



General Certificate of Education  
Advanced Level Examination  
June 2011

## Physics

## PHY6T/Q11/TN

Unit 6 Investigative and Practical Skills in A level Physics

Investigative Skills Assignment (ISA) Q

## Instructions to Supervisors

### Confidential

- These instructions are provided to enable centres to make appropriate arrangements for the Unit 6 ISA Q test.
- For further details of the administration of the ISA and for information about these instructions, please see the document *Guidance Instructions for the Administration of Investigative Skills Assignment (ISA): GCE Physics*.

## ISA (Q) Capacitor Discharge

### Centre Instructions for the Investigation

In this ISA, candidates will be investigating the discharge of a capacitor through eight different fixed resistors.

### Information for centres

Candidates can be told about one week before undertaking Stage 1 of the ISA that they will be investigating capacitor discharge and comparing this with the decay of radioactive materials.

Stage 2 of the ISA (the written tests: Sections A and B) should take place as soon as possible after Stage 1.

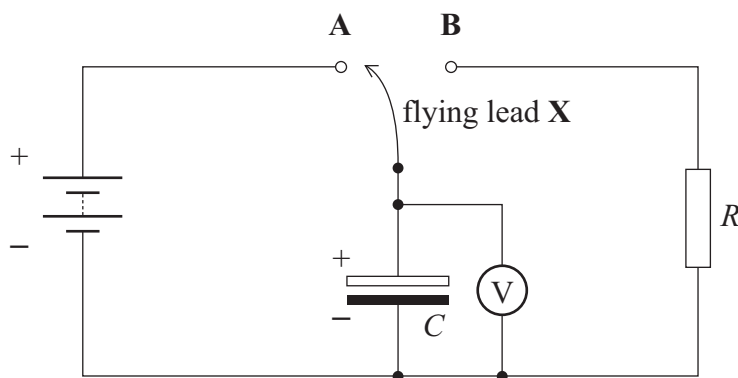
### Apparatus

Centres should ensure that the apparatus provided can be used safely. Each candidate will need:

- a 470  $\mu\text{F}$ , 25 V electrolytic capacitor with terminals clearly labelled + and –
- voltmeter (preferably digital)
- cell or battery up to a maximum of 6 V, terminals clearly labelled + and –
- 8 resistors with values clearly shown, in range 15 k $\Omega$  to 100 k $\Omega$  (eg 15, 22, 33, 47, 56, 68, 82, 100 0.5 W resistors)
- suitable connectors to connect to the capacitor or resistors (eg crocodile clips)
- connecting leads
- 'flying lead' and connector – a lead which can easily be disconnected and reconnected at various points in the circuit
- stopclock or stopwatch.

Centres must ensure that the capacitor is connected to the cell with correct polarity. A lead from the negative terminal of the cell could be permanently connected to the negative terminal of the capacitor to ensure candidates do not get the polarity wrong.

Candidates will be required to set up the circuit shown below.



Connecting the flying lead X to point A will enable the capacitor to be charged.

Connecting the flying lead to point B will allow the capacitor to discharge through the resistor.