**Homework #5 Chemistry 1114 section 2 (Fong) due Wed 14 Feb 2018 15 pts (in class)**

**Your name:\_\_\_\_\_\_\_\_Answers\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 1 pt**

1a) In the Rutherford atom the ratio of the electron orbit radius to nuclear radius (Re/RN)= \_\_\_\_\_\_\_100,000\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1b) The mass of a proton is:  **greater ~ same smaller** than the mass of a

neutron. (Circle choice)

, 1c) The ratio of the mass of the proton, M to the mass of an electron Me

Mp/Me ~ \_\_\_\_\_\_2000/1\_\_\_\_\_\_\_\_\_\_

1d) The number of neutrons in the atom listed below is: \_\_\_6\_\_\_\_\_\_ neutrons.

11B

5

1. What specifically defines an isotope of a given element ? (1 pt)

neutron count

1. In the modern version of elements, what defines a specific element ? (1 pt)

proton count

1. Fill in the boxes: (2 pts per line)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Atomic # | Mass # | symbol | #p | #n | #e | Atom charge |
| 23 | 49 | V | 23 | 26 | 23 | 0 |
| 38 | 88 | Sr | 38 | 50 | 38 | 0 |
| 17 | 35 | Cl | 17 | 18 | 18 | -1 |

1. A hypothetic super-actinide Ug is discovered to have the following isotope distribution

**mass (amu) % abundance**

300Ug 299.85 80.0

302Ug 301.86 15.0

303Ug 302.89 5.0

What is the average mass of element Ug ??? \_\_\_\_300.30\_\_\_\_\_\_\_= average Ug mass (amu) ( to nearest 0.01)

(2 pts)

**299.85\*80 + 301.86\*15 + 302.89\*5**

**100**