



# **MURANG'A UNIVERSITY OF TECHNOLOGY**

## **SCHOOL OF ENGINEERING AND TECHNOLOGY**

**DEPARTMENT OF ENGINEERING TECHNOLOGY**

**TVET EXAMINATION**

**ACADEMIC YEAR 2023/2024  
FIRST YEAR FIRST SEMESTER ASSESSMENT FOR INTERNAL  
EXAMINATION**

**UNIT CODE : ENG/OS/CET/CR/04/6/A**

**UNIT TITLE: CARRYOUT ROAD CONSTRUCTION WORKS**

**DURATION: 3 HOURS**

### **INSTRUCTION TO CANDIDATES:**

1. Answer ALL questions in Section A and any other THREE questions in Section B.
2. Mobile phones are not allowed in the examination room.
3. You are not allowed to write on this examination question paper.

## **SECTION A: ANSWER ALL QUESTIONS IN THIS SECTION**

### **QUESTION ONE (40 MARKS)**

1. What are earthworks? (2 marks)
2. State five keys to successful earthwork operations. (5 marks)
3. State three advantages of soil compaction (3 marks)
4. Outline four types of roads. (4 marks)
5. List six types of road construction materials (3 marks)
6. Outline five desirable properties of subgrade soils as a highway material (5 marks)
7. Briefly explain two types of pavements (4 marks)
8. Highlight three activities that take place during site clearance and excavation. (3 marks)
9. Explain five types of erosion control structures (5 marks)
10. Define walkways, cyclist lanes and bus bays (3 marks)
11. Highlight three types of footbridge. (3 marks)

## **SECTION B (60 MARKS): ANSWER ANY THREE QUESTIONS IN THIS SECTION**

### **QUESTION TWO (20 MARKS)**

- a) Earthwork activities are typically crucial part of projects involving roads, highways, railways, building foundations and land grading. Discuss the steps involved in earthworks. (10 marks)
- b) Explain five factors affecting highway compaction. (10 marks)

### **QUESTION THREE (20 MARKS)**

Describe the road construction process of a flexible pavement. (20 marks)

### **QUESTION FOUR (20 MARKS)**

- a) Explain quality control procedures outlining test procedures and key components of quality control in road construction. (10 marks)
- b) Identify five equipment and machines used in road construction illustrating their functions. (10 marks)

**QUESTION FIVE (20 MARKS)**

a) Highlight two methods of reduced calculation. (2 marks)

b) The following is an incomplete page level book which indicates missing entry lines.

(18 marks)

- Calculate all the missing entry and complete the page of level book.
- Include the arithmetic checks

<b>Station</b>	<b>BS</b>	<b>IS</b>	<b>FS</b>	<b>Rise</b>	<b>Fall</b>	<b>RL</b>	<b>Remarks</b>
A	2.560					100.0	<b>BM</b>
B		3.540			X	X	
C		3.200		X		X	
D		2.340		X		X	
E	1.950		X	1.08		X	<b>CP1</b>
F		2.440			X	X	
G			3.465		X	X	
<b>Checks</b>	<b><math>\Sigma BS - \Sigma FS</math></b>					<b>L.RL-F.RL</b>	