Course Name: Electronics Measurement and Instrumentation

EXPERIMENT NO: 06

Objective: To measure the temperature using LM-35 and find out the reference temperature for remote sensing application.

Materials Required: LM 35 temperature sensor, 741 IC (op-amp), resistance (470Ω), LED, dc regulated power supply, digital multimeter, bread board, connecting wires.

Theory: LM 35 is a commonly used as a temperature sensor. It shows values in the forms of output voltage. LM 35 shows high voltage values than thermocouples and may not need the output voltage to be amplified. The output voltage of LM35 is proportional to the Celsius temperature. The temperature is calculated by formula, temperature= output voltage (in mv) /10 mv/ºC.

Circuit Diagram:
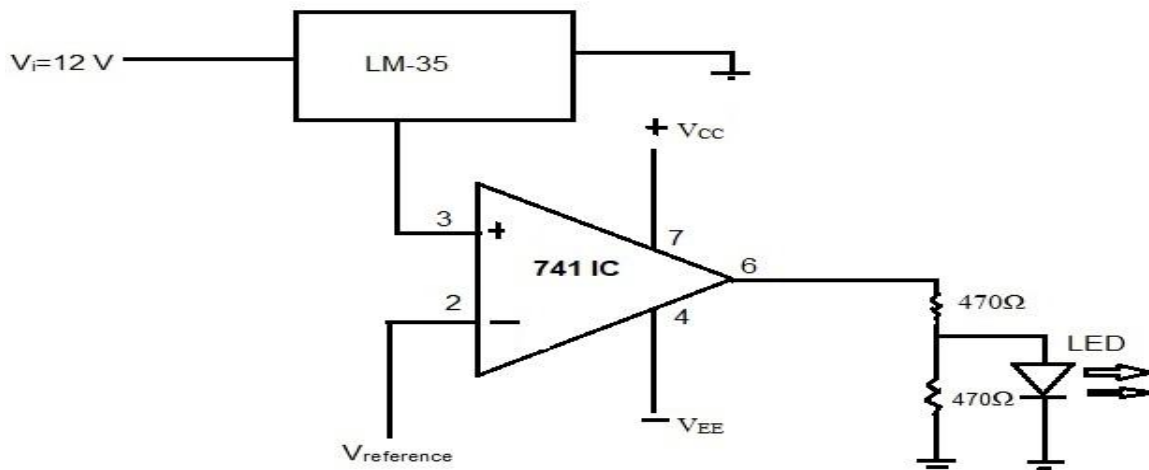
Pin out of LM -35:
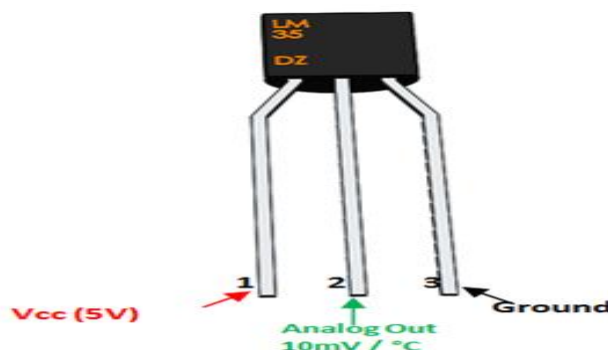
Observation : We have used LM-35 and op-amp 741 IC to compare the out put voltage of LM-35 with the reference voltage. We have set up the circuit so as to trigger the LED to glow when the temperature is greater than 28^0C.

Result: We have found out the reference voltage below which the LED does not glow and after heating LM-35 the LED starts glowing. Hence LM 35sensing device is used in remote sensing.

Precautions:
1. All connections should be neat and tight.
2. The resolution of the DC supply should be small enough to set the reference temperature or voltage in accordance to the room temperature.