

073206T4CEN

CIVIL ENGINEERING LEVEL 6

CON/OS/CET/CR/04/6

Carry Out Road Construction Works

March/April 2026



**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION
COUNCIL (TVET CDACC)**

WRITTEN ASSESSMENT

Time: 2 HOURS

INSTRUCTIONS TO CANDIDATE

1. This paper consists of **TWO** sections: **A** and **B**.
2. Answer **ALL** questions in section A and **ANY THREE** (3) questions in section B.
3. Marks for each question are indicated in the brackets.
4. Candidates are provided with a separate answer booklet
5. Do not write on the question paper.

This paper consists of THREE (3) printed pages

Candidates should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing.

SECTION A (40 MARKS)

Answer ALL the questions in this section.

1. Road construction works must comply with statutory and contractual requirements. State FOUR statutory documents required before commencement of earthworks on a road construction project. (4 Marks)
2. Earthwork operations involve the use of various construction plant and equipment. Name FOUR earthwork machines commonly used during excavation works. (4 Marks)
3. Site clearance is a critical activity before road construction begins. State FOUR site clearance activities carried out prior to earthworks on a road project. (4 Marks)
4. Interpretation of drawings is essential in road construction. Describe TWO types of drawings used in road construction works. (4 Marks)
5. Levelling ensures correct road geometry and drainage. Outline FOUR purposes of levelling in road construction works. (4 Marks)
6. Road formation must meet specified standards. State FOUR activities involved in establishing road formation during earthworks. (4 Marks)
7. Quality control is essential in pavement construction. Explain TWO quality control tests carried out on road subgrade or pavement layers. (4 Marks)
8. Highway drainage protects the pavement structure. State FOUR types of highway drainage structures used in road construction. (4 Marks)
9. Road furniture improves safety and traffic control. State FOUR types of road furniture installed on highways. (4 Marks)
10. Construction plant and equipment must be properly managed on site. Explain TWO routine maintenance practices carried out on road construction equipment. (4 Marks)

SECTION B (60 MARKS)

Answer Any THREE Questions in This Section

11. Earthworks form the foundation of all road construction projects.
- a. Outline FIVE steps involved in carrying out earthwork activities for a road construction project. (10 Marks)
 - b. Explain FIVE factors that affect the selection of cut-and-fill methods in road construction. (10 Marks)
12. Pavement structure layers are constructed to ensure strength and durability of roads.
- a. Explain FIVE functions of the base course layer in a flexible pavement. (10 Marks)
 - b. A section of road requires a compacted sub-base layer 150mm thick. The road is 8.0m wide and 500m long. Calculate the volume of sub-base material required in cubic meters. (5 Marks)
 - c. Outline FIVE factors that affect the selection of pavement materials for a flexible pavement. (5 Marks)
- 13.
- a. Drainage and hydraulic structures are critical components of highway infrastructure. Explain FIVE functions of highway drainage systems in road construction. (10 Marks)
 - b. A gabion wall is designed to be 15m long, 2m high, and 1m thick. If each gabion basket measures $2\text{m} \times 1\text{m} \times 1\text{m}$, calculate:
 - i. The volume of stone filling required in m^3 (2 Marks)
 - ii. The number of gabion baskets needed. (4 Marks)
 - c. Explain TWO causes of slope failure along road embankments and cut slopes. (4 Marks)
14. Road furniture forms an essential component of highway infrastructure.
- a. Describe FIVE importance of road furniture used on highways. (10 Marks)
 - b. Explain FIVE maintenance activities carried out on road furniture during highway maintenance. (10 Marks)

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