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**Pre-Comp Review Part 2**

1. Define the following:

- Ionization energy –

- Electronegativity -

2. Place the following elements in order of increasing atomic radius: bromine, chlorine, fluorine, iodine.

3. Place the following elements in order of increasing atomic radius: arsenic, bromine, gallium, selenium.

4. Place the following elements in order of increasing 1st ionization energy: aluminum, chlorine, phosphorous, sulfur.

5. Place the following elements in order of increasing 1st ionization energy: carbon, germanium, silicon, tin.

6. Place the following elements in order of increasing electronegativity: arsenic, fluorine, nitrogen, oxygen, phosphorous.

7. Magnesium has more protons than sodium is also smaller than sodium. Explain why the greater number of protons in magnesium results in it having a smaller atomic radius.

8. Potassium has a larger atomic radius than sodium. Explain why this is.

9. What is the relationship between atomic radius and first ionization energy?

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10. What is the relationship between atomic radius and electronegativity?

11. Element X is more electronegative than element Z. Which of these elements has a great first ionization energy and why?

12a) Which is larger: $Na^+$ or Na? _____

b) Explain your answer to part a.

13a) Which is larger: $S^{2-}$ or S? _____

b) Explain your answer to part a.

14. Rank the following from smallest to largest radius: Si, $Si^{4+}$, $Si^{4-}$.

15. Define ionic bond.

16. When rubidium and bromine react to form an ionic compound, rubidium transfers its one valence electron to bromine. Why does this happen?

17. Do ionic substances conduct electricity? If so, under what circumstances?

18. Define covalent bond.

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19. Do covalent substances conduct electricity? If so, under what circumstances?

20. When metals bond, is it through a sharing or transferring of electrons? _____

21. Name four properties of metals that occur because of the "electron sea."

22. Complete the chart below:

| **Name** | **Chemical Formula** |
|---|---|
| Magnesium nitrate | |
| Silver cyanide | |
| | $Zn(HCO_3)_2$ |
| | $BrF_7$ |
| Tetraboron nonahydride | |
| | $Mn(PO_4)_2$ |
| Ammonia | |
| Ammonium bromide | |
| Palladium (II) hydroxide | |
| | $KHSO_4$ |
| | $FeHPO_4$ |
| | $SnCO_3$ |
| Cobalt (II) phosphate | |
| Cadmium acetate | |
| | $Si_2H_6$ |
| Zinc sulfate | |

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23. For each of the following, circle the substance <u>in each pair</u> that you would expect to have a higher melting point:

a) $AlCl_3$ or $H_2S$

b) Ag or $Br_2$

c) CuSn or $NF_3$

d) $CCl_4$ or $NH_4OH$

24. Circle the substances below that would conduct electricity <u>as written</u>. You will need to circle more than one.

a) $O_2$ (aq)

b) CuSn (s)

c) $AgNO_3$ (*l*)

d) NaOH (s)

e) Au (*l*)

f) $MgSO_4$ (aq)

g) $H_2O$ (g)

25. Name the property of a metal that means it can be pulled into a wire.

26. Name the property of a metal that means it can be pounded into different shapes.

27. In a metallic substance, are the valence electrons stationary or mobile?

28. What property do metals have as a result of your answer to #27?