

Name: _____

Blk: _____ Date: _____

Chemistry 12
ACID BASE PART II Lesson # 18
PRACTICAL ASPECTS OF TITRATIONS

To carry out a titration you must have a solution of Known concentration. This is also referred to as a standardized or a standard solution.

A Primary Standard is a substance that is used to determine the concentration of a standard solution. A primary standard is one that can be obtained in a pure and stable form (does not absorb or react with atmospheric gases) and has a "set" molar mass (known to 2 decimal places).

There are TWO WAYS to prepare a **STANDARD SOLUTION**:

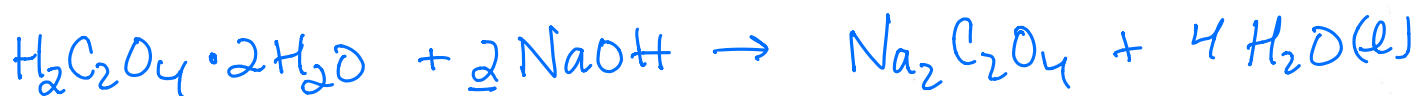
1. To prepare a standard solution of a base eg. NaOH

a. use: Potassium hydrogen phthalate ($\text{KHC}_8\text{H}_4\text{O}_4 = 204.22 \text{ g/mol}$)



(WA/SB ... use phenolphthalein)

b. use: oxalic acid dihydrate ($\text{H}_2\text{C}_2\text{O}_4 \cdot 2\text{H}_2\text{O} = 126.07 \text{ g/mol}$)



(WA/SB ... use phenolphthalein)

2. To prepare a standard solution of an acid eg. HCl

use: sodium carbonate ($\text{Na}_2\text{CO}_3 = 105.99 \text{ g/mol}$)



(SA/WB ... use methyl orange)

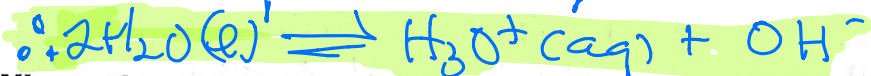
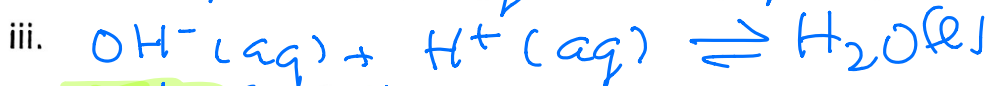
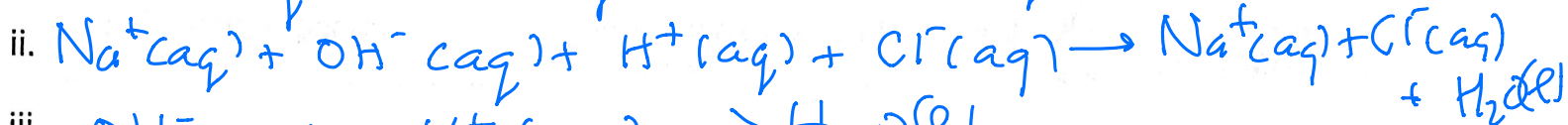
SEATWORK: Do Exercises 121-123 pg 165 in HEBDEN

PLO's: P1 (PRIMARY STANDARDS AND STANDARDIZED SOLUTIONS)

TYPES OF NEUTRALIZATION REACTIONS

Recall from earlier in this unit that we investigated the Formula, Complete and Net Ionic equations for a STRONG ACID and STRONG BASE neutralization reaction:

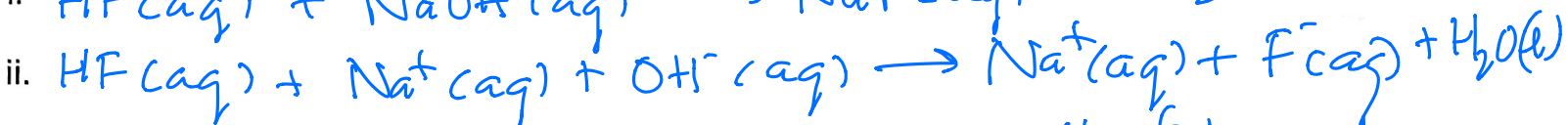
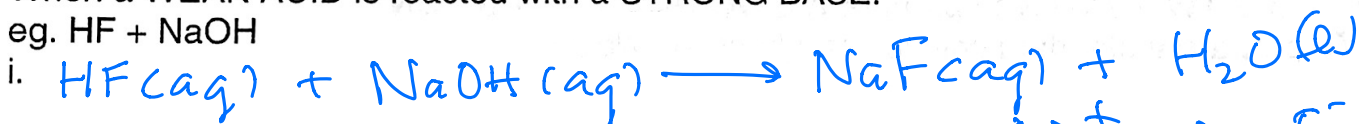
Ex. When NaOH reacts with HCl



When the $[\text{H}_3\text{O}^+] = [\text{OH}^-]$ the solution is NEUTRAL, but if one is in excess it is either basic or acidic (depending on which ion is in excess)

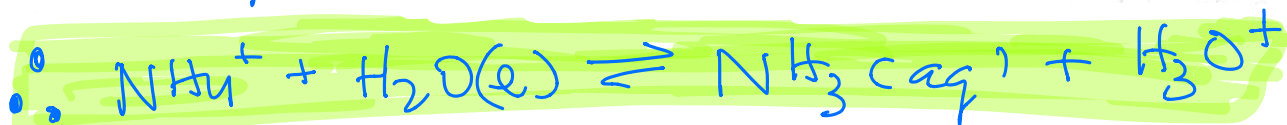
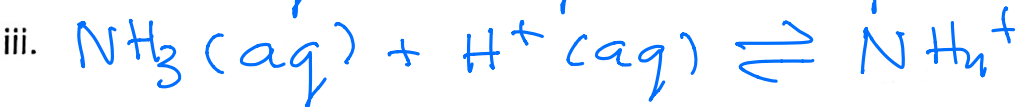
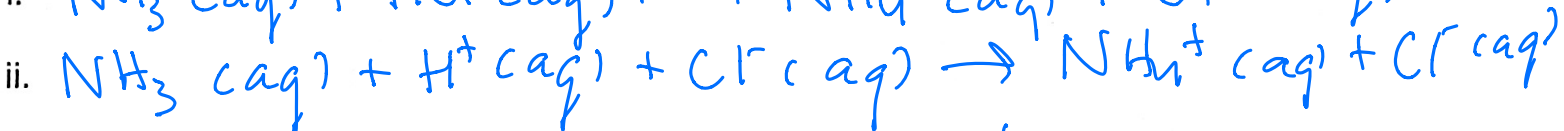
When a WEAK ACID is reacted with a STRONG BASE:

eg. HF + NaOH



When a WEAK BASE is reacted with a STRONG ACID:

Ex. $\text{NH}_3 + \text{HCl}$



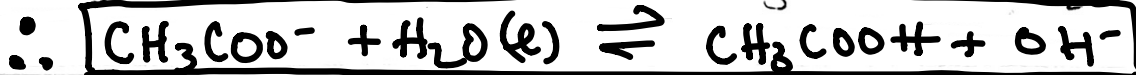
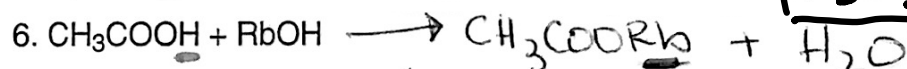
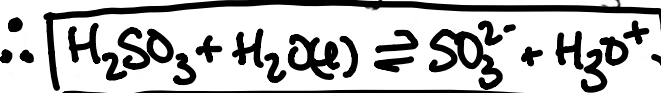
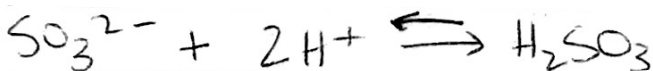
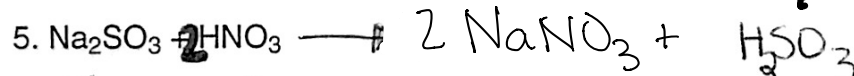
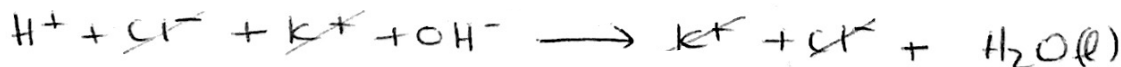
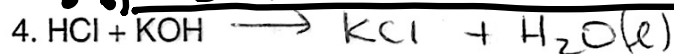
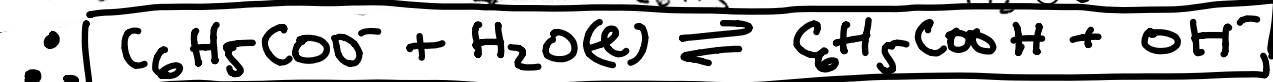
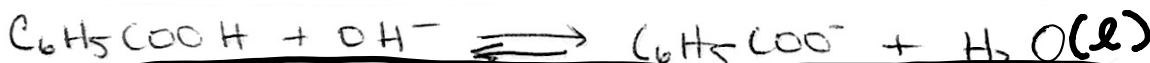
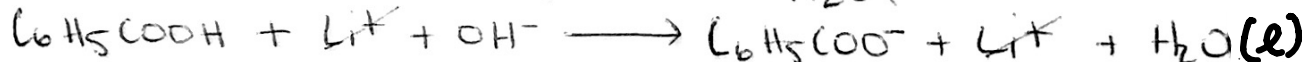
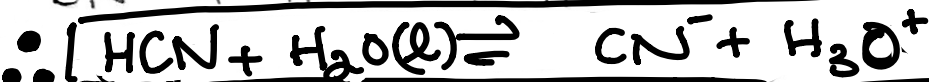
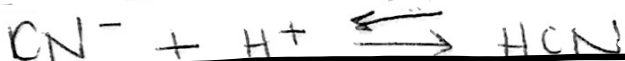
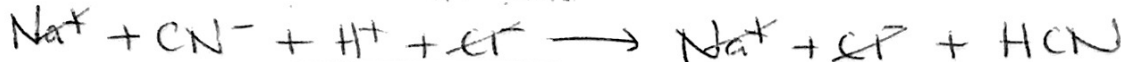
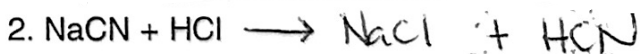
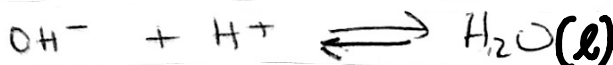
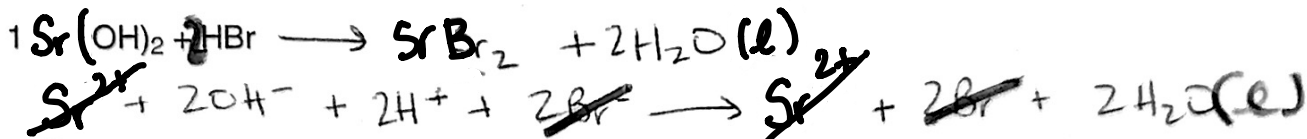
SEATWORK/HOMEWORK: Worksheet

PLO's: P4

Name: Key
 Blk: _____ Date: _____

Chemistry 12
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PRACTICAL ASPECTS OF TITRATIONS WORKSHEET

Write out the FORMULA, COMPLETE and NET IONIC Equations for the following neutralization reactions: (specialized double replacement rxns!)



neutral

acidic

basic

neutral

acidic

basic