UNIVERSITY COLLEGE LONDON

University of London

EXAMINATION FOR INTERNAL STUDENTS

For The Following Qualification:-

B.Sc.

ES1180: Materials in Construction

COURSE CODE	:	**ENVS1180**
UNIT VALUE	:	**0.50**
DATE	:	**30-APR-03**
TIME	:	**10.00**
TIME ALLOWED	:	**3 Hours**

TURN OVER

ENVS 1180 MATERIALS IN CONSTRUCTION

Answer FIVE questions

1. (a) Outline the stages involved in the manufacture of Portland Cement. (8 marks)

   (b) State the FOUR main mineralogical constituents of Portland Cement clinker AND discuss their role in influencing the properties of cement. (12 marks)

2. (a) Define the term 'workability' in concrete technology. (4 marks)

   (b)Discuss the main factors affecting the workability of freshly-mixed concrete. (10 marks)

   © Outline ONE experimental method of assessing workability of concrete on site or in the laboratory. (6 marks)

3. (a) State, giving reasons, the type of steel normally used in reinforced concrete. (6 marks)

   (b) Discuss the conditions under which steel reinforcements embedded in concrete corrodes AND suggest methods used in minimising such corrosion. (14 marks)

4. Discuss the use of timber and stone as building materials with reference to:

   (i) decay and (ii) maintenance. (20 marks)

5. In polymer technology:
   (i) Distinguish, with examples, between addition polymerisation and condensation polymerisation. (6 marks)

   (ii) Differentiate, giving examples, between thermoplastics and thermosetting materials. (6 marks)

   (iii) Discuss the function of FOUR main ingredients used in the manufacture of plastics. (8 marks)

6. (a) State FOUR performance requirements of mortars for brickwork. (8 marks)

(b) Suggest, giving reasons, recommended proportions for a mortar mix suitable for the following situations:

(i) an internal wall, eg partition walls, using common bricks in mild weather (4 marks)

(ii) an external wall, eg parapet walls, using 'stock' bricks in cold weather (4 marks)

(iii) an external wall, eg work below ground level in sulphate-bearing soils, using flettons in sheltered conditions. (4 marks)

7. (a) State FOUR advantages of using gypsum building plasters compared with building lime or cement for plastering internal walls and ceilings. (8 marks)

(b) Describe the composition, characteristics and applications of FOUR main classes of gypsum building plasters. (12 marks)

END OF PAPER