

University of South Australia
School of Geoinformatics, Planning and Building

Building Technology 1 Examination
Semester 1, 1998

Instructions to Candidates:

Answer all four questions

All Questions are of Equal Value

Closed Book Examination

Duration: 2 Hours

Lecturer: Stephen Pullen

1. Describe how you could assess the condition of reinforced concrete using on-site tests. Explain which properties of the reinforced concrete you are testing and what factors affect these properties. Use sketches and diagrams where appropriate.
2. What are the conditions that contribute to the rot or decay of timber? What can you do to minimise these factors? Describe the methods that are used to prevent the degradation of timber.
3. Briefly explain the principle of anodising aluminium.

The data below recorded the readings taken during a tensile test on an aluminium bar of rectangular cross-section 10mm x 5mm. Two gauge marks were scribed on the bar exactly 50mm apart and at each increment in load, the distance between the marks was measured.

Load (kN)	2.0	4.0	6.0	8.0	10.0	12.0	13.0	13.5	14.0	14.5	15.0	15.25
Elongation (mm)	0.03	0.06	0.09	0.11	0.14	0.17	0.20	0.24	0.31	0.55	1.62	2.75

Draw a graph of stress vs. strain for this test. From the graph estimate the Young's Modulus of the material and the stress at the limit of elasticity. At what stress would there be a permanent extension of 1%?

4. A vertical joint in a building must accommodate ± 4 mm movement. The silicone sealant that has been chosen has a movement accommodation factor of $\pm 20\%$. If the recommended width:depth ratio for the sealant is 2:1, sketch a section through the joint showing all dimensions and relevant features.

What can go wrong with sealants?