

PROGRAM **ICBP Graduate Certificate in Building and Planning**

COURSES **05470 Building Structures & Geomechanics 2**

EXAMINATION: **Semester 2, 2001** *External students only*

DURATION: **2.0 hours**

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) Summarise the different behaviour observed in clay soil, and in sands and gravels. Illustrate your answer with an appropriate footing type for a house for each soil type.
- (b) Explain several features of a natural soil profile that could cause problems to a house footing.

Question 2

- (a) Outline the principles of the static cone test and how this test is used in geotechnical engineering.
- (b) Describe and illustrate the function and application of a pier-and-beam footing.

Question 3

- (a) Explain why site maintenance is important for the successful performance of a house footing.
- (b) For a multi-storey building, outline instances where a pad footing would be used, and instances where a piled footing would be used.

Question 4

- (a) Explain the differences and applications of a displacement pile and a non-displacement pile.
- (b) Explain why drainage behind a retaining wall is important, and support your answer with an illustration.

Question 5

- (a) Describe suitable construction techniques to support small and large- scale excavations.
- (b) Explain why adding lime to clay can improve the engineering properties of the clay. Summarise some soil properties that are improved.

End of Questions