



**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR**

FOURTH YEAR FIRST SEMESTER EXAMINATIONS

**FOR THE DEGREE
OF
BACHELOR OF SCIENCE IN CIVIL AND STRUCTURAL
ENGINEERING**

COURSE CODE: CSE 441

COURSE TITLE: TRANSPORTATION ENGINEERING

DATE: MONDAY 25TH APRIL 2022

TIME: 8.00 – 10.00 AM

INSTRUCTIONS:

1. This paper contains **six** questions
2. Answer **any** five questions
3. Marks for each question are indicated in the parenthesis.
4. Examination duration is **2 Hours**

MMUST observes **ZERO** tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over.

ANSWER ANY FIVE QUESTIONS

1. (a) The choice of location of a highway in an urban area is influenced by some factors. Briefly describe them. **(8 marks)**
- (b) Falling weight deflectometer is one of the methods used to evaluate an existing pavement for overlay design. Briefly describe it **(6 marks)**
2. (a) The choice of a highway location is as tedious process that involves back and forth as well compromise. Mention any ten factors that are generally considered when choosing the most appropriate location. **(10 marks)**
- (b) Differentiate between reactive and proactive approaches to road safety. Give examples in each case **(4 marks)**
3. (a) In Highway project appraisal it is important to quantify road user benefits and social benefits of the project when carrying benefit cost analysis. State and briefly explain some of the road user and social benefits to be considered **(8 marks)**
- (b) The various activities involved in driving a motor vehicle may be grouped into three categories or levels of performance: the control level, the guidance level, and the navigation level. Briefly describe each of the above mentioned levels **(6 marks)**
4. (a) What is the function of highway economic analysis **(4 marks)**
- (b) Briefly describe the function of the following components of a railway track **(8 marks)**
- i) Rails ii) Fastening systems iii) Cross ties iv) Ballast
5. (a) Why is it important to maintain roads **(6 marks)**
- (b) Why is it important for the highway Engineer to consider driver and vehicle characteristics in their design of highway/ transportation facilities **(5 marks)**
- (c) Define perception reaction time in relation to drivers **(3 marks)**
6. There are six basic steps may be recommended in any detailed study of accident experience at selected locations in a community: name and explain the steps. **(14 marks)**