

- 1 (a) Length, mass and temperature are all SI base quantities.

State **two** other SI base quantities.

1.

2.

[2]

- (b) The acceleration of free fall g may be determined from an oscillating pendulum using the equation

$$g = \frac{4\pi^2 l}{T^2}$$

where l is the length of the pendulum and T is the period of oscillation.

In an experiment, the measured values for an oscillating pendulum are

$$l = 1.50 \text{ m} \pm 2\%$$

and $T = 2.48 \text{ s} \pm 3\%$.

- (i) Calculate the acceleration of free fall g .

$$g = \dots \text{ ms}^{-2} \quad [1]$$

- (ii) Determine the percentage uncertainty in g .

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

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

$$\text{absolute uncertainty} = \dots \text{ ms}^{-2} \quad [1]$$