



**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 **THREE 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 mechatronic system? (2 Marks)
2. What are the five key elements of a mechatronic system? (5 Marks)
3. Differentiate between microcontroller and microprocessor (4 Marks)
4. As a machine operator what are you supposed to consider before operating any mechatronic machine? (3 Marks)
5. State five differences between open loop and closed loop systems (5 Marks)
6. What is (4 Marks)
 - i. Sensor.
 - ii. Actuators.
7. Name five protective gears a machine operator would use while operating a machine. (5 Marks)
8. Briefly explain the working principle of the sensor shown below. (5 marks)



9. What is troubleshooting as done to a system? (2 Marks)
10. List the five steps followed when troubleshooting a system or software. (5 marks)

SECTION B: EXTENDED ANSWER QUESTIONS (60 MARKS)

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

11. The formulas for calculating BMI are:

Weight in Pounds \times 703

BMI = -----

Height in Inches \times height In Inches

Weight in Kilograms

BMI = -----

Height In Meters \times height In Meters

Create a BMI calculator application that reads the user's weight in pounds and height in inches (or, if you prefer, the user's weight in kilograms and height in meters), then calculates and displays the user's body mass index. Also, the application should display the following information from the Department of Health and Human Services/National Institutes of Health so the user can evaluate his/her BMI. (20 Marks)

12. List down ten rules of machine safety in any industry and briefly explain. (20 Marks)

13. List and explain different maintenance practices. (20 marks)

14. Using a block diagram show a typical full-featured micro-controller. (20 Marks)