**Honors Chemistry I**

**Test 2- Review Problems**

1. **Tell whether the following elements are 1) representative, transition, or inner transition elements; and 2) metals, nonmetals, or semimetals**

Representative, transition, inner trans. Metal, nonmetal, semimetal Group Period

**Sr**

**Sb**

**Lu**

**Cu**

**S**

**Al**

**H**

**Kr**

**Ga**

**Cd**

2. A) Calculate the average atomic mass of Boron if the percent abundance of 10B is 19.78% and 11B is

80.22%.

1. Calculate the average atomic mass for Copper using the following data:

Copper-63 69.09%

Copper-65 30.91%

1. Complete the table for the following ions:

Symbol Atomic # Mass # Protons Neutrons Electrons Name

A) Sr+2 88

B) 83 209 80

C) 7 14 10

D) Cs+1 131

E) 14 29 10

F) 17 18 18

G) B+3 12

H) 8 15 10

1. Write unabbreviated electron configurations for the following:
2. Co
3. Br
4. Xe
5. Ba
6. Au
7. Write abbreviated electron configurations for the following:
8. Cu
9. Pb
10. Ra
11. Sn
12. Lu
13. Draw orbital diagrams for the following:
14. Si
15. Kr
16. Mo
17. Sn
18. Cl
19. Draw electron dot structures for the following:
20. Ge
21. O
22. P
23. Li
24. Write orbital diagrams for neutral atoms of the following. Then write the orbital diagram for the stable ion. What noble gas does this show similarity to?
25. N atom N ion Noble gas?
26. Ca atom Ca ion Noble gas?
27. Arrange the following elements in order of decreasing atomic size:
28. Cl, F, At, Br, I
29. Ga, Ge, Ca, K, Br, Kr, As, Se
30. Arrange the following elements in order of increasing ionization energy and electronegativity:
31. Cl, F, At, Br, I
32. Ge, Ge, Ca, K, Br, As, Se

11. Give all of the 4-quantum number combinations for each electron in the 3d energy sublevel. (3 pts.)

12. On the following orbital diagram, circle the electron represented by each of the following quantum number combinations and label with the appropriate letter (1 pt. each)

↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓ ↑↓

1s 2s 2p 3s 3p 4s 3d

1. (1, 0, 0, -½)
2. (3, 1, 0, -½)
3. (4, 0, 0, -½)
4. (3, 2, +2, -½)
5. What element is represented by this orbital diagram?