ENEE2360 Project2

The room thermostat circuit shown in Fig.(1) is used to maintain the room temperature within predetermined temperatures T(max) and T(min)

Part1(Practical)

a) **Construct the circuit to verify its function.**
b) **By changing the 47k pot, determine the value of Vx so that Vo2 = +V_{sat} and the LED is off at room temperature.**
c) **By changing the 47k pot, determine the value of Vx so that Vo2 = -V_{sat} and the LED is on at room temperature.**

Part2 (Simulation and reporting)

a) **Replace the circuit to the left of Vx by a 6V battery.**
b) **Replace the green LED with D1N4002**

b) Replacing the temperature sensor by a VPWL Voltage source as shown in Fig.(2) , plot Vo1,Vo2(t), and Vo3(t).

c) Estimate the upper threshold and the lower threshold temperatures fromVo1 and Vo2(t) plots.

d) Determine +V_{sat} and -V_{sat}

e) Using results of part d, calculate by hand the upper threshold and the lower threshold temperature.

f) Write a simple report which includes:

1 – Explanation of the function of the circuit of Fig.(1)
2 - Simulation circuits and results
3 - Comparison of simulation results to hand calculation
4 – Conclusion

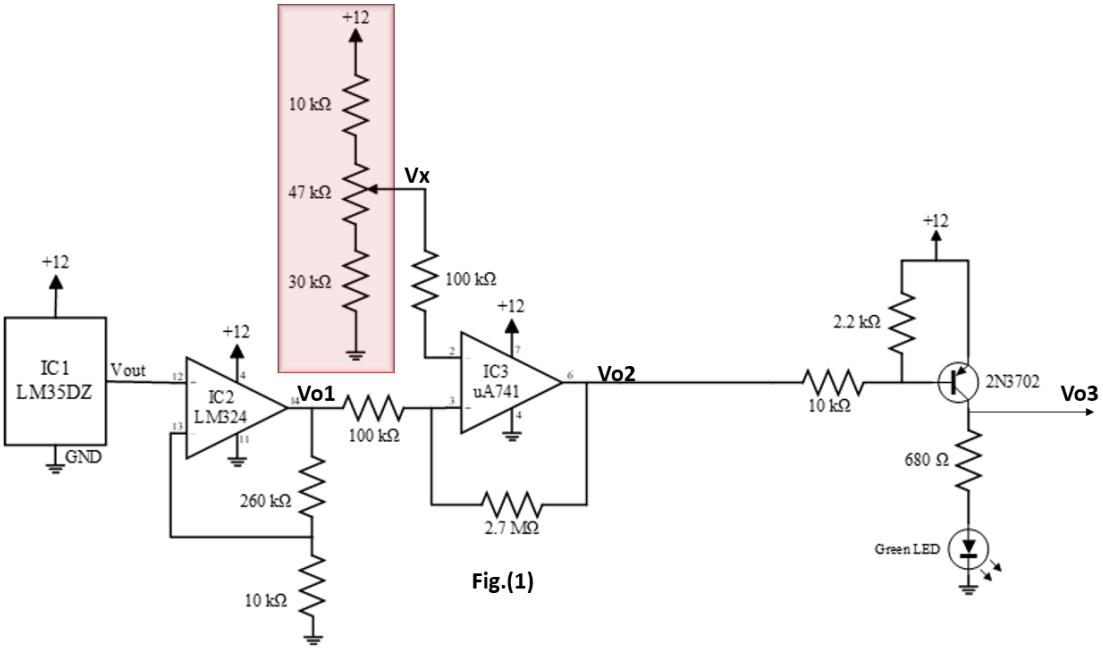

Fig.(1)

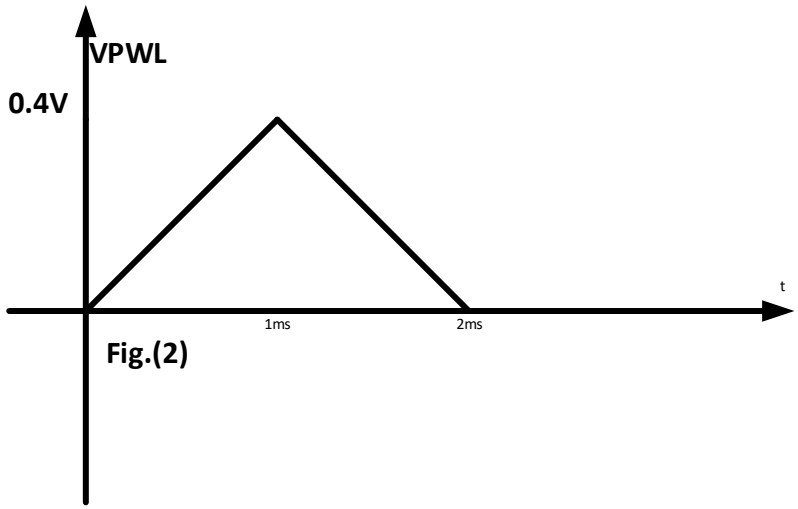

Fig.(2)

GOOD LUCK