(University of Choice)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2023/2024 ACADEMIC YEAR

FIRST YEAR FIRST SEMESTER EXAMINATIONS

MAIN EXAMINATION

FOR THE MASTER OF SCIENCE IN PLANT HEALTH MANAGEMENT

COURSE CODE: ASL 802

COURSE TITLE: ENVIRONMENTAL SOIL PHYSICS

DATE: 7.12.23 **TIME: 2-5PM**

INSTRUCTIONS

Answer Question ONE and any other THREE Questions

1. (a) From your Laboratory practical lessons, briefly explain how soil bulk density and particle-size are determined. **(10 marks)**

   (b) Identify the soil textural class in each of the following cases using the USDA Soil Texture Triangle provided. **(5 marks)**

   (i) 95% sand, 5% silt, 5% clay

   (ii) 5% sand, 90% silt, 95% clay

   (iii) 65% sand, 34% silt, 65% clay

   (iv) 53% sand, 47% silt, 44% clay

   (v) 34% sand, 22% silt, 68% clay

   (vi) List five physical properties that are dependent on soil texture **(5 marks)**

   (c) (i) State five legislations aimed at environmental protection in Kenya **(5 marks)**

   (ii) Give five applications of environmental soil physics. **(5 marks)**

   (d) State ten approaches to soil moisture conservation in the dryland areas of Kenya **(10 marks)**

2. Describe the hydrologic cycle, highlighting the different processes that lead to movement and phase changes in water and the effects of anthropogenic activities on the cycle. **(20 marks)**

3. With specific reference to case studies in Kenya, explain how climatic and edaphic factors can be modified to benefit agricultural production. **(20 marks)**

4. Discuss the phases of soil and their significance in crop production. **(20 marks)**

5. Explain the mitigation measures against environmental pollution to ensure sustained economic development and healthy livelihoods in Kenya. **(20 marks)**

Soil Textural Triangle