Topic Skills Practice Cover Sheet

Unit Name:	UEEEL0008 Evaluate and modify low voltage heating equipment and controls
Topic Title:	Electrical Heating Control

Skill Practice Number:	1.2
Skill Practice Name:	Connect and Test a Thermostat

Student Name:	
Student ID:	
College/Campus:	
Group:	

Results	
Planning:	
Carryout:	
Completion:	
Overall Results:	
Comments:	

Topic Skills Practice 1.2

UEEEL0008 Evaluate and modify low voltage heating equipment and controls

Topic 1. Electrical Heating Control

Skills Practice 1.2: Connect and Test a Thermostat

Task:

To connect and test the operation of a capillary type thermostat.

Objectives:

At the completion of this skills practice, you should be able to:

- Correctly connect a thermostat to control a circuit.
- Test the operation of a thermostat.
- Measure the differential of a thermostat.

This practical can be concurrently performed with 3.3.1

1. Planning the Skills Practice

1.1 Equipment

- Capillary thermostat
- Batten holder
- Light globe
- Power supply
- Heat source
- Thermometer

1.2 Suggested Materials

- Suitable leads or cables for connection
- Switch
- Hair dryer or heat gun

1.3 Miscellaneous Items

- Hand tools
- PPE
- Multimeter

1.4 Risk Assessment

Risk assessment procedure:

- Identify any hazards that may exist with this skills practice below
- List the supervision level you will be working under - Direct (D), General (G) or Broad (B)
- List the risk classification – High Risk (H), Medium Risk (M) or Low Risk (L)
- List the control measures required for each identified hazard that you need to implement.

Hazard/s Identified	Supervision Level (D, G or B)	Risk Classification (H, M or L)	Control Measure/s
Exposed Live terminals	D	H	Do not touch any exposed terminals without testing.
Burning by heating coil	G	M	Use protective glove to handle the coil/wait for cooling
Wrong connection causing short circuit	G	M	Test the resistance before energizing always check the connection.

Feedback

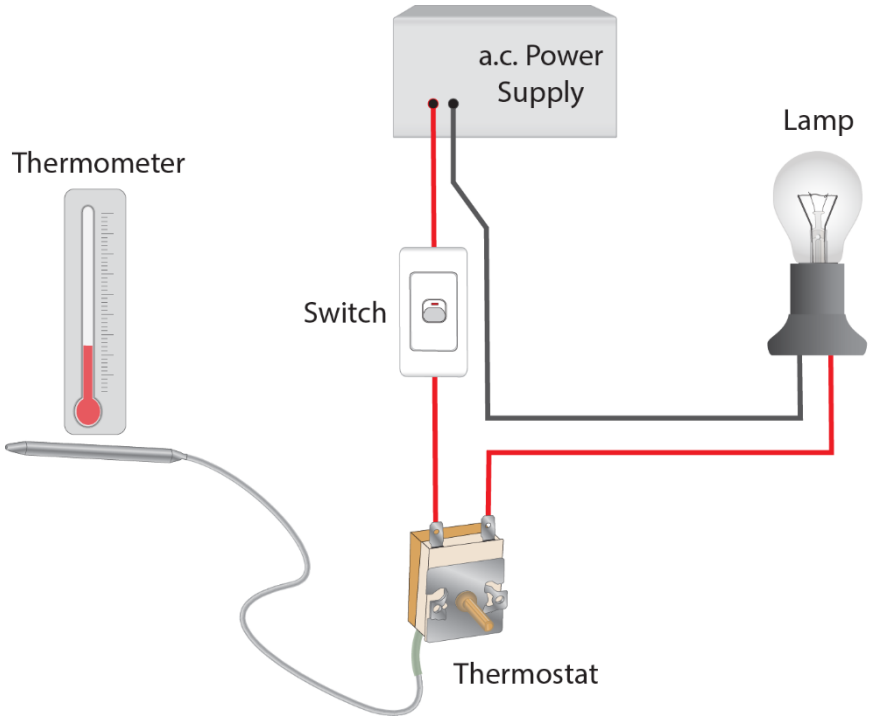
Have your teacher/trainer check your risk assessment

Teacher/Trainer Initials and Date	✓

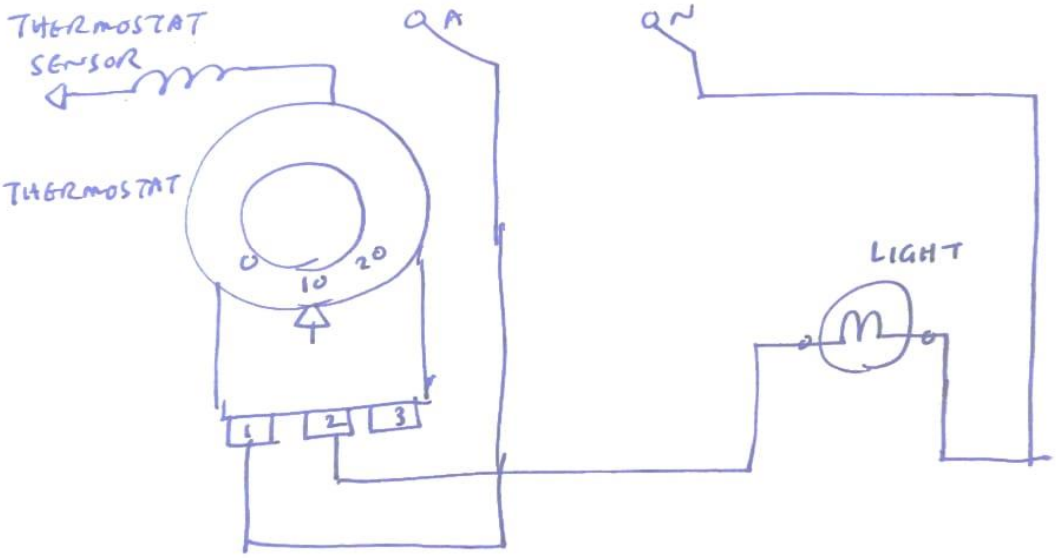
2. Carrying Out the Skills Practice

2.1 Connect the Thermostat Circuit

2.1.1 Connect the capillary thermostat circuit as shown in the diagram below.



	Have your teacher/trainer check your work	**Teacher/Trainer Initials and Date**	✓
	Feedback		



2.2 Test Thermostat Operation

2.2.1 Energise the thermostat circuit by switching on the power supply and any control switches. Set the thermostat so that the light is on, indicating that the thermostat is allowing current to flow through the circuit.

2.2.2 Place the thermometer next to the capillary bulb and note down the temperature, thermostat setting and whether the light is on or off, in Observation Table 1 (on following page).

Observation Table 1		
Thermostat Setting 1	**Temperature** **Adjust the KNOB**	**Light ON/OFF**
	18 20	On Off
Neat the thermos state sensor	20 24	On Off
Heat the thermos state sensor	26 28	On Off

2.2.3 Now use the hair dryer or heat gun to heat the capillary bulb until the thermostat opens the circuit. Note down your observations in Observation Table 1. Be sure to remove the source of heat as soon as the thermostat operates.

2.2.4 Wait for the thermostat to re-close the circuit, and note down your observations in Observation Table 1.

2.2.5 De-energise the circuit and change the thermostat to a higher setting, as directed by your teacher/trainer.

2.2.6 Now use the hair dryer or heat gun once more, to heat the capillary bulb until the thermostat opens the circuit. Note down your observations in Observation Table 2. Be sure to remove the source of heat as soon as the thermostat operates.

Observation Table 2		
Thermostat Setting 1	**Temperature** **Adjust the KNOB**	**Light ON/OFF**
Heat the thermos state sensor	28 30	On Off

2.2.7 Wait for the thermostat to re-close the circuit, and note down your observations in Observation Table 2.

2.2.8 De-energise the circuit and disconnect the components.

3. Completing the Skills Practice

3.1 Skills Practice Review Questions

3.1.1 Clean your work area, return all equipment to the correct storage areas as directed by your teacher/trainer, and then complete the following review questions.

1. What PPE did you need to safely carry out this task? List each item below.

Protective glove for thermal protection. Insulation coated plier, screw driver

2. For the first thermostat setting, what where the upper and lower operating limits of the thermostat?

18° C & 20° C

3. For the second thermostat setting, what where the upper and lower operating limits of the thermostat?

20° C & 24° C

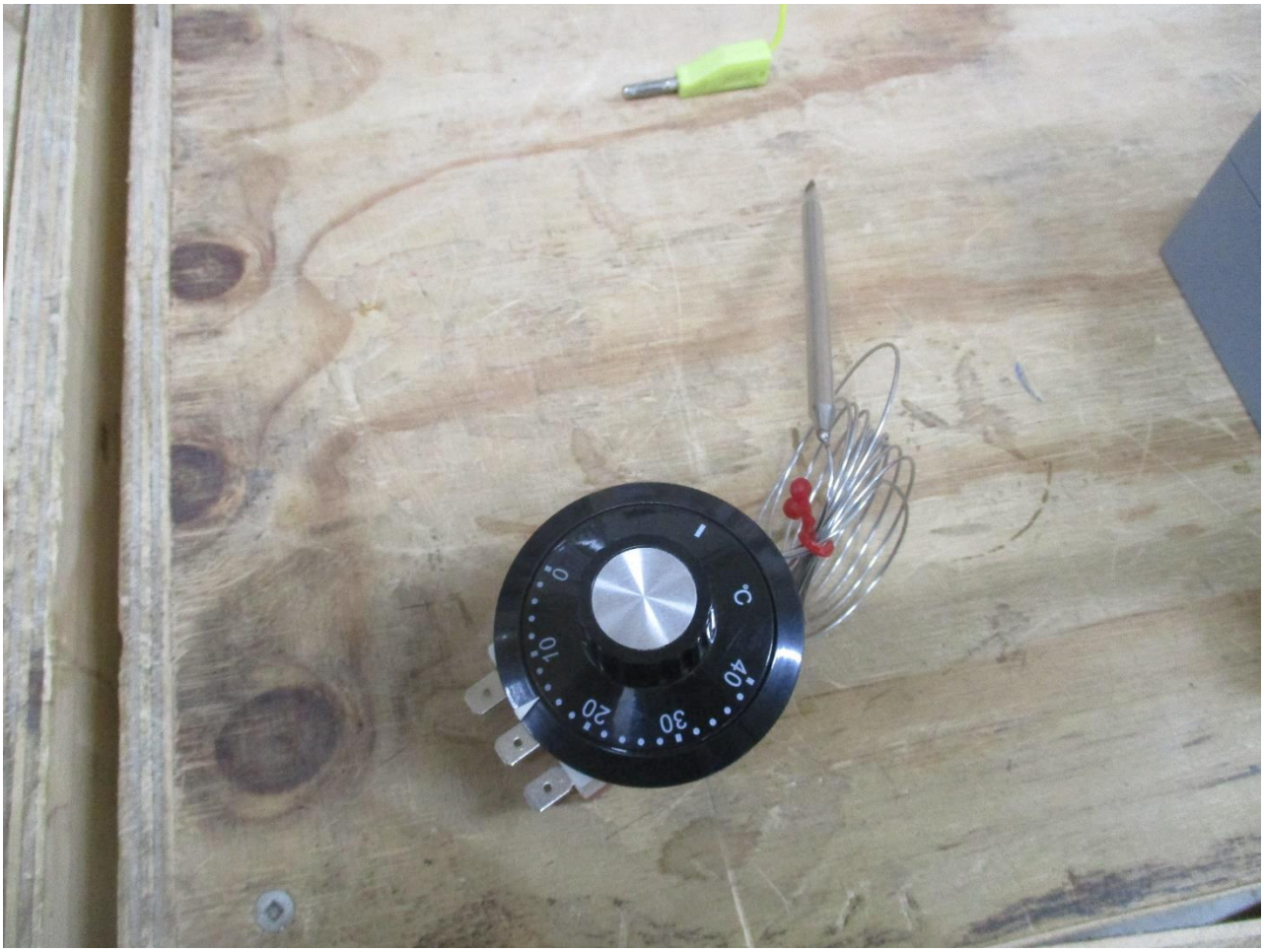
4. Based on your observations, what is the differential of the thermostat?

2° C & 4° C

5. Describe an application for the circuit you have connected.

Building heating, central heating, Air-conditioners, Kitchen equipment, such as ovens and refrigerators, medical and scientific incubators.

Practical Equipment Setup



	Feedback Have your teacher/trainer check your answers	Teacher/Trainer Initials and Date	✓