NATIONAL OPEN UNIVERSITY OF NIGERIA
14/16 AHMADU BELLO WAY, VICTORIA ISLAND, LAGOS
SCHOOL OF SCIENCE AND TECHNOLOGY
JUNE/JULY EXAMINATION

COURSE CODE: BIO408
COURSE TITLE: **SOIL ECOLOGY**
TIME ALLOWED: 2 HOURS
INSTRUCTION: ANSWER **QUESTION 1** AND **ANY OTHER THREE** QUESTIONS

1 (a). Describe the processes of weathering
(b). How is water involved in the main types of chemical weathering reaction?
(c). Describe the phosphorus cycle and explain how phosphorus is recycled locally in most ecosystems.

2 (a). What is the principal soil property by which ultisols differ from Alfisols? Inceptisols from entisols?
(b). Soil Taxonomy is said to be a hierarchical classification system. Explain.

3 (a). List and explain soil orders found in the sub-Saharan Africa.
(b). Discuss the limitations of soil tests as indicators of plant nutrient needs and water pollution risks

4 (a). A cornstalk nitrate test at harvest time shows a farmer that the soil likely contains considerable unused nitrates. To minimize nitrate leaching the farmer wants to grow a cover crop. What characteristics would the farmer look for in choosing a cover crop to ameliorate this situation?
(b). Why are nutrient cycling problems in agricultural systems more prominent than in those in forested areas?

5 (a). Give four reasons why compacting a soil would likely reduce the amount of water available to growing plants.

(b). You are considering the purchase of some farmland in a region with variable soil texture. The soils on one farm are mostly sandy loams, while those on a second farm are mostly clay loams and clays. List the potential advantages and disadvantages of each farm as suggested by the texture of its soils.

6 (a). Discuss cation exchange and its benefits to the ecosystem.
(b). Name the key bacterial processes in the nitrogen cycle.
(c). Explain how decomposition affects the rate of nutrient cycling in ecosystems.