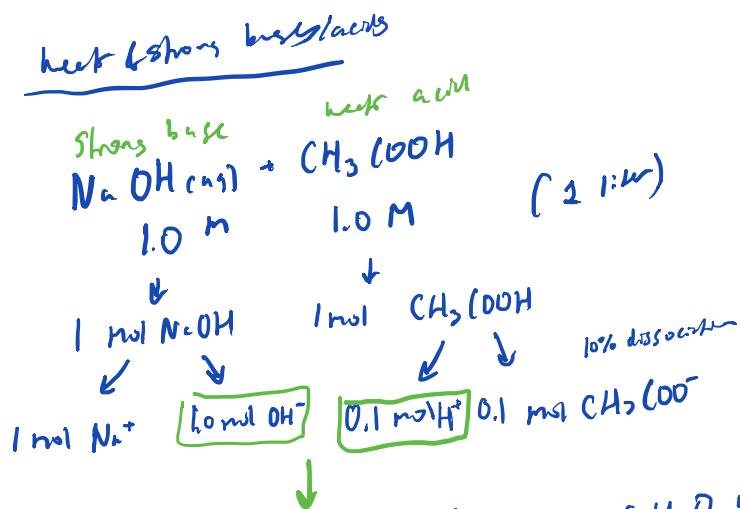
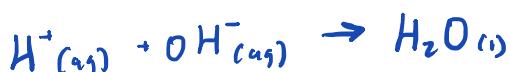
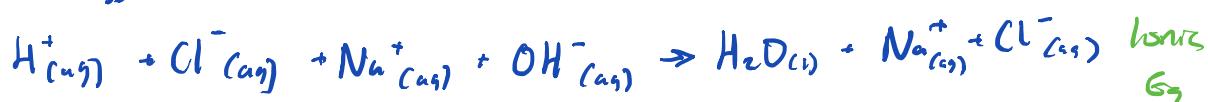
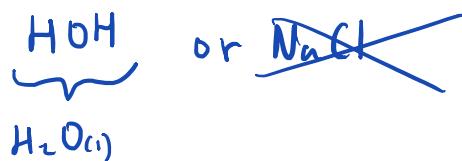


ACID-BASE REACTIONS

Proton (H^+) Donor

Proton Acceptor

according to defn.



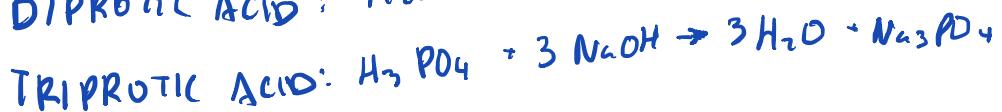
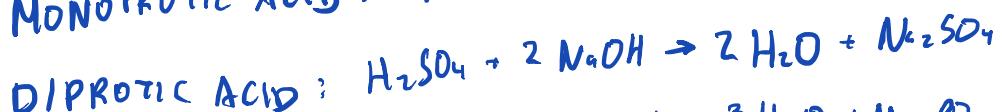
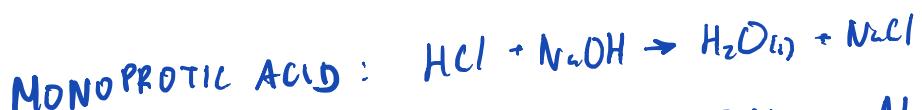
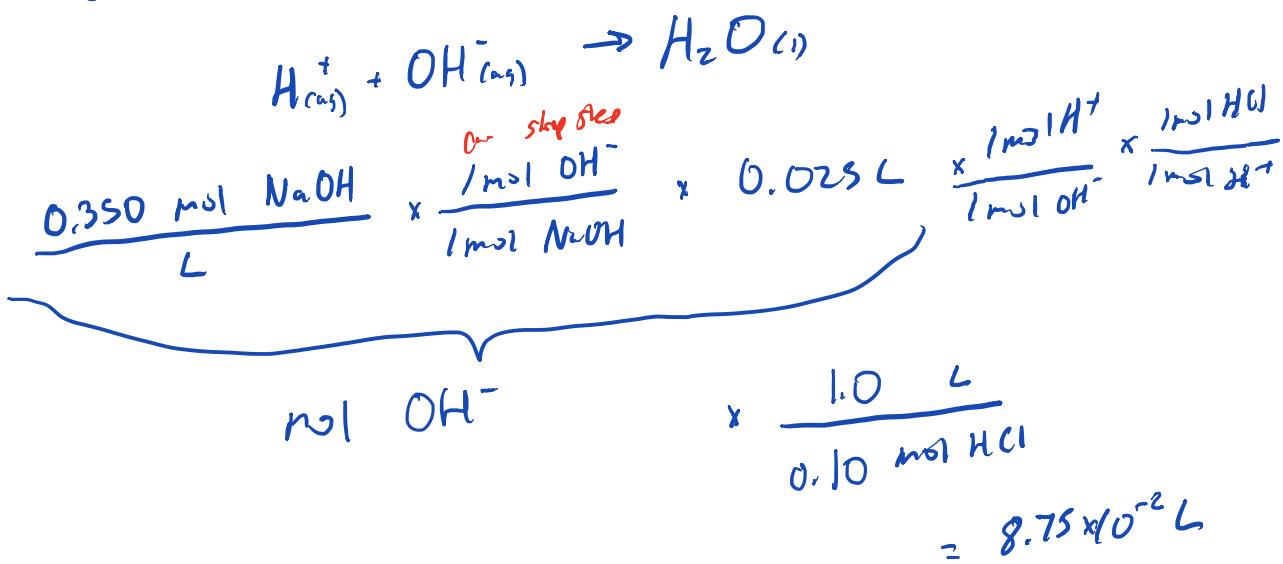
Instead of 0.1 mol H₂O, 1.0 mol of H₂O will be produced!!

OH is such a strong base, that it will rip off the undissociated CH₃COOH.

∴ The CH₃COOH will act like a strong acid in presence of a strong base

**STRONG BASE FORCES A WEAK ACID
INTO COMPLETE DISSOCIATION!!**

Ex. What volume of 0.100 M HCl sol'n is needed to neutralize 25.0 mL of 0.350 M NaOH sol'n?



↑ of acidic hydroxyls

TITRATION

- Titrant (conc. accurately known)
- sol'n (unknown conc.)
- equivalence point (can be determined with dye)

A KOH sol'n is standardized by titrating against sulphuric acid. $\text{H}_2\text{SO}_3\text{NH}_2$. If 34.20 mL of the base are needed to neutralize 0.395 g of the acid, find the molarity of KOH.



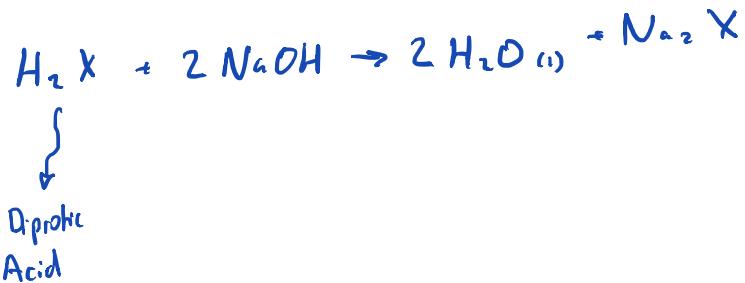
$$0.395 \text{ g } \cancel{\text{H}_2\text{SO}_3\text{NH}_2} \times \frac{1 \text{ mol}}{97.02} \times \frac{1 \text{ mol KOH}}{1 \text{ mol } \cancel{\text{H}_2\text{SO}_3\text{NH}_2}} = 4.07 \times 10^{-3} \text{ mol KOH}$$

$$[\text{KOH}] = \frac{4.07 \times 10^{-3} \text{ mol}}{0.0342 \text{ L}} = 0.119 \text{ M KOH} \quad (\text{well known = standard sol'n})$$

Titration: catch 1st transition from colorless to pink

September 16, 2016

- Ex. Titration of 6.50-g sample of a diprotic acid requires 137.5 mL of a 0.750 M NaOH sol'n for complete neutralization. Determine the molar mass of the acid.



$$\frac{0.750 \text{ mol NaOH}}{\text{L}} \times 0.1375 \text{ L} \times \frac{1 \text{ mol H}_2\text{X}}{2 \text{ mol NaOH}} = 5.156 \times 10^{-2} \text{ mol H}_2\text{X}$$

$$M.M = \frac{6.50 \text{ g}}{5.156 \times 10^{-2} \text{ mol}} = 126 \text{ g/mol}$$

- Ex. A sol'n is prepared by dissolving 15.0 g of NaOH in 150.0 mL of 0.25 M nitric acid.

Will the final sol'n be acidic, basic or neutral?

if you
try
it now
you
will Calculate the conc. of all of the ions present in the sol'n after the rxn has occurred.

$$15.0 \text{ g NaOH} \times \frac{1 \text{ mol NaOH}}{40.0 \text{ g}} = 0.38 \text{ mol NaOH} \quad \text{In excess}$$

Basic

$$0.150 \text{ L} \times \frac{0.25 \text{ mol HNO}_3}{\text{L}} = 0.038 \text{ mol HNO}_3$$