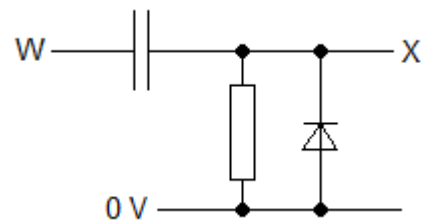


- 1 The circuit opposite is a spike generator.
Link each **component** in the circuit with its **function**.



component
diode
resistor
capacitor

function
transfers edges at W to X
suppresses negative spikes at X
holds X at 0 V between edges at W

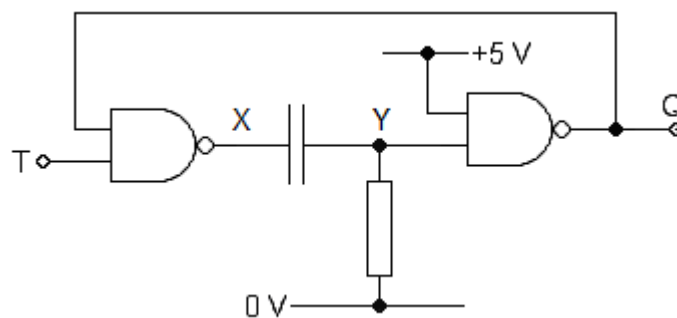
- 2 Complete the sentences for the monostable circuit below. Choose from these words.

capacitor falls gate high low resistor rises

When the circuit is in its resting state, Y is pulled low by the _____, forcing Q to go _____. Provided that T is _____, the circuit stays in this state.

When T goes low, X goes _____. This rising edge passes through the _____, making Y go _____ and forcing Q to go _____.

As the _____ charges up through the _____, the voltage at Y _____ until it becomes a _____ signal. This forces Q to go _____ once more.



- 3 Here are some statements about the monostable circuit above.
Which statements are correct?

Q is always low when T is held low.

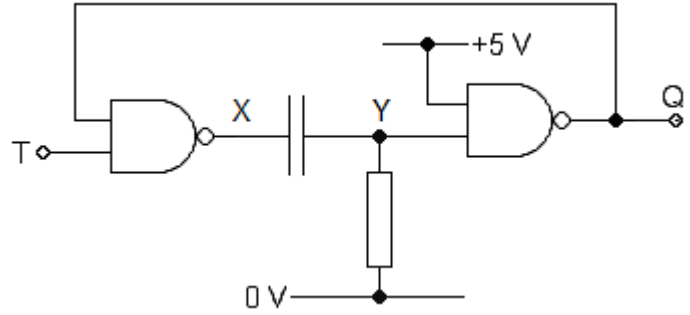
The resistor must always have a value of less than 10 kΩ.

The feedback loop ensures that the pulse always lasts for 0.7RC s.

Clamp diodes in the gate inputs suppress the effects of rising edges at T.

Replacing the NAND gates with NOR gates doesn't change the behaviour of the circuit.

4 Four voltage-time graphs for the signals at T, X, Y and Q are shown below. They are part of a timing diagram for the monostable. Add a label to each graph to show which signal it represents.



5 Link each monostable **circuit** with the description of its **behaviour**.

circuit	behaviour
	a falling edge at T gives a high-going pulse at Q
	a rising edge at T gives a low-going pulse at Q
	a rising edge at T gives a high-going pulse at Q

6 Do calculations to complete the table.

<i>R</i>	<i>C</i>	<i>T</i>
22 kΩ	47 nF	
	100 μF	60 s
100 kΩ		250 μs