



NATIONAL OPEN UNIVERSITY OF NIGERIA

Plot 91, Cadastral Zone, Nnamdi Azikiwe Expressway, Jabi – Abuja Faculty of Science

DEPARTMENT OF BIOLOGICAL SCIENCES

2024 1 EXAMINATION

COURSE CODE: BIO 408

COURSE TITLE: SOIL ECOLOGY

CREDIT UNIT: 3 Units

TIME ALLOWED: 3 Hours

INSTRUCTION: Answer Question ONE (1) and any other THREE (3) Questions

1. a. Write the formula for estimating Percentage Porosity of soil and Percentage solid material 3 Marks  
b. Determine the percentage of solid material in soil with percentage porosity of 60% 2 Marks  
c. Enumerate the properties and distribution of inceptisol soil. 4 Marks  
d. What are macropores, and microspores? 4 Marks  
e. State four (4) advantages of soil analysis. 4 Marks  
f. With the aid of annotated diagram ONLY, describe the phosphorus cycle. 8 Marks
2. a. Mention any five (5) cations found in soils. 3 Marks  
b. What is soil reaction? Why is it important? 4 Marks  
c. Enumerate the properties and distribution of utisols soil. 4 Marks  
d. Copy and complete the table below. 4 Marks

Soil Type	Texture	Basic Soil Textural Class Names
	Fine	
	Moderate Fine	

3. a. Describe the Prism-Like and block-like Soil Structures 6 Marks  
b. Explain the term cation exchange capacity of a soil. 9 Marks
4. a. What are Detritivores? Give four examples of Detritivores. 5 Marks  
b. Highlight the possible sources of nutrients in the soil. 5 Marks  
c. State the distribution of vertisols soil. 5 Marks

5. a. Why is it necessary to conduct soil analysis? 3 Marks  
b. Explain the relationship between soil organisms and their dynamics in an ecosystem. 6 Marks  
c. Explain the role of ammonification and nitrification in ensuring N-rich soil 6 Marks
6. a. Describe Climosequences soil formation 2 Marks  
b. What is a composite soil sample? 5 Marks  
c. Succinctly describe biogeochemical weathering. 4 Marks  
d. Compare the sedimentary and the gaseous cycles 4 Marks