Name _____ Date _____ Period _____

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Intro to Redox Reactions

Chemistry

Free elements are 0 and a one-atom ion equals its charge. Fill in the atoms you know first (O = −2, H = +1, F = −1, group 1 = +1, group 2 = +2), then solve for the unknown. Always write the sign.

1. Give the oxidation number of each atom or ion.

(a) N_2

(b) Ca^{2+}

(c) Br^{-}

(d) Zn

(e) Al^{3+}

(f) P_4

2. Find the oxidation number of the named element in each compound. Show your setup.

(a) S in SO_2

(b) N in HNO_3

(c) Mn in $KMnO_4$

(d) C in CH_4

(e) P in H_3PO_4

(f) C in Na_2CO_3

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3. Find the oxidation number of the named element in each polyatomic ion. Show your setup.

(a) S in SO_4^{2-}

(b) N in NO_2^{-}

(c) P in PO_4^{3-}

(d) Mn in MnO_4^{-}

4. Is each change oxidation or reduction? Explain using electrons or oxidation numbers.

(a) $Cu \rightarrow Cu^{2+} + 2e^{-}$

(b) $Br_2 + 2e^{-} \rightarrow 2Br^{-}$

(c) $Sn^{4+} + 2e^{-} \rightarrow Sn^{2+}$

(d) $Fe^{2+} \rightarrow Fe^{3+} + e^{-}$

5. In $2Na + Cl_2 \rightarrow 2NaCl$, which element is oxidized and which is reduced? Explain why one cannot happen without the other.

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