

071306T4EEN

ELECTRICAL ENGINEERING (POWER OPTION) TECHNOLOGY LEVEL 6

ENG/OS/PO/CR/05/6

INSTALL SECURITY SYSTEMS

July/ August 2024

Time: 3Hours



**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. Marks for each question are indicated in brackets.
3. Do not write on this question paper.
4. Answer the questions in **English**.

This paper consists of five (5) printed pages.

**Candidate 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. A biometric security system control panel serves as the central hub for managing and controlling biometric access control devices within a security system. State **three** IEEE regulations to be followed when installing Biometric Security system control panel. (3 Marks)
2. Segregating cables involves organizing them based on their type, function, or destination within a system. State **three** reasons why it's important to segregate cables when installing security systems in a new building. (3 Marks)
3. Closed Circuit Television system typically consists of several key components working together to create a surveillance system that can monitor and record activities in both indoor and outdoor environments for security, safety, and surveillance purposes. Mention any **four** components of a CCTV system (4 Marks)
4. Network Video Recorders (NVRs) and Digital Video Recorder (DVR) CCTV systems have their advantages, but NVRs tend to offer several key benefits over traditional DVR systems. Highlight **three** advantages of Network Video recorders over Digital Video recorder CCTV system (3 Marks)
5. Security systems can be deployed individually or integrated into comprehensive solutions tailored to specific security requirements and risk profiles. List **four** types of Security systems used today. (4 Marks)
6. In a security system, various types of cables are used to connect different components and facilitate the transmission of data, power, and signals. Explain two types of cables used in a Security system. (4 Marks)
7. Installing an electric fence in a garden involves several steps to ensure its effectiveness and safety. Give steps you would follow to install an Electric fence in a garden. (6 Marks)
8. CCTV cameras are widely used for surveillance and security purposes in various settings, including homes, businesses, and public spaces. List Four types of CCTV cameras (4 Marks)
9. Laying security system cables involves carefully planning and executing the installation of cables to ensure the effective and efficient operation of the security system. Outline **three** Factors to consider when laying security system cables (3 Marks)
10. Cable termination can involve various techniques depending on the type of cable and the application requirements. Differentiate between Screw terminal and Clamp type terminal as techniques used in security system cable termination. (2 Marks)

11. Smoke detector ensures optimal performance and effectiveness in detecting and alerting occupants to potential fires. Outline **four** factors that affect the choice of a smoke detector (4 Marks)

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SECTION B (60 MARKS)

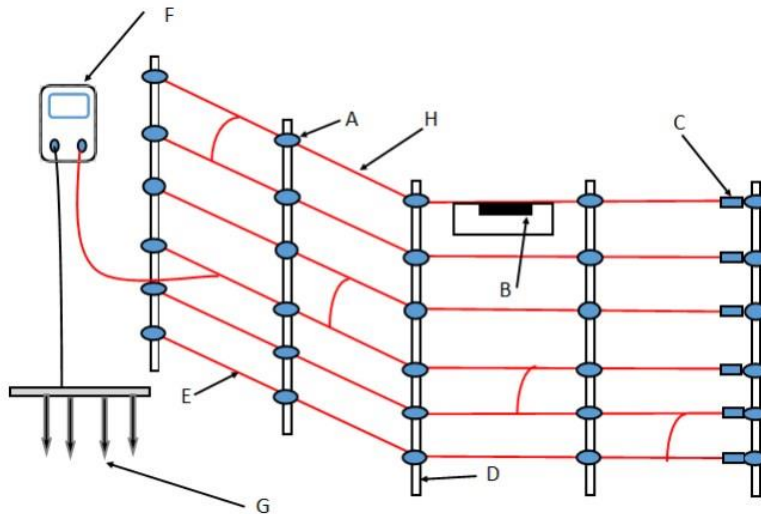
Answer any *THREE* questions in this section

12.

- (a) You have been contracted by Amani National Bank to Install CCTV surveillance, Biometric Security Systems and Anti Burglar alarm system into their New Branch building. Describe six essential documentation needed for the installation of security systems (12 Marks)
- (b) Explain **four** types of video surveillance zoning which you would use in (a) (8 Marks)

13.

- (a).Figure 1 shows a schematic diagram of an Electric fence. Identify and state the function Of the parts labelled A, B, C, D, E, F and G (14 marks)



- (a) Explain **three** important safety hints in installation of an Electric fence (6 Marks)

14.

- (a) Explain **six** factors to consider before buying a CCTV camera solution (12 Marks)
- (b) Network Video Recorders and Digital Video Recorders are essential components of a CCTV system, each serving a distinct role in video surveillance. Using a table, outline **four** Differences between Network Video Recorder and Digital Video Recorder. (8 Marks)

15.

(a) You have been assigned to carry out maintenance activities for a fire alarm standalone system.

Explain **five** steps you would follow during maintenance of the system (10 Marks)

(b) Using a well labelled diagram explain the operation of a simple bell Alarm circuit (10 Marks)

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