INSTRUCTIONS:

1. Answer all questions. Marks are allocated to each question.
2. Sketching is important. Instruments may be used and all sketches should be to an approximate scale, i.e. in proportion. It is preferable that the approximate scale be stated.

NOTES:

1. THIS IS A CLOSED BOOK EXAM
2. THIS EXAM COUNTS 60% TOWARDS THE FINAL MARK FOR THIS MODULE
QUESTION 1 (SITE SELECTION)  

Explain the meaning of the following legal restrictions and critically discuss how these affect the way in which a building and a site are planned. Provide neat and annotated sketches to complement written work.

i. Coverage  
   [6 MARKS]

ii. Floor Area Ratio  
   [6 MARKS]

iii. Building lines  
   [6 MARKS]

QUESTION 2 (FOUNDATIONS, WALLS, FLOORS, MATERIALS)  

(a) Discuss under what circumstances raft type foundations are generally used.  
   [4 MARKS]

(b) By means of neat and annotated sketches show three types of raft foundations, discuss the main characteristics of each type and indicate under what sub-soil conditions each type would be appropriate.  
   [18 MARKS]

(c) Draw a detailed and well-labelled section through a stiffened raft foundation, showing also the connection with an external brick masonry cavity wall.  
   [16 MARKS]

(d) On the drawing required for question 2(c), clearly indicate and describe methods of wall strengthening and methods preventing water penetration.  
   [4 MARKS]

QUESTION 3 (WALLS, MATERIALS)  

(a) Provide neat sketches (plan views of two alternate courses and six-course high elevation) showing how two alternate courses of a brick wall in English bond are laid.  
   [4 MARKS]

(b) External load-bearing walls can be built in many different ways and using different materials. Plastered concrete block walls, clay facing brick walls and plastered clay stock brick walls are three options. Discuss the advantages and disadvantages of each, focusing on the following factors: cost; labour; time; strength; durability; maintenance.  
   [18 MARKS]

QUESTION 4 (WALLS, OPENINGS IN WALLS)  

(a) Single storey dwellings often rely on a structural form known as cellular masonry construction. Explain what is meant by cellular masonry construction and briefly discuss the implications in terms of the transfer of loads.  
   [6 MARKS]

(b) Openings in load-bearing walls must be formed so that the loads are properly carried and transferred. Lintels are structural members used to span door and window openings and support the structure above these. Discuss the main characteristics of and the difference between bed joint reinforced lintels and precast prestressed concrete lintels. Provide neat and annotated sketches to complement written work.  
   [12 MARKS]

END OF PAPER  

TOTAL MARKS [100]