



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

**Qualification Code** : 071606T4MCT  
**Qualification** : Mechatronic Technician Level 6  
**Unit Code** : ENG/OS/MC/CC/05/6/A  
**Unit of Competency** : Apply material science principles

**PRACTICAL ASSESSMENT**

**INSTRUCTIONS TO CANDIDATE**

1. In this practical assessment, you are required to perform the following tasks:
  - a. Investigate the effects of common solutions and pH on the oxidation of aluminum
  - b. Find out the importance of coatings in protecting consumer products from corrosion.
2. You will be allocated **3 HOURS** to complete the practical task.
3. The assessor will record your performance at critical points using audio-visual means

**PROCEDURE**

- i. Remove paint from the aluminum soda can with a Scotch Brite pad or steel wool. It is easier to sand an unopened can.
- ii. Labelled the six provided beakers as H<sub>2</sub>O, Soda, HCl, Vinegar, CuSO<sub>4</sub> and NaOH.
- iii. Use scissors to cut the can into strips narrow enough to fit into a beaker.
- iv. Pour respective solutions into labeled beakers to a depth of approximately 2.5 cm.
- v. Add an aluminum strip to each beaker.
- vi. Make and record initial observations and after 20 minutes for 1 hour on the table below.

Beaker	0 min	20 min	40 min	60 min
H <sub>2</sub> O				
Soda				
HCl				
Vinegar				
CuSO <sub>4</sub>				
NaOH				

## ASSESSMENT QUESTIONS

1. Why aren't all aluminum structures or products (such as window frames) coated with paint or a polymer liner?
2. Why do you think some aluminum structures or products (such as soda cans) need to be coated with paint or a polymer liner?
3. Which solutions seemed to corrode the aluminum the quickest?
4. Hypothesize what might happen if the polymer liner on the inside of a pop can was accidentally scratched before it was filled with cola.

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