

PROGRAMS [Graduate Certificate in Building and Planning](#) |  
COURSES 05470 CIVE 4012 Building Structures and Geomechanics 2 |

EXAMINATION: Semester 2, 2002 *External students only*

DURATION: **2.0 hours of exam time, preceded by 10 minutes of Reading time,**

**INSTRUCTIONS TO CANDIDATES:**

- Answer all questions
  - All questions are of equal value
  - **No reference material is allowed**
  - State any assumptions made
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**Question 1:**

- (a) Outline typical geotechnical engineering problems that can be encountered on sites with clay soils, sand soils, and sites containing rock.
- (b) Outline the actions geotechnical engineers can follow to better define the soil conditions at a building site.

**Question 2:**

- (a) Explain what a Static Cone Test (or Cone Penetrometer Test) is, and the application of the test in geotechnical engineering.
- (b) Outline typical footings that can be used for domestic construction in Adelaide, and their application for different soil types.

**Question 3:**

- (a) Define a displacement and non-displacement pile, and give examples of each pile type.
- (b) Outline where a shallow spread footing would be used, and where a piled footing be used for a multi-storey building. Support your answer with illustrations.

**Question 4:**

- (a) Outline different types of retaining walls that are commonly used in civil engineering.
- (b) Describe the various modes of failure of common retaining structure systems.

**Question 5:**

- (a) Why does the ingress of water increases the potential for a slope to become unstable?
- (b) Explain the shape of the dry density-moisture content relationship curve for a typical soil subjected to compaction.

***End of Questions***