(Knowledge for Development)

KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2019/2020 ACADEMIC YEAR

SECOND YEAR 2ND SEMESTER
SPECIAL/SUPPLEMENTARY EXAMINATION

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

COURSE CODE: SAB 210
COURSE TITLE: SOIL PHYSICS

DATE: 08/02/2021.   **TIME:** 11 – 1PM.

INSTRUCTIONS TO CANDIDATES

Answer all Questions in section A and any other two (2) Questions in section B.

TIME: 2 Hours

This paper consists of 2 printed pages. Please Turn Over ▶

KIBU observes ZERO tolerance to examination cheating

SECTION A = 30 MARKS

1. a) Define the term Soil Separates (1 Mark)

   b) Differentiate between D10 and D60 as used in Soil Physics (4 Marks)

   c) Describe the importance of Soil Physics (6 Marks)

   d) A soil in Kibabii University greenhouse has a wet bulk density of $1.7mg/m^3$ and dry bulk density of $1.4mg/m^3$. Calculate the Gravimetric and Volumetric soil moisture contents and Air-filled porosity. (9 Marks)

   e) Describe the importance of Soil Solids. (10 Marks)

SECTION B = 40 MARKS

2. a) Explain the complexity of Soil Structure. (6 Marks)

   b) Discuss the Russell's theory of Crumb formation. (6 Marks)

   c) What are the requirements for Russell's theory to be valid? (8 Marks)

3. Outline the procedure for Particle Size analysis using the Hydrometer method. (20 Marks)

4. a) Describe the Atterberg's Constants. (12 Marks)

   b) Describe the Green and Ampt Model for predicting water infiltration rate into the soil. (8 Marks)