

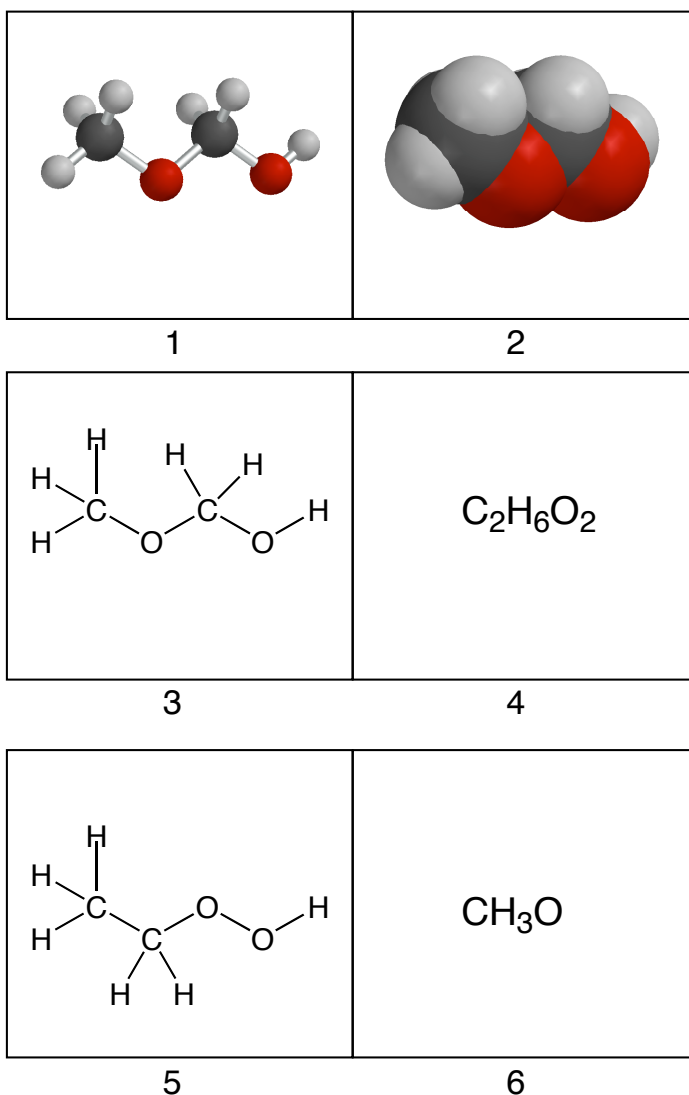
Practice General Chemistry Speaking Test (I. Gould)

(Questions from Chapter 1 of the textbook)

hydrogen 1 H 1.0079																			helium 2 He 4.0026
lithium 3 Li 6.941	beryllium 4 Be 9.012											boron 5 B 10.811	carbon 6 C 12.0107	nitrogen 7 N 14.007	oxygen 8 O 15.999	fluorine 9 F 18.998	neon 10 Ne 20.180		
sodium 11 Na 22.990	magnesium 12 Mg 24.306											aluminum 13 Al 26.912	silicon 14 Si 28.086	phosphorus 15 P 30.974	sulfur 16 S 32.067	chlorine 17 Cl 35.453	argon 18 Ar 39.948		
potassium 19 K 39.098	calcium 20 Ca 40.078	scandium 21 Sc 44.956	titanium 22 Ti 47.867	vanadium 23 V 50.942	chromium 24 Cr 51.996	manganese 25 Mn 54.938	iron 26 Fe 55.845	cobalt 27 Co 58.933	nickel 28 Ni 58.693	copper 29 Cu 63.546	zinc 30 Zn 65.39	gallium 31 Ga 69.723	germanium 32 Ge 72.61	arsenic 33 As 74.922	selenium 34 Se 78.96	bromine 35 Br 79.904	krypton 36 Kr 83.80		
rubidium 37 Rb 85.468	strontium 38 Sr 87.62	yttrium 39 Y 88.906	zirconium 40 Zr 91.224	niobium 41 Nb 92.906	molybdenum 42 Mo 95.94	technetium 43 Tc [98.91]	ruthenium 44 Ru 101.07	rhodium 45 Rh 106.42	palladium 46 Pd 106.42	silver 47 Ag 107.87	cadmium 48 Cd 112.41	indium 49 In 114.818	tin 50 Sn 118.71	antimony 51 Sb 121.760	tellurium 52 Te 127.60	iodine 53 I 126.904	xenon 54 Xe 131.29		
cesium 55 Cs 132.905	barium 56 Ba 137.32	lutetium 71 Lu 174.97	hafnium 72 Hf 178.49	tantalum 73 Ta 180.948	tungsten 74 W 183.84	rhenium 75 Re 186.21	osmium 76 Os 190.23	iridium 77 Ir 192.22	platinum 78 Pt 195.08	gold 79 Au 196.967	mercury 80 Hg 200.59	thallium 81 Tl 204.383	lead 82 Pb 207.2	bismuth 83 Bi 208.980	polonium 84 Po [209]	astatine 85 At [210]	radon 86 Rn [222]		

1. Explain how to determine how many electrons an element has using the Periodic Table. (30 seconds)
2. Explain the relationship between the elements in any of the vertical columns. Explain the relationship between the elements in any of the horizontal rows. (30 seconds)
3. A student in your class does not understand the point of the periodic table. Convince this student of the utility of the Table, both historically to chemists, and also to the student. (60 seconds)

Now please look at the six pictures below, which give some different representations of chemicals. Look at the various structures, think about the relationship between the various representations, then answer the questions.



4. Explain why we need different ways to describe chemicals. Your explanation should include descriptions of each of the structures types shown in all of the panels. (60 seconds)

5. Explain the difference between the structures in panels 4 and 6 (30 seconds).

6. A student is lazy and wants to describe all structures as shown in panel 4. Explain to him why this is not a good idea. (45 seconds)

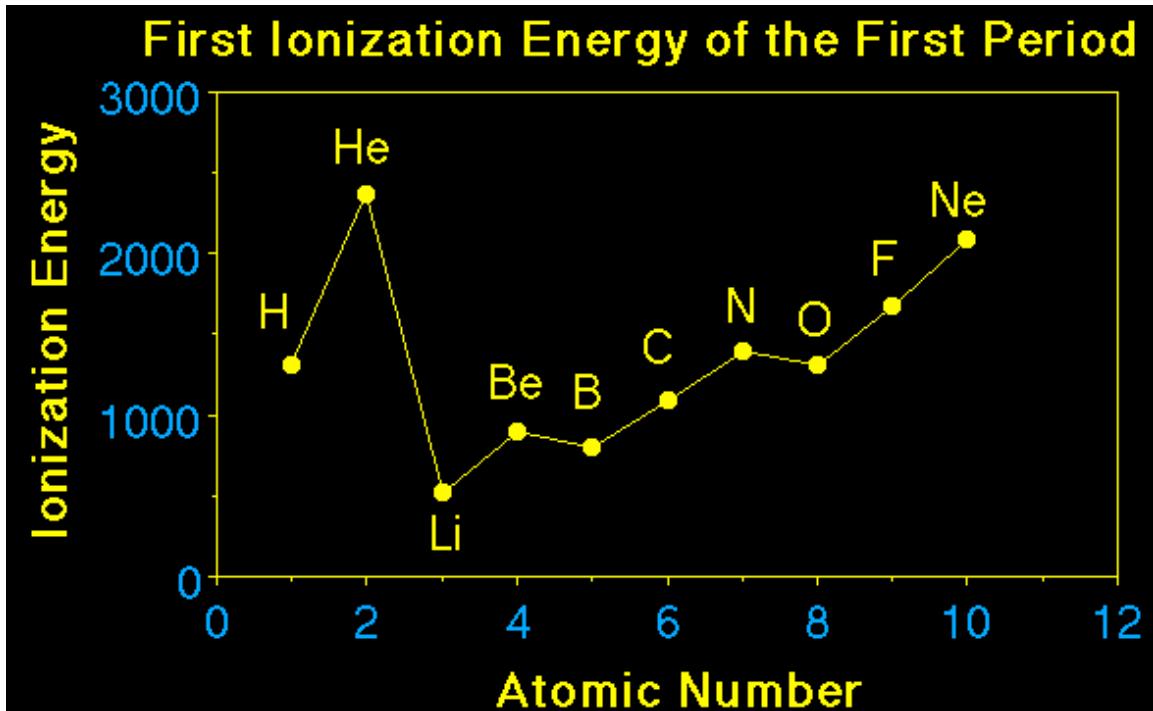
7. Explain the advantages and disadvantages of showing all chemical structures as illustrated in panel 2. (60 seconds)

Now I'd like to hear your ideas about several topics. Be sure to say as much as you can in responding to each question.

8. Many students know the difference between ionic and covalent structures, but often do not know whether a particular structure will be ionic or covalent. What can you say to the students that will help them in this problem?. (60 seconds)

9. When you give your introductory lecture on atomic structure, several of the students start to look bored and distracted. What questions ideas can you think of to keep the students engaged in a lecture on this subject? (60 seconds)

10. The graph below presents the first ionization potential of several elements as a function of atomic number. Please explain the trends that you see. (60 seconds)



11. The element after neon in atomic number is sodium. Based on what you know about this plot, and also the periodic table, would you expect the ionization potential of sodium to be larger than that of neon, or smaller? Explain why. (45 seconds)

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 5 Introduction and Review

Sep 8 - Sept 15 Organic Molecules

Sept 10 Problem Set #1 Available on the Web Site Chapters 1 - 3

Sept 17 Midterm Exam #1: Emphasis on ~~Chapters 1 and 2~~

Sept 20

~~Sept 19~~ Unrestricted Withdrawal Deadline

Sept 19 - Sept 24 Alkanes

Sept 26 - Oct 1 Studying Reactions

Oct 3 - Oct 10 Stereochemistry distributed in class

Oct 6 Problem Set #2 ~~Available on the Web Site~~

Oct 13 Midterm Exam #2: Emphasis on Chapters 3 - 5

Oct 15 - Oct 24 Spectroscopy

Oct 27 - Nov 7 Alkyl Halides

Oct 31 Restricted Course Withdrawal Deadline

Nov 3 Problem set #3 Available on the Web Site

Nov 10 Midterm Exam #3: Emphasis on Chapters 6, 11, 12

Nov 12 - Nov 21 Alkenes I

Nov 24 - Dec 8 Alkenes II

complete

Dec 4 ~~Dec 3~~ Restricted Withdrawal Deadline

Dec 5 Problem set #4 Available on the Web Site

Dec 15 (10:00 - ~~11:50 AM~~) Final Exam

Noon