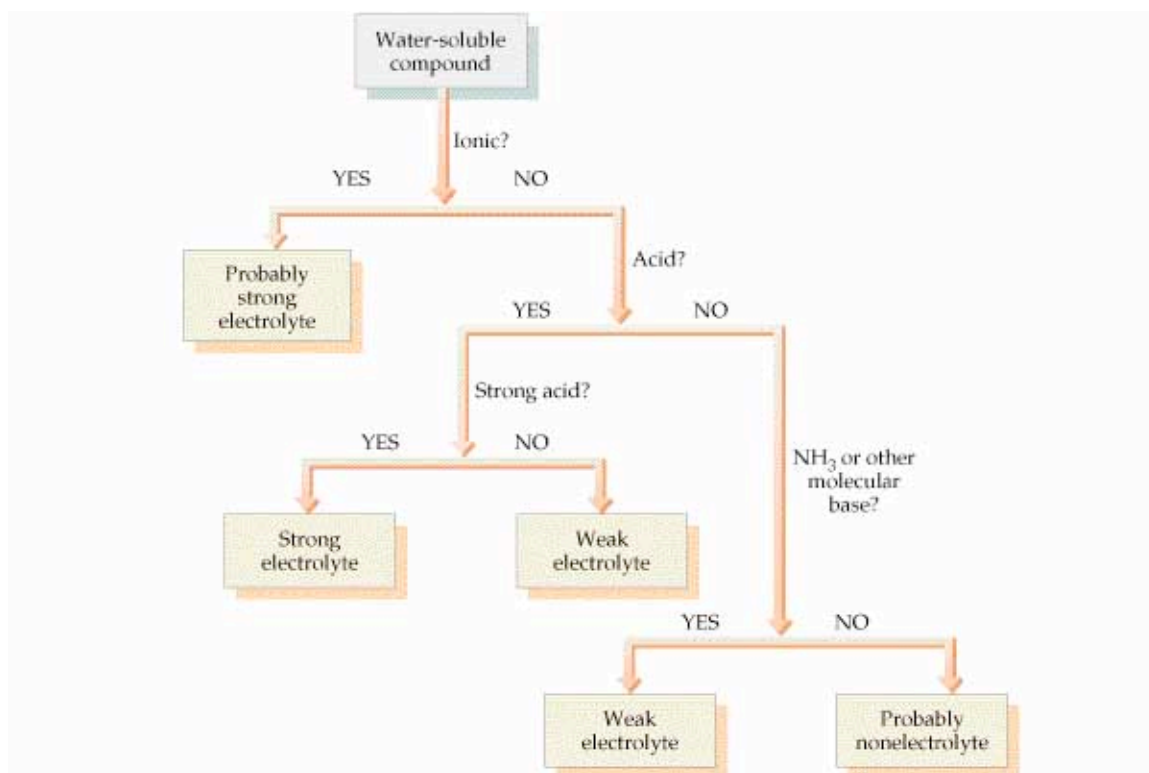


Practice General Chemistry Speaking Test Number 3
(by Ian Gould, Spring 2005)

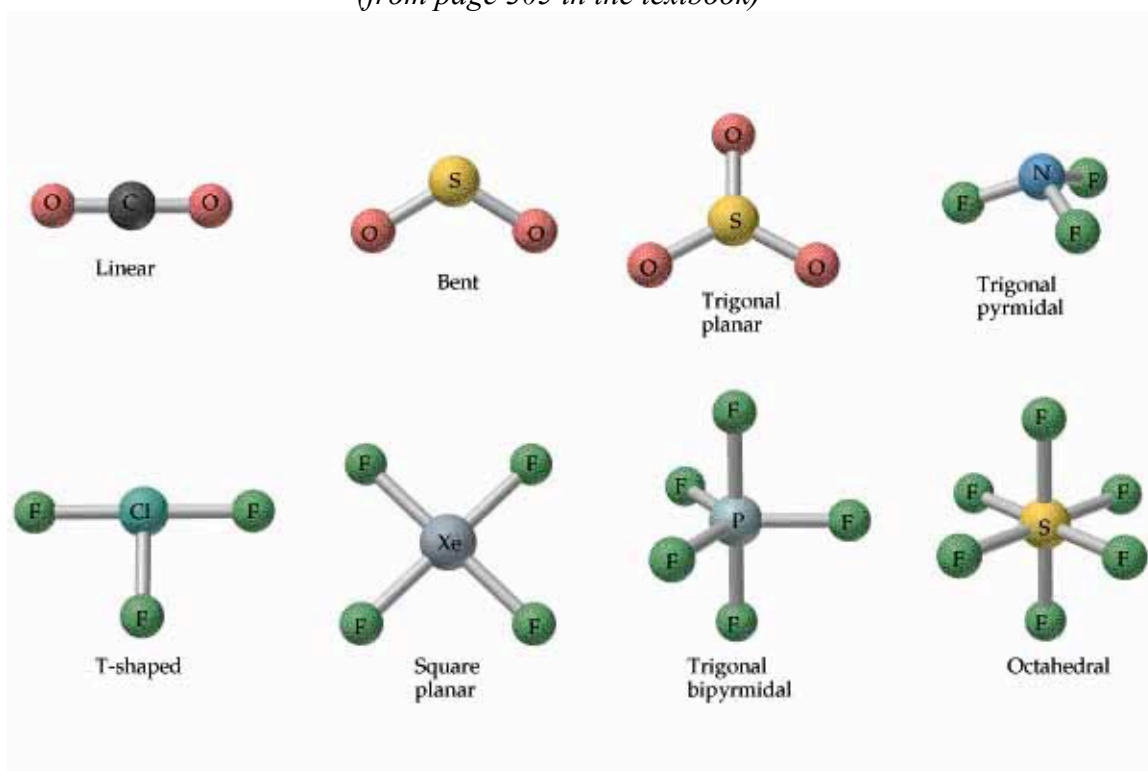


(Figure from p. 116 of the textbook)

1. Explain one of the series of tests that would identify a water-soluble substance as a weak electrolyte. (30 seconds).
2. Explain the other series of tests that would identify a water-soluble substance as a weak electrolyte (30 seconds).
3. Explain the difference between weak, strong and non-electrolytes. Give an example of each. (60 seconds).

Please look at the pictures below, which show some typical structures for simple AB_n molecules:

(from page 305 in the textbook)



4. Explain why different molecules have different shapes. What is the most important factor in determining the shape of a molecule? (60 seconds).
5. Give the name of the theory of electron repulsion that explains the shapes of molecules and explain the meaning of each word in the acronym. (30 seconds).
6. What is the molecular shape of NH_3 , CH_4 , O_3 and SF_4 ? (45 seconds).
7. The T-shaped molecule looks peculiar. Explain how a molecule could have such a T-shape. (60 seconds).

For the following free response questions, be sure to say as much as you can in responding to each question.

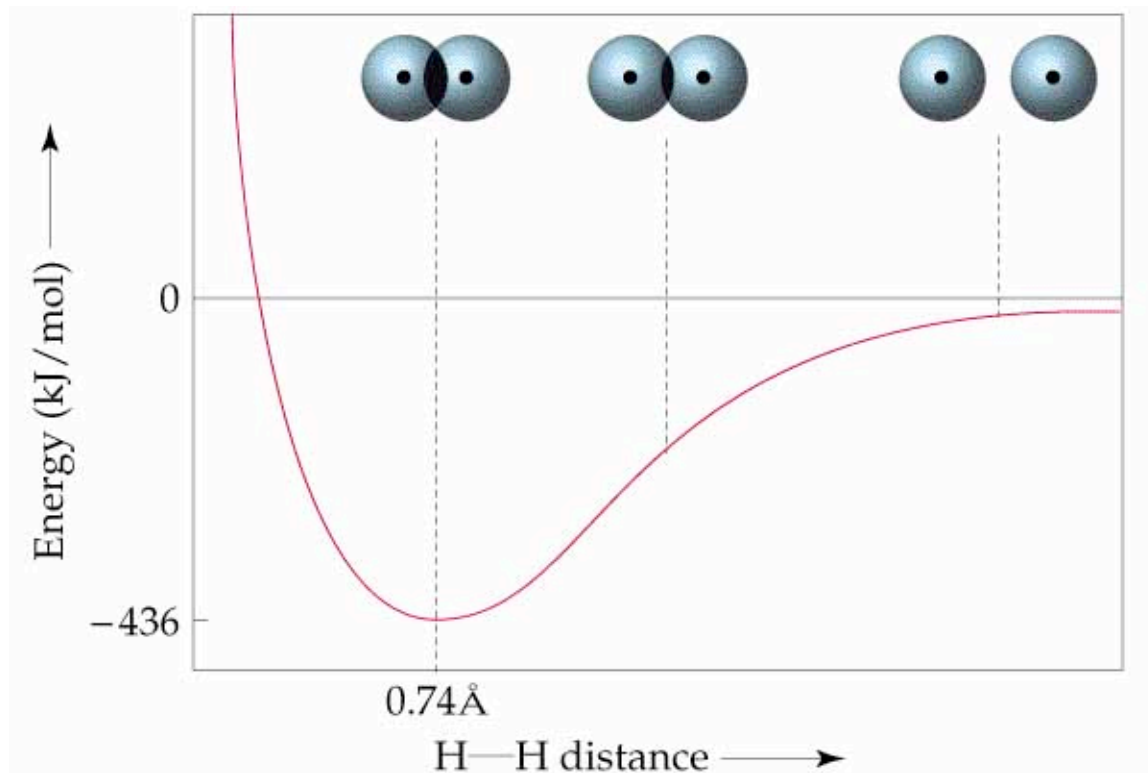
(from Chapter 11 in the textbook)

8. Some molecules can form more bonds than would be expected based on the number of their valence electrons, so-called expanded valence compounds. Explain how this is possible. (60 seconds)

9. In your lecture on chemical bonding, the students are looking bored and distracted. What questions can you think to ask to get them reengaged in the lecture? What if they can't answer your questions? (60 seconds).

10. Explain the importance of the diagram below. (60 seconds)

(The diagram can be found on p. 318 in the text book)



11. Why does the energy of the system increase with increasing separation between the hydrogen atoms? (45 seconds)

12. Now imagine that you are TA'ing a general chemistry class. The following changes need to be made to the experimental procedure for the class today. Please announce these changes. (60 seconds).

Experiment Information	
Time	1 hour <i>1.5 hours</i>
Equipment	Two <i>three</i> 50 mL beakers, 100 mL graduated cylinder, 2 mL pipette, 50 mL pipette , stand with buret holder, beam balance <i>buret</i> <i>top-loading</i>
Notes	<p>Each team member should make all of the measurements, although you should work as a team to figure out how to do them.</p> <p>Pay attention to the accuracy of the instrument used when reporting the measured volumes. Be careful with the number of significant figures when reporting the results of any calculations. Include units in all calculations, and show how they cancel where appropriate. Use proper abbreviations for all units. <i>do not abbreviate any units</i></p> <p>Refer to the appendices to learn the correct way to read the meniscus when using pipettes and burets. ← <i>and the graduated cylinders</i></p> <p>When using a buret you should mount it using a buret clamp, not a utility clamp. Make sure that the buret clamps have rubber protectors so that the metal and glass do not come into contact.</p> <p>When using the 50 mL beaker to weigh water measured with the <i>pipettes</i> graduated cylinder, you do not have to dry the beaker between weighings, so long as you dry the scale properly before each use. <i>tare</i></p>