***Organic Chemistry, 6e* (Smith)**
Chapter 1 Structure and Bonding

1) What is the ground-state electronic configuration of a carbon atom?
A) $1s^2$, $2s^2$, $2p^5$
B) $1s^2$, $2s^2$, $2p^2$
C) $1s^2$, $2s^2$, $2p^6$
D) $1s^2$, $2s^2$, $2p^4$

Answer: B
Difficulty: 1 Easy
Section: 01.01
Topic: Structure and Bonding
Bloom's: 2. Understand
Chapter: 01
Accessibility: Keyboard Navigation

2) What is the ground-state electronic configuration of a fluorine atom?
A) $1s^2$, $2s^2$, $2p^2$
B) $1s^2$, $2s^2$, $2p^3$
C) $1s^2$, $2s^2$, $2p^4$
D) $1s^2$, $2s^2$, $2p^5$

Answer: D
Difficulty: 1 Easy
Section: 01.01
Topic: Structure and Bonding
Bloom's: 2. Understand
Chapter: 01
Accessibility: Keyboard Navigation

3) What is the ground-state electronic configuration of a magnesium cation (Mg^{2+})?
A) $1s^2$, $2s^2$, $2p^6$
B) $1s^2$, $2s^2$, $2p^6$, $3s^1$
C) $1s^2$, $2s^2$, $2p^6$, $3s^2$
D) $1s^2$, $2s^2$, $2p^6$, $3s^2$, $3p^2$

Answer: A
Difficulty: 1 Easy
Section: 01.01
Topic: Structure and Bonding
Bloom's: 2. Understand
Chapter: 01

Accessibility: Keyboard Navigation

4) What is the ground-state electronic configuration of a chlorine anion (Cl^-)?
A) $1s^2, 2s^2, 2p^6$
B) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6$
C) $1s^2, 2s^2, 2p^6, 3s^2, 3p^5$
D) $1s^2, 2s^2, 2p^6, 3s^2, 3p^4$

Answer: B
Difficulty: 1 Easy
Section: 01.01
Topic: Structure and Bonding
Bloom's: 2. Understand
Chapter: 01
Accessibility: Keyboard Navigation

5) Which of the following statements about valence electrons is true?
A) They are the most tightly held electrons.
B) They do not participate in chemical reactions.
C) They are the outermost electrons.
D) They reveal the period number of a second-row element.

Answer: C
Difficulty: 1 Easy
Section: 01.01
Topic: Structure and Bonding
Bloom's: 2. Understand
Chapter: 01
Accessibility: Keyboard Navigation

6) Which of the following atoms will have a full 3s orbital in the ground state?
A) Hydrogen
B) Lithium
C) Potassium
D) Rubidium

Answer: D
Difficulty: 2 Medium
Section: 01.01
Topic: Structure and Bonding
Bloom's: 2. Understand
Chapter: 01
Accessibility: Keyboard Navigation

7) Which of the following statements about bonding is true?
A) Covalent bonds result from the transfer of electrons from one element to another.
B) Ionic bonds result from the transfer of electrons from a metal to a non-metal.
C) Ionic bonds result from the sharing of electrons between two non-metals.
D) Covalent bonds result from the sharing of electrons between two metals.

Answer: B
Difficulty: 1 Easy
Section: 01.02
Topic: Structure and Bonding
Bloom's: 1. Remember
Chapter: 01
Accessibility: Keyboard Navigation

8) Which of the following would you expect to have ionic bonds?
A) CO
B) FBr
C) NF_3
D) NaCl

Answer: D
Difficulty: 1 Easy
Section: 01.02
Topic: Structure and Bonding
Bloom's: 3. Apply
Chapter: 01
Accessibility: Keyboard Navigation

9) Which of the following molecules has nonpolar covalent bonds?
A) HCl
B) N_2
C) $CHCl_3$
D) NO

Answer: B
Difficulty: 1 Easy
Section: 01.02
Topic: Structure and Bonding
Bloom's: 2. Understand
Chapter: 01
Accessibility: Keyboard Navigation

10) Which of the following molecules contain both covalent and ionic bonds?

$NaCl$	NH_4OH	CH_3OH	$MgCO_3$
I	**II**	**III**	**IV**

A) I, II
B) I, IV
C) II, III
D) II, IV

Answer: D
Difficulty: 1 Easy
Section: 01.02
Topic: Structure and Bonding
Bloom's: 3. Apply
Chapter: 01

11) Which of the following would most likely form an ionic bond?

C-C	C-N	C-O	Na-O
I	**II**	**III**	**IV**

A) I
B) II
C) III
D) IV

Answer: D
Difficulty: 1 Easy
Section: 01.02
Topic: Structure and Bonding
Bloom's: 3. Apply
Chapter: 01

12) Which of the following statements correctly describes the typical number of bonds for carbon, nitrogen, and oxygen in most neutral organic molecules?
A) Carbon forms 4 covalent bonds, nitrogen forms 2 covalent bonds, and oxygen forms 3 covalent bonds.
B) Carbon forms 4 covalent bonds, nitrogen forms 3 covalent bonds, and oxygen forms 2 covalent bonds.
C) Carbon forms 4 covalent bonds, nitrogen forms 5 covalent bonds, and oxygen forms 2 covalent bonds.
D) Carbon forms 4 covalent bonds, nitrogen forms 5 covalent bonds, and oxygen forms 4 covalent bonds.

Answer: B
Difficulty: 1 Easy
Section: 01.02
Topic: Structure and Bonding
Bloom's: 1. Remember
Chapter: 01
Accessibility: Keyboard Navigation

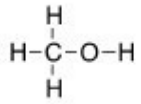
13) Which is not an acceptable Lewis structure for the anion $CH_2NCO^{—}$?

I II III IV

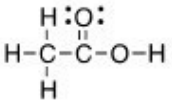
A) I
B) II
C) III
D) IV

Answer: C
Difficulty: 2 Medium
Section: 01.03
Topic: Structure and Bonding
Bloom's: 4. Analyze
Chapter: 01

14) Which of the following Lewis structures is correct?



I



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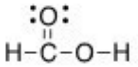

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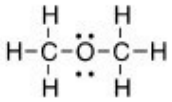
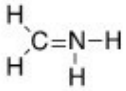


IV

A) I
B) II
C) III
D) IV

Answer: D
Difficulty: 2 Medium
Section: 01.03
Topic: Structure and Bonding
Bloom's: 4. Analyze
Chapter: 01

15) Which of the following Lewis structures is correct?



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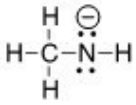

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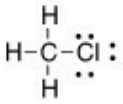

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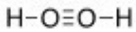
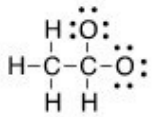


IV

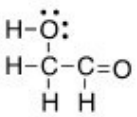
A) I, II
B) I, III
C) II, III
D) III, IV

Answer: C
Difficulty: 2 Medium
Section: 01.03
Topic: Structure and Bonding
Bloom's: 4. Analyze
Chapter: 01

16) Which is the correct Lewis structure for acetic acid (CH_3CO_2H)?



I



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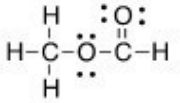

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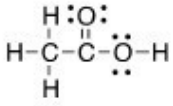
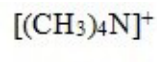


IV

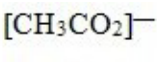
A) I
B) II
C) III
D) IV

Answer: D
Difficulty: 2 Medium
Section: 01.03
Topic: Structure and Bonding
Bloom's: 4. Analyze
Chapter: 01

17) In which of the following ions does carbon have a formal charge?



I



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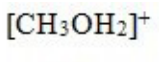

III

A) I
B) II
C) III
D) None of these

Answer: D
Difficulty: 1 Easy
Section: 01.03
Topic: Structure and Bonding
Bloom's: 1. Remember
Chapter: 01