THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

Faculty of Engineering and Technology

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

HIGHER DIPLOMA IN BUILDING & CIVIL ENGINEERING

EBC 3222: HIGHWAY ENG I

END OF SEMESTER EXAMINATION

SERIES: AUGUST/SEPTEMBER 2011

TIME: 2 HOURS

Instructions to Candidates:
You should have the following for this examination
- *Answer booklet*

This paper consists of **FOUR** questions
Answer question **ONE (COMPULSORY)** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **TWO** printed pages

Question 1 (COMPULSORY)

a) Name the **FOUR** basic types of bridges   (4marks)

b) State the **SIX** traffic flow characteristics   (6 marks)

c) Briefly describe the negative socio-economic implications of the Likoni ferry crossing transportation problems to Mombasa Polytechnic University College day scholar who resides in Likoni. Suggest some solutions to the problem   (20 marks)

Question 2

a) State the **SIX** major controls governing the geometric design of a highway   (12 marks)

b) Sketch and describe **SIX** road safety signs commonly used on Kenyan roads.   (8 marks)

Question 3

a) State the **THREE** factors that influence safety on the road and briefly describe their interrelationship   (6 marks)

b) Define the following acronyms: (4 marks)

    (i)   ADT
    (ii)   DHV
    (iii)   AASHTO
    (iv)   LOS

c) Briefly describe the procedure for determining the culvert size for the drainage of a road section
                                                                                     (10 marks)

Question 4

a) Briefly describe the **TWO** categories of traffic flow   (4 marks)

b) Using mathematical expressions, describe the following terms: (6 marks)

    (i)   Space mean speed
    (ii)   Time mean speed
    (iii)   Lane occupancy

c) A vehicle travelling at a speed of 120kph notices a stationary vehicle ahead at a distance of 150m. Assuming a deceleration rate of 4m/s2, will the vehicle stop in time to avoid an accident
                                                                                     (10 marks)