ELIZADE UNIVERSITY, ILARA – MOKIN, NIGERIA

FACULTY OF BASIC AND APPLIED SCIENCES

DEPARTMENT OF PHYSICAL AND CHEMICAL SCIENCES

2015/2016 ACADEMIC SESSION: SECOND SEMESTER EXAMINATIONS

COURSE TITLE: EXPERIMENTAL CHEMISTRY II

COURSE CODE: CHM 210

INSTRUCTIONS: ATTEMPT ONE QUESTION TIME: 3.5 HOURS

QUESTION ONE

You are provided with water samples labelled A and B. Stating the procedures for each parameter given below, determine the

I. pH
II. Total solids
III. Alkalinity.

a. Discuss the importance of pH, alkalinity and total solids as parameters for water quality assurance.
b. Explain the term alkalinity
c. List four environmental significance of alkalinity
d. Define the term pH?

QUESTION TWO

You are provided with 0.125g sample of chalk. Place the chalk sample in 250 mL of conical flask, add 50.00 mL ~~distilled water and~~ 0.200 M HCl using a pipette and back titrate the excess HCl with 0.250 M NaOH.

A. Outline the procedure for this experiment
B. Write a balanced chemical equation for the reaction and derive an expression for the equilibrium constant.

Calculate:

C. The concentration of Ca^{2+} from the saturated $Ca(OH)_2$ solution
D. The standard deviation of your result
E. The solubility product of $Ca(OH)_2$
F. Compare the observed value to the theoretical value by calculating the percentage error in your observed value and theoretical value. Give plausible reason(s) for the difference in these values

G. How will you prevent the conversion of the supernatant solution to carbonate