

CAMBRIDGE
INTERNATIONAL EXAMINATIONS

June 2003

INTERNATIONAL GCSE

MARK SCHEME

MAXIMUM MARK: 80

SYLLABUS/COMPONENT: 0625/03

PHYSICS
Paper 3 (Extended)



Page 1	Mark Scheme	Syllabus	Paper
	IGCSE EXAMINATIONS – JUNE 2003	0625	3

1	(a)	(i)	force of gravity acts on masses/weight of masses	B1	2
		(ii)	vector has direction/force has direction	B1	
	(b)	(i)	spring 1 (more difficult) any correct relevant pair of values	M1 A1	6 [8]
(ii)		P marked at extension 25 mm to 28 mm explanation in terms of end of proportionality	A1 B1		
(iii)		each graph read at 15 N, approx. 25 mm, 19 mm difference correct, 6 mm +/- 1 mm	C1 A1		
2	(a)	change in speed is 1.5 m/s deceleration = decrease in speed/time or 1.5/12 a = (-/+) 0.125 m/s	C1 C1 A1	3	
	(b)	average speed = 1.75 m/s distance = 21 m	C1 A1		2 [5]
3	(a)	attempt to use triangle or parallelogram of forces stated scale used 950 N and 1220 N in correct relative directions correct resultant drawn in weight = 1785 N [limits 1700 N to 1850 N]	M1 A1 C1 C1 A1	5	
	(b)	(i) work = force x distance or 1500 x 3.0 work = 4500 J (ii) power = work/time or 4500/2.5 power = 1800 W	C1 A1 C1 A1		4 [9]
4	(a)	air molecules hit dust particles hits continuously/unevenly/hits cause movement in all directions air molecules fast moving/high energy	M1 A1 B1	3	
	(b)	any attempt to use $p \times v = \text{constant}$ or correct proportion fraction $2 \times 80/25$ seen $p = 6.4 \times 10$ (Pa)	C1 C1 A1		3 [6]
5	(a)	Y is a wire of different metal/not copper Z is a galvanometer/millivoltmeter/milliammeter	B1 B1	2	
	(b)	2 junctions at different temperatures, accept one hot, one cold temperature difference causes e.m.f./voltage/current reading of meter changes (with temperature)	B1 B1 B1		max 3
		(c)	1 junction at known temperature/need for calibration		
	(c)	dull or black surface	B1	1 [6]	

Page 2	Mark Scheme	Syllabus	Paper
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6	(a)	(i)	incident ray, refracted ray and normal drawn all correct and meeting at a point	C1 A1	4
		(ii)	angle of incidence and refraction correctly identified	B1	
		(iii)	values correct within agreed limits	B1	
	(b)		use of $\sin i/\sin r$ correct substitution from candidates values value correct within agreed limits from candidate's values	C1 C1 A1	3 [7]
7	(a)		value $3 \times 10 \text{ m/s}$	A1	1
	(b)		speed of light (much) greater than speed of sound or value for sound	A1	1
	(c)	(i)	source and receiver arrangement with detail and labels	C1 A1	max 4 [6]
		(ii)	distance between source and receiver time between flash and bang	B1 B1	
		(iii)	speed = distance/time	B1	
8	(a)	(i)	use of charge = It or $I = 90/45$ current = 2 A	C1 A1	6
		(ii)	resistance = voltage/current or $6/2$ resistance is 3 ohm	C1 A1	
		(iii)	energy = Vit or Vq or 6×90 energy is 540 J	C1 A1	
	(b)		idea of energy transfer is (6) J/C	C1 A1	2 [8]
9	(a)	(i)	power = VI or 24×2 power is 48 W	C1 A1	4
		(ii)	voltage = power/current or $48/0.4$ voltage is 120 V	C1 A1	
	(b)	(i)	no/very little energy/power lost or energy/power in = energy/power out	B1	max 4 [8]
		(ii)	any mention of magnetic field changing magnetic field field passes through core or secondary coil induces voltage in secondary coil number of turns on secondary determines voltage output	B1 B1 B1 B1 B1	

Page 3	Mark Scheme	Syllabus	Paper
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10	(a)	(i)	circular line of force around wire through P arrow(s) on line anticlockwise - none wrong	M1 A1	3
		(ii)	arrow through Q to left	A1	
	(b)	(i)	none/stays same	B1	2
(ii)		direction reverses	B1		
(c)		at S - stronger	B1	3 [8]	
		at T - same (strength)	B1		
		at W - same (strength)	B1		
11	(a)	(i)	source, detector	B1	max 6
			named absorber/air and labels	B1	
		(ii)	take detector reading with no source (background)	B1	
	detector reading with source, detector and air only		B1		
	detector reading with appropriate named absorber (including distance in air)		B1		
	(iii)	same reading with absorber(including air) as background	B1		
	so all alpha absorbed by cardboard/paper/air, others would get through	B1			
(b)		curved path stated or drawn	B1	3 [9]	
		path at right angles to magnetic field	B1		
		into paper	B1		
TOTAL 80					