

**A Level Physics A**  
**H556/01** Modelling physics

**Question Set 1**

Multiple Choice Questions

- 1 Which is the **best** estimate of the area of a rectangular field of length  $98 \pm 3$  m and width  $47 \pm 2$  m?

- A  $4600 \pm 5 \text{ m}^2$
- B  $4600 \pm 6 \text{ m}^2$
- C  $4600 \pm 300 \text{ m}^2$
- D  $4606 \pm 337 \text{ m}^2$

$$98 \times 47 = 4606$$

$$\% \text{ uncertainty } 1 = \frac{3}{98} \times 100 = 3.06\%$$

$$\% \text{ uncertainty } 2 = \frac{2}{47} \times 100 = 4.26\%$$

$$3.06 + 4.26 = 7.32\%$$

Your answer

D

$$\frac{7.32}{100} \times 4606 = 336.9 = 337$$

[1]

- 2 Which of the following units is **not** an S.I. base unit?

- A ampere
- B mole
- C volt
- D kilogram

Your answer

C

[1]

- 3 Which set of quantities are all scalar?

- A acceleration, displacement, velocity
- B energy, mass, power
- C extension, force, gravitational potential energy
- D weight, kinetic energy, work done

Your answer

B

[1]

- 4 Which set of prefixes **A**, **B**, **C** or **D** are in order of **increasing** magnitude?

- A micro, milli, centi, kilo
- B milli, centi, micro, kilo
- C kilo, centi, milli, micro
- D centi, micro, milli, kilo

Your answer

A

[1]

5 A solid cylindrical glass rod has length  $20.0 \pm 0.1$  cm and diameter  $5.00 \pm 0.01$  mm.

What is the percentage uncertainty in the calculated volume of this rod?

- A 0.1%
- B 0.2%
- C 0.7%
- D 0.9%

$$\frac{0.1}{20} \times 100 = 0.5\%$$

$$\frac{0.01}{5} \times 100 = 0.2\%$$

$$0.5\% + 0.4\% = 0.9\%$$

$$A = \pi \left(\frac{d}{2}\right)^2$$

$$\rightarrow 0.2 \times 2 = 0.4\%$$

Your answer

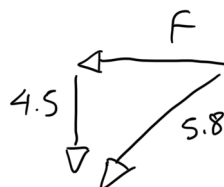
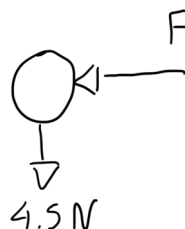
D

[1]

6 An object is falling.  
 The weight of the object is 4.5 N.  
 The wind provides a horizontal force of magnitude  $F$  on the object.  
 The **resultant** force on the object is 5.8 N.  
 Air resistance and upthrust on the object are negligible.

What is the value of  $F$ ?

- A 1.3 N
- B 3.7 N
- C 7.3 N
- D 13 N



$$a^2 + b^2 = c^2$$

$$F^2 + 4.5^2 = 5.8^2$$

$$F^2 = 5.8^2 - 4.5^2$$

$$F = \sqrt{5.8^2 - 4.5^2}$$

$$= 3.659 \text{ N}$$

$$= 3.7 \text{ N}$$

Your answer

B

[1]

**Total Marks for Question Set 1: 6**



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