



TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering and Technology
Department of BUILDING & Civil engineering
UNIVERSITY EXAMINATION FOR:
BACHELOR OF TECHNOLOGY IN CIVIL ENGINEERING

TCV 4428: TRAFFIC ENGINEERING II

END OF SEMESTER EXAMINATION

SERIES: AUGUST 2024

TIME: 2 HOURS

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of five questions.

Attempt question ONE (Compulsory) and any other TWO questions

Do not write on the question paper.

QUESTION ONE 20 Marks) (COMPULSORY)

- a) Outline the;
 - i. Factors to be considered for a well-formed road hierarchy will reduce overall impact of traffic.
 - ii. The road hierarchy principles that assist planning agencies (8 marks)
- b) Discuss with aid sketches, the land use/road hierarchy relationship (8 marks)
- c) Explain the four levels have been arranged in terms of an increasing degree of detail with respect to functional objectives and are defined as follows (2marks)

ANSWER ANY TWO QUESTIONS FROM THIS SECTION

QUESTION TWO (20 Marks)

- a) D Outline
 - i. Factors Considered for the installation of traffic signals.
 - ii. The purpose of field visits once the signals are installed, the traffic engineers. (4 marks)
- b) Discuss the Safety and Mobility for Traffic Operations (6 marks)
- c) Describe with aid of sketches how a Traffic Signal Works (6 marks)
- d) Outline the performance and asset management of signal facility (4 marks)



QUESTION THREE (20 Marks)

- a) Discuss the four basic elements and related tasks in the trip process. (7 marks)
- b) State the data required to carry out a trip assignment and the major aims of traffic assignment procedures. (10 marks)
- c) Explain the various traffic flow periodic volume counts (3 marks)

QUESTION FOUR (20 Marks)

- a) Discuss the
 - i. Four types basic intersections
 - ii. Types of signals (6 mark)
- b) Outline the objectives of signal times (2 marks)
- c) At Buxton Junction, the average normal flow of traffic on cross roads A and B during design period are 600 and 300 pcu per hour respectfully. The saturation flow values on these roads are estimated as 1250 and 1000 pcu per hour for A and B respectively. The all-red time required for pedestrian crossing is 12 sec. Design two phase traffic signal with pedestrian crossing b Webster method. (6 marks)
- d) Describe with aid sketches Cycle lengths of fixed or predetermined signals (6 marks)

QUESTION FIVE (20 Marks)

- a) Describe with sketches the road hierarchy framework (6 marks)
- b) describe the road hierarchy framework (6 marks)
- c) State THREE
 - i. Functional characteristics
 - ii. Frictional characteristics (8 marks)