Practice Question Set For A-Level
Subject : Physics
Paper-3 Topic : Practical Skills

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Name of the Student:_____
Max. Marks : 18 Marks **Time : 18 Minutes**

Mark Schemes

Q1.

Question number	Acceptable answers	Additional guidance	Mark
	• From graph: after 500 charging cycles internal resistance of cell is 327 mΩ **(1)** • Use of $V = \varepsilon - Ir$ **(1)** • Use of $\frac{V_{500}}{V_0} \times 100\%$ $\frac{V_{500}}{V_0} \times 100\% = 99.6\%$ **(1)** • So manufacturer's claim is correct **(1)**	Example of calculation: $V_0 = 3.6\,\text{V} - 0.800\,\text{A} \times 0.310\,\Omega$ $= 3.6\,\text{V} - 0.248\,\text{V} = 3.352\,\text{V}$ $V_{500} = 3.6\,\text{V} - 0.800\,\text{A} \times 0.327\,\Omega$ $= 3.6\,\text{V} - 0.262\,\text{V} = 3.338\,\text{V}$ $\frac{V_{500}}{V_0} \times 100\% = \frac{3.338\text{V}}{3.352\text{V}} \times 100\% = 99.6\%$ This last mark is awarded only if the conclusion is correctly supported by the calculation.	**4**

Q2

Question Number	Answer	Mark
(a)(i)	**Max 2** Inconsistent number of significant figures or decimal places **Or** results recorded to different precision /resolution **(1)** No repeat readings **(1)** More readings needed up to 1.5 cm **(1)**	**2**

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(a)(ii)(1)	Attempt to use Vr= constant Correctly finds two values of Vr from values in table **and** makes comment **Or** uses Vr value with another r or V to confirm corresponding value **and** makes comment Example of calculation r/cm | V/V | rV/ cmV 1.0 | 0.725 | 0.725 1.5 | 0.483 | 0.725 2.0 | 0.363 | 0.726 2.5 | 0.29 | 0.725 3.0 | 0.242 | 0.726 3.5 | 0.21 | 0.735	**(1)** **(1)**	**2**
(a)(ii)(2)	The graph would be a straight line graph through the origin. (accept a sketch of a straight line graph going through the origin graph)	**(1)**	**1**
(b)(i)	An e.m.f. is (induced) when there is a changing (magnetic) field/flux. Because the current is constant there is a constant magnetic field. **Or** Because the current is constant there isn't a changing magnetic field.	**(1)** **(1)**	**2**
(b)(ii)	Movement of either the coil or the wire Use an alternating current/signal/supply/AC Switch the current on/off **Or** change current e.g. use of variable resistor	**(1)** **(1)** **(1)**	**3**
	Total for question		**10**

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Q3.

Question Number	Acceptable Answer	Additional Guidance	Mark
	Max 4 from 2 out of 3 pairs • The student should let the pendulum swing back and to before starting the stopwatch. (1) • The first swing may be affected by the student pushing the bob as they release it (1) • The student should use a (fiducial) marker at O (1) • Easier to determine when it passes O (1) • Time more oscillations (1) • A longer time reduces (%) uncertainty (in *T*) (1)	For each pair, the second marking point is dependent on the first marking point MP4: Accept the pendulum travelling fastest when it passes O	**4**

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