

## CHEM II - Solutions Practice Test

$$\textcircled{1} \quad 1.11 \text{ g/ml} \times \frac{1000 \text{ ml}}{1 \text{ L}} \times \frac{22 \text{ g H}_2\text{O}_2}{100 \text{ g solution}} \times \frac{1 \text{ mol}}{34.02 \text{ g}} = 7.178130511 \frac{\text{mol}}{\text{L}}$$

$\textcircled{7.2 \text{ M}}$

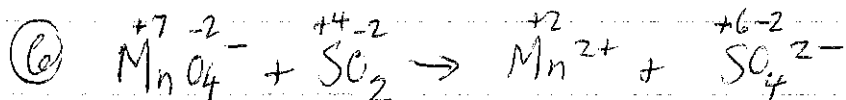
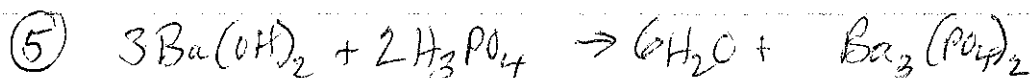
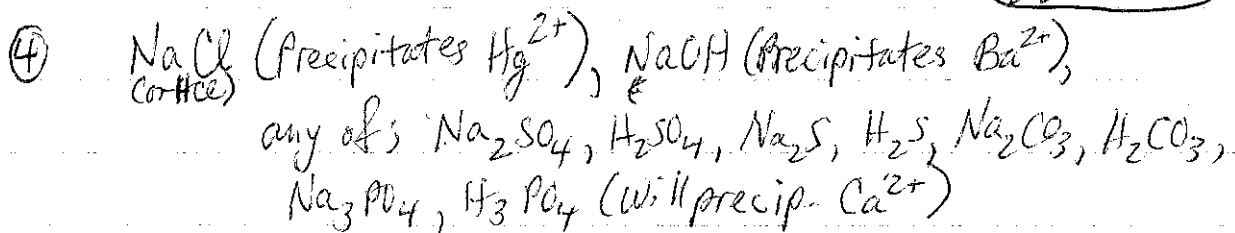
$$\textcircled{2} \quad 1.2 \text{ mol sucrose} \quad 100 \text{ g H}_2\text{O} \times \frac{1 \text{ mol}}{18.02 \text{ g}} = 5.549 \text{ mol}$$

$$X_{\text{H}_2\text{O}} = \frac{(5.549 \text{ mol})}{(5.549 \text{ mol} + 1.2 \text{ mol})} = 0.822$$

$$P = 0.822 \cdot 48 \text{ torr} = 39.465 \text{ torr} \quad \textcircled{39 \text{ torr}}$$

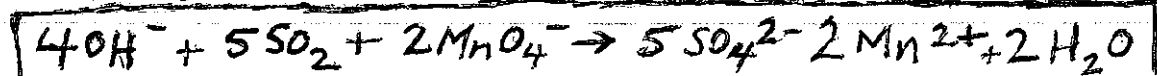
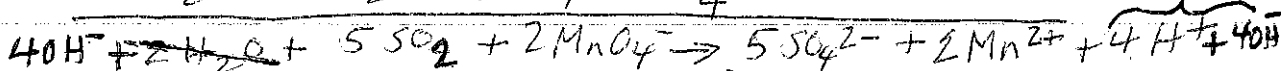
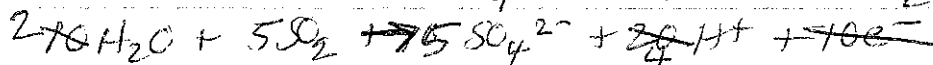
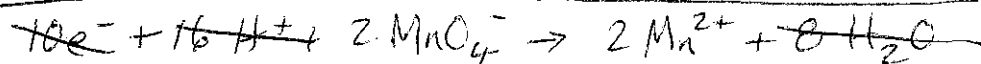
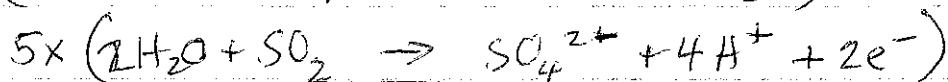
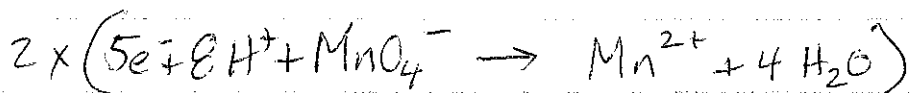
$$\textcircled{3} \quad \pi = iMRT = (2)(0.458 \text{ M})(0.08206 \frac{\text{L} \cdot \text{atm}}{\text{mol} \cdot \text{K}})(298 \text{ K}) = 22.39975408$$

$\textcircled{22.4 \text{ atm}}$

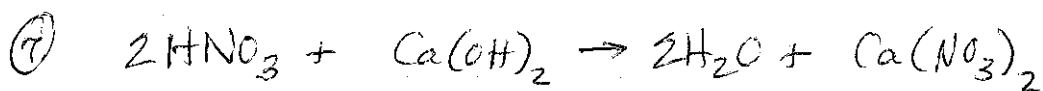


Mn is reduced, so  $\text{MnO}_4^-$  is the oxidizing agent

S is oxidized, so  $\text{SO}_2$  is the reducing agent



AP Chem - Solutions Practice Test (cont.)



$$\frac{8.06\text{g}}{\text{Ca(NO}_3)_2} \times \frac{1\text{mol}}{74.10\text{g}} \times \frac{2\text{HNO}_3}{1\text{Ca(OH)}_2} = 0.2175438596\text{mol HNO}_3$$

$$0.55\text{M} = \frac{0.2175\text{mol}}{x\text{L}} \quad x = \frac{0.2175\text{mol}}{0.55\text{M}} = 0.3955342903\text{L}$$

39.6 mL HNO<sub>3</sub>

⑧  $\Delta t = m K_f$

$$0.82^\circ\text{C} = m \cdot (5.12^\circ\text{C kg/mol})$$

$$m = \frac{0.82^\circ\text{C}}{(5.12^\circ\text{C kg/mol})} = 0.16015625\frac{\text{mol}}{\text{kg}}$$

$$0.00016015625\frac{\text{mol}}{\text{g}} \times 250.0\text{g} = 0.040039063\frac{\text{mol}}{\text{in } 15.0\text{g}}$$

374.63 g/mol

370 g/mol

⑨  $\pi = iMRT$

$$= (3)(0.0875\text{M})(0.08206\frac{\text{Latm}}{\text{molK}})(297\text{K})$$

$$= 6.39760275\text{atm}$$

6.38 atm

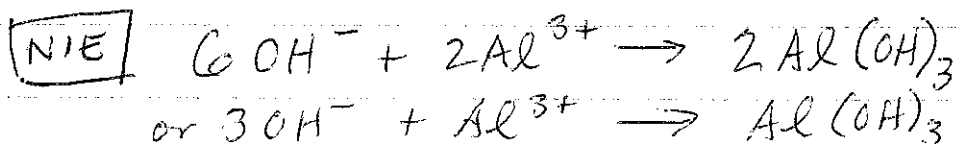
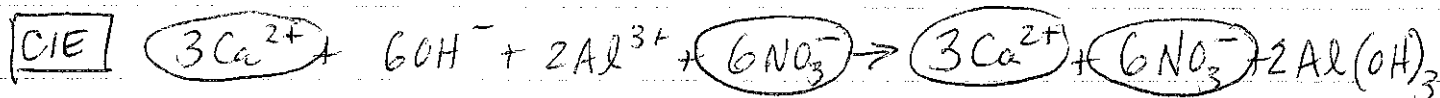
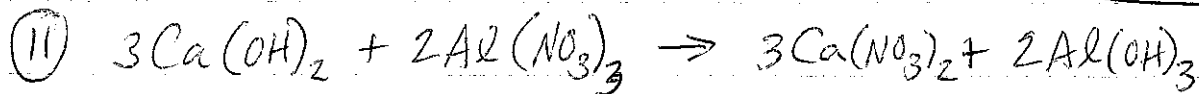
⑩  $0.50\text{M} = \frac{x}{1.25\text{L}}$

$$x = 0.625\text{mol}$$

$$12.0\text{M} = \frac{0.625\text{mol}}{y\text{L}}$$

$$y = 0.0520833333\text{L}$$

52.1 mL



SPEC. IONS  
 $\text{NO}_3^-$ ,  $\text{Ca}^{2+}$

# AP Chem - Solutions Prac. Test (cont.)

$$(12) \quad M = \frac{\text{mol}}{L} \quad 0.100 M = \frac{x}{0.0285 L} \quad x = 0.00285 \text{ mol}$$

$$M = \frac{0.00285 \text{ mol}}{0.0172 L} = 0.166 M \quad \text{Assuming a monoprotic acid.}$$

$$(13) \quad 60g \text{ CH}_2\text{Cl}_2 \times \frac{1 \text{ mol}}{84.93g} = 0.706 \text{ mol} \quad \chi = \frac{0.706 \text{ mol}}{(0.956 \text{ mol})} = 0.738$$

$$40g \text{ CH}_2\text{Br}_2 \times \frac{1 \text{ mol}}{159.80g} = 0.250 \text{ mol} \quad \chi = \frac{0.250 \text{ mol}}{(0.956 \text{ mol})} = 0.262$$

$$\begin{aligned} P_{\text{sol}} &= 0.738 \cdot 133 \text{ torr} + 0.262 \cdot 11.4 \text{ torr} \\ &= 98.2 \text{ torr} + 2.99 \text{ torr} \\ &= 101.2 \text{ torr} \end{aligned}$$