

UNIVERSITY OF SWAZILAND
DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND PLANNING
FINAL EXAMINATION, MAY 2016
BSc, B. Ed.

TITLE OF PAPER: APPLIED SOIL SCIENCE

COURSE NUMBER: GEP433

TIME ALLOWED: THREE (3) HOURS

INSTRUCTIONS:

- 1. 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**

GEP433: APPLIED SOIL SCIENCE – MAY 2016**SECTION A: COMPULSORY****QUESTION 1**

- a. Briefly explain how the outcomes of a soil survey are presented. (10 marks)
 - b. Discuss three types of soil survey and explain how they are applied in the following stages of a project.
 - i. Project pre-feasibility (5 marks)
 - ii. Project planning (5 marks)
 - iii. Project implementation (5 marks)
 - c. Discuss the three major aspects of the field mapping key used in soil survey. (15 marks)
- (40 Marks)**

SECTION B: ANSWER ANY TWO QUESTIONS**QUESTION 2**

Soil performs six key functions in the global ecosystem. Discuss these functions. **(30 Marks)**

QUESTION 3

- a) Explain the following parameters used in the characterization of a soil profile:
 - i) Soil structure (5 marks)
 - ii) Soil texture (5 marks)
 - b) Discuss the pedogenic factors as outlined by Hans Jenny (1941) and how they interact in the development of different soils from the polar regions to the tropics. (20 marks)
- (30 Marks)**

QUESTION 4

Discuss five pedogenic processes that act on soils on a macro-scale (global scale), highlighting the locations and conditions under which they are most likely to occur.

(30 Marks)

QUESTION 5

- a) Compare and contrast between a master soil horizon and a diagnostic horizon.
 - b) Discuss the World Reference Base and Soil taxonomy soil classification systems and outline their similarities and differences. (10 marks)
- (20 marks)**