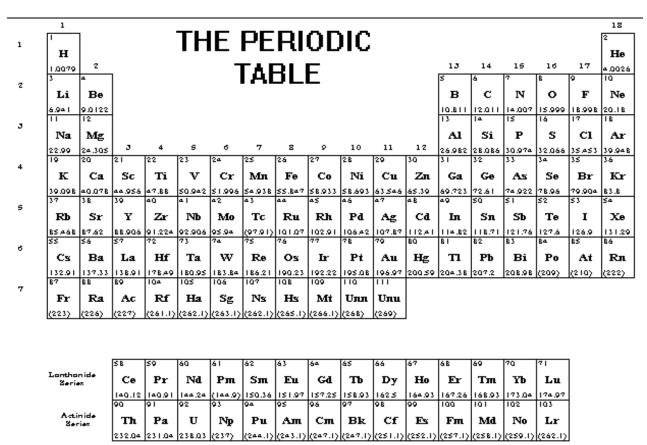**Practice General Chemistry SPEAK Test**
(by Heather Elson, Fall 2005)

1. Explain the periodic trends in atomic size and what causes the atomic radius to increase. (30 seconds)

2. Using the periodic trends in electron affinities. (30 seconds)

3. Explain how the relative chemical reactivity of the alkali metals can be explained using the Periodic Table. (60 seconds)

Examine the equation below that describes a chemical reaction
(section 4.2 in the textbook)

$$AgNO_3 \text{ (aq)} + KCl \text{ (aq)} \rightarrow AgCl \text{ (s)} + KNO_3 \text{ (aq)}$$

4. Identify and explain this type of reaction, including the relationships between the negative and positive ion partners. (60 seconds)

5. A student does not understand the concept of limiting reactants. Explain this concept and describe what the other reactants are called in a reaction that has limiting reactants *(section 3.7 in the textbook)*. (30 seconds)

6. Describe the differences between a solvent and a solute. *(section 13.3 in the textbook)*. (45 seconds)

7. Explain the difference between Bronsted Acids and Bases and Lewis acids and bases, and how the two definitions are related. *(section 16.11 in the textbook)*. (60 seconds)

Now I'd like to hear your ideas on some very basic chemistry questions. Be sure to say as much as you can in responding to each question.

8. Describe the difference between physical properties and chemical properties. *(section 1.3 in the textbook)*. (60 seconds)

9. Describe the difference between physical changes and chemical changes. *(section 1.3 in the textbook)*. (60 seconds)

The Activation Series Table below describes oxidation patterns and properties for various elements. *(section 4.4 in the textbook).*

Metal	Oxidation Reaction
Lithium	$Li \rightarrow Li^+ + e\text{-}$
Potassium	$K \rightarrow K^+ + e\text{-}$
Barium	$Ba \rightarrow Ba^{2+} + 2e\text{-}$
Calcium	$Ca \rightarrow Ca^{2+} + 2e\text{-}$
Sodium	$Na \rightarrow Na^+ + e\text{-}$
Magnesium	$Mg \rightarrow Mg^{2+} + 2e\text{-}$
Aluminum	$Al \rightarrow Al^{3+} + 3e\text{-}$
Zinc	$Zn \rightarrow Zn^{2+} + 2e\text{-}$
Chromium	$Cr \rightarrow Cr^{3+} + 3e\text{-}$
Iron	$Fe \rightarrow Fe^{2+} + 2e\text{-}$
Cobalt	$Co \rightarrow Co^{2+} + 2e\text{-}$
Nickel	$Ni \rightarrow Ni^{2+} + 2e\text{-}$
Tin	$Sn \rightarrow Sn^{2+} + 2e\text{-}$
Lead	$Pb \rightarrow Pb^{2+} + 2e\text{-}$
Hydrogen	$H_2 \rightarrow 2H^+ + 2e\text{-}$
Copper	$Cu \rightarrow Cu^{2+} + 2e\text{-}$
Silver	$Ag \rightarrow Ag^+ + e\text{-}$
Mercury	$Hg \rightarrow Hg^{2+} + 2e\text{-}$
Platinum	$Pt \rightarrow Pt^{2+} + 2e\text{-}$
Gold	$Au \rightarrow Au^{3+} + 3e\text{-}$

Increase in Ease of Oxidation

10. Explain what the activity series is used for and how you can tell whether a metal can be oxidized or not by a certain element in this table. (60 seconds)

11. Explain the concept of Electronegativity and its relationship with the polarity of a molecule.

12. Now imagine that you are TA'ing an organic chemistry class. The following changes need to be made to the syllabus. Please announce these changes to your class. (90 seconds)

CHM 100: Organic Chemistry

Exam/Problem Set Schedule, Tentative Lecture Schedule

Aug 25 – Sept 5th - Introduction and Review

Sep 8 – Sep 15th - Organic ~~Molecules~~ **Structure**

Sep 10 – Problem set #1 available on the web site

Sep 16 – Midterm Exam #1: Emphasis on Ch 1-3

Sep 21
~~*Sep 20*~~ *– Unrestricted Withdrawal Deadline*

Sep 19-24 – Bonding and Alkanes

Sep 26-Oct 1 – Studying Reactions

Oct 2nd – Quiz #1 available on the website (covering material from the beginning of the semester, Due ~~Oct 5th~~) **Oct 6th**

Oct 6th – Problem set #2 availabl~~e online~~ **distributed in class**

Oct 14th – Midterm #2: Emphasis on chapters 3-5

Oct 15th – 27th Spectroscopy ~~and Stereochemistry~~ **deleted**

Oct 16th – Quiz #2 available on website (covering material since Quiz #1, Due Oct 20th)

Oct 16th- Nov 7th – Alkyl Halides

Oct 31st – Restricted Course Withdrawal Deadline

Nov 4th – Problem Set #3 available on website

AND 13
Nov 11th – Midterm Exam #3: Emphasis on Ch 6,11,12 ^

Nov 13th- 21st – Alkenes I

Nov 23rd – Dec 7th – ~~Alkenes II~~ **Alkynes**

Dec 4th – Complete Withdrawal Deadline

Dec 6th
Dec 5th – Quiz # 3 and Problem Set #4 available on the website. (Quiz due Dec 7th)

~~**Dec 11th**~~ **– (7:40-10:30) Final Exam**

Dec 12th