**Answers to Test #4**

The test questions shown here are the exact test questions that you’ll be asked on Test #4. You will be asked to define six of the terms below and answer three of the six short answer questions in the next part. Finally, you will need to do compound naming questions, but I’ll discuss that below. For now:

**The vocabulary words:** You will be asked to define six of these words on the test. Though ny answer that says essentially the same thing will receive credit, too – don’t worry if you put things in your own words, that’s a good thing.

* alkali metal: The highly reactive elements in group 1 of the periodic table, with the exception of hydrogen
* alkaline earth metal: The moderately reactive elements in group 2 of the periodic table
* transition metal: The generally stable elements in the d-block of the periodic table
* actinide: The mostly radioactive elements in the 5f section of the periodic table.
* lanthanide: Elements in the 4f block of the periodic table that have a variety of different properties.
* halogen: The highly reactive elements in group 17 of the periodic table.
* noble gases: The completely unreactive gases in group 18 of the periodic table.
* malleable: Able to be dented/bent (either is fine). I think I referred to them as “denty” or “squishy” in class, though you’re probably aware they aren’t squishy in the normal sense of the word.
* ductile: Able to be made into a wire. The definition I gave you in class, which is much easier to remember (and is equally correct) is “stretchy.”
* cation: Positively-charged atom or group of atoms
* anion: Negatively-charged atom or group of atoms
* polyatomic ion: A group of atoms with either positive or negative charge
* ion: Any atom or group of atoms that contain positive or negative charge.
* octet rule: All elements want to be like the nearest noble gas. This can be phrased in a lot of different ways; all of them are fine.
* crystal lattice: The large-scale crystalline structure of an ionic compound.
* unit cell: The smallest possible unit of a crystal

**The short-answer questions: Three of these will be asked on the test:**

* How are ionic bonds formed? An element that wants to gain electrons to be like the nearest noble gas will take them away from one that wants to lose electrons. This causes the element that took the electrons to have a negative charge and the element that lost the electrons to have a positive charge. These oppositely-charged ions stick together and form an ionic compound.
* Why are ionic compounds hard? Ionic compounds have a whole lot of anions and cations stuck together in a stable structure. As a result of this, it is difficult to move them apart from each other.
* Why are ionic compounds brittle? Normally, the cations and anions in an ionic compound are aligned in a stable pattern. However, when the ions are moved, they move into an arrangement where they repel each other. This destabilizes the crystal, causing it to fly apart.
* Why do ionic compounds have high melting and boiling points: Ionic compounds have a whole lot of anions and cations stuck together in a stable structure. As a result of this, it is difficult to move them apart from each other. (Incidentally this is the same as the answer to the question “why are ionic compounds hard?”)
* Why do ionic compounds conduct electricity when melted or dissolved? Electricity can only move when charged things move. When you either melt or dissolve an ionic compound, the charged ions can move and conduct electricity.
* Why don’t ionic compounds burn? Carbon and hydrogen are needed for something to burn. Since ionic compounds generally don’t contain either, they usually don’t burn.