



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

Qualification Code : 071606T4MCT
Qualification : Mechatronic Technician Level 6
Unit Code : ENG/OS/MC/CR/02/6/A
Unit of Competency : Install mechatronic systems

WRITTEN ASSESMENT

INSTRUCTIONS TO CANDIDATE:

1. You have **TWO HOURS** to attempt all the questions.
2. Marks for each section are indicated in the brackets
3. The paper consists of **TWO** sections: **A** and **B**.
4. Attempt **ALL** questions from section **A** and **ANY THREE** questions from section **B**.
5. You are required to provide your responses on the answer booklet provided.

This paper consists of THREE (3) 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: SHORT ANSWER QUESTIONS (40 MARKS)

(Attempt ALL the questions from this section. Marks are indicated on each question)

1. Based on the input provided to an electronic system, the control systems are classified into two types. State and explain the two types. (4 marks)
2. Outline three possible scenarios that could cause a circuit to become overloaded. (3 marks)
3. Highlight four classification of control valves based on method of actuation (4 marks)
4. With the aid of a well labelled diagram, outline electronic feedback system. (4 marks)
5. List four functions of a protective electrical device. (4 marks)
6. State three reasons for testing a new electrical installation. (3 marks)
7. Identify any three types of sensors that can be installed in a mechatronic system. (3 marks)
8. State four functions performed by oil reservoir in a hydraulic circuit. (4 marks)
9. Giving an example on each case, differentiate between active and passive sensor. (4 marks)
10. List three tools and equipment needed to install electronic devices. (3 marks)
11. State four of the most important safety factors to be considered before electrical testing begins. (4 marks)

SECTION B: EXTENDED ANSWER QUESTIONS (60 MARKS)

(Attempt ANY THREE questions from this section. Each question carries 20 marks)

12. Discuss five major elements of a typical mechatronic systems. (20 marks)
- 13.
- i. Those who are to carry out electrical tests must first consider various safety factors. Explain five safety procedures to follow. (10 marks)
 - ii. Elaborate on five advantages of casing-capping wiring. (10 marks)
- 14.
- i. With the aid of a well labelled diagram, describe parts of a hydraulic system. (10 marks)
 - ii. Describe five pipe bending techniques. (10 marks)
- 15.
- i. Identify and discuss five types of sensors that can be used installed in a mechatronic system. (10 marks)
 - ii. With the aid of a well labelled diagram, explain the principle of a pilot-operated valve. (10 marks)