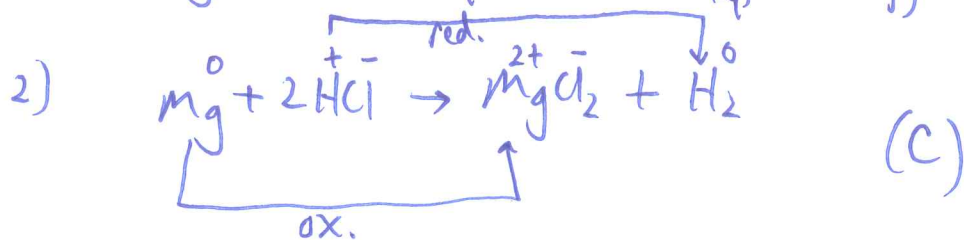
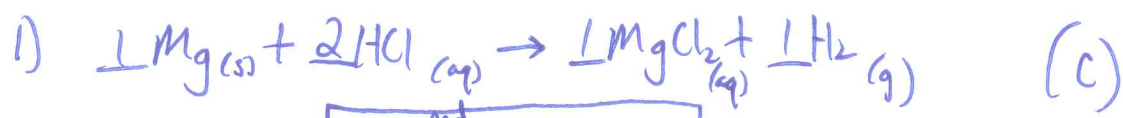


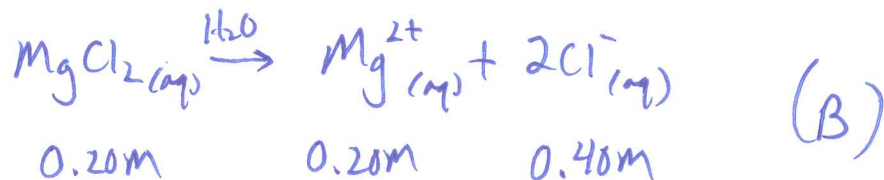
p.189 #1-15



3) $M_1 V_1 = M_2 V_2$

$$(0.60\text{M})(200.\text{mL}) = (x)(600.\text{mL})$$

$$x = 0.20\text{M}$$



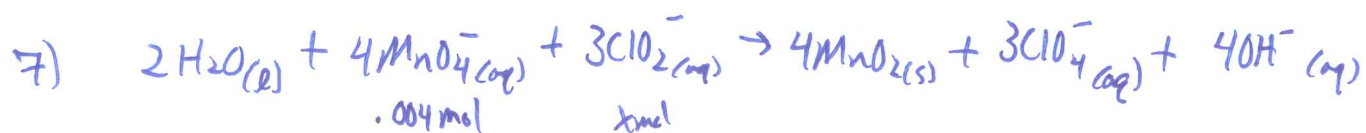
4) $M_1 V_1 = M_2 V_2$

$$(12.0\text{M})(20.0\text{mL}) = (0.500\text{M})(x)$$

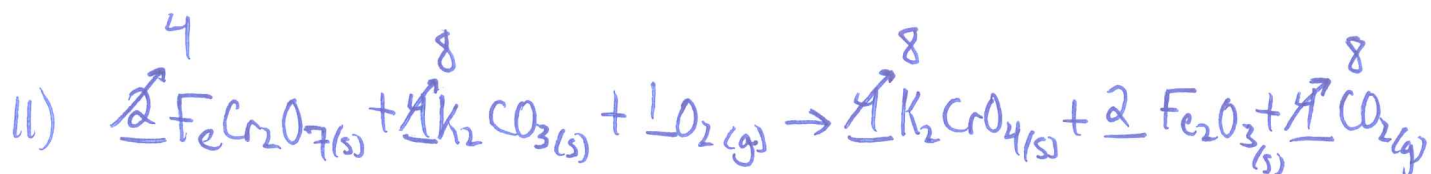
$$(x) = 480.\text{mL}, \text{ so } 460.\text{mL added (C)}$$

5) (D)

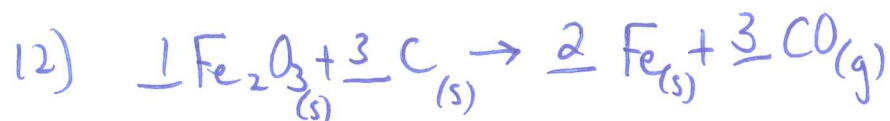
6) (A)



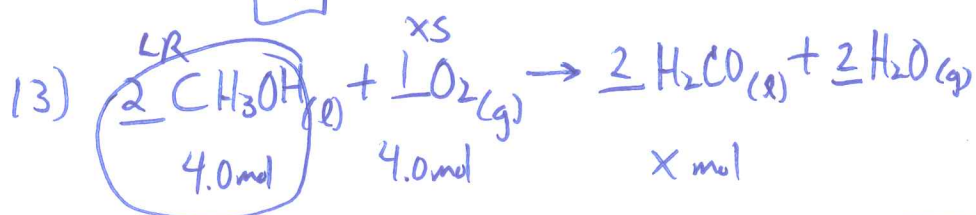
$$\frac{.004 \text{ mol MnO}_4^{-}}{4 \text{ mol MnO}_4^{-}} \Bigg/ \frac{3 \text{ mol ClO}_2^{-}}{4 \text{ mol MnO}_4^{-}} = \frac{0.003 \text{ mol}}{0.0152} = \boxed{0.20\text{M}} \quad (\text{B})$$



31

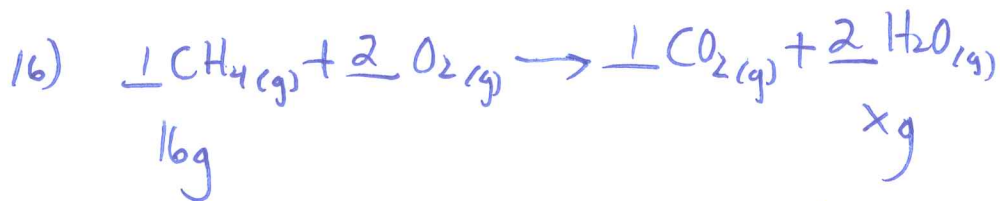


9

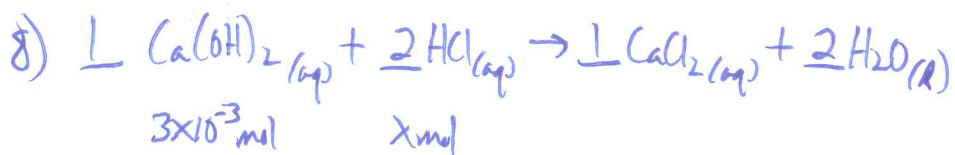


$$\frac{4.0 \text{ mol } \cancel{\text{CH}_3\text{OH}}}{2 \text{ mol } \cancel{\text{CH}_3\text{OH}}} \times \frac{2 \text{ mol H}_2\text{CO}}{2 \text{ mol } \cancel{\text{CH}_3\text{OH}}} = \boxed{4.0 \text{ mol H}_2\text{CO}}$$

$$\frac{4.0 \text{ mol O}_2}{1 \text{ mol O}_2} \times \frac{2 \text{ mol H}_2\text{CO}}{1 \text{ mol O}_2} = 8.0 \text{ mol H}_2\text{CO}$$



$$\frac{16g \text{ CH}_4}{16.05 \text{ g CH}_4} \times \frac{1 \text{ mol CH}_4}{1 \text{ mol CH}_4} \times \frac{2 \text{ mol H}_2\text{O}}{1 \text{ mol CH}_4} \times \frac{18.02 \text{ g H}_2\text{O}}{1 \text{ mol H}_2\text{O}} = \boxed{36g \text{ H}_2\text{O}}$$



$$\frac{3 \times 10^{-3} \text{ mol Ca(OH)}_2}{1 \text{ mol Ca(OH)}_2} \times \frac{2 \text{ mol HCl}}{1 \text{ mol Ca(OH)}_2} = \frac{(6 \times 10^{-3} \text{ mol})}{(0.156 \frac{\text{mol}}{\text{L}})} = \boxed{40.0 \text{ mL}} \quad (\text{B})$$

9) (D)

10) (A)

11) a) $\overset{2+}{\text{N}}\overset{2-}{\text{O}}$

b) $\overset{4+}{\text{N}}\overset{2-}{\text{O}}_2 \quad (\text{D})$

c) $\overset{+}{\text{N}}\overset{2-}{\text{O}}$

d) $\overset{5+}{\text{N}}\overset{2-}{\text{O}}_5$

12) (A)

13) $M_1 V_1 = M_2 V_2$

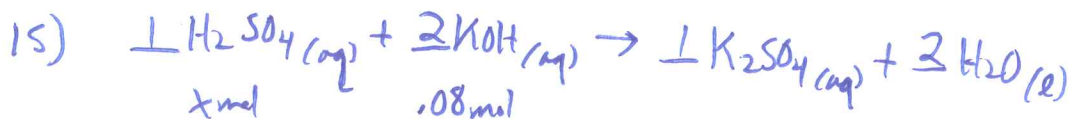
$$(1.00 \text{ M})(100.0 \text{ mL}) = (1.33 \text{ M})(x)$$

$$(x) = 75.2 \text{ mL} \rightarrow \boxed{25.0 \text{ mL}} \quad (\text{B})$$

14) $\text{NaCl} \quad (1.00 \frac{\text{mol}}{\text{L}})(.200 \text{ L}) = .200 \text{ mol}$

$\text{MgCl}_2 \quad (1.00 \frac{\text{mol}}{\text{L}})(.300 \text{ L}) = .300 \text{ mol} \times 2 = 0.600 \text{ mol}$

$$\frac{0.800 \text{ mol}}{0.500 \text{ L}} = \boxed{1.60 \text{ M}} \quad (\text{C})$$



$$\frac{.08 \text{ mol KOH}}{2 \text{ mol KOH}} \times \frac{1 \text{ mol H}_2\text{SO}_4}{1 \text{ mol H}_2\text{SO}_4} = \frac{(0.04 \text{ mol})}{(0.2000 \frac{\text{mol}}{\text{L}})} = 0.2000 \text{ L} \rightarrow \boxed{200.0 \text{ mL}} \quad (\text{A})$$