



TECHNICAL UNIVERSITY OF MOMBASA
**Faculty of Engineering &
Technology**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING
HIGHER DIPLOMA IN BUILDING & CIVIL ENGINEERING (HDBC 12J)

EBC 3222: HIGHWAY ENGINEERING I

END OF SEMESTER EXAMINATION

SERIES: APRIL 2013

TIME ALLOWED: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions.

Answer any **THREE** questions

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

Question One

- a) With the aid of sketches, explain the construction method of the following ancient roads:
- (i) Roman (10 marks)
 - (ii) Earth (10 marks)
- b) Briefly describe preliminary survey activities. (10 marks)

Question Two

Explain the following methods of site investigation

- (i) Materials survey (6 marks)
- (ii) Subsurface exploration (7 marks)
- (iii) Geophysical methods (7 marks)

Question Three

- a) Explain **FOUR** basic factors for considered in the construction of retaining walls. (10 marks)
- b) With the aid of sketches, describe the following types of retaining walls:
- (i) Cantilever
 - (ii) Counter-fort (10 marks)

Question Four

- a) Briefly describe Road classification in Kenya (8 marks)
- b) State **SIX** social and economic considerations during highway planning. (6 marks)
- c) Briefly describe:
- (i) Defects of road shoulders
 - (ii) Remedial measures to such defects (6 marks)

Question Five

- a) State the **THREE** basic data requirements for traffic planning. (6 marks)
- b) Explain the following terms used in traffic planning:
- (i) Trip generation
 - (ii) Trip distribution
 - (iii) Peak flow
 - (iv) Level of service
 - (v) Service volume (14 marks)

