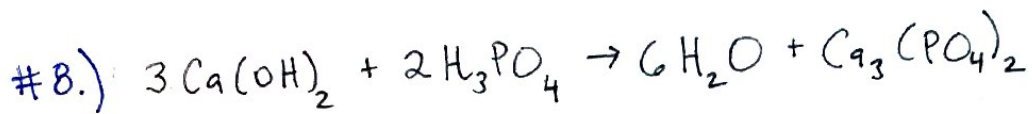


AP Unit 8 Quiz Review



$$100. \text{ mL} \times 0.5 \text{ M} = 50 \text{ mmol Ca}(\text{OH})_2 \times \frac{2 \text{ H}_3\text{PO}_4}{3 \text{ Ca}(\text{OH})_2} = \frac{100}{3} = 33 \text{ mmol H}_3\text{PO}_4$$

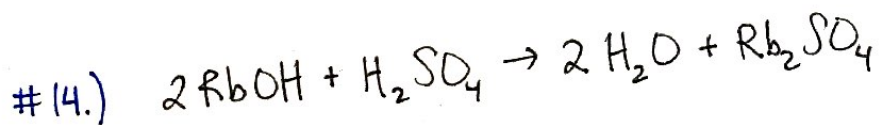
OR $\text{mol}_{\text{H}^+} = \text{mol}_{\text{OH}^-} = M_{\text{OH}^-} V_b$

$$= (0.5 \times 2)(0.100 \text{ L})$$
$$= 0.100 \text{ mol H}^+ \times \frac{1 \text{ H}_3\text{PO}_4}{3 \text{ H}^+} = 0.033 \text{ mol}$$
$$\frac{33}{1000} = 0.033 \text{ mol}$$

#11.) $M_a V_a = M_b V_b$ from graph: V @ eq. pt

$$M_a (80.0 \text{ mL}) = (1.0 \text{ M})(40.0 \text{ mL})$$

$$M_a = \frac{40}{80} = 0.5 \text{ M}$$



$$50. \text{ g RbOH} \times \frac{1 \text{ mol}}{100. \text{ g}} = 0.5 \text{ mol RbOH} \times \frac{1 \text{ H}_2\text{SO}_4}{2 \text{ RbOH}} = 0.25 \text{ mol H}_2\text{SO}_4$$

OR $\text{mol}_{\text{OH}^-} = M_{\text{H}^+} V_a$

$$0.5 \text{ mol} = M_{\text{H}^+} (0.5 \text{ L})$$
$$\frac{0.25 \text{ mol}}{0.500 \text{ L}} = 0.5 \text{ M}$$

$$\Rightarrow M_{\text{H}^+} = \frac{0.5}{0.5} = 1.0 \text{ M H}^+ \times \frac{1 \text{ H}_2\text{SO}_4}{2 \text{ H}^+} = 0.5 \text{ M}$$

#17.) $\text{p}K_a = \text{pH} @ \frac{1}{2} \text{ eq. pt} \approx 4.5$

$$\Rightarrow K_a = 10^{-4.5}$$

$$\#19.) M_a V_a = M_b V_b$$

$$(0.5 M)(50 \text{ mL}) = M_b (75.0 \text{ mL}) \Rightarrow M_b = \frac{0.5 \times 50}{75} = \frac{1}{2} \cdot \frac{2}{3} = \boxed{0.33 M}$$

↑
V @ eq. pt

$$\#21.) 32 \text{ mL} \times 0.2 M \approx 30 \times 0.2 = 6 \text{ mmol LiOH} \times \frac{1 \text{ HClO}}{1 \text{ LiOH}} = 6 \text{ mmol HClO}$$

$$6 \text{ mmol} \times \frac{52 \text{ g}}{1 \text{ mol}} \approx \frac{6 \times 50}{100} = \frac{30}{100} = \boxed{0.3 \text{ g}}$$

↑
or
↓

$$\text{mol}_a = M_b V_b = (0.2 M)(0.032 \text{ L}) = 0.006 \text{ mol} \times \frac{52 \text{ g}}{1 \text{ mol}} \approx (6 \text{ E-}3)(5 \text{ E}1) = 3 \text{ DE-}2 = \boxed{0.3 \text{ g}}$$