

Unit 4 – Chapter 4: Types of Reactions

Assignment #3: Redox Reactions & Half-Reaction Method - Answers!

1. A) Yes - Red: Ag^{+1} , Oxid: Cu
B) No
C) No
D) Yes - Red: SiCl_4 , Oxid: Mg
E) No
2. A) Yes – Red: H_2O , Oxid: CH_4
B) Yes – Red: AgNO_3 , Oxid: CH_4
C) Yes – Red: HCl, Oxid: Zn
D) No
3. A) $\text{H}^+ + \text{HCl} + \text{Zn} \rightarrow \text{H}_2 + \text{Cl}^- + \text{Zn}^{2+}$
B) $6 \text{H}^+ + 3 \text{ClO}^- + 6 \text{I}^- \rightarrow 3 \text{Cl}^- + 3 \text{H}_2\text{O} + 2 \text{I}_3^-$
C) $4 \text{H}^+ + 4 \text{NO}_3^- + 7 \text{H}_2\text{O} + 3 \text{As}_2\text{O}_3 \rightarrow 4 \text{NO} + 6 \text{H}_3\text{AsO}_4$
D) $10 \text{Br}^- + 16 \text{H}^+ + 2 \text{MnO}_4^- \rightarrow 2 \text{Mn}^{2+} + 5 \text{Br}_2 + 8 \text{H}_2\text{O}$
E) $8 \text{H}^+ + \text{Cr}_2\text{O}_7^{2-} + 3 \text{CH}_3\text{OH} \rightarrow 2 \text{Cr}^{3+} + 3 \text{CH}_2\text{O} + 7 \text{H}_2\text{O}$
4. A) $8 \text{H}^+ + 2 \text{NO}_3^- + 3 \text{Cu} \rightarrow 2 \text{NO} + 4 \text{H}_2\text{O} + 3 \text{Cu}^{2+}$
B) $14 \text{H}^+ + \text{Cr}_2\text{O}_7^{2-} + 6 \text{Cl}^- \rightarrow 2 \text{Cr}^{3+} + 7 \text{H}_2\text{O} + 3 \text{Cl}_2$
C) $\text{PbO}_2 + 2 \text{H}_2\text{SO}_4 + \text{Pb} \rightarrow 2 \text{PbSO}_4 + 2 \text{H}_2\text{O}$
D) $14 \text{H}^+ + 5 \text{NaBiO}_3 + 2 \text{Mn}^{2+} \rightarrow 5 \text{Bi}^{3+} + 5 \text{Na}^+ + 7 \text{H}_2\text{O} + 2 \text{MnO}_4^-$
E) $8 \text{H}^+ + \text{H}_3\text{AsO}_4 + 4 \text{Zn} \rightarrow \text{AsH}_3 + 4 \text{H}_2\text{O} + 4 \text{Zn}^{2+}$

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