



# MACHAKOS UNIVERSITY

University Examinations for 2018/2019 Academic Year

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCES

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR IN ENVIRONMENTAL RESOURCE CONSERVATION

**ENS 233: SOIL HABITATS**

**DATE: 27/9/2019**

**TIME: 11.00-1.00 PM**

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## **INSTRUCTIONS:**

**Answer question ONE and any other TWO questions**

### **QUESTION ONE:**

- (a) Define the following terms;
  - (i) Soil (2 marks)
  - (ii) Habitat (2 marks)
  - (iii) Peds (2 marks)
  - (iv) Soil Cation Exchange Capacity (2 marks)
  - (v) Soil available water (2 marks)
- (b) Describe the Hysteresis phenomenon (10 marks)
- (c) State the functions of organic matter (5 marks)
- (d) Explain carbonation as a soil forming process (5 marks)

### **SECTION B: 40 MARKS**

### **QUESTION TWO:**

- a) With an aid of diagram show the effect of soil texture on soil-water retention (7 marks)
- b) Explain why there is a significant difference between the concentration of Carbon dioxide in the soil and in the atmosphere (5 marks)

- c) Explain the factors which hasten the rate of soil development (8 marks)

**QUESTION THREE:**

- a) Explain soil as a three-phase system (6 marks)  
b) Describe the soil Master horizons (14 marks)

**QUESTION FOUR:**

- a) Explain the main types of soil remediation techniques for the removal of various pollutants and contamination from soils (12 marks)  
b) Explain the following statements;  
i. Why soil horizon A would tend to be horizon B (4 marks)  
ii. Why soil horizon B would tend to be horizon A (4 marks)

**QUESTION FIVE:**

- a) Describe the possible management practices which will immobilize heavy metal contaminants in the soil and reduce the potential adverse effects to the environment (8 marks)  
b) Giving examples discuss the role of micro-organisms in the soil (12 marks)