

Part I: Choose the *best* answer for questions 1 – 11.

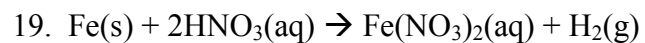
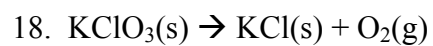
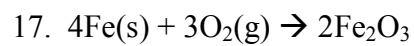
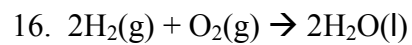
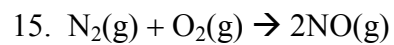
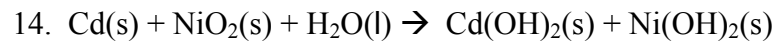
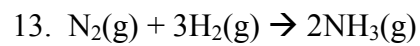
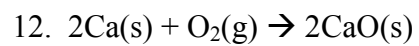
- During which process does an atom gain one or more electrons?
(1) transmutation (2) reduction (3) oxidation (4) neutralization
- Which balanced equation represents a redox reaction?
(1) $\text{PCl}_5 \rightarrow \text{PCl}_3 + \text{Cl}_2$ (2) $\text{KOH} + \text{HCl} \rightarrow \text{KCl} + \text{H}_2\text{O}$
(3) $\text{LiBr} \rightarrow \text{Li}^+ + \text{Br}^-$ (4) $\text{Ca}^{2+} + \text{SO}_4^{2-} \rightarrow \text{CaSO}_4$
- Which half-reaction correctly represents reduction?
(1) $\text{Mn}^{4+} \rightarrow \text{Mn}^{3+} + \text{e}^-$ (2) $\text{Mn}^{4+} \rightarrow \text{Mn}^{7+} + 3\text{e}^-$
(3) $\text{Mn}^{4+} + \text{e}^- \rightarrow \text{Mn}^{3+}$ (4) $\text{Mn}^{4+} + 3\text{e}^- \rightarrow \text{Mn}^{7+}$
- Given the balanced equation representing a reaction:
$$2\text{KClO}_3(\text{s}) \rightarrow 2\text{KCl}(\text{s}) + 3\text{O}_2(\text{g})$$

The oxidation state of chlorine in this reaction changes from
(1) -1 to +1 (2) -1 to +5 (3) +1 to -1 (4) +5 to -1
- Which half-reaction equation represents the reduction of a potassium ion?
(1) $\text{K}^+ + \text{e}^- \rightarrow \text{K}$ (2) $\text{K} + \text{e}^- \rightarrow \text{K}^+$ (3) $\text{K}^+ \rightarrow \text{K} + \text{e}^-$ (4) $\text{K} \rightarrow \text{K}^+ + \text{e}^-$
- In a redox reaction, the total number of electrons lost is
(1) less than the total number of electrons gained
(2) greater than the total number of electrons gained
(3) equal to the total number of electrons gained
(4) equal to the total number of protons gained
- Which balanced equation represents a redox reaction?
(1) $\text{CuCO}_3(\text{s}) \rightarrow \text{CuO}(\text{s}) + \text{CO}_2(\text{g})$
(2) $2\text{KClO}_3(\text{s}) \rightarrow 2\text{KCl}(\text{s}) + 3\text{O}_2(\text{g})$
(3) $\text{AgNO}_3(\text{aq}) + \text{KCl}(\text{aq}) \rightarrow \text{AgCl}(\text{s}) + \text{KNO}_3(\text{aq})$
(4) $\text{H}_2\text{SO}_4(\text{aq}) + 2\text{KOH}(\text{aq}) \rightarrow \text{K}_2\text{SO}_4(\text{aq}) + 2\text{H}_2\text{O}(\text{l})$
- Which changes occur when Pt^{2+} is reduced?
(1) The Pt^{2+} gains electrons and its oxidation number increases.
(2) The Pt^{2+} gains electrons and its oxidation number decreases.
(3) The Pt^{2+} loses electrons and its oxidation number increases.
(4) The Pt^{2+} loses electrons and its oxidation number decreases.
- Given the balanced ionic equation representing a reaction:
$$2\text{Al}^{3+}(\text{aq}) + 3\text{Mg}(\text{s}) \rightarrow 3\text{Mg}^{2+}(\text{aq}) + 2\text{Al}(\text{s})$$

In this reaction, electrons are transferred from
(1) Al to Mg^{2+} (2) Al^{3+} to Mg (3) Mg to Al^{3+} (4) Mg^{2+} to Al
- What is the oxidation number of chromium in the chromate ion, CrO_4^{2-} ?
(1) +6 (2) +2 (3) +3 (4) +8
- Given the balanced equation representing a redox reaction:
$$2\text{Al} + 3\text{Cu}^{2+} \rightarrow 2\text{Al}^{3+} + 3\text{Cu}$$

Which statement is true about this reaction?
(1) Each Al loses 2e^- and each Cu^{2+} gains 3e^- . (2) Each Al loses 3e^- and each Cu^{2+} gains 2e^- .
(3) Each Al^{3+} gains 2e^- and each Cu loses 3e^- . (4) Each Al^{3+} gains 3e^- and each Cu loses 2e^- .

Part II: For each reaction, write out the oxidation and reduction half reactions.



Redox Practice – Answer Key

1. (2)
2. (1)
3. (3)
4. (4)
5. (1)
6. (3)
7. (2)
8. (2)
9. (3)
10. (1)
11. (2)

