



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)
Faculty of Engineering and Technology

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

DIPLOMA IN CIVIL ENGINEERING (DC II)

DIPLOMA IN BUILDING & CIVIL ENGINEERING (DBC II)

EBC 2207: CIVIL ENGINEERING CONSTRUCTION I

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: MAY/JUNE 2012

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 any **THREE** questions

Maximum marks for each part of a question are clearly shown

This paper consists of **TWO** printed pages

Question 1 (20 marks)

- a) (i) State the **THREE** circumstances that necessitates the use of piles as foundations
(ii) State the **FOUR** factors upon which selection of piling system relies (8 marks)
- b) With the aid of sketches, show the **THREE** methods of water cut-off in rockfill cofferdam construction where high water heads are experienced (12 marks)

Question 2 (20 marks)

- 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 **FOUR** design principles of retaining walls (4 marks)

Question 3 (20 marks)

- a) (i) Define the term caisson
(ii) State the main difference between caisson and cofferdam
(iii) With the aid of a sketch, show the construction of caisson where a hard bearing layer is not available at foundation level (9 marks)
- b) State **THREE** advantages and **TWO** disadvantages of mass retaining walls (5 marks)
- c) (i) State the **TWO** functional requirements of foundations
(ii) State the **THREE** situations that necessitate the use of rafts (6 marks)

Question 4 (20 marks)

- a) Using suitable sketches, show the **TWO** main methods of anchoring sheet piles to rock (7 marks)
- b) State **FOUR** factors to be considered in design of double-wall cofferdams (4 marks)
- c) (i) State **THREE** factors that influence type of cofferdam to be selected
(ii) Outline the **THREE** main causes of failure of single wall-cofferdams (9 marks)

Question 5 (20 marks)

- a) State the **FOUR** reasons for underpinning (6 marks)
- b) With the aid of a labeled sketch, describe a cantilever wall. (10 marks)
- c) State the **FOUR** factors to be considered in design of double-wall cofferdams (4 marks)