

- 1 (a) Underline **all** the SI base units in the following list.

ampere coulomb current kelvin newton [1]

- (b) A toy car moves in a horizontal straight line. The displacement s of the car is given by the equation

$$s = \frac{v^2}{2a}$$

where a is the acceleration of the car and v is its final velocity.

State **two** conditions that apply to the motion of the car in order for the above equation to be valid.

1

2 [2]

- (c) An experiment is performed to determine the acceleration of the car in (b). The following measurements are obtained:

$$s = 3.89 \text{ m} \pm 0.5\%$$

$$v = 2.75 \text{ m s}^{-1} \pm 0.8\%.$$

- (i) Calculate the acceleration a of the car.

$$a = \dots \text{ m s}^{-2} \quad [1]$$

- (ii) Determine the percentage uncertainty, to two significant figures, in a .

$$\text{percentage uncertainty} = \dots \% \quad [2]$$

- (iii) Use your answers in (c)(i) and (c)(ii) to determine the absolute uncertainty in the calculated value of a .

absolute uncertainty = ms^{-2} [1]

[Total: 7]