

071306T4EEN

ELECTRICAL ENGINEERING (POWER OPTION) LEVEL 6

ENG/OS/PO/CR/01/6

Perform Electrical Installation

March/April 2026



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

WRITTEN ASSESSMENT

TIME: 3 HOURS

INSTRUCTIONS TO CANDIDATE

1. This paper consists of **TWO** sections: **A** and **B**.
2. Attempt **ALL** questions in section **A** and any other **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 FIVE (5) 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)

Attempt ALL the questions in this section

1. Safety is paramount when working on electrical installations. State the importance of Occupational Safety and Health Act at the workplace. (2 Marks)
2. A safety engineer at Sunshine Limited is supposed to purchase fire extinguishers for the company. List FOUR classes of fire that he should consider while deciding on the type of fire extinguishers to purchase. (4 marks)
3. Jochi Electrical company is tasked to perform domestic electrical installation in a newly constructed building. State FOUR factors to consider in selecting suitable wiring systems for the task. (4 marks)
4. Site survey is necessary before any electrical installation work. List FIVE factors that should be considered when surveying a site for an electrical installation. (5 Marks)
5. Earthing is vital for any electrical installation. State the THREE main functions of earthing. (3 Marks)
6. Circuit protection is key in electrical installation. Name THREE installation conditions that require circuit protection. (3 Marks)
7. Selecting the right tool to perform electrical installation is very essential as per the requirement of IEEE standards. State the recommended work for the following tools: (4 marks)
 - i. Stripping knife -
 - ii. Tape measure
 - iii. Spirit level
 - iv. Phase tester
8. Designing a lighting scheme for a building requires consideration of design parameters for maximum illumination. Identify FOUR such factors that should be considered. (4 marks)
9. Making a cable joint requires consideration of IEE standards so as to enhance good conductivity and safety purpose. State THREE standards to be considered. (3 marks)

10. Different installation condition demands specific wiring system. State TWO advantages of steel conduit over the PVC conduit wiring system. (4 Marks)
11. Tendering is an important process in acquisition of several commodities in an organization as per the law of procurement. Certain documents must be used during this process. List TWO contract documents required during this process. (4 marks)

SECTION B (60 MARKS)

*Attempt any **THREE** questions in this section*

12.

- a. Explain TWO reasons a neutral conductor is required in the cable supplying a three-phase final sub-circuit that has heating loads that draw different values of current on each of the phases. (4 marks)
- b. Occupational Health and Safety Act (OSHA) at the workplace, ensures proper safety, health, and welfare of all the employees and persons lawfully in attendance. Describe FOUR roles of an employer to ensure proper health of the employees. (8 marks)
- c. Electrical accidents can be caused by a variety of factors which can results into damage or death. Explain FOUR factors that leads to such accidents. (8 marks)

13.

Wiring diagram of an electrical installation is a visual representation of the electrical connection in a system.

- a. Describe FOUR importance of wiring diagrams. (8 marks)
- b. Draw a wiring diagram of a lighting circuit such that lamp;
 - i. L1 is controlled by switches S1 and S2;
 - ii. Industrial socket outlet is wired from DP circuit breaker. (8 marks)

The intake point has cut-out, energy meter, Main switch and C.C.U
- c. Circuit protective devices are used to protect electrical circuits from overloads, short circuits and any other hazard. Explain THREE types of these devices. (4 marks)

14.

- a. Logistics is a process of planning, implementing and controlling the efficient and cost-effective flow and storage of raw materials, goods, equipment and personnel from the

point of origin to an installation site. Describe FIVE logistical requirements considered for the transportation of materials, equipment and tools to the installation site.

(10 marks)

- b. Upon completion of electrical installation on a newly completed building tests are carried by the technician. Explain FIVE tests that are carried out in a such newly completed building.

(10 Marks)

15.

- a. Test and inspection are normally conducted on all new installations. Explain THREE reasons for carrying out earthing tests on a complete electrical installation. (6 marks)
- b. You have been awarded a contract to design a single-phase transformer equipment with specifications for normal operations. Determine a minimum circuit breaker trip rating and interrupting capacity for a 50 KVA single phase transformer with 4% impedance, to be operated from a 415 volt 50 Hz source. (6 marks)
- c. You are required to carry a single-phase installation on a newly constructed domestic house. With an aid of a well-labelled diagram explain the sequence of supply control equipment in installation. (8 marks)

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