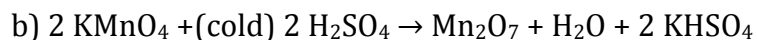
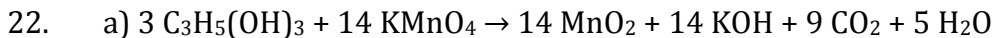


1. $[\text{NH}_3] = 0.200 \text{ M}$, $[\text{N}_2] = 0.150 \text{ M}$
2. 60%
3. 5.1×10^{-3}
4. $[\text{Fe}^{3+}]$ at pH=7 (in M): $4\text{E-}17 \pm 1\text{E-}17$ $[\text{Fe}^{3+}]$ at pH=10 (in M): $4\text{E-}26 \pm 1\text{E-}26$
5. Minimum: 9.0 ± 0.1 Maximum: 9.5 ± 0.1
6. 10.69 ± 0.011
7. $4.3\text{e-}4 \pm 0.2\text{e-}4$
8. N_2O_4 5.3 ± 0.1 NO_2 7.6 ± 0.1
9. $1.79 \times 10\text{E-}5$
10. 2
11. A
12. N, Kr, Cl
13. less soluble
14. NaNO_3 , KI, KNO_3
15. a
16. purple
17. No
18. $[\text{Pb}^{2+}] = 0.0000067 \text{ M}$
 $[\text{OH}^-] = 0.0000134 \text{ M}$
 $K_{\text{sp}} = 1.20 \times 10^{-15}$ 19. 2-
19. 2-

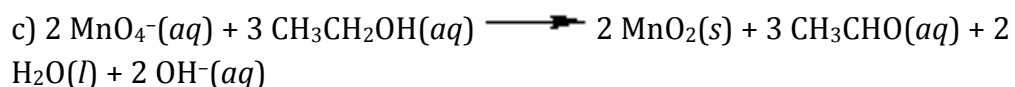
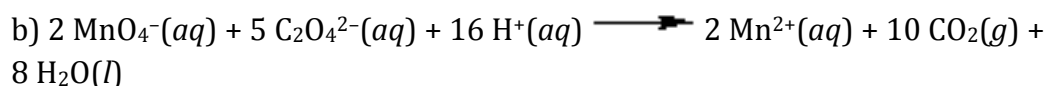
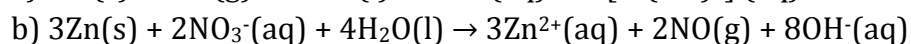
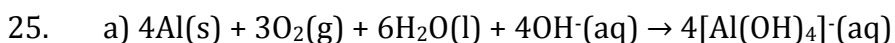
20. 2+

21. 1-



23. Potassium bisulfate and Manganese heptoxide (or manganese (VII) oxide)

24. It decomposes to permanganic acid



27. The iodide reacts with persulfate in a slow step to produce iodine and sulfate. At that point, the thiosulfate reacts with the iodine formed to produce iodide.