

UNIVERSITI SAINS MALAYSIA

First Semester Examination
Academic Session 2004/2005

Oktober 2004

BST 202E/3 - Soil Science and Environment
[Sains Tanah dan Persekitaran]

Duration: 3 hours
[Masa : 3 jam]

Please ensure that this examination paper contains printed pages.

Answer FIVE out of SIX questions, in English or Bahasa Malaysia.

Each question carries 20 marks.

Sila pastikan bahawa kertas peperiksaan ini mengandungi muka surat yang bercetak sebelum anda memulakan peperiksaan ini.

Jawab LIMA daripada ENAM soalan yang diberikan, dalam Bahasa Inggeris atau Bahasa Malaysia.

Tiap-tiap soalan bernilai 20 markah.

[BST 202E/3]

- 1) List out the principal characteristics and the differences among the soil orders Ultisols, Alfisols, Inceptisols, Histosols and Entisols.

(20 marks)

Senaraikan ciri-ciri utama dan perbezaan antara order tanah Ultisols, Alfisols, Inceptisols, Histosols dan Entisols.

(20 markah)

- 2) Explain the phenomenon of water rising up from the water table in a mineral soil. Use the terms adhesion, cohesion, meniscus, surface tension, atmospheric pressure and hydrophilic surface to explain your answer.

(20 marks)

Jelaskan fenomena kenaikan air ke atas daripada paras air takungan bagi tanah mineral. Gunakan istilah jelekatan, jelekitan, miniskus, tekanan permukaan, tekanan atmosfera dan permukaan hidrofilik untuk menjelaskan jawapan anda.

(20 markah)

[BST 202E/3]

3. (a) In what ways are soils involved in the greenhouse effect that is thought to be warming up the earth?
(5 marks)

(b) What are some common soil management practices that could be changed to reduce the greenhouse effects?
(15 marks)

(a) *Bagaimanakah tanah turut terlibat dalam kesan rumah hijau yang memanaskan bumi?*
(5 markah)

(b) *Apakah beberapa kaedah pengurusan tanah yang boleh diubahsuai bagi mengurangkan kesan rumah hijau ini?*
(15 markah)

4. Define the following terms:-

- (a) Anoxia
- (b) Decomposition
- (c) Humification
- (d) Desertification
- (e) Bioremediation
- (f) Ammonification
- (g) Denitrification
- (h) Nutrient mobility
- (i) Soil fertility
- (j) Flocculation

(2 marks each)

Berikan definisi istilah berikut:-

- a) *Anoksia*
- b) *Penguraian*
- c) *Humifikasi*
- d) *Desertifikasi*
- e) *Bioremediasi*
- f) *Amonifikasi*
- g) *Denitrifikasi*
- h) *Kemobilan nutrient*
- i) *Kesuburan tanah*
- j) *Flokulasi*

(2 markah setiap satu)

2. Explain the following statements:-

- (a) What are the differences between soil compaction and soil crusting.

(8 marks)

- (b) What are the major factors affecting soil compaction and soil crusting.

(8 marks)

- (c) Why are crusting both a physical and chemical problems.

(4 marks)

Terangkan pernyataan yang berikut:-

- (a) *Apakah perbezaan di antara pemampatan tanah dan pembentukan kerak ("crusting")*

(8 markah)

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