

Oxidation-Reduction Reactions

- 4.35 (a) In terms of electron transfer, *oxidation* is the loss of electrons by a substance, and *reduction* is the gain of electrons (LEO says GER).
- (b) Relative to oxidation numbers, when a substance is oxidized, its oxidation number increases. When a substance is reduced, its oxidation number decreases.

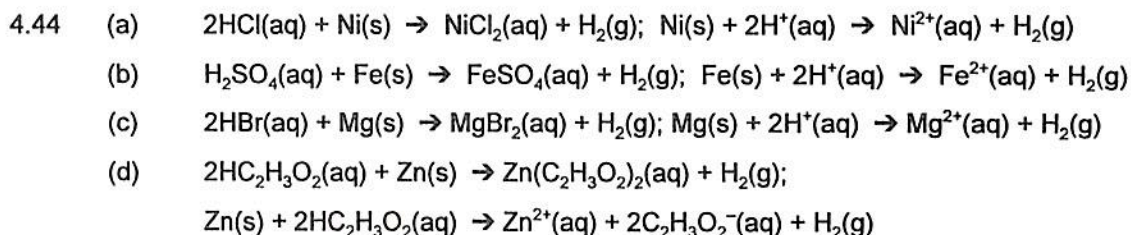
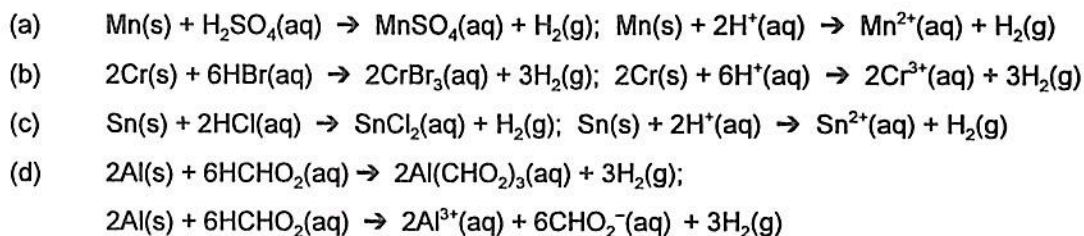
4.39 (a) +6 (b) +4 (c) +7 (d) +1 (e) 0 (f) -1 (O_2^{2-} is peroxide ion)

4.40 (a) +4 (b) +4 (c) +3 (d) -3 (e) +3 (f) +6

4.43 *Analyze.* Given: reactants. Find: balanced molecular and net ionic equations.

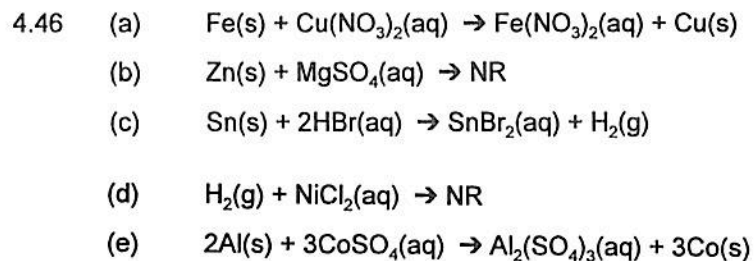
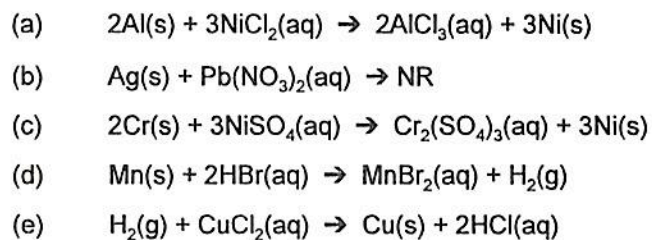
Plan. Metals oxidized by H^+ form cations. Predict products by exchanging cations and balance. The anions are the spectator ions and do not appear in the net ionic equations.

Solve:



4.45 *Analyze.* Given: a metal and an aqueous solution. Find: balanced equation.

Plan. Use Table 4.5. If the metal is above the aqueous solution, reaction will occur; if the aqueous solution is higher, NR. If reaction occurs, predict products by exchanging cations (a metal ion or H^+), then balance the equation. *Solve:*



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