

CHEMISTRY 2.7

ANSWERS

WORKSHEET ONE

REDOX #1

1. (a) +1 (b) +4 (c) +4 (d) +2 (e) -1 (f) -1
(g) +3 (h) 0 (i) +6 (j) +2 (k) +3 (l) +7
(m) +2 (n) -2 (o) +6 (p) +4 (q) +2 (r) +1
2. (a) Oxidation (b) Reduction (c) Reduction (d) Oxidation.
3. (a) Reduction (b) Reduction (c) Oxidation (d) Oxidation
(e) Reduction (f) Oxidation (g) Reduction (h) Reduction
(i) Reduction (j) Reduction.
4. (a) $\text{Cu} \rightarrow \text{Cu}^{2+} + 2\text{e}^-$
(b) $\text{Fe}^{2+} \rightarrow \text{Fe}^{3+} + \text{e}^-$
(c) $\text{SO}_3^{2-} + \text{H}_2\text{O} \rightarrow \text{SO}_4^{2-} + 2\text{H}^+ + 2\text{e}^-$
(d) $\text{Cr}_2\text{O}_7^{2-} + 14\text{H}^+ + 6\text{e}^- \rightarrow 2\text{Cr}^{3+} + 7\text{H}_2\text{O}$
(e) $\text{MnO}_4^- + 8\text{H}^+ + 5\text{e}^- \rightarrow \text{Mn}^{2+} + 4\text{H}_2\text{O}$
5. (a) Oxidant = Iodine Reductant = hydrogen
(b) Oxidant = hydrogen Reductant = iron
(c) Oxidant = copper Reductant = magnesium
(d) Oxidant = iodine Reductant = iron
6. (a) Oxidised = bromine Reduced = chlorine
(b) Oxidised = zinc Reduced = hydrogen
(c) Oxidised = sulfur Reduced = oxygen
(d) Oxidised = magnesium Reduced = copper
(e) Oxidised = sulfur Reduced = iron
(f) Oxidised = bromine Reduced = chromium.
7. (a) Bromine is oxidised because in going from Bromide ions to bromine gas it must lose electrons and loss of electrons is oxidation. Chlorine is reduced because in going from chlorine gas to chloride ions it must gain electrons and gain of electrons is reduction.
(b) Sulfur is oxidised because in going from SO_2 to SO_3 it increases its oxidation number from 4 to 6 and increasing oxidation number is oxidation. Oxygen is reduced because in going from oxygen gas to SO_3 its oxidation number goes down from 0 to -2.
(c) Magnesium is oxidised because it loses 2 electrons, while copper is reduced because it gains 2 electrons.