Chemistry 115 Name_____
Dr. Cary Willard
Quiz 4A (20 points) March 2, 2009

All work must be shown to receive credit.

1. (6 points) An unknown element contains 33 protons, 36 electrons, and has a mass number of 75. Answer the following questions.
   a. What is the atomic number of this element?

      33

   b. What is the name of this element?

      arsenic

   c. How many neutrons does this element contain?

      75 – 33 = 42 neutrons

2. (6 points) In what ways are isotopes alike?

   Same number of protons
   Same chemical and physical properties except for mass

   In what ways are they different?

   Different numbers of neutrons
   Different masses

3. (2 points) Given the following elemental symbol for an element, identify the atomic number and the mass number of the element.

$$^{102}_{41}Nb$$

Atomic number 41 mass number 102

4. (6 points) Describe what Rutherford saw when he bombarded a piece of gold foil with alpha particles. What conclusions did Rutherford draw from his observations?

Most particles went through the foil, some bounced off

He said that atoms were composed of dense centers (nuclei) surrounded by lots of empty space.

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Quiz 4B (20 points) March 2, 2009

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1. (6 points) An unknown element contains 27 protons, 25 electrons, and has a mass number of 53. Answer the following questions.
   a. What is the atomic number of this element?

      27

   b. What is the name of this element?

      cobalt

   c. How many neutrons does this element contain?

      53 – 27 = 26 neutrons

2. (6 points) In what ways are isotopes alike?

   Same number of protons
   Same chemical and physical properties except for mass

   In what ways are they different?

   Different numbers of neutrons
   Different masses

3. (2 points) Given the following elemental symbol for an element, identify the atomic number and the mass number of the element.

$$^{189}_{75}Re$$

   Atomic number 75 mass number 189

4. (6 points) Describe what Rutherford saw when he bombarded a piece of gold foil with alpha particles. What conclusions did Rutherford draw from his observations?
   Most particles went through the foil, some bounced off

   He said that atoms were composed of dense centers (nuclei) surrounded by lots of empty space.