Chem 142 Quiz 8 Spring 2009

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Key\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Instructor: Martin Larter

1. Give the nuclear symbol for the product and write the nuclear reaction for the following nuclear decays:

(a)   The decay of sulfur-30 by positron emission:

http://www.tarleton.edu/~alow/image010_0000.gif

(b)   The decay of zinc-69 by beta emission:

http://www.tarleton.edu/~alow/image012_0000.gif

(c)   The decay of gold-178 by alpha emission:

http://www.tarleton.edu/~alow/image014_0000.gif

(d)   The decay of erbium-158 by electron capture:

http://www.tarleton.edu/~alow/image016_0000.gif

1. Balance and identify the missing particle in the following nuclear equations.

a. 239Pu → 42α + 235U

b. 01n + 235U → 96Y + 4 01n + 136I

1. Uranium-238 decays in the following order α β β α α α α α β β α β β α. What is the final product (show your work)?

235U 🡪 8 42α + 6 -10β + 203Pb

1. **Define Nuclear Transmutation:** Nuclear transmutation is artificial method of transforming one element/isotope into another element/isotope. Stable atoms can be transformed into radioactive atoms by bombardment with high speed particles