**Exam 1: Chem 1114 Spring 2018**

**Version A 100 points**

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

1. What is the magnitude associated with a n? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Convert 2000 g to its equivalent, prefixed form: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. The magnitude 10+9 has what prefix name (not symbol) associated with ? \_\_\_\_\_\_\_\_\_\_\_\_\_

4. What is the symbol connected to 10-12 ?\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Convert 0.000000001 s to its correct prefixed form:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. Write 100,000,000 m in its best prefixed form\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. 1 ns = \_\_\_\_\_\_\_\_\_\_\_ps (2 pts each)

8. 2000 km = \_\_\_\_\_\_\_\_\_ Mm

9. 2 cg = \_\_\_\_\_\_\_\_\_\_\_ mg

10. 0.003 Ts = \_\_\_\_\_\_ Gs

11. 10,000 g = \_\_\_\_\_\_\_\_ kg

12. How many significant figures are in each of the numbers below ?

a) 500\_\_\_\_\_\_\_\_\_\_ b) 110000\_\_\_\_\_\_\_

c) 0.300\_\_\_\_\_\_\_\_\_ d) 6.000\*10600 \_\_\_\_\_\_\_\_\_\_\_\_

e) 1.0100\_\_\_\_\_\_ f) 800011\_\_\_\_\_\_

13. Compute to the correct significant figure count: ( 2 pts each)

0.00005 + 0.050 + 30 + 0.04 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1.0001 -0.03 +99.0 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14. Compute to correct sig fig count: 1.00\*10.0000 = \_\_\_\_\_\_\_\_\_\_\_ 3 pts each

15. Compute to correct sig fig count: 100.000= \_\_\_\_\_\_\_\_\_

4.0\*12.500

16. Compute to the correct sig fig count:

3 + 10.00\*6.00 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1.999

\_\_\_/31 (includes name pt)

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17. Provide names or symbols for the elements below: (spelling counts)

K\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sodium\_\_\_\_\_\_ H\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

C\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ copper\_\_\_\_\_\_\_ N\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

S\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ fluorine\_\_\_\_\_\_ Fe \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

18. The ratio of the electron orbit’s radius to the nuclear radius is ~ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( a number)

19.The ratio of the proton mass to the electron mass is about \_\_\_\_\_\_\_\_\_\_\_\_( another number)

20. An element with a specific count of neutrons is a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the element.

21. electrons are: ***heavier lighter the same mass*** as protons. (Circle your choice)

22. How many neutrons in 15N ? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7

23. Fill in the missing information (4 points per line)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Atomic # | Mass # | symbol | #p | #n | #e | Atom charge |
|  |  |  | 26 | 33 |  | 0 |
|  | 36 | Cl |  |  | 17 |  |

24. Compute the average atomic mass of the hypothetic element Du given the data below:

Du mass # fractional abundance=fk

100.0 0.10

110.0 0.40 average mass of Du= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( to nearest 0.1 )

120.0 0.50 (4 pts)

**25. Provide the name or formula for the compounds below. (You may use your Periodic Table as an aid.)**

Note: ClO3-2 = chlorate HCO3-1 = bicarbonate spelling counts ! (2 pts each)

N2S \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ iron(II) bromide = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

KClO3= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ copper(I) bicarbonate= \_\_\_\_\_\_\_\_\_\_\_\_\_

Fe(CO3) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sodium oxide = \_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_/38

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SHOW WORK FOR PROBLEMS BELOW OR NO CREDIT

26. Compute the molecular weight (MW) for: H2SO4 . (S=32 g/mol O=16 g/mol H=1 g/mol)

(3 pts)

\_\_\_\_\_\_\_\_g H2SO4 /mol

27. The MW of CaCO3 is 100 g/mol How many moles of are in 200 grams of it? (4 pts)

\_\_\_\_\_\_\_\_\_\_\_mol CaCO3

28. What does 0.2 moles of CaCO3 weigh in grams ? ( 4 pts)

\_\_\_\_\_\_\_\_\_\_ g CaCO3

29. How many grams are in 2.4\*1022 molecules of CaCO3? Assume 1 mole count=6.0\*1023

(round answer to nearest gram) ( 5 pts)

\_\_\_\_\_\_\_\_ g CaCO3

30. Given that butane (C4H10) has a molecular mass of 58 g/mol and 1 mole count=6\*1023:

How many molecules of butane are in 29 g of butane ? (5 pts)

\_\_\_\_\_\_\_\_\_\_\_\_\_ molecules butane

31. The formula for calcium oxalate is CaC2O4. (Molecular wt=128 g/mol)

1. How many moles of CaC2O4 are formed from 256 g of O ? (2 pts)

\_\_\_\_\_\_\_ mol CaC2O4

1. If 24 g of C (at. wt.=12 g/mol) are present in CaC2O4, how many g O (at. wt=16) are present?

(3 pts)

\_\_\_\_\_\_\_\_ g O

32. Glucose has the formula C6H12O6 and a molecular weight of 180. How many atoms of H are in 0.25 g of

glucose ? (5 pts)

\_\_\_\_\_\_\_atoms of H

\_\_\_/31