

1.  $O_2$  is reduced & is the oxidizing agent  
 $Nu$  is oxidized  $0 \rightarrow 1+$  and is the reducing agent
2.  $0.235g (.925) NaOH = .217375/39.9971 g/mol = .00543 mol$   
 $0.235g (.0750) Ca(OH)_2 = .017625/74.093 g/mol = 2.3788 \times 10^{-4} mol$   
 $\times 2$   
 $4.758 \times 10^{-4} mol OH^-$
- $mol = .00591 mol OH^- \rightarrow .00591 mol H^+$   
 $.00591 mol HCl / .0456 L = .12961 = \boxed{.13 M}$
3.  $0.9 mg F^- / L \quad .0009 g F^- \quad \frac{.0009 g}{18.9984032 g/mol} = 4.737 \times 10^{-5} mol F^-$   
 $4.737 \times 10^{-5} mol NaF / L = \boxed{5 \times 10^{-5} M}$
4. a. No reaction  
 b.  $Cu^{2+}(aq) + CO_3^{2-}(aq) \rightarrow CuCO_3(s)$
5.  $.02500 L (0.132 mol/L) HNO_3 = .00330 mol$   
 $.01000 L (0.318 mol/L) KOH = .00318 mol$  } at  $1.2 \times 10^{-4} mol$  acid left  
Acidic
- $\frac{1.2 \times 10^{-4} mol HNO_3}{.03500 L} = .00343 M HNO_3 \quad pH = -\log(.00343)$   
 $= \boxed{2.46}$
6.  $(.02872 L)(0.05051 M) = .001451 mol Cr_2O_7^{2-} \left( \frac{6 mol Fe^{2+}}{1 mol Cr_2O_7^{2-}} \right) = .008704 mol Fe^{2+}$   
 $.008704 mol Fe \left( \frac{55.85 g}{mol} \right) = .486 g Fe \quad \frac{.486 g Fe}{0.9132 g Sample} = .5323 = \boxed{53.23\%}$
7. Fe and Mn are both reduced which is impossible