AUGUST 2022
EBS 115P
GENERAL CHEMISTRY PRACTICAL 1
2 HOURS

Candidate's Index Number
Signature:

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
SCHOOL OF EDUCATIONAL DEVELOPMENT AND OUTREACH
INSTITUTE OF EDUCATION

COLLEGES OF EDUCATION
FOUR-YEAR BACHELOR OF EDUCATION (B.ED)
FIRST YEAR, END-OF-SECOND SEMESTER EXAMINATION, AUG/SEPT 2022

AUGUST 26, 2022 GENERAL CHEMISTRY PRACTICAL I 9:00 AM – 11:00 AM

Answer ALL the questions in this paper.
(60 MARKS)

1. a. State the use for each of the following apparatus in the laboratory. **8 marks**
   i. Conical flask
   ii. Gas jar
   iii. Racks
   iv. Wash-bottles

   b. Identify any four physical methods of separating insoluble solid-solid mixtures. **4 marks**

   c. Copy and complete the table below: **4 marks**
   i.

		Colour change in:	
Indicator	**pH Range**	**Acid**	**Base**
Methyl orange		Red	
phenolphthalein	8.2-10.0		

   ii. Identify the type of indicators to be used when the following combinations of solutions are used during titrations
      α. Strong acid/Weak base combination **2 marks**
      β. Weak acid/ Strong base combination **2 marks**

   d. Describe how you would prepare 500mL of 0.10 molL HCl solution from 100mL of a stock solution with a concentration of 2.0mol/L. **10 marks**

2. The nitrogen content of a poultry feed can be determined by converting all the nitrogen in the feed to ammonia and then bubbling the ammonia through excess hydrochloric acid. The quantity of HCl remaining is determined with a standard solution base.

D is a solution obtained by bubbling a certain amount of ammonia gas through 100mL of 0.1M HCl.

E is 0.1M NaOH.

E is put into the burette and titrated with 25mL portions of **D** using methyl orange as an indicator. The average titre value was determined to be 19.50mL.

From the information given, calculate:

a. the concentration of HCl in mol/L of **D.** **6 marks**

b. the moles of HCl that reacted with the ammonia gas during the preparation of **D. 6 marks**

c. the mass of NH_3 that was bubbled through the HCl to prepare **D.** **10 marks**

d. Given that the NH_3 used to prepare **D** was obtained from 0.5g of animal feed, calculate the percentage of nitrogen in the animal feed. **8 marks**