# Topic 11 – Practical 1

## *Diode bridge rectification*

### Safety

Maximum current of 1 A to flow in circuit.

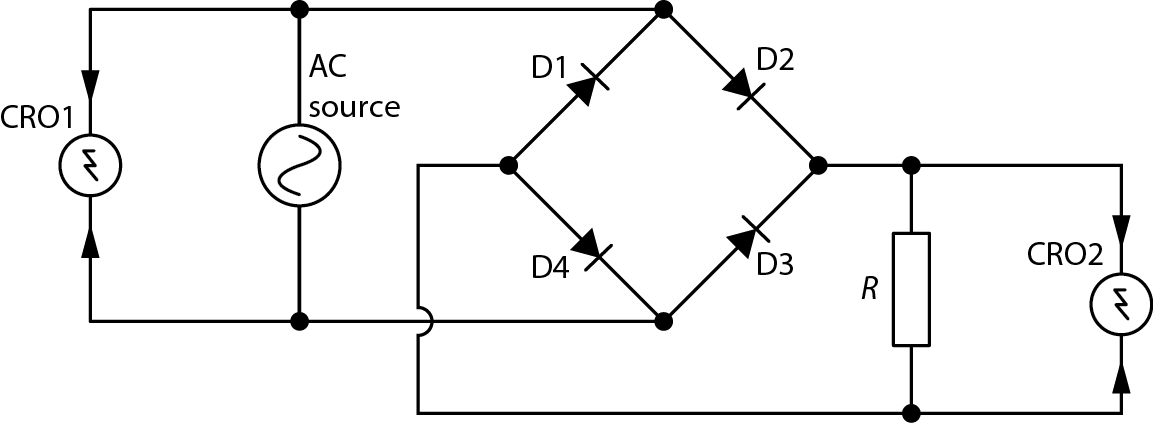
### Apparatus and materials

* AC power supply (5–25 V)
* four diodes 1N4001 (max current 1 A)
* resistor (100  or greater)
* two oscilloscopes (or one oscilloscope with two channels)
* connecting wires
* graph paper

### Introduction

The conversion of an alternating (ac) electrical signal into a direct (dc) electrical signal is called rectification. The output signal is not completely dc and the level of rectification varies depending on the circuit used.

In a diode bridge rectifier the diodes are connected as a bridge (see circuit below). The output signal is always positive.



### Procedure

1. Construct the circuit shown in the diagram above.
2. Set the input signal to 12 V (*V*rms) and frequency of 50 Hz.
3. Using the first oscilloscope (CRO1), draw the input signal on graph paper. Label and scale the axis of your graph.
4. Using the second oscilloscope (CRO2), draw the output signal on the same graph paper. Label and scale the axis of your graph.
5. Change the input signal to 24 V (*V*rms) and frequency of 50 Hz and repeat steps **3**–**4**, plotting the graphs on a separate graph paper.
6. Compare the input and output signals in each case.

### Questions

* 1. Compare the maximum value of the output voltage with the input voltage.
  2. What is the frequency of the output signal compared to the input one?
  3. Make two sketches of the circuit, one showing the current flow when the input voltage is positive and another showing the current flow when the input voltage is negative.