

FEDERAL UNIVERSITY OF TECHNOLOGY OWERRI
School of Agriculture and Agricultural Technology
Department of Soil Science and Technology
Harmattan semester Examinations 2014/2015

SST 301: SOIL CHEMISTRY AND FERTILITY

CREDIT UNIT: 2 UNITS

TIME: 3 HOURS

Instruction: Answer any 5 questions

SECTION A

- 1(a) Define (i) soil (ii) minerals
(b) Explain the different types of minerals, given three examples of each.
(c) With the aid of a diagram, explain composition of soil.
- 2 (a) Define the following: (i) Isomorphous substitution (ii) cation (iii) anion (iv) ion
(v) cation exchange (vi) cation exchange capacity
(b) With the aid of a diagram, explain the chemistry of potassium in soil.
- 3 (a) Define percentage base saturation (%BS) (b) List the general rules for percentage base saturation.
(c) Write short note on the following: (i) Root interception (ii) mass flow (iii) diffusion
(d) Explain anion exchange.

SECTION B

- 4(a) List and explain the five sources of soil acidity
(b) Write short note on the following:
(i) Soil acidity (ii) Alkalinity (iii) Humic substance (iv) Vermicomposting
(v) Thermophilic composting
- 5(a) Soil is one of the factors that affect leaching of nutrients. Explain
(b) Comment on the useful and harmful effect of leaching.
- 6 How would you prepare 20 kg of 4 – 12 – 8 fertilizer mixture using sulphate of ammonia (21%