

**The University of Melbourne
The Institute of Land and Food Resources
Semester 1 Assessment 2004**

202106 Land Resources

Reading Time 15 minutes

Examination Duration 3 hours

This paper has 3 pages including this cover.

Examination paper can be deposited in Library

Authorized Materials

No materials are authorized

Instructions to Invigilators

Students will require script books only (initially 6)

Instructions to students

This paper contributes 50% of the total subject mark.

You are to answer six (6) questions. There are five (5) sections. You must answer one (1) question from each section and an additional question from any section.

Separate script books are to be used for each question attempted

All questions are of equal value.

202 106 LAND RESOURCES, Semester 2 Examination, 2004

You are to answer six (6) questions. There are five (5) sections. You must answer one (1) question from each section and one (1) additional question from any section. Separate script books are to be used for each question attempted.

SECTION A

1. The igneous rocks that have had the largest effect on the Victorian landscape are the Devonian granites/granodiorites and the Recent basalts. Each has given rise to distinct landscapes and soils. Discuss the reasons for these differences by discussing:
 - a. the processes by which these two rock types are formed,
 - b. their mineral content and the way that has influenced the soils formed from them,
 - c. the features of the landscapes associated with these rock types and the way these are influenced by the rocks and the rock forming processes.(each part is of equal value)
2. Weathering and leaching are important processes involved in the formation of soils. Using examples, show how climate and parent material interact with these two processes to form different soil profiles. In your answer, you should include definitions of weathering and leaching.
3. Give examples of Sedimentary, Metamorphic and Igneous rocks and indicate what characteristics soil derived from these rocks would display

SECTION B

3. Discuss the factors which influence the formation of soils
4. Write brief notes on three (3) of the following topics:
 - a. Theories for the origin of duplex (texture contrast) soil profiles
 - b. Ferrosols in Victoria
 - c. Sodosols in Victoria
 - d. The properties used to describe soil profiles in the field
 - e. Dispersion and slaking of soil aggregates
 - f. Gilgai(each part is of equal value)
5. Discuss the red duplex soils of the Goulburn Valley, including in your answer;
 - a. the basic profile characteristic,
 - b. the profile characteristics that are used to separate soil types in the region,
 - c. the way soil types are distributed in the landscape and how this relates to soil formation,
 - d. the way soil type has influenced the uses to which these soils can be put.(each part is of equivalent value)

SECTION C

6. Discuss the key climatic factors influencing plant growth, development and the production of harvestable plant parts.
7. What are the factors leading to variability of climate in Australia? In your answer you should consider variability across Australia, within an area and over time.
8. What are El Nino, La Nina and the Southern Oscillation Index? How do they impact upon natural or managed ecosystems?

SECTION D

9. Discuss the components of the hydrologic cycle of a woodland in a temperate region. Using the general water balance equation, show how clearing would impact upon the quantity and quality of surface water resources.
10. Describe the processes leading to dryland salinity, the detrimental effects of dryland salinity, and the ways in which governments and community groups have responded to the problem.

OR

With the aid of diagrams, describe the mechanism of irrigation salting. You should discuss the significance of plant water use, watertable fluctuations, capillary rise, soil moisture status and irrigation practice.

11. What are the key water resource management issues facing management of the Murray river?

SECTION E

11. With reference to Endter-Wada (1998, Social Science Contributions to Ecosystems Management), outline four types of social information that you might consider in exploring the impact of land use change on rural communities. Provide examples of these types of information.
12. Catchment Management is emerging as a dominant model for land management in Australia. With reference to readings, field trips and lecture material, explain why social information must be considered in catchment planning. Outline the types of information you might use in catchment planning.
13. Discuss the relationship of land use change and social change. Include in your answer an example of land use change affecting social changes and social change affecting land use changes.

End of Examination