



School	NBE	Subject Area & Catalogue number	CIVE 1003
Course Name	Construction Science 1		

Official Reading Time: 10 Minutes

Writing Time: 2½ Hours

Note that ENTEXT students are allowed 10 minutes additional time per hour of exam time. In this case 25 minutes of additional time.

Instructions to Candidates:

- This exam is worth 50% of the total course marks.
- Attempt all questions.
- *All questions are of equal value.*
- No reference materials are allowed.
- State any assumptions made.
- Diagrams are recommended where appropriate.

Permitted Materials

Normal writing and drawing equipment.

Question 1

Describe the principle of bimetallic corrosion and write notes on the factors that affect the rate of corrosion, giving clear examples where appropriate. If a copper and steel pipe were joined, explain what would happen if (a) the copper were coated and (b) the steel were coated. What are the underlying reasons for your explanation? Use diagrams where suitable.

20 marks

Question 2

Write notes on the following aspects of glass and glass products. Use diagrams where appropriate.

- (i) The manufacture of float glass
- (ii) The potential and actual strength of glass and the reasons for the difference.
- (iii) Describe in detail two glass products, which have been developed to overcome this problem.
- (iv) What are GRC and GRP?

20 marks

Question 3

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. Explain the terms modulus of elasticity and modulus of rupture for timber.

20 marks

Question 4

Describe how you could assess the condition of fully hardened and matured 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.

20 marks

Question 5

Respond to the following questions and statements:

- a. What is creep in materials?
- b. What is meant by fibre saturation point in timber?
- c. What is brick growth?
- d. Give an alternative name for modulus of rupture.
- e. Sketch stress/strain curves for materials which show Hookean and non-Hookean elasticity.
- f. Why is it that aluminium does not corrode like steel
- g. Float glass is manufactured by floating molten glass over the surface of what and why?

The use of diagrams is encouraged.

20 Marks

END OF QUESTIONS

DO NOT COMMENCE WRITING UNTIL INSTRUCTED TO DO SO