(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS 2017/2018 ACADEMIC YEAR

THIRD YEAR 1ST SEMESTER MAIN EXAMINATION

FOR THE DEGREE OF BACHELOR OF SCIENCE AGRICULTURE AND BIOTECHNOLOGY & BACHELOR OF EDUCATION SCIENCE

COURSE CODE: SAB 310
COURSE TITLE: SOIL MORPHOLOGY AND CLASSIFICATION

DATE: 19TH JANUARY 2018 **TIME:** 2 – 4 PM

INSTRUCTIONS TO CANDIDATES

Answer Question ONE and any other TWO Questions.

TIME: 2 Hours

This paper consists of 3 printed pages. Please Turn Over

1. Study the soil profile below of soil type X and answer the following questions

Soil Horizon	Characteristics
1	Colour – 8/9 Bl, Texture – Clay Loam, Slope – 5%, Moisture – Udic, Temprature – Thermic Poreroots – Dense Depth – 0 – 5 cm Reaction with HCL – High effervescences pH – 5.8
2	Colour – 7/8 Bl, Texture – Sandy Clay, Slope – 5%, Moisture – Udic, Temprature – Thermic Poreroots – Dense Depth – 5 – 20 cm pH – 5.6
3	Colour – 5/7 Rd, Texture – Clay, Structure – Prismatic, Moisture – Perudic, Poreroots – Less dense, Slickensides available, Depth – > 20 cm

a) Using the Munsell color chart, describe the color of various soil horizons (6 Marks)

b) Describe the soil moisture regimes in horizon 2 and 3 (4 Marks)

c) Describe the pedogenic processes involved in the formation of each soil horizon listed above (6 Marks)

d) Classify soil X according to:

- FAO-UNESCO classification system (2 Marks)
- USDA soil taxonomy system (2 Marks)
- WRB-RSG classification system (2 Marks)

e) Evaluate soil X suitability according to FAO Framework for land evaluation (4 Marks)

f) Subject soil X to SWOT analysis for use in agriculture (4 Marks)

2. a) Describe how parent material and organisms results into soil formation (10 Marks)

   b) Briefly explain different approaches to soil classification (10 Marks)

3. a) State the importance of soil temperature regimes (2 Marks)

   b) Describe the soil temperature regimes (18 Marks)

4. Edwin, a pedologist has been contracted by Kibabii University to assess the suitability of their farm for maize cultivation. Describe the various soil qualities that he will have to assess (20 Marks)