

HW08 - VSEPR

ⓘ This is a preview of the published version of the quiz

Started: Oct 21 at 11:14am

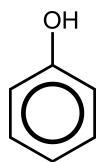
Quiz Instructions

Homework 08 - VSEPR

Question 1

2 pts

Consider the structural formula of phenol.



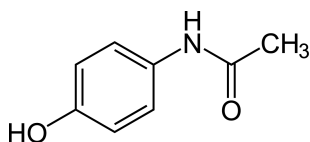
The active ingredient in some oral anesthetics used in sore throat sprays. What is the molar mass of phenol?

- 89 g/mol
- 17 g/mol
- 94 g/mol
- 50 g/mol

Question 2

2 pts

This is the condensed structural formula for acetaminophen, the active ingredient in the over-the-counter medication Tylenol.



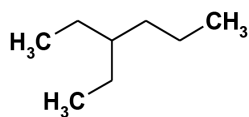
What is the molecular formula of acetaminophen?

- C₈H₅NO₂
- C₈H₉NO₂
- C₈H₁₁NO₂
- C₈H₈NO

Question 3

1 pts

The following structure is the carbon skeleton for a structural isomer of octane with most of the hydrogen and carbon atoms omitted.



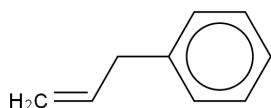
What is the molecular formula of this isomer?

- C₈H₁₆
- C₈H₂₄
- C₈H₈
- C₈H₁₈

Question 4

2 pts

Consider the following structure:



How many single bonds, double bonds, sigma bonds, and pi bonds (respectively) are represented by this condensed formula?

- 15, 4, 15, 4
- 11, 7, 18, 7
- 12, 4, 12, 4
- 12, 4, 16, 4
- 15, 4, 19, 4

Question 5

1 pts

The electronegativity of H is...

- a lot less than that of C.
- about equal to that of C.
- a lot more than that of C.

Question 6

1 pts

Which pair of bonded atoms has the largest dipole moment?

- C-Cl
- C-F
-

C-O

C-N

Question 7

1 pts

Consider a 3-atom molecule A-B-A for which B has a total of only four valence electrons - enough to make two bonds. Predict the A-B-A bond angle.

109.5°

120°

90°

180°

Question 8

1 pts

What is the shape (molecular geometry) of COCl_2 ?

tetrahedral

T-shaped

trigonal planar

trigonal pyramidal

Question 9

2 pts

Which of the following has bond angles slightly LESS than 120°?

O_3

SF_2

SO_3

NO_3^-

I_3^-

Question 10

1 pts

Draw the Lewis structure for NO_2^- . How many single bonds, double bonds, triple bonds, and unshared pairs of electrons are on the central atom, in that order, when considering a single contributing structure (ignoring the averaging effects of resonance)?

0, 0, 1, 1

- 4, 0, 0, 0
- 2, 0, 0, 2
- 1, 0, 1, 0
- 1, 1, 0, 1

Question 11

1 pts

Determine the molecular geometry of the ion NO_2^- .

- trigonal planar
- trigonal pyramidal
- none of these
- linear
- bent or angular

Question 12

1 pts

What is the electronic geometry of IF_4^- ?

- square pyramidal
- octahedral
- square planar
- trigonal bipyramidal
- tetrahedral

Question 13

1 pts

What is the molecular geometry of IF_4^- ?

- square pyramidal
- trigonal planar
- see-saw
- octahedral
- square planar

Question 14

1 pts

Is IF_4^- non-polar?

- It cannot be determined from the structure.
- Yes, it is non-polar.
- No, it is polar.

Question 15

1 pts

What is the geometry around the left-most carbon in the molecule CH_2CHCH_3 ?

- tetrahedral
- trigonal pyramidal
- linear
- trigonal planar

Question 16

2 pts

Which of the following has bond angles of 90° , 120° , and 180° ?

- ICl_4^-
- SF_4
- XeF_4
- IF_5
- PF_6^-

Question 17

1 pts

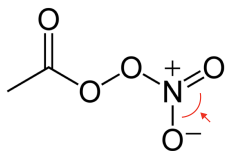
A central atom is surrounded by four chlorine atoms. Which of the following combinations is possible?

- a trigonal bipyramidal electronic geometry and seesaw molecular geometry
- a trigonal bipyramidal electronic geometry and t-shaped molecular geometry
- an octahedral electronic geometry and tetrahedral molecular geometry.
- an octahedral electronic geometry and square pyramidal molecular geometry

Question 18

1 pts

Consider the compound peroxyacetyl nitrate, an eye irritant in smog.



Predict the indicated bond angle.

- slightly less than 120°
- 109.5°
- 120°
- 90°
- slightly less than 109.5°

Question 19

1 pts

Which of the following is a polar molecule?

- CCl_4
- CO_2
- XeF_2
- SF_4
- SO_3

Question 20

1 pts

Which of the following statements about polarity is FALSE?

- Linear molecules can be polar.
- Polar molecules must have a net dipole moment.
- Lone (unshared) pairs of electrons on the central atom play an important role in influencing polarity.
- CF_4 is a polar molecule.
- Dipole moments can "cancel," giving a net non-polar molecule.

Question 21

1 pts

Which of the following molecules is nonpolar?

- CH_3Br
- H_2O

SO₂

NF₃

BF₃

Question 22

2 pts

CHF₃ is (less, more) polar than CHI₃ because...

less, the C-H bond in CHF₃ is a nonpolar bond.

less, the tetrahedral geometry decreases the polarity of C-F bonds.

more, the C-H bond in CHF₃ is a nonpolar bond.

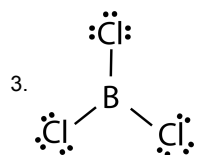
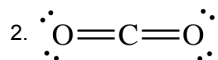
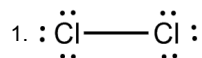
more, the C-F bonds are more polar than the C-I bonds.

less, the three polar C-F bonds are symmetrical and cancel the dipole moments.

Question 23

1 pts

Which of the following molecules contains polar covalent bonds but is NOT itself a polar molecule?



1 and 3 only

2 only

none fit the criteria

2 and 3 only

3 only

1, 2, and 3

1 and 2 only

Question 24

1 pts

Which of the following molecules has the largest dipole moment?

HI

HCl

H₂

HBr

F₂

Not saved

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