Name_____ Class _____

Essay questions for final examination in chemistry. January, 2003.

I. Use the grid below to graph the ionization energies of the elements in period 2 on the periodic table, with atomic number of each element as your X axis, and ionization energy as your Y axis.

  A. Choose an appropriate title for your graph.

  B. Label the two axes, including proper units of ionization energy.

  C. Choose an appropriate scale for each axis, and plot the data. Draw a circle around each of the points on the graph.

  D. For these elements, state the general trend in ionization energy in terms of atomic number.

  E. How does the ionization energy of element number 11 compare to that of the elements plotted in your graph? Provide an explanation of this observation.
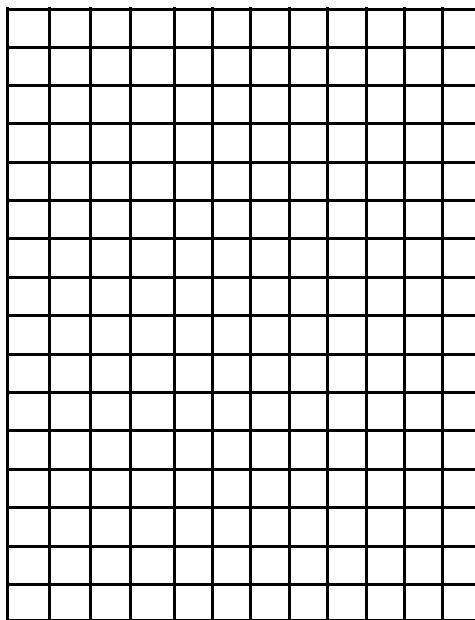
II A gas is collected at a temperature of 27°C and a pressure of 100. kilopascals. The volume of the gas is found to be 24.0 mL. The gas is heated to a temperature of 327°C. What must the new pressure of the gas be, if its new volume is 96.0 mL ?

Write the equation that you will use to solve the problem. Solve the equation, and be sure to include correct units in your answer.

III. Draw dot structures for each of the following:

A. A barium atom.

B. Barium oxide.

C. NH_3

D. CS_2

E. N_2

Extra Credits:

I. What was Bohr's first name? What was his nationality?

II. Explain why you agree or disagree with the statement "There are NO elements that have more than eight electrons in their outermost principal energy level."

III. Draw the dot structure of HCN