



TECHNICAL UNIVERSITY OF MOMBASA

SCHOOL OF ENGINEERING AND TECHNOLOGY

Department of BUILDING & Civil engineering

UNIVERSITY EXAMINATION FOR:

BACHELOR OF SCIENCE IN CIVIL ENGINEERING

ECV 4318 : TRANSPORT PLANNING & DEVELOPMENT

END OF SEMESTER EXAMINATION

SERIES: JANUARY 2025

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 **four** questions.

Attempt **question ONE (Compulsory) and any other TWO questions.**

Do not write on the question paper.

QUESTION ONE - Answer ALL questions (30 Marks)

- i. The cost of improving an existing road, 25 km long, is KShs. 4.0 million per km, the road user costs, with and without improvement, accident costs, with and without improvement, and maintenance cost, with and without improvement are tabulated below for 10 years period and after the completion of the improvements. Assume a discount rate of 10 percent, determine whether the project is economically justifiable (refer to Table 1). **(20 marks)**

- ii. Briefly explain FOUR key transport planning activities. **(10 marks)**

Table 1

Year (t)	Road user costs		Accidents costs		Maintenance cost		Benefits (Bt)	B _t -C _t	$\frac{B_t - C_t}{1 + \frac{r}{100}})^t$
	With impr.	Without Impr.	With impr.	Without t Impr.	With impr.	Without t Impr.			
1	2	3	4	5	6	7	8	9	10
0	-	-	-	-	-	-	-		
1	105.5	126.5	1.1	3.1	3.5	2.5			
2	110.3	132.2	1.1	3.1	3.5	2.5			
3	115.8	138.9	1.2	3.5	3.5	2.5			
4	121.6	145.8	1.2	3.7	3.5	2.5			
5	127.6	153	1.3	3.8	3.5	2.5			
6	134	161	1.3	4	3.5	2.5			
7	140.7	168.9	1.4	4	3.5	2.5			
8	147.8	177	1.5	4.4	3.5	2.5			
9	155.1	186.2	1.6	4.7	3.5	2.5			
10	162.9	195.2	1.6	4.9	3.5	2.5			

Section B (Choose ANY TWO Questions)

Question 2:

- i. State TWO transportation problems, and discuss appropriate solution. **(5 marks)**
- ii. Briefly describe TWO major tasks guiding transportation network planning. **(5 marks)**
- iii. Discuss ANY FOUR measures one can employ to maximize mobility of people and goods in transportation planning and development. **(10 marks)**

Question 3:

- i. State FOUR comparisons between roads and railways. **(8 marks)**
- ii. Define gauge in railway transportation. **(2 marks)**
- iii. Explain stabilization of soil roads. **(10 marks)**

Question 4:

- i. Briefly explain ANY FOUR factors that determine route allocation. **(4 marks)**
- ii. State THREE requirements that the development and planning facilities should meet. **(6 marks)**
- iii. Briefly explain factors taken into account when designing an airport. **(10 marks)**

Question 5:

- i. Discuss FOUR measures one can employ to maximize mobility of people and goods in transportation planning and development. **(10 marks)**
- ii. Briefly describe TWO major tasks guiding transportation network planning. **(5 marks)**
- iii. Give TWO reasons why transportation is a highly regulated sector. **(5 marks)**