



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

(A Centre of Excellence)

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

HIGHER DIPLOMA IN BUILDING & CIVIL ENGINEERING

EBC 3224: HIGHWAY & TRAFFIC ENGINEERING II

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2012

TIME: 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) Explain the following terms:
- (i) Space-mean speed
 - (ii) Time-mean speed
- (5 marks)**
- b) With the aid of a sketch, describe the speed distribution curve. **(8 marks)**
- c) State **SEVEN** reasons for carrying out Origin and Destination studies. **(7 marks)**

Question Two

- a) Name and explain the **FIVE** basic elements involved in traffic accidents. **(10 marks)**
- b) Briefly explain the **FOUR** systems of co-ordination of traffic signals. **(8 marks)**
- c) Explain the term cycle length as applied to traffic signal. **(2 marks)**

Question Three

- a) State the **FOUR** main reasons for providing highway lighting. **(4 marks)**
- b) Name and explain the **FOUR** main siting arrangements of street lights. **(8 marks)**
- c) Distinguish between the **TWO** main types of lanterns for distribution of street lights. **(4 marks)**
- d) Define the terms:
- (i) Overhang as applied to street lighting
 - (ii) Mounting height
- (4 marks)**

Question Four

- a) Briefly explain design vehicle in relation to geometric design. **(6 marks)**
- b) Explain Driver characteristics in regard to geometric design. **(5 marks)**
- c) State **FIVE** principles of a good junction design. **(5 marks)**
- d) With the aid of a sketch, explain acceleration lane. **(4 marks)**

Question Five

- a) State the **FOUR** reasons why speed and delay studies are carried out. **(4 marks)**
- b) State **SIX** essential features of a road intersection. **(6 marks)**
- c) Sketch the following at grade level junctions:
- (i) Rotary roundabout
 - (ii) Staggered skewed.
- (6 marks)**

d) State **FOUR** advantages which result from channelization of the intersections. **(4 marks)**