method for calculating the formal charge of an atom in a molecule.

Discuss the significance of valence electrons in the formation of chemical bonds.

In which of the following molecules can resonance structures be drawn?

- O₃
- CO₂
- NO₃⁻
- CH₄

Which of the following statements about formal charge are true?

- It helps determine the most stable Lewis structure
- It is calculated by subtracting the number of valence electrons in the free atom from the number of valence electrons in the molecule
- A structure with formal charges closest to zero is generally more stable
- Formal charge is irrelevant in determining resonance structures

Which of the following elements can have an expanded octet?

- Sulfur
- Phosphorus
- Chlorine
- Neon

What is the typical number of electrons needed to satisfy the octet rule?

- 2
- 4
- 6
- 8

Which of the following molecules is an example of an expanded octet?

- H₂O
- CO₂

- SF₆
- NH₃

What is the formal charge on the oxygen atom in a water molecule (H₂O)?

- 1
- 0
- +1
- +2