Grossmont College Name: \_\_\_\_\_\_\_Key\_\_\_\_\_\_\_\_\_\_\_\_\_

Chemistry 102, Spring 2017

Quiz 2b (25 points) Date: \_\_\_\_\_\_\_\_\_\_\_\_

1. (4 points) A collection of glass beads has a mass of 29.33 g. the beads were transferred to a graduated cylinder containing 113.5 mL of water. The volume of the water plus beads was 125.2 mL. Calculate the density of the glass beads in units of g/mL.

$$density= \frac{29.33 g }{125.2 mL – 113.5 mL }=\frac{29.33 g }{11.7 mL }=2.51 g/mL $$

1. (6 points) Write nuclear equations for the following process:

|  |  |
| --- | --- |
| 1. Americium-241 (Am) undergoes α decays
 | 1. platinum-199 undergoes beta decay
 |
| 95241Am → 93237Np + 24α | 78199Pt → 79199Au + -10β |

1. Iodine-131 is used to destroy thyroid tissue in the treatment of an overactive thyroid. The half-life of iodine-131 is 8 days. If a hospital receives a shipment of 200. g of iodine-131, how much I-131 would remain after 32 days?

$$32 days ×\frac{1 half life}{8 days}=4 half lives$$

$$200 g ×\left( \frac{1}{2}\right)^{4}=12.5 g $$

1. (4 points) One cup of clam chowder contains 9.0 g of protein, 11.0 g of fat, and 15.0 g of carbohydrate. How many kilojoules are in the clam chowder from protein?

|  |  |
| --- | --- |
| Food Type | kcal /g(exact values) |
| Carbohydrate | 4 |
| Fat | 9 |
| Protein | 4 |

$$9.0 g of protein ×\frac{4 kcal}{1 g} ×\frac{4.184 kJ}{1 kcal}=150 kJ$$

1. (4 points) Choose the names of two elements that are in the following groups.

|  |  |
| --- | --- |
| 1. Alkali metals
 | (argon, lithium ,potassium, hydrogen,) |
| 1. Halogens
 | (chlorine, calcium, fluorine, sulfur)  |

1. (3 points) What are the number of protons, neutrons, and electrons in the following isotope?

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Protons\_\_\_24\_\_\_\_\_\_\_ Neutrons\_\_\_\_27\_\_\_\_\_ Electrons\_\_\_\_24\_\_\_\_\_\_