UNIVERSITY OF ESWATINI

SEMESTER 2 MAIN EXAMINATION PAPER, NOVEMBER 2021

BSc & B. Ed. Sec. Sci.

FACULTY OF SCIENCE AND ENGINEERING

DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND PLANNING

COURSE CODE:	**GEP416**
PAPER TITLE:	**APPLIED SOIL SCIENCE**
TIME ALLOWED:	**Three (3) Hours**

ANSWER THREE QUESTIONS

2. QUESTION 1 IS COMPULSORY

3. ILLUSTRATE YOUR ANSWERS WITH EXAMPLES AND CLEARLY DRAWN DIAGRAMS WHERE APPROPRIATE

ALLOCATION OF MARKS: **QUESTION 1 (COMPULSORY) CARRIES 40 MARKS WHILE THE REST CARRY 30 MARKS EACH**

Candidates may complete the front cover of their answer book when instructed by the Chief Invigilator and sign their examination attendance card but must NOT write anything else until the start of the examination period is announced.

No electronic devices capable of storing and retrieving text, including dictionaries and any form of foreign material may be used while in the examination room

DO NOT Turn examination paper over until instructed to do so

GEP416: APPLIED SOIL SCIENCE – NOVEMBER 2021

SECTION A: COMPULSORY

QUESTION 1

a) Discuss the following terms of soil in relation to soil classification systems:
   i) Soil moisture regimes (5 marks)
   ii) A diagnostic horizon (5 marks)

b) Using examples, discuss the applications of soil science in the following fields:
   i) Geotechnical engineering (5 marks)
   ii) Environmental engineering (5 marks)
   iii) Forestry (5 marks)

c) 'In farming, farmers are generally interested in the soil's properties'. Discuss the properties of soil in relation to their applicability to farming. (15 marks)

(40 Marks)

SECTION B: ANSWER ANY TWO QUESTIONS

QUESTION 2

'One of the functions of soil is its use as a medium for construction'. Discuss the various soil properties that support this statement. **(30 Marks)**

QUESTION 3

'Soil erosion is a major threat to the soils of Eswatini'. Discuss this issue, with examples, in relation to: the types of soil erosion, the main causes of erosion and erosion mitigation and control in Eswatini. **(30 Marks)**

QUESTION 4

Discuss the factors influencing soil formation and how they interact in the development of different soils around the world. **(30 Marks)**

QUESTION 5

Compare and contrast the following soil classification systems: World Reference Base and Soil Taxonomy. **(30 Marks)**