Name_____ **Regents Chemistry** **Redox Weekly #1**

____ 1. What is the oxidation number of manganese in $KMnO_4$?

A) +7 B) +2 C) +3 D) +4

____ 2. What is the oxidation state of nitrogen in the compound NH_4Br?

A) –1 B) +2 C) –3 D) +4

____ 3. 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 +5
C) +1 to –1 D) +5 to –1

____ 4. Given the reaction that occurs in an electrochemical cell:

$Zn(s) + CuSO_4(aq) \rightarrow ZnSO_4(aq) + Cu(s)$

During this reaction, the oxidation number of Zn changes from

A) 0 to +2 B) 0 to –2
C) +2 to 0 D) –2 to 0

____ 5. In an oxidation-reduction reaction, the number of electrons lost is

A) equal to the number of electrons gained
B) equal to the number of protons gained
C) less than the number of electrons gained
D) less than the number of protons gained

____ 6. The chemical process in which electrons are gained by an atom or an ion is called

A) addition B) oxidation
C) reduction D) substitution

____ 7. Which changes occur when Pt^{2+} is reduced?

A) The Pt^{2+} gains electrons and its oxidation number increases.
B) The Pt^{2+} gains electrons and its oxidation number decreases.
C) The Pt^{2+} loses electrons and its oxidation number increases.
D) The Pt^{2+} loses electrons and its oxidation number decreases.

____ 8. Given the balanced ionic equation:

$Zn(s) + Cu^{2+}(aq) \rightarrow Zn^{2+}(aq) + Cu(s)$

Which equation represents the oxidation half-reaction?

A) $Zn(s) + 2e^- \rightarrow Zn^{2+}(aq)$
B) $Zn(s) \rightarrow Zn^{2+}(aq) + 2e^-$
C) $Cu^{2+}(aq) \rightarrow Cu(s) + 2e^-$
D) $Cu^{2+}(aq) + 2e^- \rightarrow Cu(s)$

____ 9. In the reaction

$2\ Al(s) + 3\ Fe^{2+}(aq) \rightarrow 2\ Al^{3+}(aq) + 3\ Fe^0(s)$,

the species oxidized is

A) Al(s) B) $Al^{3+}(aq)$
C) Fe(s) D) $Fe^{2+}(aq)$

10. In the half-reaction

$Pb^0 \rightarrow Pb^{2+} + 2e^-$, the Pb^0

A) gains protons B) loses protons
C) is oxidized D) is reduced

11. In the reaction

$Mg + 2\ HCl \rightarrow MgCl_2 + H_2$,

the magnesium

A) gains electrons and is reduced
B) gains electrons and is oxidized
C) loses electrons and is reduced
D) loses electrons and is oxidized

12. Which half-reaction equation represents the reduction of an iron(II) ion?

A) $Fe^{2+} \rightarrow Fe^{3+} + e^-$
B) $Fe^{2+} + 2e^- \rightarrow Fe$
C) $Fe^{3+} + e^- \rightarrow Fe^{2+}$
D) $Fe \rightarrow Fe^{2+} + 2e^-$

13. Which half-reaction correctly represents reduction?

A) $Ca^{2+} \rightarrow Ca + 2e^-$
B) $Ca^{2+} + 2e^- \rightarrow Ca$
C) $2\ F^- + 2e^- \rightarrow F_2$
D) $2\ F^- \rightarrow F_2 + 2e^-$

14. Which half-reaction equation represents the reduction of a potassium ion?

A) $K^+ + e^- \rightarrow K$ B) $K + e^- \rightarrow K^+$
C) $K^+ \rightarrow K + e^-$ D) $K \rightarrow K^+ + e^-$

15. What occurs during the reaction below?

$4\ HCl + MnO_2 \rightarrow MnCl_2 + 2\ H_2O + Cl_2$

A) The manganese is reduced and its oxidation number changes from +4 to +2.
B) The manganese is oxidized and its oxidation number changes from +4 to +2.
C) The manganese is reduced and its oxidation number changes from +2 to +4.
D) The manganese is oxidized and its oxidation number changes from +2 to +4.

16. In which compound does carbon have an oxidation state of –4?

A) CO B) CO_2
C) CCl_4 D) CH_4