1 **(a)** The boxes in Fig. 1.1 contain terms on the left-hand side and examples of these terms on the right-hand side.

Draw a line between each term on the left and the correct example on the right.

| | |
|---|---|
| base quantity | coulomb |
| base unit | electric current |
| derived quantity | force |
| derived unit | kilogram |

**Fig. 1.1**

[2]

**(b)** A set of experimental measurements is described as precise and not accurate.

State what is meant by:

**(i)** precise

.....

..... [1]

**(ii)** not accurate.

.....

..... [1]

**(c)** An object of mass $m$ travels with speed $v$ in a circle of radius $r$. The force $F$ acting on the object is given by

$$F = \frac{mv^2}{r}.$$

The percentage uncertainties of three of the quantities are given in Table 1.1.

**Table 1.1**

| quantity | percentage uncertainty |
|---|---|
| $F$ | ±3% |
| $m$ | ±4% |
| $r$ | ±5% |

The value of $v$ is determined from $F$, $m$ and $r$.

**(i)** Calculate the percentage uncertainty in $v$.

percentage uncertainty = ..... % [2]

**(ii)** The value of $v$ is $15.0\,\text{m s}^{-1}$.

Calculate the absolute uncertainty in $v$.

absolute uncertainty = ..... $\text{m s}^{-1}$ [1]

[Total: 7]