



**NATIONAL OPEN UNIVERSITY OF NIGERIA
FACULTY OF AGRICULTURAL SCIENCES
DEPARTMENT OF CROP AND SOIL SCIENCE
2025_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

1a. Describe the ways in which plants can significantly affect the physicochemical properties of soil. (6 marks)

1bi. Discuss in detail the two (2) main factors that affect the availability of nitrogen, one of the major nutrients. (10 marks)

1bii. List the two (2) functions of boron and the three (3) symptoms of its deficiency in plants.

(5 marks)

1ci. What does "Soil Reaction" mean?

(5 marks)

1cii. Name and describe the four soil pH ranges that are informative.

(4 marks)

2a. List the six (6) functions that soil organic matter performs in soil. (12 marks)

2b. List the four(4) organic matter types that you are aware of. (4 marks)

2c. Which two (2) factors contribute to salinity in soil? (4 marks)

3a. List and describe the origin-based groupings of soil microorganisms. (9 marks)

3b. Define soil bacteria as diversified soil microorganisms. (9 marks)

3c. As a macronutrient that many plants require in large quantities, phosphorus has two (2) key roles in plants which are?.

(2 marks)

4a. What does "Cation Exchange Capacity" mean? (5 marks)

4b. Name two circumstances that lead to a soil being classified as alkali. (4 marks)

4ci. What does "soil organism" mean? (5 marks)

4cii. Explain soil bacteria as a type of non-diversified soil microbe. (6 marks)