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

Name of the Student:_____
Max. Marks : 23 Marks **Time : 23 Minutes**

Mark Schemes

Q1.

(i) 10.0 (V) **(1)**

1

(ii) V_{rms} = 10.0/√2 = 7.1 (V) **(1)**

1

(iii) time period = 3 × 2 = 6 (ms) **(1)**

1

(iv) frequency = 1/0.006 or 1/6 **(1)**

frequency = 167 **(1)** (Hz)

2

[5]

Q2.

(a) (i) use of 1.5 cycles **(1)**

conversion to time eg time for 1.5 cycles = 10 × 1.5 = 15ms **(1)**

calculation of frequency eg frequency = 1 / 0.010 = 100 ± 3Hz **(1)**

(ii) peak voltage = 1.5 × 2 **(1)** = 3.0V **(1)**

(iii) rms voltage = 3.0/√2 **(1)** (ce from (a) (i))

rms voltage = 2.12V **(1)**

7

(b) vertical line is formed **(1)**

of length equal to twice the peak voltage **(1)**

because trace no longer moves horizontally
or spot moves **just** up and down **(1)**

max 2

[9]

Q3.

(a) (i) the lines are not straight (owtte) **(1)**

(ii) there is no permanent extension **(1)**
(or the overall/final extension is zero or the unloading curve returns to zero extension)

(iii) (area represents) **work done** (on or energy transfer to the rubber cord) or **energy** (stored) **(1)** not heat/thermal energy

3

(b) the mark scheme for this part of the question includes an overall assessment for the Quality of Written Communication

QWC	descriptor	mark range
good-excellent	The candidate provides a comprehensive and coherent description which includes nearly all the necessary procedures and measurements in a logical order. The descriptions should show awareness of how to apply a variable force. They should know that measurements are to be made as the force is increased then **as it is decreased**. In addition, they should know how to calculate/measure the extension of the cord. **At least five different masses/'large number' of masses are used. Minimum 7 masses to reach 6 marks**. The diagram should be detailed.	**5-6**
modest-adequate	The description should include most of the necessary procedures including **how to apply a variable force** and should include the necessary measurements. They may not have described the procedures in a logical order. They may not appreciate that measurements are also to be made as the cord is unloaded. They should know **that the extension** of the cord must be found and name a **suitable measuring instrument (or seen in diagram – label need not be seen)/how to calculate**. The diagram may lack some detail.	**3-4**
poor-limited	The candidate knows that the **extension or cord length** is to be measured for **different forces –** may be apparent from the diagram. They may not appreciate that measurements are also to be made as the cord is unloaded. They may not state how to calculate the extension of the cord. The diagram may not have been drawn.	**1-2**
incorrect, inappropriate or no response	No answer at all or answer refers to unrelated, incorrect or inappropriate physics.	**0**

The explanation expected in a competent answer should include a coherent selection of the following physics ideas.

diagram showing rubber cord fixed at one end supporting a weight at the other end or pulled by a force **(1)**

means of applying variable force drawn or described (eg use of standard masses or a newtonmeter) **(1)**

means of measuring cord drawn or described **(1)**

procedure

measured force applied (or known weights used) **(1)**

cord extension measured or calculated **(1)**

repeat for increasing then decreasing length (or force/weight) **(1)**

extension calculated from cord length – initial length **(1)**

[9]