

Name \_\_\_\_\_

## A Level Physics Transition Questions

### 40 Marks

Write your answers in this booklet. A piece of graph paper is required for Q6 – it is stapled at the back of the booklet. You may use a calculator.

THIS IS NOT A TEST! Look up anything you are unsure of and aim to fill the gaps in your knowledge and understanding so you can achieve full marks.

Bring your completed booklet to your first Physics lessons at Chesterton in September.

| Question Number | Topic                  | Score     |
|-----------------|------------------------|-----------|
| 1               | Symbols and Prefixes   | /3        |
| 2               | Standard Form          | /4        |
| 3               | Re-arranging Equations | /3        |
| 4               | Atomic Structure       | /3        |
| 5               | Recording Data         | /3        |
| 6               | Graphing               | /4        |
| 7               | Forces and Motion      | /10       |
| 8               | Electrical Circuits    | /5        |
| 9               | Waves                  | /5        |
|                 |                        | Total /40 |

Q1 Complete the following table:

| Unit prefix | Meaning    |
|-------------|------------|
| k (kilo)    | x 1000     |
|             | X 0.000001 |
| M (mega)    |            |
| N (nano)    |            |

[3]

Q2

a) Write the following numbers in standard form.

i. 0.012

ii. 120000

iii. 0.00000012

[3]

b) Complete the following calculations and write your answers to an appropriate number of significant figures.

i.  $2.1 \times 0.15$

ii.  $0.345 \div 0.114$

[4]

Q3 Re-arrange the following equations to make R the subject of the equation.

a)  $Q = WERTY$

b)  $Q^2 = WR^2$

c)  $Q = W - RT^2$

[3]

Q4 Name the 3 particles (from GCSE) that make up an atom.

..... [1]

a) Which one of the above particles is not found in the nucleus of an atom?

..... [1]

b) Which of the above particles will be found in varying quantities in the nuclei of isotopes of the same element?

..... [1]

Q5

a) Complete the following table

| Potential difference<br>(V) | Current (A) |          |      |
|-----------------------------|-------------|----------|------|
|                             | Repeat 1    | Repeat 2 | Mean |
| 2                           | 0.23        | 0.26     | 0.25 |
| 4                           | 0.46        | 0.53     |      |
| 6                           | 0.69        | 0.78     | 0.74 |
| 8                           | 0.92        | 1.04     | 0.98 |
| 10                          | 1.15        | 1.30     | 1.23 |

[3]

Q6

a) Use your piece of graph paper to plot a graph of Current (x-axis) against Voltage (y-axis) and draw a line of best fit through your data points.

[4]

b) Find the gradient of your line of best fit

[3]



b) Calculate the distance travelled whilst at the second terminal velocity.

[2]

c) Calculate the **average** acceleration in the first 20 seconds.

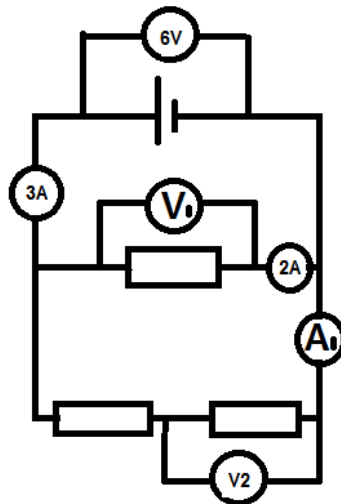
[2]

Q8

a) Draw a circuit diagram to show how the resistance of a filament bulb could be measured using an ammeter and a voltmeter.

[2]

b) Look at the circuit diagram below. All of the resistors are identical.

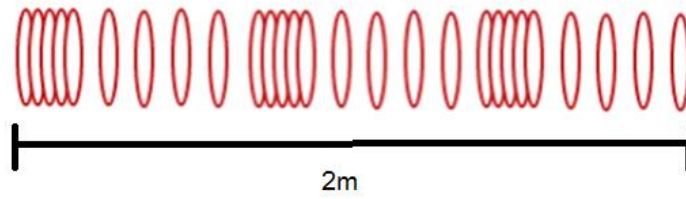


Write the missing values of current and potential difference:

- i.  $V_1 =$
- ii.  $V_2 =$
- iii.  $A_1 =$

[3]

Q9 The diagram below shows a diagram of 3 complete longitudinal wave oscillations on a slinky:



a) State the wavelength of the wave shown

..... [1]

b) Label a complete wavelength on the diagram above with the correct symbol used for wavelength in GCSE and A Level Physics

[1]

c) If the above wave had a frequency of 5Hz how long would it take an individual hoop to complete 1 full oscillation?

[1]

d) Calculate the speed of the wave

$$\mathbf{wavespeed = frequency \times wavelength}$$

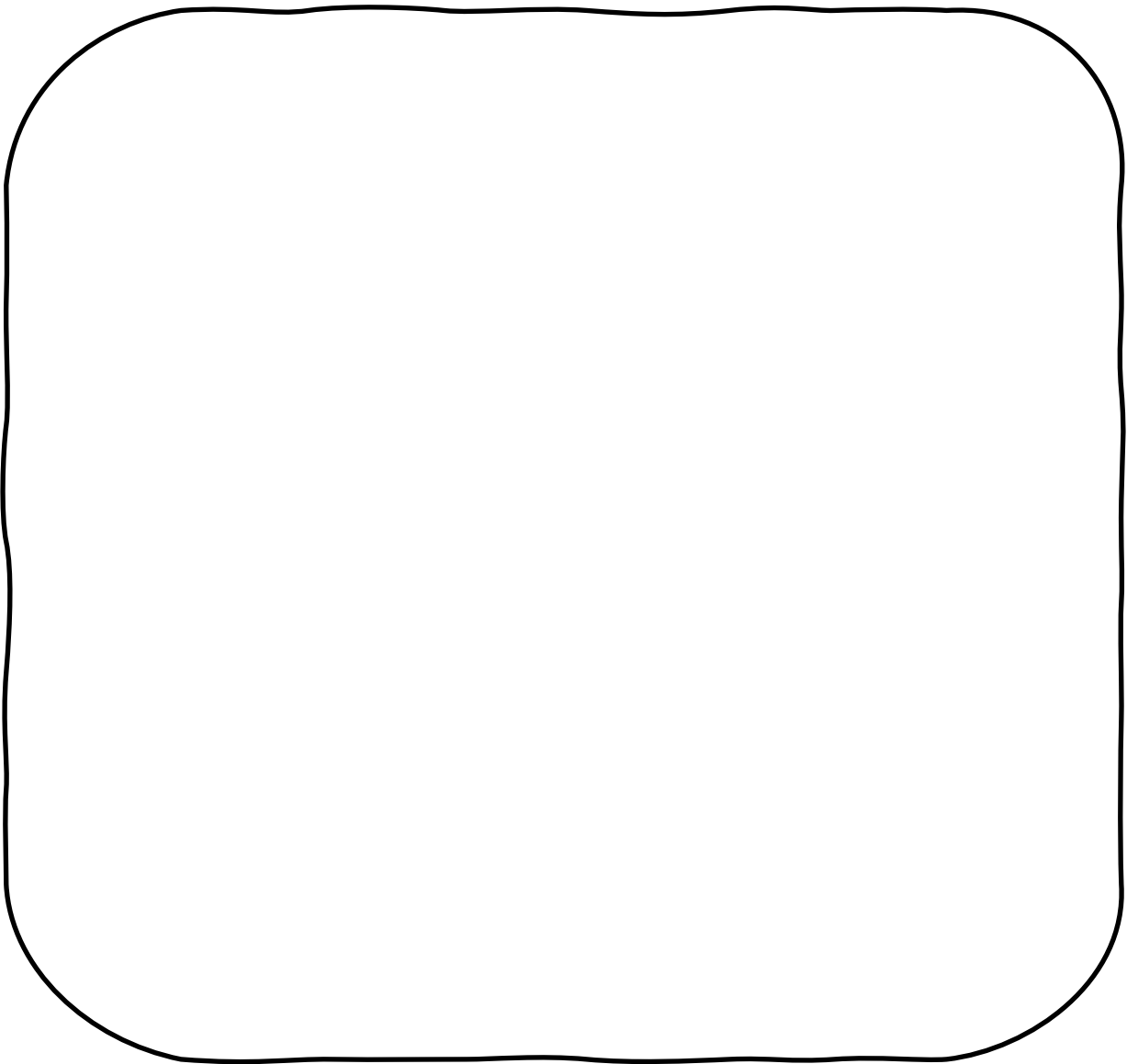
Wave speed = \_\_\_\_\_ Unit \_\_\_\_\_ [2]

### **A little about you?**

It is always helpful for a teacher to know a little bit about the students in front of them. In the space below, tell us a little bit about yourself. You might want to include some of the following:

- Why did you choose to study Physics?
- Do you have any particular plans for after Sixth Form – gap year, university, career?
- What is your favourite part of studying science?
- Is there anything that you are kind of dreading?
- Do you have a favourite scientist, and/or a favourite scientific fact?

There are no right or wrong answers, so just write whatever feels right.

A large, empty, rounded rectangular box with a black outline, intended for students to write their answers to the questions listed above. The box is centered on the page and occupies most of the lower half of the document.