OCR
Oxford Cambridge and RSA

# AS Level Physics A

**H156/01** Breadth in Physics

# Question Set 1 – Module 2 MCQ

**1** Two resistors of resistances 120 Ω and 500 Ω are connected in **parallel**.
The percentage uncertainty in the value of resistance of each resistor is 10%.

What is the correct value of the total resistance and the percentage uncertainty?

**A** 97 Ω ± 10%

**B** 97 Ω ± 20%

**C** 620 Ω ± 0%

**D** 620 Ω ± 20%

Your answer ☐ **[1]**

**2** Which is **not** an International System (S.I.) base unit?

**A** second (s)

**B** kelvin (K)

**C** kilogram (kg)

**D** coulomb (C)

Your answer ☐ **[1]**

**3** An object experiences two forces, 3.0 N and 4.0 N, in the same plane. The directions of the forces are not known.

What is the magnitude of the resultant force *F* acting on the object?

**A** $F = 5.0\,\text{N}$

**B** $F = 7.0\,\text{N}$

**C** $1.0\,\text{N} \leqslant F \leqslant 7.0\,\text{N}$

**D** $4.0\,\text{N} \leqslant F \leqslant 7.0\,\text{N}$

Your answer ☐ **[1]**

**4** Which definition is correct and uses only quantities rather than units?

**A** Acceleration is the change in velocity per second.

**B** Resistance is potential difference per ampere.

**C** Intensity is energy per unit cross-sectional area.

**D** Electromotive force is energy transferred per unit charge.

Your answer ☐ **[1]**

**5** A student determines the power $P$ dissipated in a resistor. The measured values of the current $I$ in the resistor and the resistance $R$ of the resistor are:

$$I = (4.0 \pm 0.2)\ \text{A and } R = (3.0 \pm 0.3)\ \Omega$$

The equation $P = I^2R$ is used to calculate $P$.
What is the percentage uncertainty in the value of $P$?

**A** 15%

**B** 20%

**C** 25%

**D** 30%

Your answer ☐ **[1]**

**6** What are the correct base units for work done or energy?

**A** $\text{kg m}$

**B** $\text{kg m s}^{-2}$

**C** $\text{kg m}^2\text{s}^{-1}$

**D** $\text{kg m}^2\text{s}^{-2}$

Your answer ☐ **[1]**

**7** The table below shows four physical quantities and their units.

Which row is correct?

| | Physical quantity | Unit |
|---|---|---|
| **A** | strain | pascal |
| **B** | charge | coulomb |
| **C** | power | joule |
| **D** | force constant | newton |

Your answer ☐ **[1]**

**8** Four students each carry out an experiment to determine the acceleration of free fall *g*.

Which is the **least** accurate value?

**A** $(9.0 \pm 1.0)\,m\,s^{-2}$

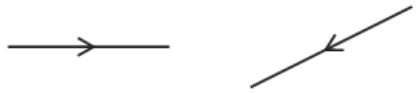
**B** $(9.5 \pm 0.1)\,m\,s^{-2}$

**C** $(9.6 \pm 0.4)\,m\,s^{-2}$

**D** $(9.7 \pm 0.2)\,m\,s^{-2}$

Your answer ☐ **[1]**

**9** Two forces act in the plane of this paper.
The magnitude and direction of the two forces are shown below.



The two forces are added together.

Which diagram shows the correct resultant?

**A** 

**B** 

**C** 

**D** 

Your answer ☐ **[1]**

**10** Power has base units kg $m^2$ $s^{-3}$.

What are the base units for intensity?

**A** kg $s^{-3}$

**B** kg m $s^{-3}$

**C** kg $m^2$ $s^{-3}$

**D** kg $m^4$ $s^{-3}$

Your answer ☐ **[1]**

## Total Marks for Question Set 1: 10