

# IGCSE PHYSICS 4420, NOVEMBER 2005 MARK SCHEME

---

## Paper 3

### Question 1

- |     |                                     |                          |   |
|-----|-------------------------------------|--------------------------|---|
| (a) | 4.4                                 | answer must round to 4.4 | 1 |
| (b) | 6.5                                 |                          | 1 |
| (c) | attach newtonmeter to door handle   |                          | 1 |
|     | hold other end of newtonmeter       |                          | 1 |
|     | pull door open and read newtonmeter |                          | 1 |
| (d) | More than                           |                          | 1 |

**Total 6 marks**

### Question 2

- |      |   |   |   |
|------|---|---|---|
| (a)  | 28  |   | 1 |
| (b)  | 0.028 (mm to m)   | $280 \times 10000 \times 10$<br>$= 2\,800\,000$<br>scores 2 | 1 |
|      | $\times 1000 \times 10$                                   | Or $28 \times 1000 \times 10$<br>scores 2                   | 1 |
|      | $= 280$ (Pa)  | $0.028 \times 1000$<br>scores 1                             | 1 |
| (c)  | Note value between right hand level<br>(i) and fixed mark |   | 1 |
|      | Double this value   |   | 1 |
| (c)  | 48 (mm)   | 46 - 50 (mm)  | 1 |
| (ii) |   |   |   |

**Total 7 marks**

### Question 3

- |     |                       |   |
|-----|-----------------------|---|
| (a) | ammeter in series     | 1 |
|     | voltmeter in parallel | 1 |
|     | switch in series      | 1 |

(b)	1.5 (V)		1
	0.3 (A)		1
(c)	labelled axes		1
	completed scales	length at least every 2 cm. R at least every $1\Omega$	1
	points plotted		2
	best straight line		1
(d)	3.6 – 3.7		1
(i)			
(d)	found reciprocal of $R$		1
(ii)			
(e)	97 - 102		1
(i)			
(e)	resistance when length is 'zero'	length was never zero	1
(ii)			
	resistance of clips / contact / connecting wires / ammeter		1
(f)	measured entire length of conducting material		1
	for each value of $R$		1
<b>Total 17 marks</b>			

#### Question 4

(a)	12	Accept 11.5	1
(i)			
(a)	69 - 70		1
(ii)			
(a)	34°	33° - 35°	1
(iii)			
(b)	(measure angle with) protractor		
	place ball bearing on ramp and release		
	note position in sand		
	(measure BD with) rule		
	smooth sand		
	repeat		
	find average		
	repeat		
<b>Maximum</b>			<b>7</b>

(c)	40° - 50°	45° scores both marks	1
(i)	45°		1
(c)	BD too small (to measure)		1
(ii)			
1			
(c)	ball stop at ramp/go vertically		
(ii)	upwards so no range		1
2			
(d)	height of release		1
(e)	increased angle P leads to increased		
(i)	height		1
(e)	place zero of rule on sand surface		
(ii)	vertically		
	midway between B and D		
	find midpoint of BD by preliminary		
	experiment		
	measure to bottom of ball	Maximum	3
(e)	1 mm or 10°		1
(iii)			
		<b>Total 20 marks</b>	