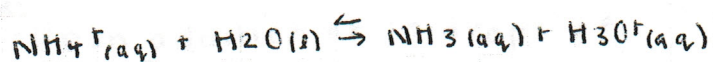


EXP. NUMBER 2	EXPERIMENT/SUBJECT Isolation and Determination of the Isoelectric Point of Casein	DATE [REDACTED]
NAME [REDACTED]	LAB PARTNER [REDACTED]	LOCKER/DESK NO. [REDACTED]
COURSE & SECTION NO. [REDACTED]		

Prelab Question



$$K_b = 1.8 \times 10^{-5}$$

$$K_a = \frac{K_w}{K_b} = \frac{1 \times 10^{-14}}{1.8 \times 10^{-5}}$$

$$= 5.56 \times 10^{-10}$$

$$\text{pH} = -\log(5.56 \times 10^{-10})$$

$$= 9.26$$

$$\text{pH} = \text{pH}_a + \log \frac{[\text{base}]}{[\text{acid}]}$$

$$8.85 = 9.26 + \log x$$

$$10^{-0.41} = x = 0.389$$

$$10^{-0.41} = x = 0.389 = \text{ratio}$$

$$\text{Let } x = [\text{acid}]; y = [\text{base}]$$

$$\frac{y}{x} = 0.389$$

$$x + y = 0.075 \text{ L}$$

$$y = 0.075 - x$$

$$\frac{x}{0.075 - x} = 0.389$$

$$0.075 - x$$

$$x = 0.0292 - 0.389x \rightarrow [\text{acid}] =$$

$$1.389x = 0.0292 \quad 0.075 - 0.021$$

$$x = 0.021 \text{ L} \quad = 0.054 \text{ L}$$

So you need 21 mL of NH_3
and 54 mL of NH_4^+ .

Purpose:

The purpose of this experiment is to isolate casein (from skim milk powder) and determine its isoelectric point. The effects of acids/bases on both buffered and non-buffered solutions of casein will be examined.

Procedure:

The experiment was carried out as described in experiment 9 (Isolation and Determination of the Isoelectric Point of Casein), of the Chemistry 1A03/1A03/1E03 Laboratory Manual.
*note: to create $< 0.1\%$ HCl, we combined $\approx 1 \text{ mL } 10\% \text{ HCl}$ with $\approx 99 \text{ mL}$ distilled water (10x volume water for 10x dilution).

SIGNATURE	DATE	WITNESS/TA	DATE
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