



ZIMBABWE

**MINISTRY OF HIGHER AND TERTIARY EDUCATION,
INNOVATION, SCIENCE AND TECHNOLOGY
DEVELOPMENT**

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL DIPLOMA

IN

CIVIL ENGINEERING

SUBJECT: Traffic Engineering

PAPER NO: 578/22/S08

DURATION: 3 Hours

MARCH/ APRIL 2025 EXAMINATION

REQUIREMENTS

- 1) Scientific calculator
- 2) Answer booklet

INSTRUCTIONS TO CANDIDATE

- 1) Answer any five (5) questions.
- 2) Start each question on a fresh page.
- 3) Do not write anything on the paper.
- 4) Do not tear off any pages from the answer booklet.

PAPER NO: 578/22/S08-TRAFFIC ENGINEERING

QUESTION 1

- a) Using neat sketches, differentiate between at grade, intersection and grade separated intersection. (10 marks)
- b) Justify the need of law enforcement regarding traffic accidents and safety. (10 marks)

QUESTION 2

- a) Discuss the points to be considered before erecting traffic lights. (10 marks)
- b) Outline the importance of street lighting. (10 marks)

QUESTION 3

Describe in detail the importance of accident studies in improving traffic safety. (20 marks)

QUESTION 4

Major cities in Zimbabwe are increasing in human and traffic population. Hence they are facing problems such as congestion, traffic jam, environmental pollution etc. Explore the viability of non-motorised transport as a possible solution.

QUESTION 5

- a) Describe the PIEV theory in traffic Engineering. (10 marks)
- b) Outline the factors affecting the skid resistance of a pavement. (10 marks)

QUESTION 6

- a) The average normal flow on cross roads A and B during design period are 400 PCU (Passenger car units) and 250 PCU per hour. The saturation flows are 1250 PCU and 1000 PCU per hour respectively. The all red time required for pedestrian crossing is 12 seconds. Design a two phase signal by Webster's method. (10 marks)
- b) Outline the factors affecting the skid resistance of a pavement. (10 marks)
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