

**CHM 101 EXAM I**

Show all calculations with units and correct significant figures. Write in complete sentences. **GOOD LUCK!!!**

1. Give the correct chemical name for each substance. (10)

$\text{CaCO}_3$  \_\_\_\_\_

$\text{KNO}_2$  \_\_\_\_\_

$\text{Fe}_2\text{O}_3$  \_\_\_\_\_

$\text{H}_2\text{SO}_4$  \_\_\_\_\_

Mn \_\_\_\_\_

2. Write the correct chemical formula for each substance. (10)

titanium (IV) oxide \_\_\_\_\_

calcium phosphate \_\_\_\_\_

lithium hydrogen carbonate \_\_\_\_\_

sodium nitride \_\_\_\_\_

sulfur trioxide \_\_\_\_\_

3. Element, compound, or ion? Use E, C, or I - (5)

$\text{SO}_3^{-2}$	$\text{S}_8$	$\text{SO}_3$	$\text{H}_2\text{S}$	$\text{HS}^{-1}$
_____	_____	_____	_____	_____

4. Fill in the number of protons, neutrons, and electrons in the table below. (15)

Element or ions	Atomic number	Mass number	Number of protons	Number of neutrons	Number of electrons
K	19	40			
Ga	31	70			
Mn <sup>+7</sup>	25	55			
P <sup>-3</sup>	15	31			
Cr <sup>+3</sup>	24	52			

5. Lithium metal has a density of 0.53 g/mL, while cesium has a density of 1.90 g/mL. If you had 1.00 kg of each metal, how would the volumes of the two metals compare? (10)

6. Two students measure the length of a copper cable. Here are the results:

Student 1 - 32 m

Student 2 - 31.94 m

Is there a difference in the two measurements? (5)

Could the difference above be caused by the student, the measuring device, or both? (5)

7. A student is going to separate a sample of copper (II) sulfate and sand. The copper (II) sulfate is soluble and produces a very dark blue solution on dissolving. The student sets up a funnel, masses a dry piece of white filter paper, and filters the sand out and dries the filter paper and sand. On getting ready to mass the filter paper and sand the student notices that it has a very blue color. How could this influence the final results - %sand and %CuSO<sub>4</sub>? Explain. (5)

Could the results above have been corrected? If so, explain how. (5)