

CHUKA



UNIVERSITY

**UNIVERSITY EXAMINATION
RESIT/SUPPLEMENTARY / SPECIAL EXAMINATIONS
EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE**

CHEM 304/308: ANALYTICAL CHEMISTRY I**STREAMS:****TIME: 2 HOURS****DAY/DATE: WEDNESDAY 03/11/2021****8.30 A.M - 10.30 A.M.****INSTRUCTIONS**

- Answer any Question ALL Questions.

QUESTION ONE (30 MARKS)

- 1(a) (i). Discuss the confidence limit (4 marks)
- (ii). A soda ash sample is analyzed in the laboratory by titration with standard hydrochloric acid. The analysis is performed in triplicate with the following results: 93.50, 93.58 and 93.43 W% Na₂CO₃. Calculate the range at which you are 95% confident the true value lies. (6 marks)
- b(i) Suggest ways of tackling systematic errors (6 marks)
- (ii) Explain briefly what you understand by the method validation (4 marks)
- (c). Explain why the radiation source in atomic absorption instrument is usually modulated (10 marks)

QUESTION TWO (20 MARKS)

- 2(a). Describe the following terms as used in chromatography, stating when and how they are applied
- (i) Gradient elution (7 marks)
- (ii) Isocratic elution (3 marks)

(iii) Derivatization (10 marks)

QUESTION THREE (20 MARKS)

3 a) State four applications of electrochemical methods (4 marks)

b) Describe how you could use the reaction in a galvanic cell (8 marks)

c) Discuss the advantages and limitations of ion selective electrodes (8 marks)

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