**A Level Physics Transition Baseline Assessment**

**40 Marks – 40 Minutes**

A single piece of graph paper is required for the completion of the assessment.

You may use a calculator.

|  |  |  |
| --- | --- | --- |
| 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

# Write the following numbers into standard form.

# 0.012

# 120000

# 0.00000012

# [3]

# Complete the following calculations and right your answers to an appropriate number of significant figures.

# 2.1 X 0.15

# 0.345 ÷ 0.114

#  [4]

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

# $Q=WERTY$

# $Q^{2}=WR^{2}$

# $Q=W-RT^{2}$

# [3]

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

# ……………………………………………………………………………………………………………………………………………… [1]

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

# ……………………………………………………………………………………………………………………………………………… [1]

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

# ……………………………………………………………………………………………………………………………………………… [1]

# Q5

# Complete the following table

|  |  |
| --- | --- |
| Voltage (\_\_) | \_\_\_\_\_\_\_\_\_\_ (A) |
| Repeat 1 | Repeat 2 | Average |
| 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) drawing a line of best fit through your data points.

# [4]

# b) Find the gradient of your line of best fit

# [3]

# Q7 The graph below shows the journey of a skydiver after they have left the plane.

a) Explain the shape of the graph commenting on how and why the forces have changed.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

[6]

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

**[2]**

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

**[2]**

# Q8

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

# [2]

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

#

# Write the missing values of current and potential difference:

#  V1 =

#  V2 =

#  A1 =

# [3]

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

#

# State the wavelength of the wave shown

# …………………………………………………………………………………………………………………………………………………… [1]

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

# [1]

# 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

# $$wavespeed=frequency ×wavelength$$

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