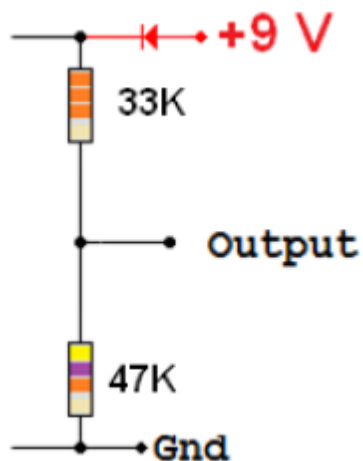


Name .....

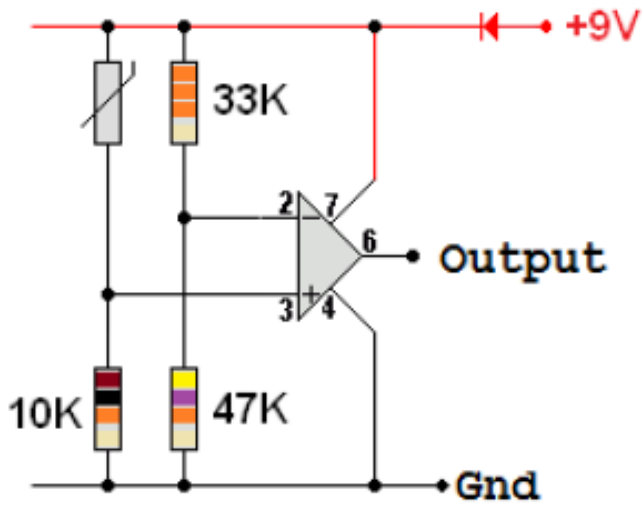
- 1) Write down  $47\text{k}\Omega$  in engineering notation (  $4.7 \times 10^x$  )
- 2) Write down  $4.7\text{M}\Omega$  in engineering notation (  $4.7 \times 10^x$  )
- 3) Write down  $47\text{m}\Omega$  in engineering notation (  $4.7 \times 10^x$  )
- 4) Write down the Voltage Divider formula.
- 5) Calculate the output voltage for the circuit below. FNAU !!!!



- 6) Explain how a comparator works.
- 7) A  $10\text{K}$  resistor is in parallel with a  $22\text{K}$  resistor. Calculate the combined resistance. FNAU !!!!

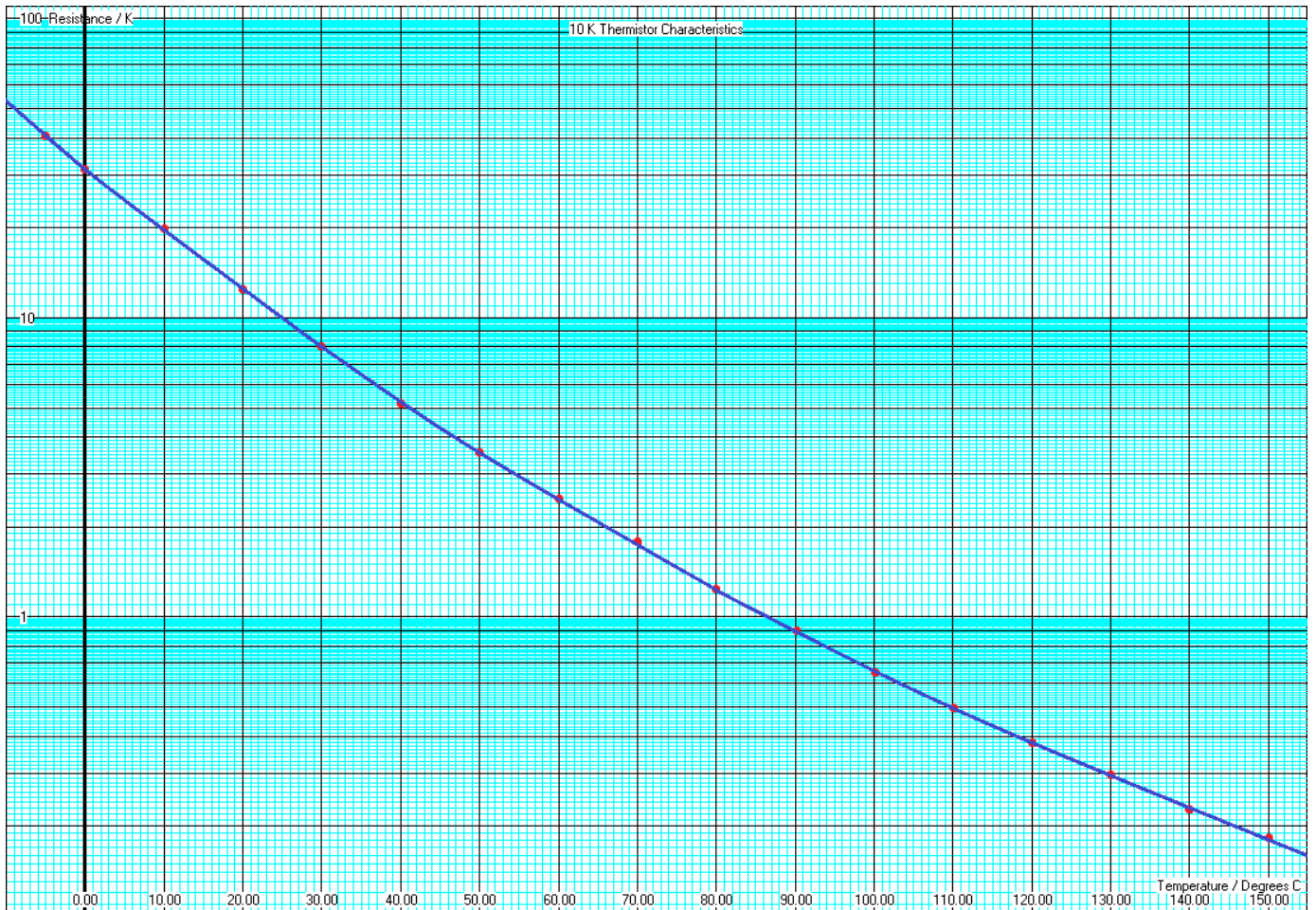
8) Explain two features that differ between a Schmitt trigger and a comparator circuit.

9) a) At high temperatures, is the output high or low?



b) What is the thermistor resistance at the change-over temperature?

c) Use the graph below to find the change-over temperature?



d) Add a resistor to the diagram above to convert the comparator into a Schmitt Trigger.

e) What type of feedback does this resistor provide?

f) At 25 degrees C, what is the thermistor resistance?

g) At 145 degrees C, what is the thermistor resistance?

h) If the additional resistor from part ( d ) was 47 k $\Omega$ , calculate the lower reference level.

i) If the additional resistor from part ( d ) was 47 k $\Omega$ , calculate the upper reference level.