



100

KIBABII UNIVERSITY

**UNIVERSITY EXAMINATIONS
2016/2017 ACADEMIC YEAR**

**THIRD YEAR FIRST SEMESTER
MAIN EXAMINATIONS**

FOR THE DEGREE OF B.ED (SCIENCE)

COURSE CODE: SCH 320

COURSE TITLE: ANALYTICAL CHEMISTRY II

DURATION: 2 HOURS

DATE: 8TH JANUARY 2018

TIME: 9 – 11AM

INSTRUCTIONS TO CANDIDATES

- Answer **QUESTION ONE** (Compulsory) and any other two (2) Questions.
- Indicate **answered questions** on the front cover.
- Start every question on a new page and make sure question's number is written on each page.

This paper consists of **2** printed pages. Please Turn Over



1.
 - a) Separation and purification techniques are very important in analytical chemistry. For each of the following separation techniques state the principle behind it and applications:
 - i. Filtration (3mks)
 - ii. Distillation (3mks)
 - iii. Solvent extraction (3mks)
 - b) Identify an analytical technique in which the ultimate measurement is weight and briefly discuss the various types of this technique. (5mks)
 - c) An analyst is required to use a primary standard, advice the analyst on the qualities of a good primary standard. (5mks)
 - d) Differentiate among the following terms as used in chromatography:
 - i. Chromatogram (2mks)
 - ii. Elusion (2mks)
 - iii. An effluent (2mks)
 - iv. Retention time (2mks)
2.
 - a) Discuss high performance chromatography under the following subheadings:
 - i. Principle (4mks)
 - ii. Instrumentation (11mks)
 - iii. Applications (5mks)
3.
 - a) Volumetric analysis is the general term for a method in quantitative analysis in which the amount of substance is determined by measurement of volume that the substance occupied. State the meaning of each of the following terms as used in volumetric analysis:
 - i. Titration (2mks)
 - ii. Titrant (2mks)
 - iii. Primary standard (2mks)
 - iv. Standardization (2mks)
 - v. Equivalent point (2mks)
 - b) Identify the types of volumetric analysis. (4mks)
 - c) Briefly discuss the applications of volumetric analysis (6mks)
4.
 - a) What are the conditions which must be fulfilled by a good precipitate for a good precipitation process? (5mks)
 - b) Discuss the meaning of the following terms as used in gravimetric analysis:
 - i. Isomorphous inclusion (2mks)
 - ii. Non-isomorphous inclusion (1mk)
 - iii. Occlusion (1mk)
 - iv. Surface adsorbance (1mk)
 - c) You are required to carry out precipitate analysis. Outline the steps which you will follow during this analysis (7mks)
 - d) State any two applications of precipitation gravimetry. (3mks)