1. *(p. Sec. 12.2)* Diethyl ether, used as a solvent for extraction of organic compounds from aqueous solutions, has a high vapor pressure which makes it a potential fire hazard in laboratories in which it is used. How much energy is released when 100.0 g is cooled from 53.0°C to 10.0°C?
Boiling point: 34.5°C
Heat of vaporization: 351 J/g
Specific heat capacity, $(CH_3)_2O(l)$: 3.74 J/(g · K)
Specific heat capacity, $(CH_3)_2O(g)$: 2.35 J/(g · K)
E. 48.6 kJ

2. *(p. Sec. 12.2)* A 5.00 g sample of water vapor, initially at 155°C is cooled at atmospheric pressure, producing ice at -55°C. Calculate the amount of heat energy lost by the water sample in this process, in kJ. Use the following data: specific heat capacity of ice is 2.09 J/g · K; specific heat capacity of liquid water is 4.18 J/g · K; specific heat capacity of water vapor is 1.84 J/g · K; heat of fusion of ice is 336 J/g; heat of vaporization of water is 2260 J/g.
A. 15.6 kJ

3. *(p. 454)* Neon atoms are attracted to each other by
B. London dispersion forces.

4. *(p. 452)* Ammonia's unusually high melting point is the result of
C. hydrogen bonding.

5. *(p. 451)* In hydrogen iodide _____ are the most important intermolecular forces.
A. dipole-dipole forces

6. Sublimation

7. Carbon is a smaller atom than silicon and it is capable of efficiently overlapping p-orbitals to form double bonds (and triple bonds). Carbon dioxide forms molecules and each molecule moves independently with small intermolecular forces. Silicon forms a molecular framework - an extensive array of covalently bonded silicon and oxygen atoms based on a tetrahedron. This crystal network forms solid crystals (sand, quartz) at room temperature.

8. Hydrogen must be covalently bonded to a highly electronegative atom (N, O, F) and there must be available lone electron pairs for the bonding to take place.

9. The gaseous phase has the greatest energy as there are more arrangements of gas molecules possible (higher entropy) and the molecules have higher kinetic energies (KE is proportional to absolute T).