

**NATIONAL UNIVERSITY OF LESOTHO  
FACULTY OF AGRICULTURE  
DEPARTMENT OF SOIL SCIENCE AND RESOURCE CONSERVATION**

**SSR3502: SOIL GENESIS, MORPHOLOGY AND CLASSIFICATION**

**PROGRAMMES: BSc Agriculture (Soil Science) and BSc Geography**

**YEAR 3**

**JANUARY 2023**

**100 MARKS**

**3 HOURS**

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**INSTRUCTIONS**

1. Answer ALL questions
  2. All questions carry equal marks [25 marks]
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**Question 1 [25 marks]**

- a) Describe how climate influences the process of soil formation. **[10 marks]**
- b) Distinguish between eluviation and illuviation processes. **[5 marks]**
- c) Briefly discuss the sequence of soil formation from parent material to the formation of the solum. **[10 marks]**

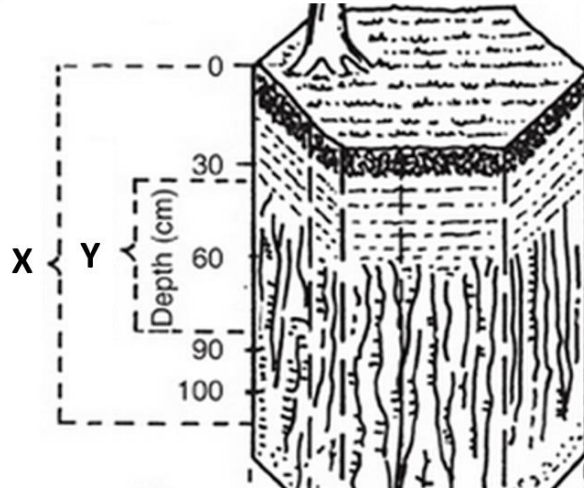
**Question 2 [25 marks]**

- a) Compare and contrast these two horizons: AB-Horizon and A/B-Horizon. **[8 marks]**
- b) Discuss any three (3) soil colours and clearly indicate what they suggest about other soil properties. **[9 marks]**
- c) Discuss the importance of soil texture particularly in predicting agricultural productivity. **[8 marks]**

**Question 3 [25 marks]**

**Use the figure below to answer questions a) and b):**

- a) Define the following, and identify them from the picture below: **[4 marks]**
  - i) Solum
  - ii) Control section
- b) Which one between solum and control section is used in determining particle size class of the soil family name and why? **[7 marks]**



- c) What are diagnostic soil properties? [2 marks]
- d) A soil name was given as: *Fine-loamy mixed thermic Typic Hapludult*. State and identify all levels of the US Soil Taxonomy depicted on this name. [12 marks]

**Question 4 [25 marks]**

- a) Based on **depth**, **fertility** and **erosion**, discuss how soils vary at the following landscape positions: summit, shoulder and toeslope. [15 marks]
- b) Discuss any two (2) water transported parent materials. [10 marks]