



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

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

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING
UNIVERSITY EXAMINATION FOR BACHELOR OF SCIENCE IN
BUILDING & CIVIL ENGINEERING

EBC 2207: CONSTRUCTION TECHNOLOGY I

END OF SEMESTER EXAMINATION

SERIES: APRIL 2012

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions in **TWO** sections **I & II**

Answer question **ONE (Compulsory)** and any other **TWO** questions

Maximum marks for each part of a question are clearly shown

This paper consists of **TWO** printed pages

SECTION I (Compulsory)

Question 1

- a) Distinguish between cohesive and non-cohesive soils under the following sub headings:
- (i) Permeability
 - (ii) Internal friction
 - (iii) Consolidation under construction loads and plasticity (8 marks)
- b) Discuss the effects of differential settlement of buildings and outline measures to control these effects (7 marks)
- c) With the aid of suitable sketches, distinguish between the following foundations;
- (i) Reinforced wide strip and deep strip foundations (8 marks)
 - (ii) Raft with upstand beams and cellular raft (7 marks)

SECTION II (Answer any TWO questions)

Question 2

- a) Distinguish between driven precast concrete PCC, and bored pipe foundations, with the aid of appropriate sketches (12 marks)
- b) Show with the aid of suitable sketches, the distribution of building loads through a pile cap and ground beams (8 marks)

Question 3

- a) Outline with the aid of sketches, the forces which act on a retaining wall (8 marks)
- b) Outline measures designed to provide stability of a cantilever retaining wall and limit the forces outlined in question (a) above, including provision of suitable drains in the structures as to reduce passive water pressure (12 marks)

Question 4

- a) With the aid of suitable sketches, distinguish between a cofferdam and caisson. (8 marks)
- b) Describe the construction of a single skin cofferdam, showing a pictorial and sectional view of the cofferdam (12 marks)

Question 5

Write short descriptive notes on the following seafront structures:

- (i) Dock
- (ii) Pier fender system
- (iii) Dolphin and
- (iv) Piers (20 marks)