



MACHAKOS UNIVERSITY

University Examinations for 2022/2023

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

FIFTH YEAR SECOND SEMESTER EXAMINATION

BACHELOR OF SCIENCE (CIVIL ENGINEERING)

ECV 520 URBAN TRAFFIC MANAGEMENT

DATE:

TIME:

INSTRUCTIONS

- *This paper comprises five questions*
- *Answer question number one and any other two questions*
- *All the optional questions carry equal marks*
- *Candidates to have relevant design manuals*

QUESTION ONE (COMPULSORY) (30 MARKS)

- Explain two (2) recommended criteria for the activation of a reversible lane system in a road section (4 marks)
- Describe the use of traffic lights on the roads/intersections (3 marks)
- In relation to traffic management, define the term Grade separation (5 marks)
- Elucidate three (3) types of Grade Separation in respect of traffic Management. (6 marks)
- Discuss five (5) types of on-street parking (5 marks)
- Expound 2 (two) Risk factors influencing crash involvement (5 marks)
- Explain why public health approach is a useful framework in dealing with road safety issues (2 marks)

QUESTION TWO (20 MARKS)

- a) Describe five (5) types of on-street parking layouts (10 marks)
- b) Outline Peripheral Parking system and discuss two (2) of its advantages (10 marks)

QUESTION THREE (20 MARKS)

With the aid of illustrative diagram(s), discuss Automated Parking System (APS)

QUESTION FOUR (20 MARKS)

Transport related environmental pollution has many faces, but two of them are especially onerous: emission of harmful compounds of exhaust gases and vibroacoustic effects with particular significance to noise.

- a) Explain these two environmental pollution phenomena (10 marks)
- b) Discuss two (2) design factors to mitigate harmful effects for each one of the two environmental pollution phenomena in 4.a) above (10 marks)

QUESTION FIVE (20 MARKS)

Explain five (5) risk factors for road traffic injuries and discuss mitigation measures thereof