

071306T4EIN

Electrical Installation Technician Level 6

ENG/OS/EIT/CR/04/6/A

Perform Testing of Electrical Installation

July/ August 2023



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

WRITTEN ASSESSMENT

3 HOURS

INSTRUCTIONS TO CANDIDATES

1. This paper has two sections **A** and **B**. Answer questions in each section as per instructions given in the section.
2. You are provided with a separate answer booklet.
3. Marks for each question are indicated in the brackets.
4. Do not write on the question paper

This paper consists of FOUR (4) printed pages.

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

SECTION A: (40 MARKS)

Answer all questions in this section.

1. State **three** types of potential hazards caused by electrical faults. (3 Marks)
2. (a) Outline **three** types of fuses. (3 Marks)
b. Define the term polarity as used in single-phase power. (1 Mark)
3. As an electrical technician, highlight three safety precautions to be observed while carrying out electrical testing of a new installation. (3 Marks)
4. Distinguish between electrical testing and visual inspection. (2 Marks)
5. Describe **two** types of cable joints for a safe installation circuit. (4 Marks)
6. Explain **three** types of hazards that may arise as a result of overload. (6 Marks)
7. List **four** types of final sub-circuits to be tested in an electrical installation. (4 Marks)
8. Early detection of faults in an installation system helps in mitigation against effect of risks.
Describe **three** instruments used in performing various tests. (6 Marks)
9. Identify **two** factors considered when choosing type of earthing system for an electrical installation. (2 Marks)
10. An earth electrode should comply with IEE regulations, list **two** such regulations. (2 Marks)
11. An electrical consumer should not be located far away from the distribution transformer. Describe **two** effects of power supply to distant customers. (4 Marks)

SECTION B: (60 MARKS)

Answer any **THREE** questions in this section.

12. Your supervisor requires you to conduct inspection and testing of a new installation work before commissioning. The installation is a 3-storey building supplied with 415V three-phase supply system.
- a) Explain **three** reasons for testing and inspecting an electrical installation. (6 Marks)
 - b) Prepare a checklist of necessary tests showing the values and reasons of expected readings. (14 Marks)
13. (a) Explain the purpose of earth loop impedance test and the instrument used to perform the test. (3 Marks)
- b) With the aid of a labelled diagram, describe how earth loop impedance test is carried out on a complete electrical installation earthed in TT giving the following;
 - i. Connection diagram (7 Marks)
 - ii. Description (6 Marks)
 - iii. Expected reading (2 Marks)
 - iv. Reason for the expected value (2 Marks)
14. (a) Define the following terms as used in electrical installation;
 - i. Earthing (1 Mark)
 - ii. Earth electrode (1 Mark)
 - iii. Earthing lead (1 Mark)
 - iv. Earth continuity wire (1 Mark)
- b) Describe **two** methods of electrical system protection stating two advantages in each case. (8 Marks)
 - c) Client X is experiencing fault currents in his metallic case refrigerator. As an electrician, explain the possible reason leading to the problem. State one remedy to the problem. (3 Marks)
 - d) Highlight **five** components of the initial visual inspection checklist in an electrical installation. (5 Marks)

15. (a) With aid of a well-labelled diagram, explain the procedure of performing ring continuity test using a multimeter. (5 Marks)
- b) A circuit breaker is an essential accessory in any installation; describe how a single pole miniature circuit breaker is constructed. (6 Marks)
- c) Using suitable diagrams, discuss three types of earthing systems in an electrical installation. (9 Marks)

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