1. Complete these tables; bond angles refer to angles around the central atom.

Molecule	OPF_3	$AlCl_3$	HNO_3	TeF_4	ClF_3
# Valence Elect.					
Lewis Structure (include all nonzero formal charges)					
Elect.Arrangement					
Molecular Geom.					
Bond Angle(s)					
Hybridization					
Polar/Nonpolar					
# sigma bonds					
# pi (π) bonds					
Bond Order					

Molecule	BrI_5	CF_2CF_2	ClO_3^-	CH_3COCH_3	H_2CCCH_2
# Valence Elect					
Lewis Structure (include all nonzero formal charges)					
Elect.Arrangement					
Molecular Geom.					
Bond Angle(s)					
Hybridization					
Polar/Nonpolar					
# sigma bonds					
# pi (π) bonds					
Bond Order					

2. Use the exponential portion of the Arrhenius equation to:

    a. Calculate the fractions of gaseous argon atoms that have a kinetic energy greater than 10 kJ/mole at a temperature of 10,000 K and at a temperature of 298K.

    b. Calculate the fractions of gaseous argon atoms that have a kinetic energy greater than 500 kJ/mole at a temperature of 10,000 K and at a temperature of 298K.

3. Sketch a kinetic molecular distribution plot for two temperatures and shade in the areas having a kinetic energy greater than an arbitrary activation energy. Then use this illustration to clearly explain why chemical reactions occur faster at higher temperatures.

4. McQuarrie 23-81

5. McQuarrie 23-85

6. For diatomic bromine, use thermodynamic data in Appendix D to predict:

    a. Its normal boiling point temperature.

    b. Its vapor pressure at 298K.