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TELECOMMUNICATION ENGINEERING TECHNICIAN LEVEL 6

ENG/OS/TLE/CR/01/6/A

Perform Electrical Installation

November/December 2025



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

WRITTEN ASSESSMENT

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INSTRUCTIONS TO CANDIDATE

1. This paper consists of **TWO** sections:
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 FOUR 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 questions from this section.

1. Risk assessment is a proactive requirement under OSHA. List FOUR key steps involved in conducting a risk assessment for an electrical task at a workplace. (4 marks)
2. The Energy Regulations outline requirements for electrical workers. List FOUR categories of electrical worker classifications as recognized by the Energy and Petroleum Regulatory Authority (EPRA). (4 marks)
3. Underground cable systems require special consideration during design. State THREE advantages of using underground cable systems compared to overhead systems in urban installations. (3 marks)
4. Cable selection is a fundamental part of electrical design. List THREE critical factors to consider when selecting the size of a cable for a specific circuit. (3 marks)
5. Backup power systems are essential for critical installations. State THREE types of emergency power supply systems that can be incorporated into electrical installations. (3 marks)
6. Protection devices must operate within precise parameters. State the THREE essential operational parameters that define the performance of a circuit breaker. (3 marks)
7. Earth Leakage Circuit Breakers (ELCBs), commonly known as RCDs, are vital for safety. List FOUR locations or circuits within a residential installation where the use of an RCD is mandatory as per wiring codes. (4 marks)
8. Conflict within a project team is inevitable but must be managed. Outline FOUR effective strategies for resolving conflict within a team on a construction site. (4 marks)
9. Cable termination quality affects system performance. State THREE critical quality checks for proper cable termination in high-voltage applications. (3 marks)
10. The IEE Wiring Regulations specify the maximum number of outlets per circuit. State the FOUR standard design rules for determining the maximum number of socket outlets allowed on a single ring final circuit in a domestic installation. (4 marks)
11. Lugs are used for terminating large cables. List TWO types of compression lugs based on their connection method. (2 marks)
12. Cable pulling requires specific tools and techniques. State THREE essential tools required for proper cable pulling in conduit systems. (3 marks)

SECTION B :(60 MARKS)

Answer **THREE** questions in this section.

13.

- a) "Permit-to-Work" systems are formal safety procedures for high-risk tasks. For SIX different high-risk electrical activities, name the activity and justify why a formal Permit-to-Work system is required before commencement. (12 marks)
- b) Safety signs are a primary means of communicating hazards. Identify FIVE standard types of safety signs used in electrical installations and state their meaning. (5 marks)
- c) Lock-out tag-out procedures prevent accidents. State THREE fundamental rules for implementing effective lock-out tag-out procedures. (3 marks)

14.

- a) The construction process involves several key stages where the electrical installation must be integrated. Explain the specific role and input of the electrical contractor at each of the following stages:
 - i. Architectural Drawing Stage
 - ii. Foundation and Slab Construction Stage
 - iii. First Fixing Stage (before p
 - iv. Second Fixing Stage (after
 (8 marks)
- b) Project planning tools are essential g timelines and resources.
 - i. Draw a simple Gantt chart illustrating the sequence and overlapping timelines of the four stages mentioned in part (a). (6 marks)
 - ii. Explain how this chart helps in coordinating with other trades on site, such as plumbers and masons. (6 marks)

15.

- a) The integrity of an electrical installation is verified through rigorous testing. Outline the step-by-step procedure for performing an Earth Fault Loop Impedance (EFLIZ) test on a final socket outlet circuit and explain the purpose of this test. (9 marks)
- b) A three-phase four-wire (TPN) distribution board is a complex assembly. List ELEVEN key components, busbars, and protective devices that are found within a fully assembled TPN main distribution board. (11 marks)

16.

- a) An electrician can be held legally liable for their work. Explain the difference between negligence and breach of contract, giving a relevant example for each in an electrical context. (6 marks)

- b) Contracts can be formed in various ways. State and explain the THREE essential elements that must be present for a simple contract for electrical work to be legally binding. (6 marks)
- c) The tendering process must be fair and transparent. State and explain FOUR key stages in the tender process, from the client's initial decision to the final award of the contract. (8 marks)