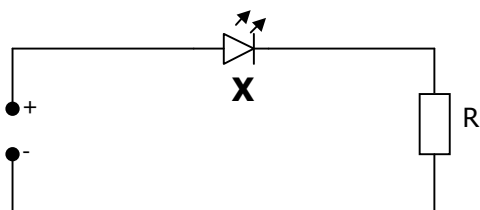


# ELECTRONICS

## Homework Exercises

### Homework for Tuesday 7<sup>th</sup> September 2010

1.



- Name the component marked **X** in the circuit.
- What would happen in the circuit if component **X** was connected the opposite way around?
- Why must there always be a resistor in series with this component?

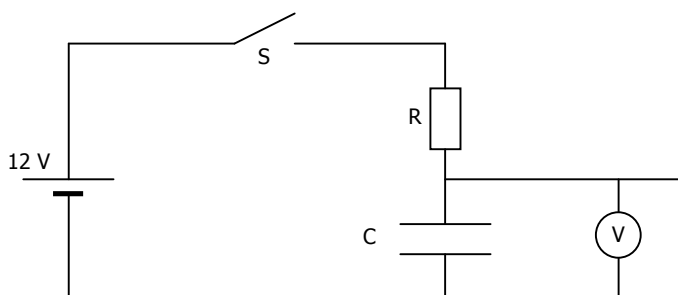
2. An LED is attached to a 6 V supply. An excerpt from its data sheet is given below:

*Maximum forward voltage:* 2.7 V  
*Maximum forward current:* 110 mA

- Draw a circuit diagram that will allow this LED to light safely.
- Calculate the value of the resistor needed.

3. Sketch a graph to show how the resistance of an LDR might vary with light intensity.

4. Look at the following circuit. Capacitor **C** is initially discharged. Switch **S** is now closed



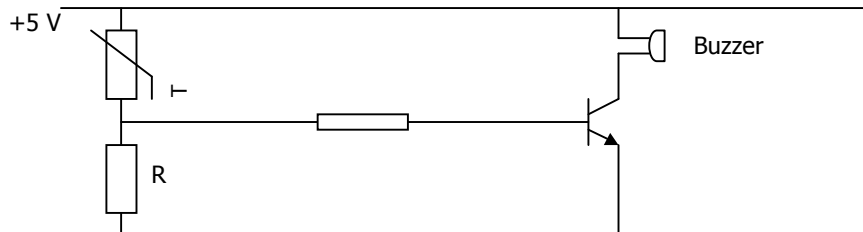
- What will the voltmeter read before the switch is closed?
- What happens to the voltage as time goes on after the switch is closed?
- State two changes that could be made to this circuit which would decrease the time taken for the capacitor to fully charge up.

**Turn over for Q5**

# ELECTRONICS

## *Homework Exercises*

5. The circuit shown below is used as an alarm.



- The thermistor is positioned in a car engine. At normal engine temperatures, the transistor is OFF. What will happen if the engine overheats?
- Explain how the circuit works.