

OCTOBER 2023
EBS 115P
GENERAL CHEMISTRY PRACTICAL I
2 HOURS

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| 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, SEPTEMBER/OCTOBER 2023

2ND OCTOBER 2023

GENERAL CHEMISTRY PRACTICAL I

12:00 PM – 2:00 PM

(60 MARKS)

Answer ALL the questions.

1. State a use for each of the following apparatus in the laboratory. (8 marks)
 - a. conical flask
 - b. gas jar
 - c. racks
 - d. wash-bottles
2. Explain the following terms as used in scientific investigation processes. (6 marks)
 - a. titrant
 - b. aliquot
 - c. analyte
3. Identify any **four** physical methods of separating insoluble solid-solid mixtures. (8 marks)
4. Describe how you would prepare 1000ml of 0.25 mol/L HCl solution from a stock solution with concentration 2.5.0mol/L. (9 marks)

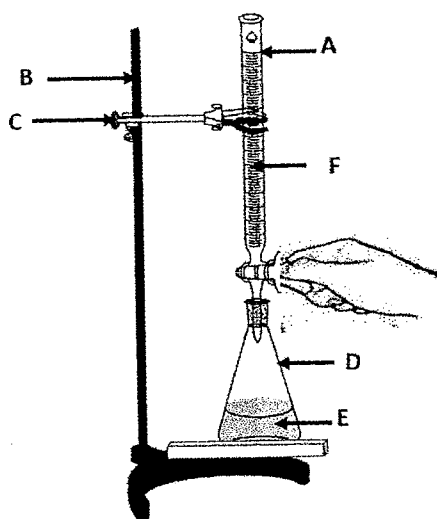
5. Copy and complete the table below:

(5 marks)

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

6. Below is a setup for titration. Identify the parts labelled A-F.

(6 marks)



7. Q is a 0.5M NaOH solution, while T is a solution obtained after 1dm³ of 0.75M HCl reacted with 30g of a powdered sample of 'limestone' soil. Put T into the burette and titrate against 25.00cm³ of solution Q in a conical flask, using phenolphthalein as indicator. Record the titre value. Repeat it for two or more times for consistent results.

From your results and information provided, calculate the:

(18 marks)

- initial moles of the HCl solution (T)
- mole of the NaOH reacting
- final mole of T (excess)
- moles of HCl that reacted with the sample Q

Assume the table below was the result after performing the exercise.

| BURETTE READINGS (cm ³) | TITRATIONS | | | |
|--|------------|-------|-------|-------|
| | 1 | 2 | 3 | 4 |
| Final Reading | 30.30 | 30.00 | 39.90 | 30.10 |
| Initial Reading | 0.00 | 0.00 | 10.00 | 0.00 |
| Actual volume Used | 30.30 | 30.00 | 29.90 | 30.10 |