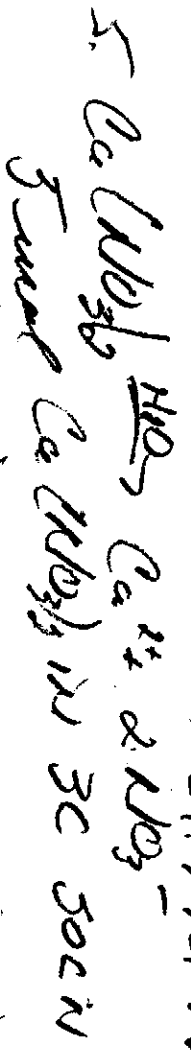


a.  $(35 \text{ g NaOH} / 40 \text{ g/mol}) = 0.875 \text{ mol NaOH}$   
 $0.875 \text{ mol NaOH} \times 2 = 1.75 \text{ mol Na}^+$

b.  $(35 \text{ g NaOH} / 40 \text{ g/mol}) = 0.875 \text{ mol NaOH}$   
 $0.875 \text{ mol NaOH} \times 2 = 1.75 \text{ mol Na}^+$

c.  $(.598 \text{ mol Na}^+) \times 2 = 1.196 \text{ mol Na}^+$   
 From 1:1:1 mol ratio in structure form

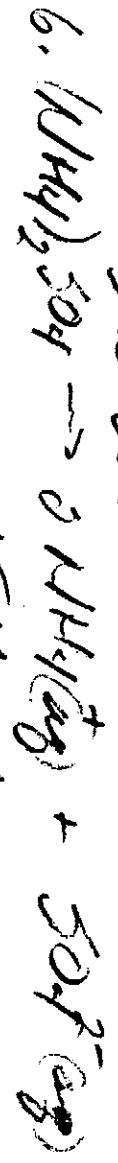
$1.196 \text{ mol Na}^+ \times 35 \text{ L} = 41.86 \text{ mol Na}^+$



a.  $(3 \text{ mol} \times 164 \text{ g/mol}) = 492 \text{ g Ca}(\text{NO}_3)_2$

b.  $(3 \text{ mol} \times 2 \times 62 \text{ g/mol}) = 372 \text{ g NO}_3^-$   
 $(372 \text{ g NO}_3^-) / (62 \text{ g/mol}) = 6 \text{ mol NO}_3^-$

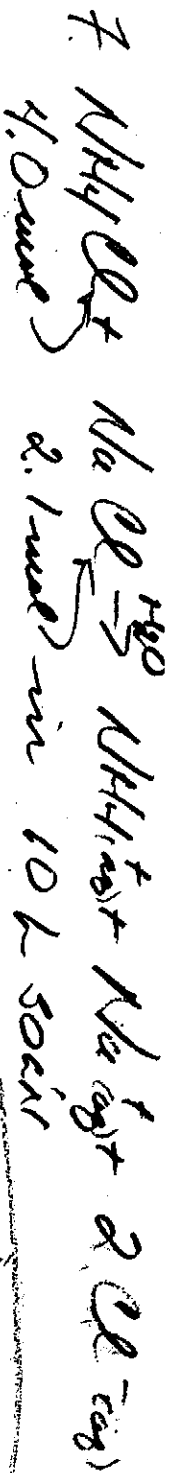
c.  $(10 \text{ mol NO}_3^-) / (3 \text{ L solution}) = 3.33 \text{ M NO}_3^-$



a.  $\text{NH}_4^+ \text{ at } 300 \text{ g} \times 2 = 600 \text{ g}$

b.  $(1.5 \text{ mol/L} \times 0.25 \text{ L}) = 0.375 \text{ mol } (\text{NH}_4)_2\text{SO}_4$

c.  $0.375 \text{ L } 50 \text{ cm}^3$



$$= 4 \text{ meq } \text{NH}_4^+ \text{ in } 10 \text{ L} = \boxed{.4 \text{ M } \text{NH}_4^+}$$

$$= 2.1 \text{ meq } \text{Na}^+ \text{ in } 10 \text{ L} = \boxed{.21 \text{ M } \text{Na}^+}$$

$$= 4 \text{ meq } \text{Cl}^- + 2.1 \text{ meq } \text{O}^{2-} \text{ in } 10 \text{ L}$$

$$= \boxed{.61 \text{ M } \text{Cl}^-}$$



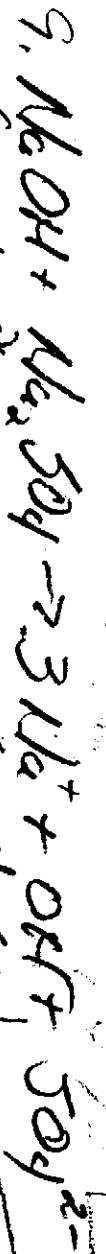
$$= \boxed{.3 \text{ meq } \text{Ca}^{2+} \text{ in } 1 \text{ L} = .3 \text{ M } \text{Ca}^{2+}}$$

$$= \boxed{.4 \text{ meq } \text{H}_3\text{B}^{3-} \text{ in } 1 \text{ L} = .4 \text{ M } \text{H}_3\text{B}^{3-}}$$

$$= \left( \frac{.3 \text{ meq } \text{Ca}^{2+} + 2 \text{ meq } \text{Br}^-}{\text{meq } \text{CaBr}_2} \right) = \boxed{.6 \text{ meq } \text{Br}^- \text{ from } \text{CaBr}_2}$$

$$\left( \frac{.4 \text{ meq } \text{H}_3\text{B}^{3-}}{.2 \text{ meq } \text{Br}^-} \right) = \boxed{2 \text{ meq } \text{Br}^- \text{ from } \text{H}_3\text{B}^{3-}}$$

$$\frac{1.4 \text{ meq } \text{Br}^- \text{ in } 1 \text{ L} = \boxed{.14 \text{ M } \text{Br}^-}}$$



$$\left( \frac{30g \text{ NaOH}}{40g \text{ meq}} = 75 \text{ meq NaOH} \right) \left( \frac{40g \text{ Na}_2\text{SO}_4}{142g \cdot 0.4 \text{ meq}} \right) = \boxed{.38 \text{ meq } \text{Na}_2\text{SO}_4}$$

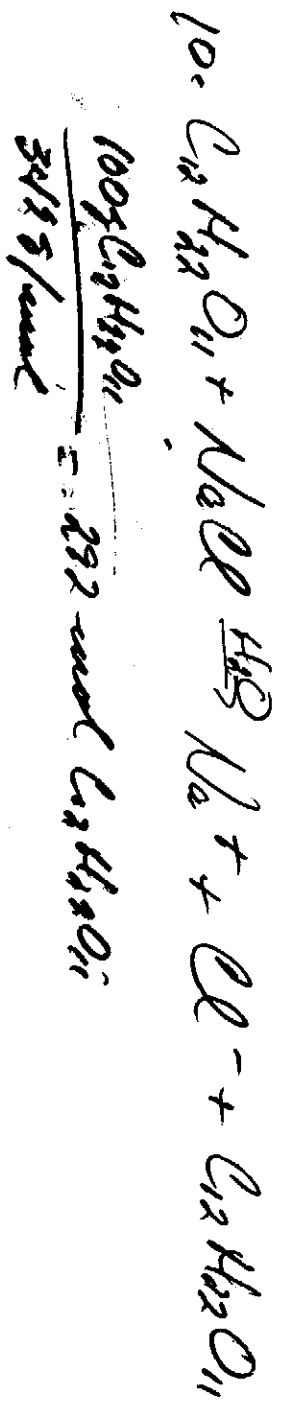
$$= \left( \frac{.38 \text{ meq } \text{Na}_2\text{SO}_4 \cdot 2 \text{ meq } \text{Na}^+}{1 \text{ meq } \text{Na}_2\text{SO}_4} \right) = \boxed{.76 \text{ meq } \text{Na}^+ \text{ from } \text{Na}_2\text{SO}_4}$$

$$= \left( \frac{.75 \text{ meq } \text{NaOH}}{1 \text{ meq } \text{Na}^+} \right) \left( \frac{1 \text{ meq } \text{Na}^+}{1 \text{ meq } \text{Na}^+} \right) = \boxed{.75 \text{ meq } \text{Na}^+ \text{ from } \text{NaOH}}$$

9. Combustion

(3)

$$\begin{aligned} & (.75 \text{ mole } \text{NaOH}) \left( \frac{1 \text{ mole } \text{OH}^-}{1 \text{ mole } \text{NaOH}} \right) = .75 \text{ mole } \text{OH}^- \text{ in } 1 \text{ L} \\ & \left[ = .75 \text{ M } \text{OH}^- \right] \\ & (.75 \text{ mole } \text{Na}_2\text{SO}_4) \left( \frac{1 \text{ mole } \text{SO}_4^{2-}}{1 \text{ mole } \text{Na}_2\text{SO}_4} \right) = .75 \text{ mole } \text{SO}_4^{2-} \text{ in } 1 \text{ L} \\ & \left[ = .28 \text{ M } \text{SO}_4^{2-} \right] \end{aligned}$$



$$\begin{aligned} & \frac{.292}{.32} = 6.67 \text{ M } \text{Na}^+ \\ & = 6.67 \text{ M } \text{Na}^+ \\ & = 6.67 \text{ M } \text{O}^- \\ & = .292 \text{ mole } \text{C}_2\text{H}_2\text{O}_2^- = .97 \text{ M } \text{C}_2\text{H}_2\text{O}_2^- \\ & \quad .32 \end{aligned}$$