



NATIONAL OPEN UNIVERSITY OF NIGERIA

FACULTY OF AGRICULTURAL SCIENCES

DEPARTMENT OF CROP AND SOIL SCIENCES

1ST SEMESTER EXAMINATION. 2017/2018 SESSION

SLM305 _ INTRODUCTION TO SOIL CHEMISTRY FERTILITY

INSTRUCTIONS: Answer five questions in all. Question one is compulsory and it carries 30 marks. The rest carry 10 marks each.

TIME ALLOWED: 3 hours

1. a) List only, the factors that affect the availability of micro-nutrient cations in the soil for crop uptake. (10 Marks)
b) What do you understand by mycorrhizae? Elucidate its roles in plant nutrition. (10 Marks)
c) Mention three causes of soil acidity. What do you understand by lime requirement? Give one local material used for liming in agriculture. (10 Marks)
2. a) List five micro-nutrients cations in the soil (5 Marks)
b) Explain in detail the effects of soil pH on the availability of micro-nutrients to plants. (5 Marks)
3. Explain in detail the relationship between acidity and alkalinity as expressed by soil Ph. (10 Marks)
4. Distinguish between Cation Exchange Capacity (CEC) and Anion Exchange Capacity (AEC). (10 Marks)
5. a) List the importance of bacteria in soil fertility. (5 Marks)
b) What are acidophilic bacteria and thermophile bacteria? (5 Marks)
6. a) Explain in detail the importance of nematodes in tropical crop production. (5 Marks)
b) Briefly explain the importance of earth worms in tropical soils (5 Marks)
7. Tropical soils are generally of low fertility. One of the ways of increasing the fertility of soil is to add organic matter.
 - i) List the main types of organic matter that may be added to the soil to improve its fertility. (5 Marks)
 - ii) Outline the roles/functions of organic matter in tropical soils. (5 Marks)