



**TECHNICAL UNIVERSITY OF MOMBASA**  
***Faculty of Business & Social Studies***  
DEPARTMENT OF BUSINESS STUDIES

DIPLOMA IN LOGISTICS AND TRANSPORT MANAGEMENT

**BLT 2106: TRANSPORT PLANNING**

END OF SEMESTER EXAMINATIONS

**SERIES: AUGUST 2014**

**TIME: 2 HOURS**

**INSTRUCTIONS:**

- This paper consists of **FIVE** questions.
- Answer question **ONE (Compulsory)** and any other **TWO** questions.

***This paper consists of Three printed pages.***

### QUESTION 1 (Compulsory)

- a) Explain the following transport planning attributes stating the applying equation where applicable and defining the equation's parameters
- i) Mode choice
  - ii) Route choice **(25 marks)**
- b) Assume 6,000 potential traveler is using personal cars are to travel between two towns A and B during a given hour. If they are to choose between routes 1 and 2 and route 1 has a free flow time of 20 minutes and road capacity of 4,400 vehicles while route 2 has a free flow time of 10 minutes and capacity of 2,200 vehicles.

Write the equation that can be used to determine the equilibrium travel time. i.e when it take the same time to travel through any of the two routes. **(5 marks)**

### QUESTION 2

- a) Outline
- i) Considerations in designing individual routes. **(7 marks)**
  - ii) Common route designs **(7 marks)**
- b) Explain how stop density and locations is arrived at. **(3 marks)**
- c) A transit agency is considering changing frequency on a certain route. Currently the route serves 11175 passengers in the peak hour, operating at a frequency of 10 buses per hour.

Use Mohring's formula to determine optimal frequency for this route given the cost per hour of operation is \$66, value of time of \$11 per hour and a route-trip time of 95 minutes. **(5 marks)**

### QUESTION 3

There exists peak (rush) hour either in the morning or in the evening in most the Kenya's major towns. Discuss its cause, effects and how it can be minimized. **(20 marks)**

#### QUESTION 4

a) Explain the term modelling in the context of transport planning. **(3 marks)**

b) For a certain zone the trip production to work  $P_w$  is given by

$$P_w = 0.3 - (4.8 \times 10^{-6}) I - 0.041V - 0.0024V + 0.82e$$

Where I is income

V is vehicle ownership

h is family size

e is family level of employment.

i) Interpret the values of the coefficient.

ii) Determine the  $P_w$  for a household whose income is 50,000 annually, having 3 vehicles, family size of 5 and two of them being employed. **(9 marks)**

c) Identify **FOUR** factors that affect the demand for:

i) Passenger transport.

ii) Freight transport.

**(8 marks)**

#### QUESTION 5

a) i) Define transport planning.

ii) Outline the reasons for transport planning.

**(11 marks)**

b) With the aid of a diagram, explain the following road networks designs:

i) Spoke and the Hub Road Network.

ii) Radial Road Network

iii) Grid Road Network.

**(9 marks)**