

## ASSESSMENT UNIT PH6B – EXPERIMENTAL TASK

## MARK SCHEME

## TEST 1

- |     |      |   |  |     |
|-----|------|---|--|-----|
| (a) | (i)  | Correct diagram (2 marks with 1 mark penalty for incorrect symbols or incorrectly placed components)<br>[see appropriate helper sheet 1(a)]   | (1)                                    | [2] |
|     | (ii) | Plan to charge and discharge the capacitor<br>Plan to take at least 5 readings of voltage and time at equal intervals of voltage or time<br>Repeat readings to be taken   | (1)<br>(1)<br>(1)                      | [3] |
| (b) |      | Circuit set up correctly<br>[Assistance required $\rightarrow$ 0]   |  | [1] |
| (c) |      | Tabulation: Titles and units on all columns ( $V$ and $t$ )<br>Repeat readings included and means calculated correctly<br>Data given consistently to 3 sig figs<br>Instrument resolution of stopwatch and voltmeter given   | (1)<br>(1)<br>(1)<br>(1)               | [4] |
| (d) |      | Taking logs correctly<br>Comparison with $y = mx + c$<br>Graph is $\ln V$ against $t$   | (1)<br>(1)<br>(1)                      | [3] |
| (e) |      | <b>Graph:</b> Graph of $\ln V$ ( $y$ – axis) against $t$ ( $x$ – axis)<br>plotted with axes labelled and correct units given<br>Values of $\ln V$ correctly calculated (allow $\log_{10} V$ )<br><b>(anywhere in script)</b><br>Suitable scale chosen so that all data points occupy at least half the graph paper<br>All points plotted correctly to within $\pm \frac{1}{2}$ division<br>Line of best fit drawn<br>[The first mark is not available for candidates who plot $V$ against $t$ ; the other marks are all available in principle] | (1)<br>(1)<br>(1)<br>(1)<br>(1)<br>(1) | [5] |