



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

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

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING
UNIVERSITY EXAMINATION FOR DEGREE IN BACHELOR OF SCIENCE
IN CIVIL ENGINEERING (YR 3 SEM 2)
ECE 2303: TRAFFIC ENGINEERING I
END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2011
TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer booklet*

This paper consists of **FIVE** questions

Answer question **ONE (COMPULSORY)** from **SECTION A** and any other **TWO** questions from **SECTION B**

Maximum marks for each part of a question are clearly shown

This paper consists of **TWO** printed pages

SECTION A (COMPULSORY)

Question 1 (20 marks)

- a) Briefly describe how the following driver characteristics influence the rate at which accidents occur.
- (i) Vision
 - (ii) Field of vision
 - (iii) Fatigue
- (9 marks)
- b) Explain how alcoholic drinks affect a driver ability to drive safely (4 marks)
- c) Describe the **SIX** basic steps that are recommended in any detailed accident study (9 marks)
- d) Name and briefly describe the **TWO** types of speed limits commonly used in traffic management (8 marks)

SECTION B (Answer any TWO questions from this section)

Question 2 (20 marks)

- a) Describe the **THREE** main types of crash barriers (12 marks)
- b) Briefly explain **FOUR** advantages of one-way traffic systems (8 marks)

Question 3 (20 marks)

- a) Briefly explain the tidal-flow operation as used in traffic engineering (5 marks)
- b) Describe the three methods used to drain and control the reversible lanes in order to enable tidal flow operations to be carried out safely and efficiently (9 marks)
- c) Briefly explain how the following factors in a main road are affected by closing side streets:
(i) Journey time and running speed
(ii) Number of accidents
(iii) Usage of pedestrian precincts (6 marks)

Question 4 (20 marks)

- a) (i) Compare paint and thermoplastics as materials used for road making (4 marks)
- (ii) Briefly describe the 'reflectorisation' of paint and thermoplastics used in road making. (4 marks)
- b) Briefly describe the following types of traffic signal lights used at road intersections:
(i) Pre-timed traffic signals
(ii) Traffic actuated signals (7 marks)
- c) (i) Briefly describe what traffic signs are (2½ marks)
(ii) State **FIVE** principles of traffic signing (2½ marks)

Question 5 (20 marks)

- a) Briefly explain the following terms used in traffic studies
(i) Uninterrupted flow
(ii) Interrupted flow (6 marks)
- b) Briefly describe the **FIVE** classes of roads in Kenya (5mark)
- c) Explain the functions of the following lines used in roadways
(i) Centre-lines
(ii) Lane-lines (6½ marks)
- d) Name **FIVE** policy documents used in management of traffic (2½ marks)