**Answers for Short Answer Midterm Review: Gen Chem**

1) Dalton’s laws

* Atoms are tiny, indestructible spheres. False, they’re neither spherical or indestructible.
* Atoms of the same element have the same properties. False, because of isotopes.
* Atoms of different elements have different properties. True.
* Atoms obey the law of conservation of mass. True.
* Atoms obey the law of multiple proportions. True.

What this question is getting at: Know what the different models of the atoms are and their main ideas. Which parts are right and which are wrong?

2) My art abilities aren’t good, but I gave you a packet with that info. If you can’t find it for whatever reason, I’m sure you can look up the answer online.

What this question is getting at: Same thing as #1

3) Three step process:

* Atom absorbs energy
* Electron jumps from ground state to excited state.
* When it falls back down, it gives off that difference in energy as light.

What this question is getting at: We spent lots and lots of time on spectra and spectroscopy. You really need to know this stuff inside and out.

4) Spectroscopy is when you identify an element by the line spectrum it gives off when energy is added. The process is the same as that in #3, with the added feature that comparing the emitted spectrum to that of known elements allows you to do the identification.

What this question is getting at: Same as #3

5) Elements want to be like the nearest noble gas. Ionic compounds are formed because one element that wants to gain elements to be like its nearest noble gas will take electrons from one that wants to lose electrons. This forms an anion and a cation, which result in the formation of an ionic compound

What this question is getting at: The octet rule is the single most important thing you need to know. You need to understand how the octet rule affects bonding and properties like electronegativity and ionization energy.

6) Electricity can only be conducted when charged particles (ions or electrons) move. As a solid, the ions in an ionic compound are locked in place and can’t move. When it dissolves or melts, the ions can move so it will conduct electricity.

What this question is getting at: You should understand the properties of ionic compounds and how the structure of ionic compounds leads to these properties.

7) a) 23 (protons = atomic number)

b) 27 (protons + neutrons = atomic mass)

c) 23 (same as protons)

What this question is getting at: Know how to find protons, neutrons, and electrons of an element.

8) a) [Xe] 6s2 4f14 5d10 6p2

b) [Ne] 3s2 3p3

What this question is getting at: Know electron configurations.

9) a) lead (II) hydroxide

b) sodium sulfite

c) silver hydroxide

What this question is getting at: Know how to name ionic compounds.

10) a) V2S3

b) Zn(NO3)2

c) Na3P

What this question is getting at: Know how to find the formulas of ionic compounds.

11) Electrons can move freely in metals at any temperature because of the electron sea theory. Nonmetals have localized bonds, and metalloids only start having delocalized bonding at higher temperatures.

What this question is getting at: Understand the properties of the elements in the periodic table, as well as the reasons for each.

12) When hot or at high voltage

What this question is getting at: Understand the properties of metals, nonmetals, and metalloids.

13) Pick a noble gas, as they’re unreactive. Nitrogen is also unreactive

What this question is getting at: Understand the properties of the different groups in the periodic table (reactivities and physical properties).

Other information:

* I feel like I may have understated the importance of knowing the properties of different parts of the periodic table. You might want to look into that.
* I don’t know that I mentioned safety here. Be familiar with some of the very basic safety rules
* There are no trick questions on the exam. The questions you saw in the multiple choice practice problems that contained information we never covered were accidentally left in the review sheet because I overlooked them when making the review.

And the answer to the big question: “What’s on the midterm?”

EVERYTHING. Anything that I’ve talked about in class is fair game. I’ve done my best to represent the material from the midterm on the review sheets, but it’s possible I’ve forgotten something big. Some general things to know about the midterm good rule of thumb is that:

* Things we learned second quarter are more likely to be on the midterm than the stuff we learned first quarter.
* Things we spent a lot of time on will be represented more on the midterm.
* I’m not going to ask any trick questions, so relax.