

FEDERAL UNIVERSITY OF TECHNOLOGY OWERRI  
 SCHOOL OF AGRICULTURE AND AGRICULTURAL TECHNOLOGY  
 DEPARTMENT OF SOIL SCIENCE TECHNOLOGY  
 2006/2007 HARMATTAN SEMESTER EXAMINATION  
 SOIL GENESIS, CLASSIFICATION & MAPPING  
 TIME ALLOWED:

SST 401  
 3 HOURS

**INSTRUCTION.** Attempt 5 questions in all, Candidates are advised to answer at least 2 questions from each section.

**SECTION A. SOIL GENESIS**

- 1 (a) Differentiate between Soil Genesis and weathering.  
 (b) Discuss 5 important processes through which rocks mechanically breakdown.  
 (c). Itemize any 5 reasons why we study soil genesis.
- 2 (a) "Soil is a product of five soil forming factors". Discuss?  
 (b) How can man influence soil formation? (c) State the climafunction.
3. (a) Explain (i) E – horizon (ii) R – horizon (iii) Bt – horizon (iv) Cm – horizon  
 (v) Bhs – horizon (vi) Ap- horizon (vii) Oe- horizon (viii) ss- subordinate horizon  
 (ix) Ab – horizon (x) z-subordinate horizon (b) (i) pedoturbation (ii) lessivage  
 (iii) Melanization (iv) Enrichment (v) Synthesis (vi) Ripening (vii) Paludization  
 (viii) Braunification (ix) Leucinization (x) Littering

**SECTION B. CLASSIFICATION AND MAPPING**

- 4 (a) In your opinion, is Soil classification necessary in low technology (LT) agriculture? Give reasons.  
 (b) Define the term "differentiae"? (c) State the importance of differentiae in soil classification.  
 (c) How many categories are there in USDA Soil Taxonomy? List them.
- 5 (a) State the major difference between Natural and Technical classifications of soils.  
 (b) Explain (i) Entisols (ii) Ultisols (iii) Histisols (iv) Vertisols (v) Andisols.  
 (c) Complete this Table

Soil Order	Derivation	Formative element
Gelisols	-	-
-	-	od
-	Fr. Oxide, oxide	-
Ultisols	-	-
Entisols	-	-

6. (a) State any 3 processes in soil classification. (b). Explain (i) Acrisols (ii) Arenosols (iii) Calcisols (iv) Solonchaks (v) Leptosols. (c) Complete this Table

Formative element	Derivation	Meaning
alb	-	-
cry	-	-
-	L fluvis, river	-
xer	-	-
psamm	-	-