Chemistry 30 Redox Balancing Name: _____

PRACTICE PROBLEMS

1. Balance the following reactions using the half-reaction method. All reactions are carried out in acidic solution.
   a. $Cu(cr) + AgNO_3(aq) \rightarrow Cu(NO_3)_2(aq) + Ag(cr)$
   b. $HNO_3(aq) + H_2S(g) \rightarrow S(cr) + NO(g)$
   c. $Pb(cr) + PbO_2(cr) + H_2SO_4(aq) \rightarrow PbSO_4(cr)$

PRACTICE PROBLEMS

Balance the following equations using the half-reaction method. All reactions occur in acidic solution unless indicated.

25. $MnO_4^-(aq) + H_2SO_3(aq) + H^+(aq) \rightarrow Mn^{2+}(aq) + HSO_4^-(aq) + H_2O(l)$
26. $Cr_2O_7^{2-}(aq) + H^+(aq) + I^-(aq) \rightarrow Cr^{3+}(aq) + I_2(cr) + H_2O(l)$
27. $NH_3(g) + O_2(g) \rightarrow NO(g) + H_2O(g)$ (*basic*)
28. $As_2O_3(cr) + H^+(aq) + NO_3^-(aq) + H_2O(l) \rightarrow H_3AsO_4(aq) + NO(g)$
29. $I_2(cr) + H_2SO_3(aq) + H_2O(l) \rightarrow I^-(aq) + HSO_4^-(aq) + H^+(aq)$
30. $H_3AsO_4(aq) + Zn(cr) \rightarrow AsH_3(g) + Zn^{2+}(aq)$
31. $MnO_4^{2-}(aq) + H^+(aq) \rightarrow MnO_4^-(aq) + MnO_2(cr)$
32. $MnO_4^-(aq) + SO_2(g) \rightarrow Mn^{2+}(aq) + SO_4^{2-}(aq) + H^+(aq)$
33. $NO_2(g) + OH^-(aq) \rightarrow NO_2^-(aq) + NO_3^-(aq)$ (*basic*)
34. $HgS(cr) + Cl^-(aq) + NO_3^-(aq) \rightarrow HgCl_4^{2-}(aq) + S(cr) + NO(g)$