**Quiz 6A**

# Directions: Answer each of the following questions. Be sure to use complete sentences where appropriate. For full credit be sure to show all of your work. Where appropriate answers should be boxed for clarity, written to the correct number of significant figures, and, include the proper units.

1. Complete the following table (9 points):

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Compound Name | Monoprotic, diprotic, or triprotic acid? | Cation | Anion | Compound Formula |
|  | Hydrobromic acid | Monoprotic | H+ | Br- | HBr (aq) |
|  | Acetic acid | Monoprotic | H+ | C2H3O2- | HC2H3O2 (aq) |
|  | Phosphorous acid | Triprotic | H+ | PO33- | H3PO3 (aq) |

1. Are alloys pure substances or mixtures? Are they compounds? Explain your answers (4 points).

Alloys are mixtures. They are neither pure substances nor compounds. They lack constant composition and have variable properties.

1. Nitrogen has five valence electrons, therefore it is sometimes difficult to fit a nitrogen atom into a Lewis structure that obeys the octet rule. Why is this so? Without actually drawing them, which of the following species do not have a Lewis structure that satisfies the octet rule? N2O, NO2, NF3, NO, N2O3, N2O4, NOCl, NO2Cl (3 points).

NO2 and NO have an odd number of electrons and thus cannot satisfy the octet rule.

1. Compare the bonds between potassium and chlorine in potassium chloride with the bond between two chlorine atoms in chlorine gas. Which bond is ionic, and which is covalent? Describe how each bond forms (4 points).

The potassium chloride bond is ionic. The potassium transfers its one valence electron to the chlorine atom.



The bond in chlorine gas is covalent, formed by two chlorine atoms sharing a pair of electrons.

