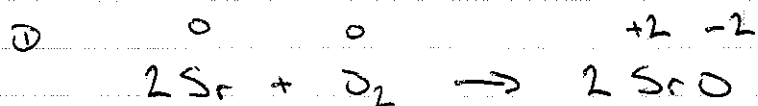


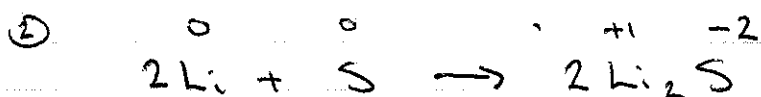
## 20 Oxidation-Reduction Reactions

### Section 20.1



Sr is oxidized; O is reduced

O<sub>2</sub> is oxidizing agent; Sr is reducing agent



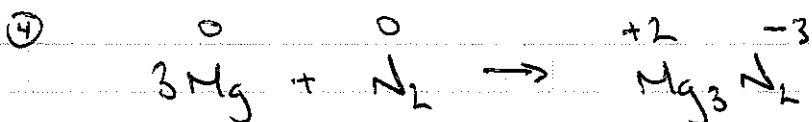
Li is oxidized; S is reduced

S is oxidizing agent; Li is reducing agent



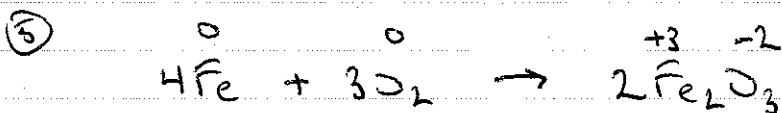
Cs is oxidized; Br is reduced

Br<sub>2</sub> is ox. agent; Cs is red. agent



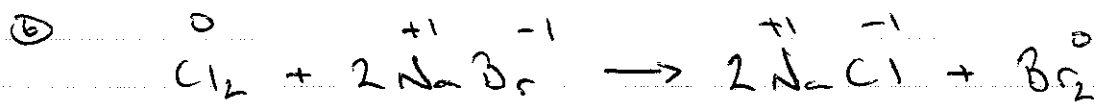
Mg is oxidized; N is reduced

N<sub>2</sub> is ox. agent; Mg is red. agent



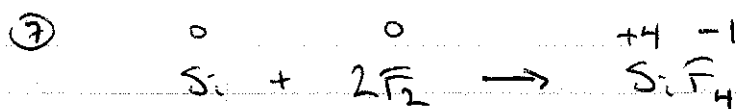
Fe is oxidized; O is reduced

O<sub>2</sub> is ox. agent; Fe is red. agent



Br is oxidized; Cl is reduced

$\text{Cl}_2$  is ox. agent;  $\text{NaBr}$  is red. agent



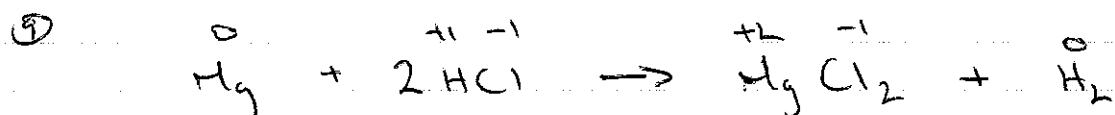
Si is oxidized; F is reduced

$\text{F}_2$  is ox. agent; Si is red. agent



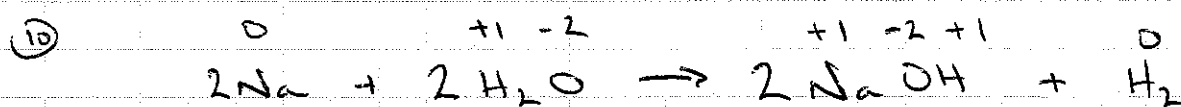
Ca is oxidized; O is reduced

$\text{O}_2$  is ox. agent; Ca is red. agent



Mg is oxidized; H is reduced

HCl is ox. agent; Mg is red. agent



Na is oxidized; H is reduced

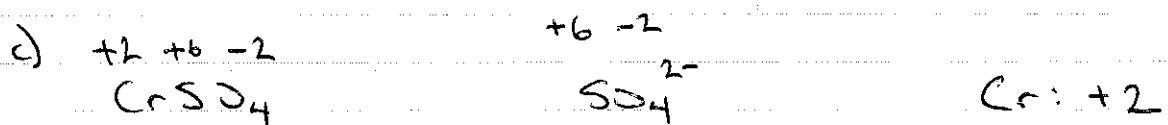
$\text{H}_2\text{O}$  is ox. agent; Na is red. agent

# Section 20.2

- ① a) 0      c) -2      e) 0      g) +4  
      b) +1      d) +3      f) +2      h) -1



$$\begin{aligned}
 2(+1) + 2x + 7(-2) &= 0 \\
 2 + 2x - 14 &= 0 \\
 2x &= 12 \\
 x &= +6
 \end{aligned}$$



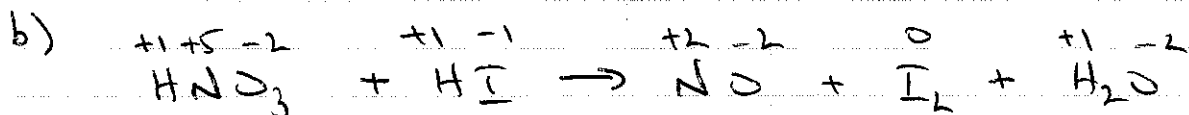
$$\begin{aligned}
 x + 6 + 4(-2) &= 0 \\
 x - 2 &= 0 \\
 x &= +2
 \end{aligned}$$



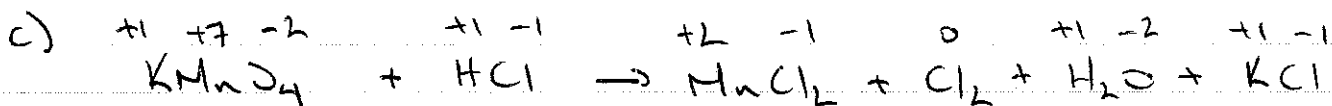
$$\begin{aligned}
 x + 4(-2) &= -2 \\
 x - 8 &= -2 \\
 x &= +6
 \end{aligned}$$



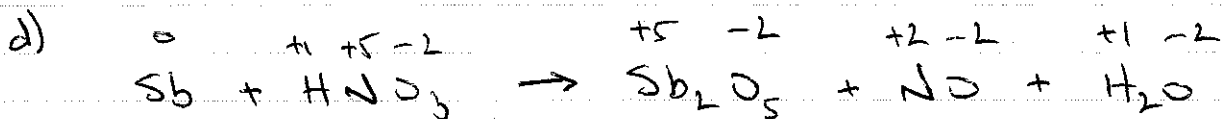
Oxidized: C      Reduced: S



Ox: I      Red: N



Ox: Cl      Red: Mn



Ox: Sb      Red: N

④ a) Ox. Agent:  $\text{H}_2\text{SO}_4$

Red. Agent: C

b) Ox. Agent:  $\text{HNO}_3$

Red. Agent: HI

c) Ox. Agent:  $\text{KMnO}_4$

Red. Agent: HCl

d) Ox. Agent:  $\text{HNO}_3$

Red. Agent: Sb