



NATIONAL OPEN UNIVERSITY OF NIGERIA
FACULTY OF AGRICULTURAL SCIENCES
DEPARTMENT OF CROP AND SOIL SCIENCE
2024 1 EXAMINATION

COURSE TITLE: SOIL CHEMISTRY, FERTILITY AND MICROBIOLOGY (2CU)

COURSE CODE: SLM 305

TOTAL SCORE: 70 MARKS

INSTRUCTION: Answer 3 questions in all

Question 1 is compulsory (30 marks) and any other TWO questions (20 marks each)

TIME ALLOWED: 2 Hours

1. a. i) Briefly explain three (3) factors that affect the availability of Boron (6 marks)
ii). Briefly explain five (5) factors that affect Iron availability (10 marks)
b. What is sybiotic fixation (4 marks)
c. i) Define the term "cation exchange" (5 marks)
ii) Define the term "Base Saturation" (5 marks)
2. a. Give a detailed explanation of the relationship between soil chemistry and
i) Soil physics (6 marks)
ii) Geochemistry and soil formation (5 marks)
b. List five (5) forces of adsorption (5 marks)
c. State two (2) important diverse environmental conditions under which bacteria survive (4 marks)
3. a. State five (5) reasons why the need to study organic matter have become even more relevant in modern times (10 marks)
b. What are the factors affecting the availability of manganese (Mn) (6 marks)
c. Discuss the way in which soil pH affect the availability of Mo (4 marks)
4. a. i) Flocculation and Dispersion are opposite terminologies discuss (6 marks)
ii) Define the term "Anion Exchange Capacity (AEC)" (5 marks)
b. List two (2) functions that manganese (Mn) plays (4 marks)
c. State and describe the two subdivision of algae (5 marks)