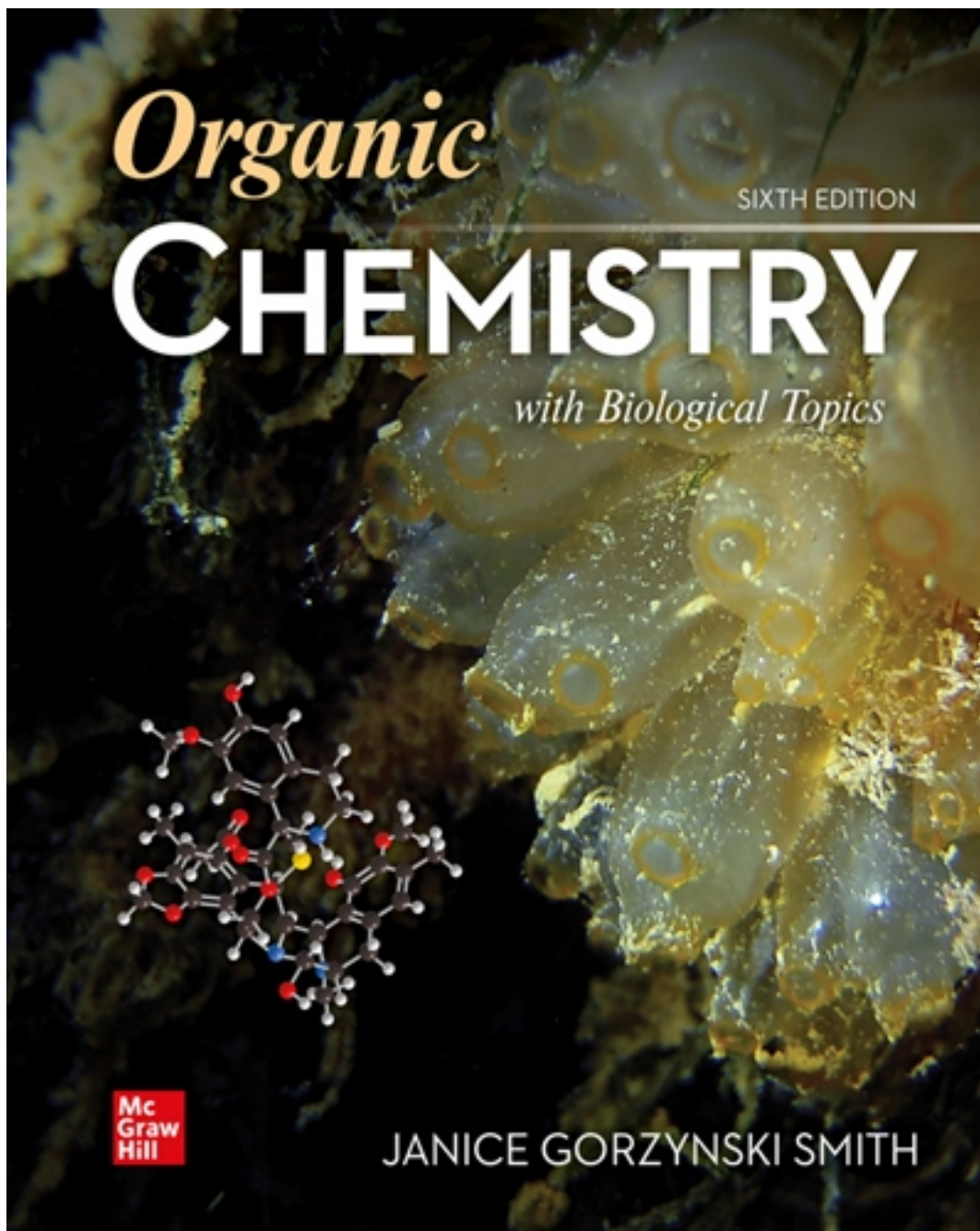


Test Bank for Organic Chemistry with Biological Topics 6th Edition by Smith

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Test Bank

Organic Chemistry with Biological Topics 6th Edition by Smith CH01

ANSWERS ARE LOCATED IN THE SECOND PART OF THIS DOCUMENT

MULTIPLE CHOICE - Choose the one alternative that best completes the statement or answers the question.

1) What is the ground-state electronic configuration of a carbon atom?

1) _____

A) $1s^2, 2s^2, 2p^5$

B) $1s^2, 2s^2, 2p^2$

C) $1s^2, 2s^2, 2p^6$

D) $1s^2, 2s^2, 2p^4$

Question Details

Difficulty : 1 Easy

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Bloom's : 2. Understand

Section : 01.01

2) What is the ground-state electronic configuration of a fluorine atom?

2) _____

A) $1s^2, 2s^2, 2p^2$

B) $1s^2, 2s^2, 2p^3$

C) $1s^2, 2s^2, 2p^4$

D) $1s^2, 2s^2, 2p^5$

Question Details

Difficulty : 1 Easy

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Bloom's : 2. Understand

Section : 01.01

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3) What is the ground-state electronic configuration of a magnesium cation (Mg^{2+})?
3) _____

- 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) $1s^2, 2s^2, 2p^6, 3s^2, 3p^2$

Question Details

Difficulty : 1 Easy

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Bloom's : 2. Understand

Section : 01.01

4) What is the ground-state electronic configuration of a chlorine anion (Cl^-)?
4) _____

- 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) $1s^2, 2s^2, 2p^6, 3s^2, 3p^4$

Question Details

Difficulty : 1 Easy

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Bloom's : 2. Understand

Section : 01.01

5) Which of the following statements about valence electrons is true?
5) _____

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- 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.

Question Details

Difficulty : 1 Easy

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Bloom's : 2. Understand

Section : 01.01

6) Which of the following atoms will have a full 3s orbital in the ground state?

6) _____

- A) Hydrogen
- B) Lithium
- C) Potassium
- D) Rubidium

Question Details

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Bloom's : 2. Understand

Section : 01.01

7) Which of the following statements about bonding is true?

7) _____

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- 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.

Question Details

Difficulty : 1 Easy

Topic : Structure and Bonding

Bloom's : 1. Remember

Chapter : 01

Accessibility : Keyboard Navigation

Section : 01.02

8) Which of the following would you expect to have ionic bonds?

8) _____

- A) CO
- B) FBr
- C) NF₃
- D) NaCl

Question Details

Difficulty : 1 Easy

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Bloom's : 3. Apply

Section : 01.02

9) Which of the following molecules has nonpolar covalent bonds?

9) _____

Organic Chemistry with Biological Topics 6th Edition by Smith CH01

- A) HCl
- B) N₂
- C) CHCl₃
- D) NO

Question Details

Difficulty : 1 Easy

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Bloom's : 2. Understand

Section : 01.02

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

NaCl

NH₄OH

CH₃OH

MgCO₃

I

II

III

IV

10) _____

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

Question Details

Difficulty : 1 Easy

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Bloom's : 3. Apply

Section : 01.02

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

C-C

C-N

C-O

Na-O

I

II

III

IV

11) _____

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

Question Details

Difficulty : 1 Easy

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Bloom's : 3. Apply

Section : 01.02

12) Which of the following statements correctly describes the typical number of bonds for carbon, nitrogen, and oxygen in most neutral organic molecules?

12) _____

- 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.

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Question Details

Difficulty : 1 Easy

Topic : Structure and Bonding

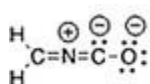
Bloom's : 1. Remember

Chapter : 01

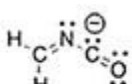
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Section : 01.02

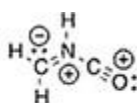
13) Which is not an acceptable Lewis structure for the anion CH_2NCO^- ?



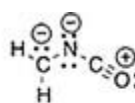
I



II



III



IV

13) _____

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

Question Details

Section : 01.03

Topic : Structure and Bonding

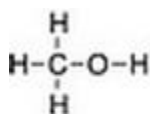
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Accessibility : Keyboard Navigation

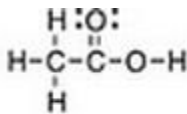
Difficulty : 2 Medium

Bloom's : 4. Analyze

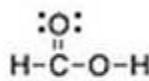
14) Which of the following Lewis structures is correct?



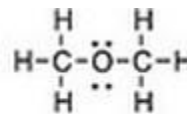
I



II



III



IV

14) _____

Organic Chemistry with Biological Topics 6th Edition by Smith CH01

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

Question Details

Section : 01.03

Topic : Structure and Bonding

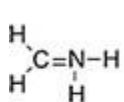
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Accessibility : Keyboard Navigation

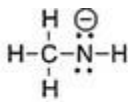
Difficulty : 2 Medium

Bloom's : 4. Analyze

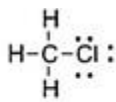
15) Which of the following Lewis structures is correct?



I



II



III



IV

15) _____

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

Question Details

Section : 01.03

Topic : Structure and Bonding

Chapter : 01

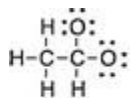
Accessibility : Keyboard Navigation

Difficulty : 2 Medium

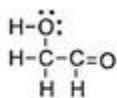
Bloom's : 4. Analyze

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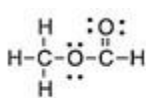
16) Which is the correct Lewis structure for acetic acid ($\text{CH}_3\text{CO}_2\text{H}$)?



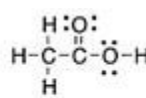
I



II



III



IV

16) _____

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

Question Details

Section : 01.03

Topic : Structure and Bonding

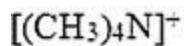
Chapter : 01

Accessibility : Keyboard Navigation

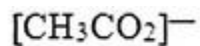
Difficulty : 2 Medium

Bloom's : 4. Analyze

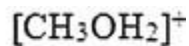
17) In which of the following ions does carbon have a formal charge?



I



II



III

17) _____

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

Organic Chemistry with Biological Topics 6th Edition by Smith CH01

Question Details

Difficulty : 1 Easy

Section : 01.03

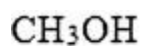
Topic : Structure and Bonding

Bloom's : 1. Remember

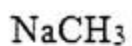
Chapter : 01

Accessibility : Keyboard Navigation

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



I



II



III

18) _____

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

Question Details

Difficulty : 1 Easy

Section : 01.03

Topic : Structure and Bonding

Bloom's : 1. Remember

Chapter : 01

Accessibility : Keyboard Navigation

19) What is the formal charge of carbon in carbon monoxide (CO) when drawn with a triple bond?

19) _____

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- A) 0
- B) -2
- C) -1
- D) +1

Question Details

Section : 01.03

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Bloom's : 4. Analyze

20) What is the formal charge of the carbon in carbon dioxide (CO₂) when drawn with two double bonds?

20) _____

- A) +1
- B) 0
- C) -1
- D) -2

Question Details

Section : 01.03

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Bloom's : 4. Analyze

21) Which of the following statements about constitutional isomers is true?

21) _____

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- A) Constitutional isomers are different molecules having the different molecular formula.
- B) Constitutional isomers are different molecules having the same molecular formula.
- C) Constitutional isomers are same molecules having the different molecular formula.
- D) Constitutional isomers are same molecules having the same molecular formula.

Question Details

Difficulty : 1 Easy

Topic : Structure and Bonding

Bloom's : 1. Remember

Chapter : 01

Accessibility : Keyboard Navigation

Section : 01.04

22) How many constitutional isomers are there for a molecule having the molecular formula C_2H_6O ?

22) _____

- A) 1
- B) 2
- C) 3
- D) 4

Question Details

Difficulty : 1 Easy

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Bloom's : 4. Analyze

Section : 01.04

23) How many constitutional isomers are there for a molecule having the molecular formula C_3H_8O ?

23) _____

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- A) 1
- B) 2
- C) 3
- D) 4

Question Details

Difficulty : 1 Easy

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Bloom's : 4. Analyze

Section : 01.04

24) How many constitutional isomers are there for a molecule having the molecular formula C_3H_6 ?

24) _____

- A) 1
- B) 2
- C) 3
- D) 4

Question Details

Difficulty : 1 Easy

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Bloom's : 4. Analyze

Section : 01.04

25) How many constitutional isomers are there for a molecule having the molecular formula $C_2H_4Cl_2$?

25) _____

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- A) 1
- B) 2
- C) 3
- D) 4

Question Details

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Bloom's : 4. Analyze

Section : 01.04

26) How many different isomers are there for a compound having the molecular formula C_3H_6O ?

26) _____

- A) 4
- B) 5
- C) 6
- D) 7

Question Details

Topic : Structure and Bonding

Chapter : 01

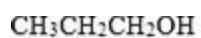
Accessibility : Keyboard Navigation

Difficulty : 2 Medium

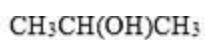
Bloom's : 4. Analyze

Section : 01.04

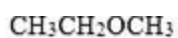
27) Which of the following molecules are constitutional isomers?



I



II



III



IV

27) _____

Organic Chemistry with Biological Topics 6th Edition by Smith CH01

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

Question Details

Difficulty : 1 Easy

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Bloom's : 4. Analyze

Section : 01.04

28) Which of the following compounds has an atom with an unfilled valence shell of electrons?

28) _____

- A) H₂O
- B) BCl₃
- C) CH₄
- D) CO₂

Question Details

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Bloom's : 4. Analyze

Section : 01.05

29) Which of the following compounds has an atom with more than eight valence electrons?

29) _____

Organic Chemistry with Biological Topics 6th Edition by Smith CH01

- A) H_2CO_3
- B) H_2SO_4
- C) H_2O
- D) HBr

Question Details

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Bloom's : 4. Analyze

Section : 01.05

30) How many electrons are around phosphorus in phosphoric acid (H_3PO_4)?

30) _____

- A) 6
- B) 8
- C) 10
- D) 12

Question Details

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Bloom's : 4. Analyze

Section : 01.05

31) Which of the following statements about resonance structures is true?

31) _____

Organic Chemistry with Biological Topics 6th Edition by Smith CH01

- A) Resonance structures have the same placement of electrons but different arrangement of atoms.
- B) Resonance structures have the same placement of atoms but different arrangement of electrons.
- C) Resonance structures have the same placement of atoms and the same arrangement of electrons.
- D) Resonance structures have different placement of atoms and different arrangement of electrons.

Question Details

Difficulty : 1 Easy

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Bloom's : 2. Understand

Section : 01.06

32) Which of the following statements about resonance structures is *not* true?

32) _____

- A) There is no movement of electrons from one form to another.
- B) Resonance structures are not isomers.
- C) Resonance structures differ only in the arrangement of electrons.
- D) Resonance structures are in equilibrium with each other.

Question Details

Difficulty : 1 Easy

Topic : Structure and Bonding

Chapter : 01

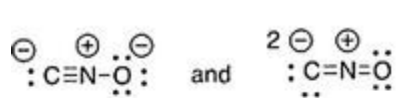
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Bloom's : 2. Understand

Section : 01.06

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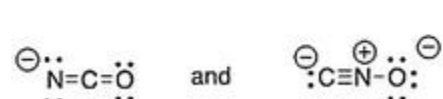
33) Which of the following pair does not represent resonance structures?



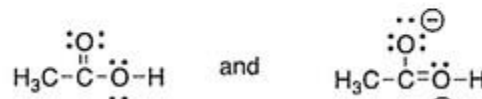
I



II



III



IV

33) _____

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

Question Details

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Bloom's : 4. Analyze

Section : 01.06

34) What 2 things will change between two resonance structures?

34) _____

- A) The position of multiple bonds and non-bonded electrons.
- B) The position of multiple bonds and single bonds.
- C) The placement of atoms and single bonds.
- D) The placement of atoms and non-bonded electrons.

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Question Details

Difficulty : 1 Easy

Topic : Structure and Bonding

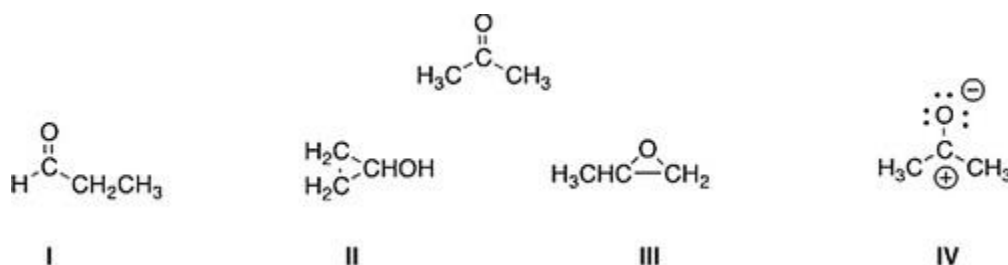
Chapter : 01

Accessibility : Keyboard Navigation

Bloom's : 2. Understand

Section : 01.06

35) Which of the following is a resonance structure of the compound below?



35) _____

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

Question Details

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

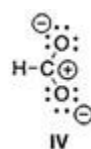
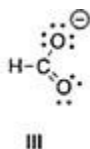
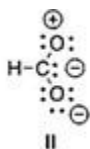
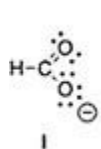
Difficulty : 2 Medium

Section : 01.06

Bloom's : 3. Apply

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36) Which of the following resonance structures is the least important contributor to the resonance hybrid of the formate anion, HCOO^- ?



36) _____

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

Question Details

Topic : Structure and Bonding

Chapter : 01

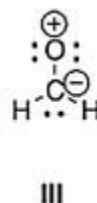
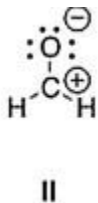
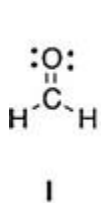
Accessibility : Keyboard Navigation

Difficulty : 3 Hard

Section : 01.06

Bloom's : 3. Apply

37) Rank the following in order of decreasing importance as contributing structures to the resonance hybrid of formaldehyde, H_2CO .



37) _____

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- A) I > II > III
- B) I > III > II
- C) II > I > III
- D) III > II > I

Question Details

Topic : Structure and Bonding

Chapter : 01

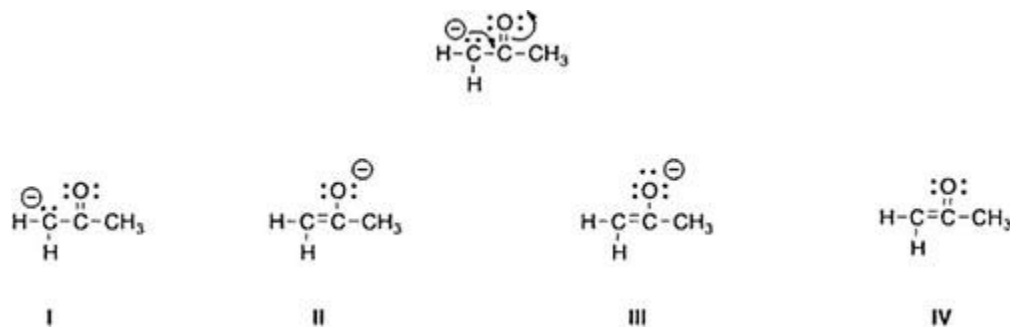
Accessibility : Keyboard Navigation

Difficulty : 3 Hard

Section : 01.06

Bloom's : 3. Apply

38) Follow the curved arrows to draw the second resonance structure for the ion below.



38) _____

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

Question Details

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

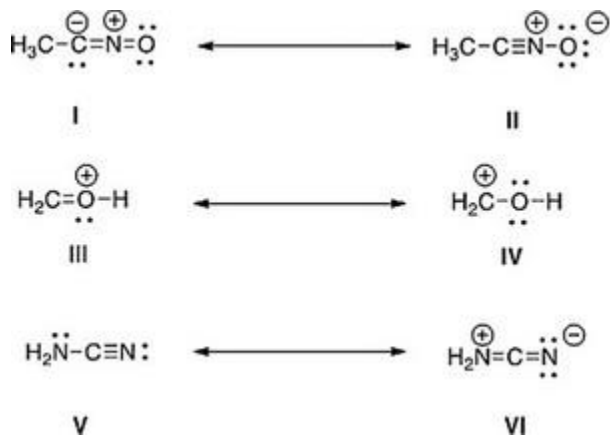
Difficulty : 2 Medium

Bloom's : 2. Understand

Section : 01.06

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39) Which is more important in each pair of contributing resonance structures?



39) _____

- A) II, IV, V
- B) II, III, V
- C) II, III, VI
- D) I, IV, V

Question Details

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Bloom's : 4. Analyze

Section : 01.06

40) What is the approximate value of the H-C-H bond angle in methane, CH₄?

40) _____

- A) 90°
- B) 109.5°
- C) 120°
- D) 180°

Organic Chemistry with Biological Topics 6th Edition by Smith CH01

Question Details

Difficulty : 1 Easy

Bloom's : 1. Remember

Chapter : 01

Accessibility : Keyboard Navigation

Topic : Molecular Shape

Section : 01.07

41) What is the approximate C-C-C bond angle in propene, $\text{CH}_3\text{CH}=\text{CH}_2$?

41) _____

- A) 90°
- B) 109.5°
- C) 120°
- D) 180°

Question Details

Difficulty : 1 Easy

Chapter : 01

Accessibility : Keyboard Navigation

Topic : Molecular Shape

Bloom's : 2. Understand

Section : 01.07

42) What is the approximate H-C-O bond angle in formaldehyde, H_2CO ?

42) _____

- A) 90°
- B) 109.5°
- C) 120°
- D) 180°

Organic Chemistry with Biological Topics 6th Edition by Smith CH01

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

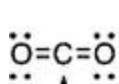
Difficulty : 2 Medium

Topic : Molecular Shape

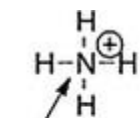
Bloom's : 2. Understand

Section : 01.07

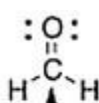
43) Determine the geometry around the indicated atom in each species.



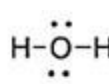
I



II



III



IV

43) _____

- A) I = Linear; II = tetrahedral; III = trigonal planar; IV = tetrahedral
- B) I = Linear; II = tetrahedral; III = trigonal planar; IV = linear
- C) I = Trigonal planar; II = linear; III = tetrahedral; IV = trigonal planar
- D) I = Tetrahedral; II = trigonal planar; III = linear; IV = tetrahedral

Question Details

Difficulty : 1 Easy

Bloom's : 1. Remember

Chapter : 01

Accessibility : Keyboard Navigation

Topic : Molecular Shape

Section : 01.07

44) What is the approximate bond angle for the C-C-N bond in acetonitrile, CH₃CN?

44) _____

Organic Chemistry with Biological Topics 6th Edition by Smith CH01

- A) 90°
- B) 109.5°
- C) 120°
- D) 180°

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Topic : Molecular Shape

Bloom's : 4. Analyze

Section : 01.07

45) What is the molecular geometry around the boron atom in BH_3 ?

45) _____

- A) Tetrahedral
- B) Trigonal Planar
- C) Trigonal Pyramidal
- D) Linear

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Topic : Molecular Shape

Bloom's : 4. Analyze

Section : 01.07

46) What is the molecular geometry around the carbon atom in CH_4 ?

46) _____

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- A) Tetrahedral
- B) Trigonal Planar
- C) Trigonal Pyramidal
- D) Linear

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

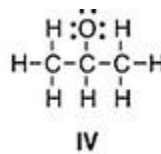
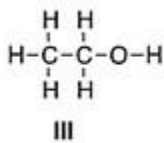
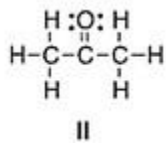
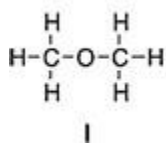
Difficulty : 2 Medium

Topic : Molecular Shape

Bloom's : 4. Analyze

Section : 01.07

47) Which of the following is the appropriate conversion of the condensed structure, CH_3COCH_3 , to a Lewis structure?



47) _____

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

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

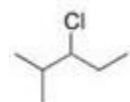
Bloom's : 2. Understand

Section : 01.08

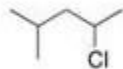
Topic : Drawing Organic Molecules

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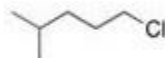
48) Which of the following is the appropriate conversion of $(\text{CH}_3)_2\text{CHCH}_2\text{CHClCH}_3$ to a skeletal structure?



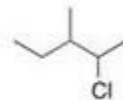
I



II



III



IV

48) _____

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

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Bloom's : 2. Understand

Section : 01.08

Topic : Drawing Organic Molecules

49) Which of the following is the appropriate conversion of $(\text{CH}_3)_4\text{C}$ to a skeletal structure?



I



II



III



IV

49) _____

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

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Question Details

Difficulty : 1 Easy

Chapter : 01

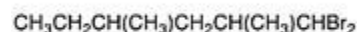
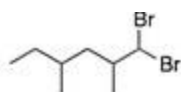
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Bloom's : 2. Understand

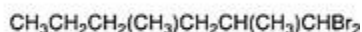
Section : 01.08

Topic : Drawing Organic Molecules

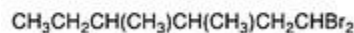
50) What is the condensed formula of the compound below?



I



II



III



IV

50) _____

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

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

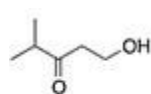
Bloom's : 2. Understand

Section : 01.08

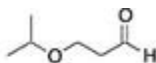
Topic : Drawing Organic Molecules

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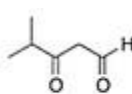
51) Which of the following is the appropriate conversion of $(\text{CH}_3)_2\text{CHOCH}_2\text{CH}_2\text{CH}_2\text{OH}$ to a skeletal structure?



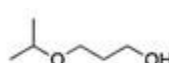
I



II



III



IV

51) _____

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

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

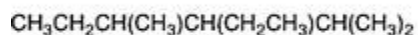
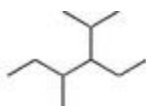
Difficulty : 2 Medium

Bloom's : 2. Understand

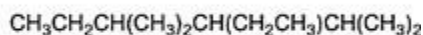
Section : 01.08

Topic : Drawing Organic Molecules

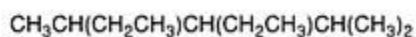
52) Convert the following skeletal structure to a condensed structure.



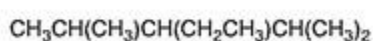
I



II



III



IV

52) _____

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

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

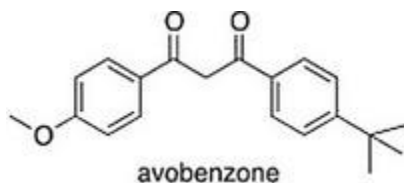
Difficulty : 2 Medium

Bloom's : 2. Understand

Section : 01.08

Topic : Drawing Organic Molecules

53) Avobenzone is an active ingredient in some common sunscreens. Which of the following is the correct molecular formula for avobenzone?



53) _____

- A) C₂₂O₂₂O₃
- B) C₂₀H₂₂O₃
- C) C₂₁H₂₃O₃
- D) C₂₀H₂₄O₃

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

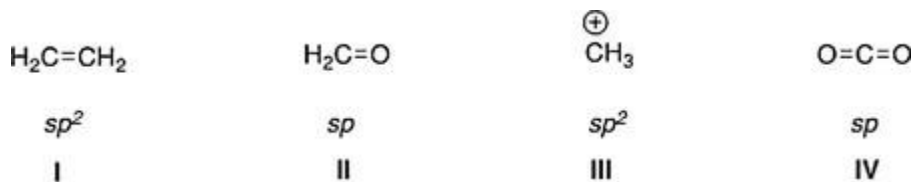
Bloom's : 3. Apply

Section : 01.08

Topic : Drawing Organic Molecules

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54) In which structure is the hybridization incorrect?



54) _____

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

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

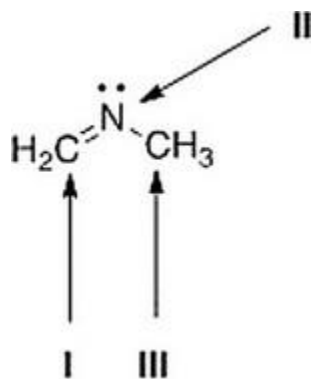
Difficulty : 2 Medium

Topic : Molecular Shape

Bloom's : 2. Understand

Section : 01.09

55) What is the hybridization for each of the indicated atoms in the following compound?



55) _____

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- A) I = sp^2 ; II = sp^2 ; III = sp^2 .
- B) I = sp^2 ; II = sp^3 ; III = sp^3 .
- C) I = sp ; II = sp^2 ; III = sp^3 .
- D) I = sp^2 ; II = sp^2 ; III = sp^3 .

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Topic : Molecular Shape

Bloom's : 2. Understand

Section : 01.09

56) What is the hybridization of the carbon atom in the methyl cation, (CH_3^+) ?

56) _____

- A) sp^3
- B) sp^2
- C) sp
- D) p

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Topic : Molecular Shape

Bloom's : 2. Understand

Section : 01.09

57) What is the hybridization of the nitrogen atom in the ammonium cation, NH_4^+ ?

57) _____

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- A) sp^3
- B) sp^2
- C) sp
- D) p

Question Details

Chapter : 01
Accessibility : Keyboard Navigation
Difficulty : 2 Medium
Topic : Molecular Shape
Bloom's : 2. Understand
Section : 01.09

58) Which atomic orbitals overlap to form the C-H s bonding molecular orbitals of ethane, CH_3CH_3 ?

58) _____

- A) $\text{C}sp^2 + \text{H}1s$
- B) $\text{C}sp^3 + \text{H}1s$
- C) $\text{C}2p + \text{H}1s$
- D) $\text{C}sp + \text{H}1s$

Question Details

Chapter : 01
Accessibility : Keyboard Navigation
Difficulty : 2 Medium
Topic : Molecular Shape
Bloom's : 3. Apply
Section : 01.10

59) Which atomic orbitals overlap to form the C-H s bonding molecular orbitals of ethylene, $\text{H}_2\text{C}=\text{CH}_2$?

59) _____

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- A) $C2p + H1s$
- B) $Csp + H1s$
- C) $Csp^3 + H1s$
- D) $Csp^2 + H1s$

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Topic : Molecular Shape

Bloom's : 3. Apply

Section : 01.10

60) Which atomic orbitals overlap to form the carbon-carbon *s* and *p* bonding molecular orbitals of ethylene, $H_2C=CH_2$?

60) _____

- A) $Csp^3 + Csp^3$, and $C2p + C2p$
- B) $Csp^3 + Csp^3$, and $Csp^2 + Csp^2$
- C) $Csp^2 + Csp^2$, and $C2p + C2p$
- D) $Csp^2 + Csp^2$, and $Csp^2 + Csp^2$

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Topic : Molecular Shape

Bloom's : 3. Apply

Section : 01.10

61) Which atomic orbitals overlap to form the C-H *s* bonding molecular orbitals of acetylene, C_2H_2 ?

61) _____

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- A) $Csp + H1s$
- B) $C2p + H1s$
- C) $Csp^3 + H1s$
- D) $Csp^2 + H1s$

Question Details

Chapter : 01
 Accessibility : Keyboard Navigation
 Difficulty : 2 Medium
 Topic : Molecular Shape
 Bloom's : 3. Apply
 Section : 01.10

62) Which atomic orbitals overlap to form the carbon-carbon s bonding molecular orbital of acetylene, C_2H_2 ?

62) _____

- A) $Csp^2 + Csp^2$
- B) $Csp + Csp$
- C) $Csp^3 + Csp^3$
- D) $C2p + C2p$

Question Details

Chapter : 01
 Accessibility : Keyboard Navigation
 Difficulty : 2 Medium
 Topic : Molecular Shape
 Bloom's : 3. Apply
 Section : 01.10

63) When forming molecular orbitals from atomic orbitals, what is the order of increasing C-H bond strength for the following set?

sp^3
I

sp^2
II

sp
III

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63) _____

- A) II < I < III
- B) III < I < II
- C) III < II < I
- D) I < II < III

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

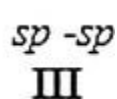
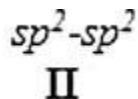
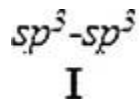
Difficulty : 2 Medium

Topic : Molecular Shape

Bloom's : 3. Apply

Section : 01.11

64) What is the order of decreasing bond length for a C-C bond composed of the following molecular orbitals?



64) _____

- A) I > III > II
- B) I > II > III
- C) III > II > I
- D) II > III > I

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Topic : Molecular Shape

Bloom's : 3. Apply

Section : 01.11

65) Which of the following statements about electronegativity and the periodic table is true?

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65) _____

- A) Electronegativity decreases across a row of the periodic table.
- B) Electronegativity increases down a column of the periodic table.
- C) Electronegativity increases across a row of the periodic table.
- D) Electronegativity does not change down a column of the periodic table.

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Section : 01.12

Topic : Molecular Shape

Bloom's : 2. Understand

66) Rank the following atoms in order of increasing electronegativity, putting the least electronegative first.

S
I

Cl
II

F
III

N
IV

66) _____

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

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Section : 01.12

Topic : Molecular Shape

Bloom's : 3. Apply

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67) Rank the following atoms in order of decreasing electronegativity, putting the most electronegative first.

| | | | |
|----|----|-----|----|
| Si | N | O | C |
| I | II | III | IV |

67) _____

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

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Section : 01.12

Topic : Molecular Shape

Bloom's : 3. Apply

68) Which molecule has the greatest difference in electronegativity (DE) between the two different elements?

68) _____

- A) CO₂
- B) H₂S
- C) NH₃
- D) H₂O

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

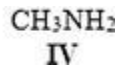
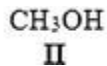
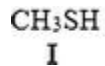
Section : 01.12

Topic : Molecular Shape

Bloom's : 3. Apply

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69) Which compound contains the most polar bond?



69) _____

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

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Section : 01.12

Topic : Molecular Shape

Bloom's : 3. Apply

70) Which of the following compounds are non-polar?



70) _____

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

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Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Topic : Molecular Shape

Section : 01.13

Bloom's : 3. Apply

71) Which of the following molecules has non-polar covalent bonds?

71) _____

- A) CO₂
- B) N₂
- C) CCl₄
- D) HF

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Section : 01.12

Topic : Molecular Shape

Bloom's : 2. Understand

72) Which of the following molecules has polar covalent bonds?

72) _____

- A) MgO
- B) NH₃
- C) Cl₂
- D) NaBr

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Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Section : 01.12

Topic : Molecular Shape

Bloom's : 2. Understand

73) Which of the following covalent bonds has the largest dipole moment?

73) _____

- A) C-H
- B) C-C
- C) C-O
- D) H-F

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Section : 01.12

Topic : Molecular Shape

Bloom's : 3. Apply

74) Which of the following molecules has the smallest dipole moment?

74) _____

- A) CO₂
- B) HCl
- C) H₂O
- D) NH₃

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Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Section : 01.12

Topic : Molecular Shape

Bloom's : 2. Understand

75) Which of the following molecules does *not* have a net dipole moment of zero?

75) _____

A) CCl_4

B) BF_3

C) CO_2

D) NH_3

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

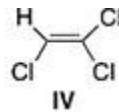
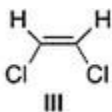
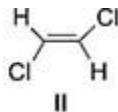
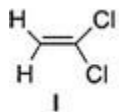
Difficulty : 2 Medium

Topic : Molecular Shape

Bloom's : 2. Understand

Section : 01.13

76) Which of the following molecules has a net dipole moment of zero?



76) _____

A) I

B) II

C) III

D) IV

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Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Topic : Molecular Shape

Section : 01.13

Bloom's : 4. Analyze

77) Consider compounds which contain both a heteroatom and a double bond. For which compound is no additional Lewis structure possible?



77) _____

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

Question Details

Topic : Structure and Bonding

Chapter : 01

Accessibility : Keyboard Navigation

Bloom's : 4. Analyze

Difficulty : 3 Hard

Section : 01.06

78) Which of the following molecules has a net dipole moment of zero?

78) _____

- A) CH₄
- B) CO₂
- C) BH₃
- D) All of these are correct.

Organic Chemistry with Biological Topics 6th Edition by Smith CH01

Question Details

Chapter : 01

Accessibility : Keyboard Navigation

Difficulty : 2 Medium

Topic : Molecular Shape

Section : 01.13

Bloom's : 4. Analyze

Organic Chemistry with Biological Topics 6th Edition by Smith CH01 Answer Key

Test name: CH01

- 1) B
- 2) D
- 3) A
- 4) B
- 5) C
- 6) D
- 7) B
- 8) D
- 9) B
- 10) D
- 11) D
- 12) B
- 13) C
- 14) D
- 15) C
- 16) D
- 17) D
- 18) B
- 19) C
- 20) B
- 21) B
- 22) B
- 23) C
- 24) B
- 25) B

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- 26) D
- 27) D
- 28) B
- 29) B
- 30) C
- 31) B
- 32) D
- 33) C
- 34) A
- 35) D
- 36) B
- 37) A
- 38) C
- 39) B
- 40) B
- 41) C
- 42) C
- 43) A
- 44) D
- 45) B
- 46) A
- 47) B
- 48) B
- 49) D
- 50) A
- 51) D
- 52) A
- 53) B
- 54) B
- 55) D

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- 56) B
- 57) A
- 58) B
- 59) D
- 60) C
- 61) A
- 62) B
- 63) D
- 64) B
- 65) C
- 66) B
- 67) D
- 68) D
- 69) B
- 70) A
- 71) B
- 72) B
- 73) D
- 74) A
- 75) D
- 76) B
- 77) C
- 78) D