The following transmitters haven’t been registered

- Transmitter 1AFFC52
- Transmitter 1F89D64
- Transmitter 204B8BE
- Transmitter 1B7C771
- Transmitter 1EA947F
Lets take test 2!!

- The deadline for exam 2 is Thursday. Check testing center hours.
- The pretest must be completed by midnight Wed.
- If you need special testing, see me.
- Do the synthesis questions.
Chapter 10

• What are the 2 types of wave?
  – Compression
  – Transverse (shear)

• What are the 4 characteristics of waves?
  – Amplitude, wavelength, frequency, speed

• What are the 4 wave behaviors?
  – Reflection, refraction, diffraction, interference
What process causes waves to spread out after passing through a small opening?

a) diffraction
b) reflection
c) refraction
d) diffusion
e) interference
Which of the following would not be expected to transmit shear waves?

a) the earth's crust
b) a steel bar
c) the ocean
d) a block of rubber
e) a hard-boiled egg

• Same question for compression waves
Chapter 11

• What causes electromagnetic radiation?
  – Accelerating charged particles
• What are all of the types of EM radiation?
  – Gamma, x, microwave, UV, visible, IR, radio
• Which part of the above list is out of order?
• Is light a wave or particle?
• Diffraction and interference experiments are convincing experimental evidence that light and matter
  a) have colors
  b) are particles
  c) are made up of electric charges
  d) have wave properties
  e) conserve mass-energy
How do we know that light behaves like a particle?
Chapter 12

- States of matter
  - Solid
  - Liquid
  - Gas
  - Plasma
- Conductivity
  - Ionic nonconductor
  - Nonionic nonconductor
  - Conductor

What patterns do you see?

What properties do things share?
Chapter 13

- Molecular model explains
  - Brownian motion
  - Evaporative cooling
  - Latent heat
  - Pressure
  - Temperature
A large bucket of water and a glass of water have the same temperature. Which is true? [The question tests your understanding of the meaning of the term temperature.]

a) on average, the molecules in the glass of water are faster than those in the bucket
b) the two systems have the same total internal energy
c) the two systems have the same total molecular kinetic energy
d) both systems have the same total energy
e) the average molecular speed is the same in both
• Water is heated slowly until it reaches its boiling point. As the hot stove delivers additional energy to the pot of water, the temperature of the water remains constant. This is because:

(a) Energy travels straight through the water - in the bottom and out the top.
(b) The additional energy is being stored in the walls of the container.
(c) The additional energy is becoming internal electrical potential energy in the water and vapor rather than changing the temperature.
(d) The additional energy is becoming internal kinetic energy in the water and vapor rather than changing the temperature.
(e) The additional energy is becoming internal electrical potential and kinetic energy.
Chapter 14

• Know the Scientist, experiment, and resulting model, shortfalls of the model

• Experiments come in 3 parts
  – Set up
  – Results
  – Conclusion
Chapter 15

Electrons, like light are both a particle and a wave
- When is it a particle?
- When is it a wave?
Heisenberg's Uncertainty Principle states that it is impossible to simultaneously determine which two things about a particle?

a) its length and time  
b) its speed and energy  
c) its mass and position  
d) its position and speed  
e) its IQ and taste in music
The wavelength of an electron is about what size?

a) the size of the nucleus

b) the size of an atom

c) one millimeter

d) a few centimeters

e) one meter
Chapter 16

- What does an atom look like?
  - What is an orbital
  - What is an energy well
- What are the electrons doing?
• Draw an energy well.
• Fill it in for Beryllium (4 electrons).
• What would change if you drew an energy well for oxygen (8 electrons)?
Beryllium

free electron

Level 3

Level 2

Level 1

3d
3p
3s
2p
2s
1s
Chapter 18

- Can you read the Periodic Table?
  - Number of protons, neutrons and electrons
  - Number of valence electrons
  - Metals and non-metals
  - Volume
  - Ionization energy
  - Chemical behavior
Question 18

Which of the following are most chemically similar?

a) K, Ca, Sc
b) C, N, O
c) H, He, Cl
d) In, Mg, Zr
e) Mg, Ca, Sr