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 x 10000 x 10 = 2 800 000 scores 2	**1**
	x 1000 x 10	Or 28 x 1000 x 10 scores 2	**1**
	= 280 (Pa)	0.028 x 1000 scores 1	**1**
(c) (i)	Note value between right hand level and fixed mark		**1**
	Double this value		**1**
(c) (ii)	48 (mm)	46 – 50 (mm)	**1**

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 1Ω	**1**
	points plotted		**2**
	best straight line		**1**
(d) (i)	3.6 − 3.7		**1**
(d) (ii)	found reciprocal of *R*		**1**
(e) (i)	97 – 102		**1**
(e) (ii)	resistance when length is 'zero'	length was never zero	**1**
	resistance of clips / contact / connecting wires / ammeter		**1**
(f)	measured entire length of conducting material		**1**
	for each value of *R*		**1**

Total 17 marks

Question 4

(a) (i)	12	Accept 11.5	**1**
(a) (ii)	69 – 70		**1**
(a) (iii)	34°	33° - 35°	**1**
(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	**Maximum**	**7**

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

Total 20 marks