



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

**Qualification Code : 071606T4MCT**

**Qualification : Mechatronics Technician Level 6**

**Unit Code : ENG/OS/MC/CR/06/6/A**

**Unit of Competency : Operate 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.

**SECTION A: SHORT ANSWER QUESTIONS (40 MARKS)**

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

1. What is a sensor? (2 Marks)
2. How does an actuator work? (3 Marks)
3. Explain the working principle of a photoelectric sensor (4 Marks)
4. List four qualities of a good machine operator? (3 Marks)
5. Describe two levels of troubleshooting and give an application of each (5 Marks)
6. What is (4 Marks)
  - a) Transducer
  - b) Actuators
7. Explain the operating principle of a Strain Gauge (5 Marks)
8. Briefly explain the working principle of the sensor below. (5 Marks)



9. What is troubleshooting a system? (3 Marks)
10. List the five steps followed when troubleshooting a system or software. (5 marks)
11. The mechatronic approach to design involves four general approaches in design of mechanisms. Giving an example for each, explain the four approaches.

(5 Marks).

**SECTION B: EXTENDED ANSWER QUESTIONS (60 MARKS)**

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

12. With aid of the diagrams explain the importance and working principle of a variable frequency drive. (20 Marks)
13. Using examples give application of open-loop and closed-loop control systems. (20 Marks)
14. Explain the basic architecture of a programmable logic controller. (20 Marks)
15. Show using a diagram the various components of an hydraulic system give an explanation (20 Marks)

easytvvet.com