

Assignment Previewer

[Close this window](#)

Previewer Tools

Chapter 9 (397934)

[Show All](#)

In View:

[Hide All](#)Hidden: [Assignment Score](#) | [Mark](#) | [Help/Hints](#) | [Key](#) | [Solution](#)[Show New Randomization](#) | [Reload from Editor](#) |  | [Details](#)

About this Assignment

Description

Bonding and Molecular Structure: Fundamental Concepts

Instructions

Bonding and Molecular Structure: Fundamental Concepts

1. KT6 9.P.007. [467486] [Show Details](#)

List the following compounds in order of increasing lattice energy (from least negative to most negative): LiI, LiF, CaO, RbI.

---Select--- < | ---Select--- < | ---Select--- < | ---Select--- <

2. KT6 9.P.012. [467357] [Show Details](#)

Draw a Lewis structure for each of the following molecules or ions. (Do this on paper. Your instructor may ask you to turn in this work.)

- (a) CS₂
- (b) BF₄⁻
- (c) NO₂⁻
- (d) SOCl₂

3. KT6 9.P.020. [467414] [Show Details](#)

Draw a Lewis structure for each of the following molecules or ions. (Do this on paper. Your instructor may ask you to turn in this work.)

- (a) NH₂Cl
- (b) Cl₂O (O is the central atom)
- (c) HOF
- (d) CS₂

Describe the electron-pair geometry and the molecular geometry around the central atom.

(a) NH₂Cl

electron pair geometry

- bent
- linear
- tetrahedral
- trigonal planar

molecular geometry

- bent
- linear
- tetrahedral
- trigonal planar
- trigonal pyramidal

(b) Cl₂O (O is the central atom)

electron pair geometry

- bent
- linear
- tetrahedral
- trigonal planar

molecular geometry

- bent
- linear
- tetrahedral
- trigonal planar
- trigonal pyramidal

(c) HOF

electron pair geometry

- bent
- linear
- tetrahedral
- trigonal planar

molecular geometry

- bent

(d) CS₂

electron pair geometry

- bent
- linear
- tetrahedral
- trigonal planar

molecular geometry

- bent

- linear
- tetrahedral
- trigonal planar
- trigonal pyramidal

- linear
- tetrahedral
- trigonal planar
- trigonal pyramidal

4. KT6 9.P.024. [467317] [Show Details](#)

Draw a Lewis structure of each of the following molecules or ions. (Do this on paper. Your instructor may ask you to turn in this work.)

- (a) XeF_4
- (b) ClF_2^-
- (c) PF_5
- (d) SF_4

Describe the electron-pair geometry and molecular geometry around the central atom.

(a) XeF_4

electron pair geometry

- octahedral
- trigonal bipyramidal
- tetrahedral

molecular geometry

- linear
- octahedral
- see-saw
- square planar
- square pyramidal
- trigonal bipyramidal
- T-shaped
- tetrahedral

(b) ClF_2^-

electron pair geometry

- octahedral
- trigonal bipyramidal
- tetrahedral

molecular geometry

- linear
- octahedral
- see-saw
- square planar
- square pyramidal
- trigonal bipyramidal
- T-shaped
- tetrahedral

(c) PF_5

electron pair geometry

- octahedral
- trigonal bipyramidal
- tetrahedral

molecular geometry

- linear
- octahedral
- see-saw
- square planar
- square pyramidal
- trigonal bipyramidal
- T-shaped
- tetrahedral

(d) SF_4

electron pair geometry

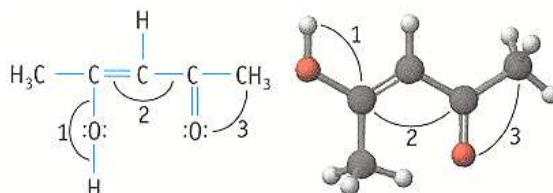
- octahedral
- trigonal bipyramidal
- tetrahedral

molecular geometry

- linear
- octahedral
- see-saw
- square planar
- square pyramidal
- trigonal bipyramidal
- T-shaped
- tetrahedral

5. KT6 9.P.028. [489790] [Show Details](#)

Acetylacetone has the structure shown here. Estimate the values of the indicated angles.



angle 1 angle 2 angle 3
 ---Select--- ---Select--- ---Select---

6. KT6 9.P.030. [489813] [Show Details](#)

Determine the formal charge on each atom in each of the following molecules or ions.

(a) CO_2

C

 O

 O

(b) HCO_2^- (formate ion)

H

 C

 O (attached by a double bond)

 O

(c) N_2O

N

 N (central atom)

 O

(d) HNO_3 (nitric acid)

H

 N

 O (attached by a double bond)

 O

 O (attached to a hydrogen)

7. KT6 9.P.033. [467244] [Show Details](#)

For each pair of bonds, indicate the more polar bond.

(a) C-O and C-N

- CO
 CN

(b) P-Br and P-Cl

- PBr
 PCl

(c) B-O and B-S

- BS
 BO

(d) B-F and B-I

- BI
 BF

8. KT6 9.P.037. [467464] [Show Details](#)

Considering both formal charges and bond polarities, predict on which atom or atoms the negative charge resides in the following anions. (Type your answer using the element's atomic symbol.)

(a) BH_4^-

(atoms)

(b) BF_4^-

(atoms)

(c) CH_3CO_2^-

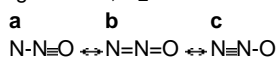
(atoms)

(d) OH^-

(atoms)

9. KT6 9.P.039. [467254] [Show Details](#)

Three resonance structures are possible for dinitrogen oxide, N_2O .



(a) Draw the three resonance structures. (Do this on paper. Your instructor may ask you to turn in this work.)

(b) Calculate the formal charge on each atom in each resonance structure.

structure a
 left N

middle N

O

structure b
left N

middle N

O

structure c
left N

middle N

O

(c) Based on formal charges and electronegativity, predict which resonance structure is the most reasonable.

- structure a
 structure b
 structure c

10. KT6 9.P.048. [467576] [Show Details](#)

Give the number of bonds for each of the following molecules or ions. Give the bond order for each bond.

- (a) CN^-
- one CN triple bond with bond order 3
 - one CN double bond with bond order 2
 - two CN single bonds with bond order 1
- (b) CH_3CN
- three CH single bonds, one CC single bond, one CN triple bond with bond orders 1,1,3 respectively
 - three CH triple bonds, one CC single bond, one CN triple bond with bond orders 3,1,1 respectively
 - three CH single bonds, one CC double bond, one CN triple bond with bond orders 3,2,1 respectively
- (c) SO_3
- three SO single bonds with bond order 1
 - two SO single bonds, one SO triple bond with resonance structures and bond orders 1,1 respectively
 - two SO single bonds, one SO double bond with resonance structures and bond orders 1,2 respectively
- (d) $\text{CH}_3\text{CH}=\text{CH}_2$
- six CH single bonds, two CC single bonds with bond orders 1,1
 - six CH single bonds, one CC single bond, one CC double bond with bond orders 1,1,2 respectively
 - five CH single bonds, two CC single bonds, one CC double bond with bond orders 2,1,1 respectively

[Submit for Testing](#)