

071606T4MCT

Mechatronics Technician Level 6

ENG/CU/MC/CR/04/6/

Perform Mechatronic Systems Instrumentation and Control

July/August 2025



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

PRACTICE ASSESSMENT

Time: 3 HOURS

INSTRUCTIONS TO CANDIDATE:

1. You are required to install a motor system that will be controlled as per the following sequence:
 - a. Start pushbutton starts the system
 - b. When the first capacitive sensor is triggered the motor runs forward for 1 minute
 - c. After 1 minute the motor stops
 - d. When the second capacitive sensor is triggered the motor runs in reverse for 1 minute
 - e. After 1 minute the motor stops.
 - f. The cycle repeats as long as the two sensors are triggered
 - g. The stop pushbutton stops the system

- i. **Task 1:** Design and Install the control system
 - a. Sketch a circuit diagram for this control system
 - b. Install the control system as per the circuit diagram on an installation board
 - ii. **Task 2:** Develop the PLC program
 - a. Develop I/O distribution list
 - b. Develop the PLC program as per the instructions outlined above
 - iii. **Task 3:** Test and Operate the system
 - a. Confirm that the installation has been done as per SOPs
 - b. Power the system
 - c. Upload the PLC program
 - d. Operate the system
 - e. Measure speed of motor both in the forward and the reverse direction
2. You have been provided with the following resources for the practical tasks:
- A4 drawing paper
 - Installation board
 - Ruler
 - 2 Capacitive sensors
 - 2 Push buttons
 - 24V DC motor
 - DC relay
 - Connecting cables
 - Digital Multimeter
 - Digital tachometer
 - Double Pole M.C.B
 - 24 DVC Power Supply
 - PLC
 - Programming Cable
 - Din rail
 - Programming device