021306T4ICI
INDUSTRIAL CONTROLS INSTALLATION LEVEL 6

ENG/OS/IC/CR/4/6

Manage High Voltage Systems

July/August 2025

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

PRACTICAL ASSESSMENT

TIME: 3 HOURS

INSTRUCTIONS TO CANDIDATE:

1. You are required to perform the following tasks:

   Task 1: Transformer Winding Resistance Measurement;

   Measure and record the resistance of the primary (HV) and secondary (LV) windings.

   Task 2: Winding resistance measured versus resistance on the manufacturer's datasheet;

   Compare and account for any difference between the winding resistances measured and the manufacturer's datasheet winding resistances.

   Task 3: Insulation Resistance Test between windings and core (earth);

   a. Connect the Megger between Primary winding (HV) and core(earth), apply a test voltage of 500V and record the insulation resistance.
   b. Connect the Megger between Secondary (LV) winding and core(earth), apply a test voltage of 500V and record the insulation resistance.

c. Connect the Megger between Primary winding (HV) and Secondary (LV) winding, apply a test voltage of 500V and record the insulation resistance.

Task 4: Insulation condition of the transformer;

Based on the measured values, comment on the insulation condition of the transformer.

Task 5: Voltage Turns Ratio Test;

NOTE: Do **no**t power on the AC power supply without permission from the assessor.

Using the double pole circuit breaker, switch and connecting wires provided, connect the primary side of the transformer to the AC power supply. The secondary side should be left open. Apply the AC voltage to the primary side. Measure and record primary and secondary voltage. Turn of the AC supply.

Task 6: Comparison between measured voltage and rated voltage;

Compare the measured voltage with manufacturer's rated voltage and account for any difference.

2. You have been provided with the following resources to carry out the tasks:

- Single phase Step-down Transformer (with manufacturer's datasheet)
- Power supply
- Voltmeter
- Ammeter
- Ohmmeter
- Insulated wires
- Switch
- Circuit Breaker
- Earthing wire
- Insulated tools
- Insulation resistance tester (Megger)
- AC power supply
- High Voltage safety gloves