



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

Faculty of Engineering & Technology

DEPARTMENT OF CIVIL AND BUILDING ENGINEERING

DIPLOMA IN ARCHITECTURE

DIPLOMA IN CIVIL ENGINEERING

CIVIL ENGINEERING CONTRUCTION I

END OF SEMESTER EXAMINATIONS

MAY 2010 SERIES

TIME: 2 HOURS

Instructions to Candidates

You should have the following for this examination:

- Answer booklet
- Drawing instruments

This paper consists of **FIVE** Questions.

Answer **THREE** Questions.

Question **ONE** is **COMPULSORY** and any other **TWO** Questions.

Maximum marks for each part of a question are as shown.

Question ONE (COMPULSORY)

- (a). (i). State the **FOUR** reasons for under pinning.
(ii). Sketch and label a cross-section through a wall underpinning
(11 Marks)
- (b). With the aid of sketches, describe the following methods of ground water exclusion:
(i). Sump pumping
(ii). Freezing
(9 Marks)
- (c). (i). State **TWO** functional requirements of foundations.
(ii). State the **THREE** circumstances that necessitate use of rafts.
(iii). State the **FOUR** factors influencing use of cellular Raft foundation.
(10 Marks)

Question TWO

- (a). State **FIVE** modes of failure of retaining walls. **(5 Marks)**
- (b). With the aid of a sketch, describe the construction of 'cantilever retaining wall'.
(10 Marks)
- (c). State **THREE** advantages and **TWO** disadvantages of mass retaining walls.
(5 Marks)

Question THREE

- (a). With the aid sketches, describe the construction methods for the following caissons:
(i). Box caissons
(ii). Pneumatic caissons
(12 Marks)
- (b). Briefly explain the following defects associated with caissons:
(i) Sand blowing
(ii) Sinking
(8 Marks)

Question FOUR

- (a). State **SIX** factors to be considered when selecting a suitable cofferdam for a specific work.
(6 Marks)

- (b). With the aid of sketches, describe the following:
- (i). Rockfill dam
 - (ii). Earth dam
- (8 Marks)**
- (c). Explain **THREE** causes of failure in Gravity cofferdams. **(6 Marks)**

Question FIVE

- (a). State **FIVE** indicators in determining suitability of labour-based methods. **(6 Marks)**
- (b). Sketch and label a section through a Jack or miga pile wall underpinning. **(10 Marks)**
- (c). State the **FOUR** design principles of retaining walls. **(4 Marks)**