

- 1 Five energies are listed.

5 kJ

5 mJ

5 MJ

5 nJ

Starting with the smallest first, what is the order of increasing magnitude of these energies?

- A** 5 kJ  $\rightarrow$  5 mJ  $\rightarrow$  5 MJ  $\rightarrow$  5 nJ
- B** 5 nJ  $\rightarrow$  5 kJ  $\rightarrow$  5 MJ  $\rightarrow$  5 mJ
- C** 5 nJ  $\rightarrow$  5 mJ  $\rightarrow$  5 kJ  $\rightarrow$  5 MJ
- D** 5 mJ  $\rightarrow$  5 nJ  $\rightarrow$  5 kJ  $\rightarrow$  5 MJ
- 2 Which of the following correctly expresses the volt in terms of SI base units?
- A**  $A\Omega$
- B**  $WA^{-1}$
- C**  $kg\,m^2\,s^{-1}\,A^{-1}$
- D**  $kg\,m^2\,s^{-3}\,A^{-1}$
- 3 What is a reasonable estimate of the average kinetic energy of an athlete during a 100 m race that takes 10 s?
- A** 40 J                      **B** 400 J                      **C** 4000 J                      **D** 40 000 J
- 4 The resistance  $R$  of a resistor is determined by measuring the potential difference  $V$  across it and the current  $I$  in it. The value of  $R$  is then calculated using the equation

$$R = \frac{V}{I}.$$

The values measured are  $V = 1.00 \pm 0.05\,V$  and  $I = 0.50 \pm 0.01\,A$ .

What is the percentage uncertainty in the value of  $R$ ?

- A** 2.5 %                      **B** 3.0 %                      **C** 7.0 %                      **D** 10.0 %