

NATIONAL OPEN UNIVERSITY OF NIGERIA

FACULTY OF AGRICULTURAL SCIENCES

January/ February 2017_2 POP Examination

Course Title: Introduction to Pedology and Soil Classification

Course Code: SOS301

INSTRUCTION:

- i) Answer at least one question from each section compulsorily.
- ii) Answer four questions in all.
- iii) Time: 2 hours

SECTION A

Question One

- a) Match the following words against the below listed soil descriptions. Please note that a word can be matched more than once. **2 marks each x 10= 20 marks**

(Clay, loam, sand, Humus, Mineral nutrients, and organic matter)

- i) Can easily get water logged
- ii) Can form a cast when wet but cracks when dry
- iii) Has very low infiltration rate
- iv) Has very high infiltration rate
- v) Has low water holding capacity
- vi) Easily get drained
- vii) Has an almost balanced ratio of clay and sand
- viii) An un-decomposed biodegradable matter
- ix) A well decomposed/degraded organic matter in the soil.
- x) Macro and micro chemical elements in the soil.

- b) Give reasons or state the implications/meanings of the following of the following.

(2 marks each x 5= 10 marks)

- i) A very bright red/brownish brick color sub soil
- ii) A dull blackish/gray to silver color sub soil
- iii) Heavy presence of worm cast on a soil
- iv) What is the basic parent material of any soil
- v) Flora and fauna refers to what in the soil characteristics

- c) List five factors or bad practices that can destroy the soil **(2 marks each x 5= 10 marks)**

SECTION B

Question Two

- a) Define the term “**Rock**” **(5 marks)**
- b) What are the basic types of rocks that naturally exist **(5 marks)**
- c) Write a short descriptive note on rocks formed as a result of accumulation of minerals and solid particles **(2marks)**
- d) List 3 types of rocks formed from sedimentary actions. **(3 marks)**

Question Three

- a) What is weathering **(5 marks)**

- b) List five agents of biological weathering. (5 marks)
- c) Write a brief but comprehensive note on chemical weathering (5 marks)

Question Four

- a) Outline the components of (i) Physical and ii) biological weathering (8 marks)
- b) Explain the formation of soil using passive and active factors (7 marks)

Question five

Write a short note on (i) soil texture (ii) soil permeability (iii) soil infiltration rate, (iv) soil structure and (v) soil bulk density. (3marks each x 5=15)

Question Six

- a) Discuss the importance of soil amendment to a crop producer. (5 marks)
- b) Write a short note on biological properties of the soil. (4 marks)
- c) Describe any 3 soil reactions (2marks each x3= 6 marks)