

# 3220/201

SCOTTISH  
CERTIFICATE OF  
EDUCATION  
1999

FRIDAY, 14 MAY  
9.00 AM – 10.30 AM

PHYSICS  
HIGHER GRADE  
Paper I

### Read Carefully

- 1 All questions should be attempted.
- 2 The following data should be used when required unless otherwise stated.

|                                 |                                     |                        |                                    |
|---------------------------------|-------------------------------------|------------------------|------------------------------------|
| Speed of light in vacuum $c$    | $3.00 \times 10^8 \text{ m s}^{-1}$ | Planck's constant $h$  | $6.63 \times 10^{-34} \text{ J s}$ |
| Charge on electron $e$          | $-1.60 \times 10^{-19} \text{ C}$   | Mass of electron $m_e$ | $9.11 \times 10^{-31} \text{ kg}$  |
| Acceleration due to gravity $g$ | $9.8 \text{ m s}^{-2}$              | Mass of proton $m_p$   | $1.67 \times 10^{-27} \text{ kg}$  |

### Section A (questions 1 to 30)

- 3 Check that the answer sheet is for Physics Higher I (Section A).
- 4 Answer the questions numbered 1 to 30 on the answer sheet provided.
- 5 Fill in the details required on the answer sheet.
- 6 Rough working, if required, should be done only on this question paper, or on the first two pages of the answer book provided—**not** on the answer sheet.
- 7 For each of the questions 1 to 30 there is only **one** correct answer and each is worth 1 mark.
- 8 Instructions as to how to record your answers to questions 1–30 are given on page two.

### Section B (questions 31 to 37)

- 9 Answer questions numbered 31 to 37 in the answer book provided.
- 10 Fill in the details on the front of the answer book.
- 11 Enter the question number clearly in the margin of the answer book beside each of your answers to questions 31 to 37.
- 12 Care should be taken **not** to give an unreasonable number of significant figures in the final answers to calculations.



