(*University of Choice*)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITRY EXAMINATIONS
2019/2020 ACADEMIC YEAR

THIRD YEAR FIRST SEMESTER EXAMINATIONS

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

COURSE CODE: CSE 341

COURSE TITLE: TRAFFIC ENGINEERING

DATE: Tuesday 21ST JANUARY 2020 TIME: 3.00 – 5.00 pm

INSTRUCTIONS:
1. This paper contains EIGHT questions
2. Answer ONE question in section I and TWO questions each from sections II and III
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.

SECTION 1 –Answer one question

1) a) Traffic flow can be divided into two main categories, name and describe them

(4 marks)

b) Traffic stream characteristics fall into two broad categories Macroscopic and microscopic. Mention two characteristics in each case, describe them and mention their importance to Traffic Engineers **(16 marks)**

2(a) Data is an essential input for effective planning, design and management of transportation systems. Describe the process involved in carrying out traffic measurements to obtain that data **(10 marks)**

b) Describe any five types of traffic surveys that can be done **(10 marks)**

SECTION 11- Answer any two questions

3 (a) Data collection methods can be broadly categorized into in-situ methods and floating car data (FCD) methods. Briefly describe any two from each category **(6 marks)**

b) What is an axle load **(3 marks)**

c) Describe three methods that can be used to measure axle loads **(6 marks)**

4 a) What is the importance of traffic forecasting **(3 marks)**

b) Traffic grows from time to time. Explain 5 factors that contribute to the growth in traffic **(12 marks)**

5) Considering the four by four base year trip matrix below. Determine the future estimated trip matrix where the growth factor is 1.2 using **(15 marks)**

      a. Uniform growth factor method
      b. Singly constrained growth factor method- origin constrained
      c. Doubly constrained growth factor.

	1	**2**	**3**	**4**	$\sum j$
1	5	50	100	200	355
2	50	5	100	300	455
3	50	100	5	100	255
4	100	200	250	200	570
$\sum i$	205	355	455	620	1635

SECTION III- Answer any two questions

6) There are four major indices to describe parking utilization. Define them giving the appropriate mathematical formulation where necessary. **(10 marks)**

7) What is the purpose of islands at intersections, use illustrations **(10 marks)**

8) There are two mathematical formulations for determination of trip generation model. Describe them giving the appropriate formula **(10 marks)**