



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

DEPARTMENT OF BUILDING & CIVIL ENGINEERING
UNIVERSITY EXAMINATION FOR BACHELOR OF SCIENCE IN CIVIL
ENGINEERING
[Institutional Based Programmes]

ECE 2521: TRANSPORTATION & LAND USE

END OF SEMESTER EXAMINATION
SERIES: AUGUST 2013
TIME ALLOWED: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- Answer Booklet
- Pocket Calculator

This paper consists of **FIVE** questions.

Answer question **ONE** any other **TWO** questions

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

Question One (Compulsory)

- a) Briefly explain the relationship between land development and transportation **(8 marks)**
- b) Explain the following systems used in transportation **(8 marks)**
- (i) Freeway management systems
 - (ii) Incident management systems
 - (iii) Route guidance systems
 - (iv) Emergency response systems
- c) (i) Describe the relationship between transportation and land development **(8 marks)**

- (ii) In relation to land use and transportation explain why urban areas grow or decline in time. **(6 marks)**

Question Two

- a) With the aid of a flow chart describe transportation within the urban systems **(8 marks)**
- b) In relation to urban planning, briefly describe the ‘location theory’ **(8 marks)**
- c) Explain the **THREE** components of transportation **(4 marks)**

Question Three

- a) In relation to transportation describe the following types of transportation modes:-
(i) Centrally controlled modes
(ii) Individually controlled modes **(6 marks)**
- b) (i) Briefly describe the various classes in which land use models are divided into. **(7 marks)**
- (ii) Explain the nature of transportation demand **(7 marks)**

Question Four

- a) With the aid of a sketch, explain the interaction between the three main components of transportation. **(7 marks)**
- b) Outline the steps followed in the density saturation gradient method to estimate land-use. **(7 marks)**
- c) Briefly explain the following as used in transportation and land-use in urban areas.
(i) Zoning
(ii) Comprehensive plan
(iii) Urban interaction
(iv) Infrastructure **(6 marks)**

Question Five

- a) Explain the “planning process” as used in transportation and land use. **(5 marks)**
- b) Describe the urbanization process and how it affects other urban such as infrastructure and urban services. **(15 marks)**