Name: Raji Mubarak Akanji

Department: Industrial Chemistry

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CHM 200B ASSIGNMENT.

1. M1V1=M2V2

M2=M1V1/V2=0.5\*10/250=0.2M.

1. the **titrant** is a solution of known concentration that is added (titrated) to another solution to determine the concentration of a second chemical species. ... In contrast, the analyte, or **titrand**, is the species of interest during a titration.
2. ● Precautions taken during gravimetric analysis -
3. Transfer of liquids should be in as small quantities as possible.
4. Precipitation should be practically complete & free from contamination.
5. Balance should be adjusted carefully.
6. Grinding of the sample is mandatory.
7. Glass calibration device should be appropriately calibrated.

4. Enthlapy a thermodynamic quantity equivalent to the total heat content of a system. It is equal to the internal energy of the system plus the product of pressure and volume. Entropy is a thermodynamic quantity representing the unavailability of a system's thermal energy for conversion into mechanical work, often interpreted as the degree of disorder or randomness in the system. Free Gibbs Energy is the Gibbs free energy is a thermodynamic potential that can be used to calculate the maximum of reversible work that may be performed by a thermodynamic system at a constant temperature and pressure

5. 

6. The **limiting reactant** or **limiting reagent** is a **reactant** in a chemical reaction that determines the amount of product that is formed

7i.) To identify the limiting reagent convert the mass of the reactants to moles with help of their molar mass.

Molar mass of NH₄Cl=14+4+35.5=53.5g

Molar mass of Ba(OH)₂.8H₂O=315g

 Mol of NH₄Cl=150gNH₄Cl\*(1 mole NH₄Cl/53.5g NH₄Cl) =2.8molNH₄Cl

 Mol of Ba(OH)₂.8H₂O=290gBa(OH)₂.8H₂O\*(1 mole Ba(OH)₂.8H₂O/315g Ba(OH)₂.8H₂O)

=0.9mol Ba(OH)₂.8H₂O

The limiting reagent is NH₄Cl

7ii.) molar mass of water (H₂O)=18g/mol

Moles of water given from equation=10mol

10\*18=180grams

The theoretical yield =180grams.

7iii). %yield of water=Actual yield/Theoretical yield\*100%

Mass of water given=157.2g which is the actual yield . %yield of water= 157.2g/180g\*100%=87.3%.

7iv.) molar mass of Ba(OH)₂.8H₂O=315g

Mass of Ba(OH)₂.8H₂O given=31.5g

But mole of Ba(OH)₂.8H₂O =mass/molar mass=31.5g/mol/315g=0.1mol.

Molar mass of anhydrous hydroxide(NaOH)=23+16+1=40g/mol

Mass of anhydrous hydroxide that will contain the same number of moles of Ba²⁺ ions as 31.5g of Ba(OH)₂.8H₂O is mass = mole\*molar mass=0.1\*40=4 grams.

1. **Coordination compounds**, such as the FeCl4- ion and CrCl3 6 NH3, are called such because they contain ions or molecules linked, or coordinated, to a transition metal. ... The ions or molecules that bind to transition-metal ions to form these **complexes** are called **ligands** (from Latin, "to tie or bind").
2. A **chelate** is a chemical compound composed of a metal ion and a **chelating agent**. A **chelating agent** is a substance whose molecules can form several bonds to a single metal ion. In other words, a **chelating agent** is a multidentate ligand. An **example** of a simple **chelating agent** is ethylenediamine. Ethylenediamine
3. 