last name: F18 201-04 ExI

KEEP YOUR WORK AND ANSWERS COVERED.

1. (24 pts) Indicate whether each statement is true (T) or false (F). Be certain T or F is clearly indicated.

T Every measuring device has an uncertainty.

T Most of the mass of an atom lies in the nucleus.

F Atoms of different elements cannot have the same mass number.

T Methane is a molecular compound.

F Selenium dibromide has ionic bonds.

T The chemical formula of an ionic network compound is the smallest, whole-number ratio of cations and anions.

T Arsenate is an oxyanion.

T The empirical formula of barium sulfite is $BaSO_3$.

2. (4 pts) Circle the mass (in g) of 4.16×10^{24} atoms of neon.

94.1	98.2	103	108	112	116
124	127	133	(139)	145	148

** 3. (3 pts) In which Period is silver? 5

(3 pts) What is the symbol of the Main Group metal which has the smallest atomic number? Li

(3 pts) How many electrons are in the chloride ion? 18

** 4. (5 pts) Circle the compounds below which have a 1+ cation.

IBr (KNO$_3$) HCl CuSO$_4$ S$_2$O (NH$_4$F)

5. (2 pts) How many elements in Period 5 are not metals? 4

(2 pts) Give the symbol of the element in the Third Period which forms a 2+ cation. Mg

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6. (8 pts) Balance the following equations.

$$H_2O + F_4SO + CaO \rightarrow CaF_2 + SO_3 + 2\,HF$$

$$C_6H_8 + 2\,S_8 \rightarrow 6\,CS_2 + 4\,H_2S$$

** 7. (6 pts) Acetylene, C_2H_2, is used in welding applications. Circle the mass (in g) of O_2 that is needed for the combustion of 18.50 g C_2H_2.

20.33	23.89	26.11	32.97	36.03	38.41
41.18	44.73	48.62	51.20	(56.84)	59.71

** 8. (3 pts) Fruit sugar (fructose) has the formula $C_6H_{12}O_6$. How many moles are present in 19.5 g of fructose? 0.108

9. (6 pts) Give the formula for each of the following.

dioxygen difluoride O_2F_2

chromium(II) phosphate $Cr_3(PO_4)_2$

10. (6 pts) The following equation is balanced.

$$3\,Se + 4\,HNO_3 \rightarrow 4\,NO + 3\,SeO_2 + 2\,H_2O$$

Circle the mass (in g) of HNO_3 which is needed in order to make 31.9 g of SeO_2 by this reaction.

11.5	13.6	16.8	19.0	22.7	(24.2)
25.1	28.9	31.1	34.6	36.2	38.0