Test stuff
• The deadline for exam 3 is Thurs.
• Pretest deadline Wed.

Chapter 25
• Fission
  - What happens
  - Advantages and disadvantages as an energy source
• Fusion
  - Same questions as above

True or False? In the nucleus:
- electromagnetic force (EF) is stronger than the strong force (SF)
- EF is a binding force rather than disruptive
- EF plays a role in fission of U235
- EF is short range
- SF is short range
- SF is a binding force
- size of the nucleus is not important in determining whether fission is likely

Fission or Fusion?
- splitting apart
- smushing together
- requires temperatures of millions of degrees
- uses isotopes of H
- uses isotopes of U
- can release energy explosively (bombs)
- commercially produces energy
- powers the sun
- produces long-lived radioactive by-products
- involves electrons
- easier to control
- ingredients plentiful, easy to obtain

Chapter 25
• What does the graph tell us.

Chapter 18
• Total entropy always does what?
• Can you ever increase order?
  - What else has to happen?
• How do you classify order?
• What is the most ordered form of energy? Least ordered?
Which of these processes is reversible?
A. Melting of ice at 0 °C
B. Melting of ice at 100 °C
C. Scrambling an egg
D. Popping a balloon

Question
Your roommate tells you it is your turn to do the dishes which of the following is true?
A. There is no point in washing them, because according to the law of increasing disorder, you can’t really get them clean anyway.
B. The law of increasing disorder doesn’t apply because there are humans involved.
C. While it is true that washing the dishes make them more ordered, you had to turn chemical potential energy into thermal energy, so total disorder still increases.
D. Washing the dishes actually increases the disorder of the universe because clean dishes are more disordered than dirty ones.

Chapter 19
- Can you read formulae?
- Can you balance a chemical equation?
- Mass spec & IR

Potential Energy Surface

Which of these equations is balanced?
1. Mg + 3N → MgN₃
2. Zn + O₂ → 2ZnO
3. 2C + O₂ → 2CO
4. C + CaO → CaC₂ + CO
5. C₂H₄ + 3O₂ → 2CO₂ + 2H₂O

Chapter 21 & 22
- What type of bond do you get when you combine metals with other metals?
  - What are the characteristics of these bonds?
- What type of bond do you get when you combine metals with nonmetals?
  - What are the characteristics of these bonds?
  - What do you call the resulting compound?
  - Can you figure out the correct chemical formula?
Question 21&22

For the following, identify the type of bond and if appropriate the chemical formula.
- Ag and Au
- Mg and Cl
- K and I
- C and O

Metals typically have _______ ionization energies than non-metals.

a) higher  
b) lower  
c) neither higher nor lower

Semiconductors conduct electricity better at higher T because

a) the electrons are moving faster  
b) some electrons jump from molecular orbitals to atomic orbitals  
c) some electrons are promoted into the valence band  
d) some electrons in the valence band have enough energy to jump the band gap into the conduction band  
e) the entropy of the universe decreases

Chapter 23

- Characteristics of covalent bonds
- Intermolecular forces

Which has the highest boiling point

a) O₂  
b) NH₃  
c) H₂O  
d) CH₄