Experiment:12

Characteristics of an ON/OFF Temperature Control System.

EQUIPMENTS

- Temperature Transducer Trainer IT-5929.
- 2mm Connecting leads.
- Digital Multimeter.
- Stopwatch.

EXPERIMENTAL SETUP:

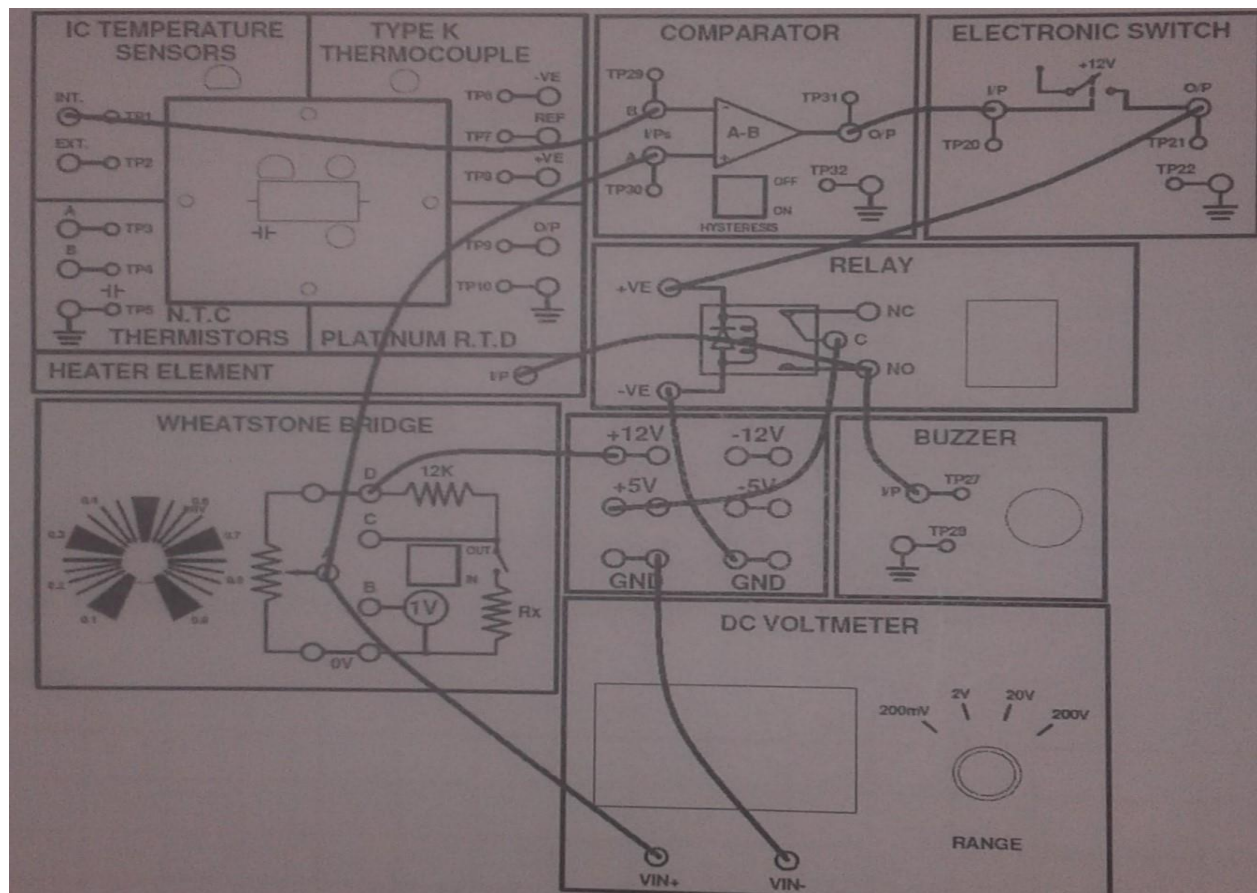Refer to the fig 12.1 configure setup for present experiment.

Figure 12.1 (Experimental Setup)

PROCEDURE

- Connect the circuit as shown in fig 12.1. Switch the comparator HYSTERISIS OFF.
- Connect the INT off IC Temperature to the non-inverting of the comparator.
- Connect the output of comparator to the input of electronic signal.
- Now connect the output of electronic switch to the +VE terminal of the relay and provide the ground to the –VE terminal of the relay.

- Provide +5V to the common point of the relay and connect the NO terminal to the heater and buzzer input.
- Switch ON the power supply and adjust the 10kΩ 10-turn potentiometer for a voltage of 310mV on the inverting input of the comparator.
- Transfer the voltmeter to the output of IC temperature sensor and note the output voltage (you may need one the leads while you do this).

Ic temperature sensor output voltage =: _____V.

Transfer the voltmeter again to the output of the 10kΩ 10-turn potentiometer and set the output voltage to a value 310mV.

Reference voltage setting = : _____V.

Restore the output lead to the electronic switch to start the heating process. Note the temperature-time characteristics of the system by noting the displayed temperature and the heater state (whether ON or OFF) at time intervals of 30s (0.5 min).

Note: the heater state will be indicated by the buzzer, buzzer ON = heater ON and buzzer OFF =heater OFF enter the details in Table 12.1

Time (minutes)	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Heater state ON/OFF										
Temperature (°C)										

Table 12.1 (Observations ON/OFF Temperature Control System)

- Plot the temperature- time characteristics on the axes provided:
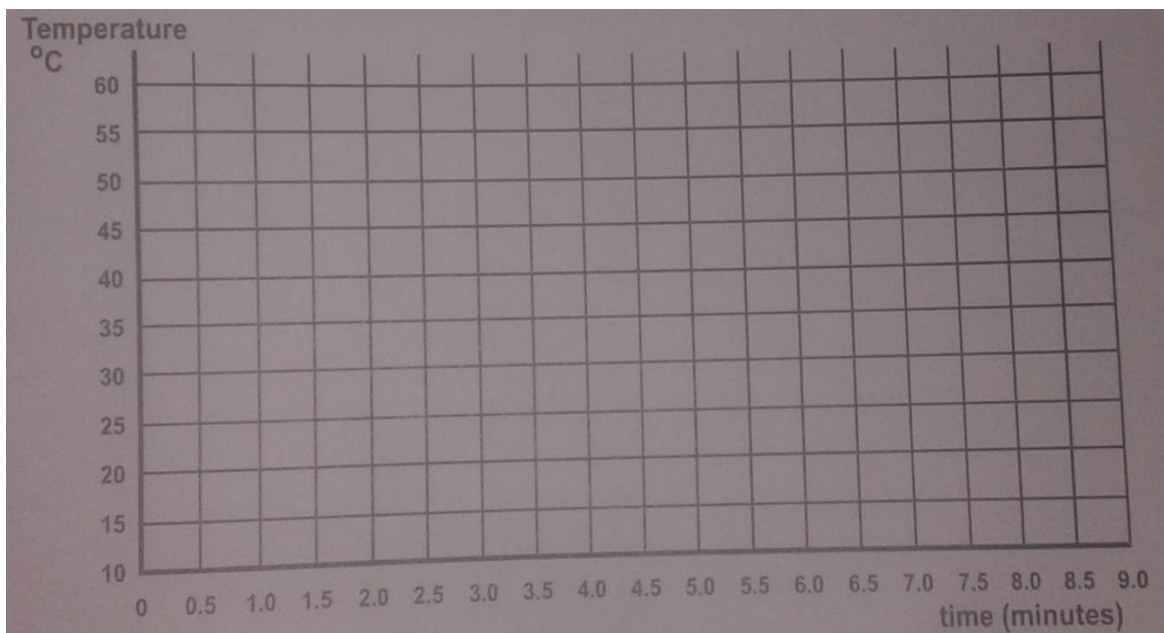
Graph 12.1 (Temperature Vs Time)

- Shade the blocks at the bottom of your graph to represent the reference temperature setting.
- Mark in a line on your graph to represent the reference temperature setting.

<u>CONCLUSION</u>

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Instructor Signature: _____   **Date:** _____