

### TASK A3

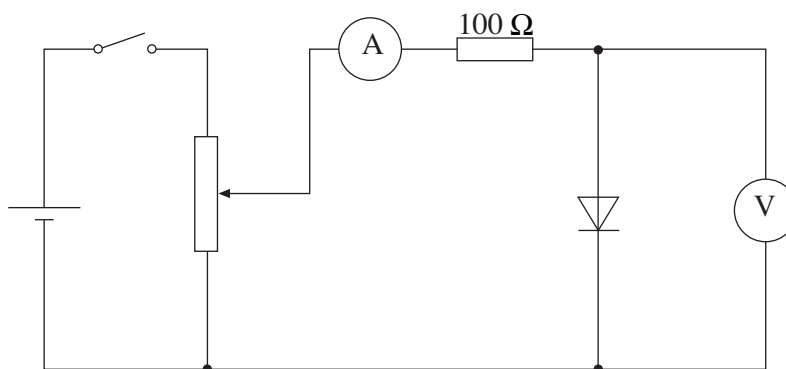
Candidates will be expected to determine the forward current-voltage characteristic of a silicon diode.

#### Test 1

Apparatus required:

- IN4002 diodes available from Rapid Electronics - Order code: 47–3132 (5p each)
- $100\ \Omega$  Resistor - 0.6 W metal film are recommended, e.g. Available from Rapid Electronics: Order code: 62–7446 - £2.20 for a pack of 100
- Ammeter - Resolution  $\pm 0.1\ \text{mA}$  (or a multimeter set on 0 – 200 mA DC current range)
- Voltmeter - Resolution  $\pm 0.01\ \text{V}$  (or a multimeter set on 0 – 2 V DC voltage range)
- Connecting leads
- 4 × 'D' type 1.5 V cells arranged in series and 4 × 'D' type battery holders **or** a variable/fixed d.c. power supply set at 6 V
- 1 × switch (push to make or morse key-type)
- Rheostat, e.g. 0–25  $\Omega$  [The value is not critical. It should enable the candidates to obtain a series of current measurements in the range 0 – 30 mA]

The following circuit should be set up for the candidates in such a way that they can easily relate it to this diagram. The rheostat slider should be roughly central.



If the circuit is set up using locktronics then the component symbols must be blanked out.

#### Test 2

The apparatus and circuit are as for **Test 1** except that a different diode should be used – IN4001, order code 47 – 3131 from Rapid Electronics (3.8 p)