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071304T4EIN**ELECTRICAL INSTALLATION LEVEL 4****ENG/OS/EI/CR/03/4/A**

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PERFORM ELECTRICAL SYSTEM BREAKDOWN MAINTENANCE

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July/August 2025

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

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TIME: 2 HOURS

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INSTRUCTIONS TO CANDIDATE

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

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

SECTION A (10 MARKS)

Attempt all question in this section. Each question carries one mark

1. You have been conservice a motor, you need to conduct fault diagnosis on the motor.

Identify one fault that may not be a major cause of breakdowns in motors.

- A. Sparking at brushes
- B. Overheating
- C. Failure to excite
- D. Blown choke

2. Identify one common indication of a ground fault llation.

- A. Excessive voltage
- B. Reduced current flow
- C. High resistance
- D. Voltage surges

3. Surge protectors are important components of electrical installations. Identify the function of a surge protector in an electrical system.

- A. To generate power surges
- B. To absorb and divert excessive voltage to protect equipment
- C. To regulate voltage to a constant level
- D. To reduce power consumption

4. Maintenance of electrical installation is aimed at keeping the system at its optimum

wo Which of the following statements is true about breakdown maintenance?

- A. Breakdown maintenance is aimed at repairing a faulty system to restore its functionality.
- B. Breakdown maintenance is aimed at preventing a system from failing.
- C. Planning for breakdown maintenance on an old installation includes extending the installation to suit current needs
- D. Testing the installation may not be necessary when carrying out breakdown maintenance.

5. In the process of repairing and servicing an electrical system, you may come across terms used to describe certain phenomena. Give the meaning of the term 'Short Circuit'
- A. A circuit with
 - B. A circuit with very short cables or wires
 - C. A circuit large current
 - D. A circuit with low resistance
6. Identify one factor that is not a possible disadvantages of breakdown maintenance.
- A. Reduced operational efficiency
 - B. Higher long-term maintenance cost
 - C. Immediate problem identification
 - D. Increased emergency repair needs
7. Various accessories are installed in the lighting circuit of a domestic electrical installation. Identify component likely to be replaced in event of an open circuit fault.
- A. Circuit breaker
 - B. Socket outlet
 - C. Insulation systems
 - D. Energy meter
8. Various activities are undertaken during breakdown maintenance. Identify one action likely to take place during breakdown maintenance.
- A. Preparing a wiring diagram for maintenance purposes.
 - B. Routine cleaning
 - C. Testing and diagnostics
 - D. Preventive component testing
9. Adhering to safety procedures when maintaining an electrical system is paramount. As a technician, what should you do to the power supply when working on an electrical system?
- A. Close and tag circuit breaker and main switch
 - B. Open and tag circuit breaker
 - C. Open and tag the circuit breaker and main switch
 - D. Close and tag circuit breaker

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10. Thermal imaging is one of the methods applied in troubleshooting faults in electrical systems. Highlight the role of thermal imaging in electrical systems maintenance?

- A. Testing insulation
- B. Ensuring correct polarity
- C. Measuring voltage and current
- D. Detecting temperature variations and hotspots

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SECTION B (40 MARKS)***Attempt all questions in this section.***

11. In order to carry out maintenance on florescent lamps, you need to understand parts of the lamp and their functions. Give THREE parts of a florescent lamp. (3 Marks)
12. Servicing motors begin with disassembling the machine. Outline the procedure for dismantling electrical the moor for repair and maintenance. (4 Marks)
13. Faults occur in electrical systems that may cause damage to the system components. Name THREE major types of faults in an electrical installation. (3 Marks)
14. It is important to keep maintenance records of a tion. Give THREE reasons why maintenance records are very important. (3 Marks)
15. Diagnosing a facult is the initial stage of repairing faulty electrical system. Name FOUR ways of diagnosing am electrical fault. (4 Marks)
16. Maintaining an electrical installation minimizes failures. Name FOUR common causes of electrical system breakdowns? (4 Marks)
17. When repairing an electrical installation, you are required to assemble a list of tools, equipment and materials. Give a list of FOUR materials you may require during maintenance of domestic electrical installation with a short circuit fault. (4 Marks)
18. Zakayo is a technician contracted to maintain a faulty earthing system on an electrical installation. Give FOUR earthing tests he may condtem he just maintained. (4 Marks)
19. During breakdown maintenance cables are loosened and scattered. Various materials can be. List FOUR materials used for binding and organizing cables. (4 marks)
20. A maintenance report is prepared at the end the maintenance process. State THREE key elements that must be included in maintenance report. (3 marks)

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21. Miguna is a maintenance technician at Koka Kola Bottlers Company Limited. He is mandated to supervise his team during maintenance of a faulty electrical system in the plant. Give the equipment he will assemble for the team.

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(4 Marks)

- i. Leather gloves
- ii. Helmet
- iii. Safety boots
- iv. Safety goggles

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