

Homework #13

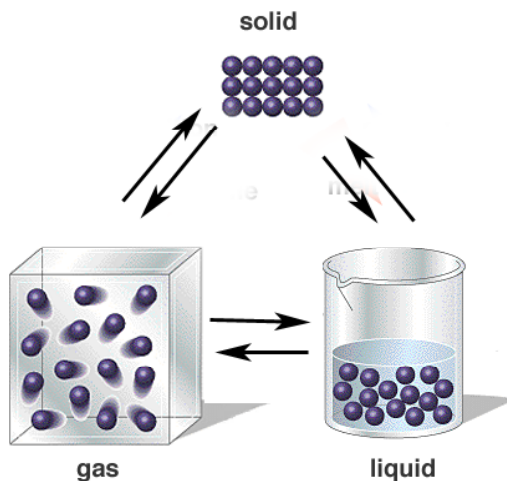
Name: _____

Student ID: _____

Chem 192 – Spring 2010
Cañada College

Total Possible Points: 15
Due Tuesday May 11th

Suggested chapter 13 problems: 2, 6, 10, 15, 17



1. (1½ pts) Name each of the following processes.

Converting a liquid to a solid:

Converting a solid to a vapor:

Converting a vapor to a liquid:

2. (2 pts) In Redwood City, you should cook fresh pasta in boiling water for exactly 8 minutes. If you're cooking the same pasta in Denver, the mile high city, you need to cook it in boiling water for 11-12 minutes to get the same results. Why?

3. (2 pts) The surface tension of water is 72 dynes/cm at 25° C. That means it would take a force of 72 dynes to break the surface of a film of water 1 cm long. Would you expect it to take more or less force to break the surface of water at 75° C. Why?

4. (2 pts) Glass can be made from silicon or lead. A liquid forms beads on silicon glass, but does not on lead glass. (a) Is the adhesive force between the liquid stronger with silicon glass or lead glass? (b) If an identical capillary is made of both types of glass, the liquid will climb higher in one due to capillary action. Which one and why?

5. (3½ pts) You have a 35.0 gram sample of liquid water at 100.0°C. What is the minimum amount of heat (energy) you need to add to this sample to convert the entire sample to steam? (note: the heat of vaporization of water is 2.26 kJ/g)

6. (4 pts) You have a block of 29.5 grams of ice at -50.0 °C. How much heat do you need to add to this sample to melt the ice entirely? (note: the specific heat of ice is 2.092 J/g °C; the heat of fusion of water is 335 J/g)

Hint: there are two steps to this problem!