



UNIVERSITY EXAMINATIONS

1ST SEMESTER 2022/2023 ACADEMIC YEAR

**FIRST YEAR EXAMINATION FOR THE DEGREE OF
BACHELOR OF SCIENCE (AGRICULTURAL
EDUCATION AND EXTENSION)**

NARM 113/114: INTRODUCTION TO SOIL SCIENCE

STREAM: R

TIME: 2 HRS

DAY: THURS [11.30AM – 13.30]

DATE: 08/12/2022

THIS QUESTION PAPER CONSISTS OF TWO (2) PAGES

PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.



INSTRUCTIONS: - ANSWER QUESTION ONE AND ANY OTHER TWO**QUESTION ONE**

- (a) Briefly describe five types of chemical weathering. (10 Marks)
- (b) Discuss five master horizons used in soil classification. (10 Marks)
- (c) Discuss five roles of organic matter in the soil (10 Marks)

QUESTION TWO

- (a) Define the term soil colloid. (2 Marks)
- (b) Briefly explain the four general types of soil colloids. (8 Marks)
- (c) Name five sources of soil acidity. (10 Marks)

QUESTION THREE

- (a) Differentiate between
 - (i) Soil organic matter and soil organic carbon (4 Marks)
 - (ii) Soil microbiota and soil macrobiota (4 Marks)
 - (iii) Soil micropores and soil macropores (4 Marks)
- (b) A sample of moist soil with wet mass of 0.5 kg and a volume of $3.2 \times 10^{-4} \text{ m}^3$ was dried in the oven and found to have a mass of 0.4 kg. Calculate:
 - (i) Bulk density (2 Marks)
 - (ii) Gravimetric water content (2 Marks)
 - (iii) Volumetric water content (2 Marks)
 - (iv) Porosity (2 Marks)

QUESTION FOUR

- (a) Briefly explain five factors affecting nutrient availability in soils. (10 Marks)
- (b) Discuss five types of physical properties of minerals. (10 Marks)

QUESTION FIVE

- (a) Discuss the roles of soil organisms in maintenance of healthy productive soils. (20 Marks)