Name Date

Lab # RedOx Reaction Writing Lab

Aim: To balance Equations using oxidation states.

Define: Using technical reference. (10 Pts.)

Oxidation-

Reduction-

Oxidation Number-

Spectator Ion –

Oxidation – Reduction Reaction -

Method: For the following 6 reactions: (10 pts. Each)

1) Assign Oxidation Numbers to each element. (Above the element in the reaction) **(2pts.)**
2) Connect like species with brackets and label as Oxidation or Reduction. **(2pt.)**
3) List any Spectator ions or write "No Spectator Ions." **(1 pt.)**
4) Write both the oxidation and reduction half reaction. **(2pts.)**
5) Check to see if the number of electrons lost is the same as the number of electrons gained. If they are not multiply each half reaction by the number of electrons in the opposite half reaction. **(1 pt.)**
6) Write the Net Balanced RedOx reaction. **(2pts.)**

The following is an example problem that we will do together.

$H_2 + CuO \rightarrow Cu + H_2O$

3) Spectator Ions

4) Reduction Half Reaction

5) Adjusted Reduction Half Reaction

4) Oxidation Half Reaction

5) Oxidation Half Reaction

Net Balanced RedOx Reaction

After Completing the six attached reactions answer the questions on the back of this page.

Name Date

Lab # RedOx Reaction Writing Lab

1) Why are double replacement reactions never redox reactions? You may want to use this reaction to help you answer this. $NaOH + HCl \rightarrow H_2O + NaCl$. (5pts.)

2) Why are single replacement reactions always redox reactions? You may want to use this reaction to help you answer this. $Zn + 2HCl \rightarrow H_2 + ZnCl_2$. (5pts.)

3) Can oxidation happen on its own? Explain your answer using atomic structure and electrons. (5pts.)

The following questions are 3 points each. Put your answer on the line next to the question number.

4) _____What is the oxidation number of N in $NaNO_2$?

5) _____In which type of reaction are electrons transferred?

A) Organic Addition C) Oxidation – Reduction
B) Double Replacement D) Neutralization

6) _____In a oxidation – reduction, reaction the total number of electrons lost is

A) equal to the total number of protons gained.
B) equal to the total number of electrons gained.
C) greater than the total number of protons gained.
D) greater than the total number of electrons gained.

7) Which half reaction correctly represents reduction:
A) $Mn^{+4} \rightarrow Mn^{+3} + e^-$ C) $Mn^{+4} + e^- \rightarrow Mn^{+3}$
B) $Mn^{+4} \rightarrow Mn^{+7} + 3e^-$ D) $Mn^{+4} + 3e^- \rightarrow Mn^{+7}$

8) _____Given the balanced equation representing a reaction:

$$2KClO_3(s) \rightarrow 2KCl(s) + 3O_2(g)$$

The oxidation state of chlorine in this reaction changes from

A) -1 to +1 B) +1 to -1 C) -1 to +5 D) +5 to -1

Name Date

Lab # RedOx Reaction Writing Lab

3) Spectator Ions

$CdS + I_2 + HCl \rightarrow CdCl_2 + HI + S$

4) Reduction Half Reaction

5) Adjusted Reduction Half Reaction

4) Oxidation Half Reaction

5) Oxidation Half Reaction

Net Balanced RedOx Reaction

---

3) Spectator Ions

$KMnO_4 + HCl \rightarrow KCl + MnCl_2 + H_2O + Cl_2$

4) Reduction Half Reaction

5) Adjusted Reduction Half Reaction

4) Oxidation Half Reaction

5) Oxidation Half Reaction

Net Balanced RedOx Reaction

Name Date

Lab # RedOx Reaction Writing Lab

3) Spectator Ions

$Na + H_2O \rightarrow NaOH + H_2$

4) Reduction Half Reaction

5) Adjusted Reduction Half Reaction

4) Oxidation Half Reaction

5) Oxidation Half Reaction

Net Balanced RedOx Reaction

---

3) Spectator Ions

$Zn + HNO_3 \rightarrow Zn(NO_3)_2 + NO_2 + H_2O$

4) Reduction Half Reaction

5) Adjusted Reduction Half Reaction

4) Oxidation Half Reaction

5) Oxidation Half Reaction

Net Balanced RedOx Reaction

Name Date

Lab # RedOx Reaction Writing Lab

$H_2O_2 \rightarrow H_2O + O_2$

3) Spectator Ions

4) Reduction Half Reaction

5) Adjusted Reduction Half Reaction

4) Oxidation Half Reaction

5) Oxidation Half Reaction

Net Balanced RedOx Reaction

$K_2Cr_2O_7 + H_2O + S \rightarrow SO_2 + KOH + Cr_2O_3$

3) Spectator Ions

4) Reduction Half Reaction

5) Adjusted Reduction Half Reaction

4) Oxidation Half Reaction

5) Oxidation Half Reaction

Net Balanced RedOx Reaction

Name Date

Lab # RedOx Reaction Writing Lab

3) Spectator Ions

4) Reduction Half Reaction

5) Adjusted Reduction Half Reaction

4) Oxidation Half Reaction

5) Oxidation Half Reaction

Net Balanced RedOx Reaction

---

3) Spectator Ions

4) Reduction Half Reaction

5) Adjusted Reduction Half Reaction

4) Oxidation Half Reaction

5) Oxidation Half Reaction

Net Balanced RedOx Reaction
