

**CAMBRIDGE**  
INTERNATIONAL EXAMINATIONS

**NOVEMBER 2002**

**INTERNATIONAL GCSE**

<b>MARK SCHEME</b>
<b>MAXIMUM MARK : 80</b>
<b>SYLLABUS/COMPONENT : 0625/2</b> <b>PHYSICS</b> <b>(CORE)</b>

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QU.	SCHEME	TARGET GRADE	MARK
1.	(a) (i) greater	F	M1
	(ii) P.E. (or equiv.) has increased OR work done lifting case	F	A1
	(b) (i) greater	F	M1
	(ii) it is moving OR now has K.E. (or equiv.)	F	<u>A1</u> <u>4</u>
2.	(a) insulator	F	B1
	(b) radiation	F	B1
	(c) conductor	F	B1
	(d) convection	F	<u>B1</u> <u>4</u>
3.	(a) arrow(s) clockwise	C	B1
	(b) 3 circles (by eye) around wire (need not be concentric, ignore other lines)	F	B1
	circles concentric with wire (by eye)	C	<u>B1</u> <u>3</u>
4.	(a) (i) 1020 - 610	F	C1
	410 (g)	F	A1
	(ii) mass/volume	F	C1
	his (i)/500	F	C1
	0.82 e.c.f.	F	A1
	$g/cm^3$	C	B1
	(iii) use measuring cylinder/pipette/narrower jug/burette	C	B1
	(b) level shown below oil level	C	<u>B1</u> <u>8</u>

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5.	(a) changes into a different nucleus/ <i>substance/isotope/nuclide</i> OR loses/emits part of itself / <i>particles</i> OR loses/emits an alpha/beta particle/gamma ray <i>OR mass decreases OR different mass no.</i>	F	B1
	(b) evidence of 2 half-lives	C	C1
	56 (years)	C	<u>A1</u> 3
6.	(a) temperature <i>NOTHING ELSE</i> solid turns to liquid OR liquid turns to solid	F	B1
	(b) last 2 both ticked	C	B1
	(c) (i) horizontal straight line (nothing else)	F	B1
	(ii) B.P. correctly marked at horizontal line (condone extras) <i>allow 100°C</i> <i>ie. on temp axis</i> <i>MUST BE CLEAR</i>	C	<u>B1</u> 5
7.	(a) rub them together	F	B1
	(b) <i>G.L.E.</i> } OR pick up fluff etc OR crackles when discharged <i>leaf deflects</i> } OR makes hair rise etc	F	B1
	(c) region (or equiv.) where electric charge experiences a force/ <i>attraction/repulsion</i> <i>NOT "effect"</i>	C	B1
	(d) (i) moves away / <i>repel/deflects/spins</i>	F	M1
	(ii) like charges (NOT poles) repel	F	A1
	(e) copper is a conductor (or similar comment) / <i>copper can't be charged</i> <i>BO for conductor of heat</i>	C	<u>B1</u> 7
8.	(a) volt OR volts OR V	F	B1
	(b) resistance = p.d./current in any form, allow symbols or mixture 2F (allow B1 for just p.d./ current)		B2
	(c) $4.7 = V/0.5$ 2.35 (V)	F	C1
	(d) (i) increases <i>OR is a maximum</i>	F	B1
	(ii) decreases <i>condone "to zero"</i> <i>OR minimum</i>	F	B1
	(e) 10 - 4.7 5.3 ( $\Omega$ )	C	C1
		C	<u>A1</u> 9

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9. (a) avoid problems with echoes C B1
- (b) time would have been too small to measure (with stopwatch) C B1  
*OR to give a greater time interval OR for accuracy*
- (c) tape-measure OR trundle wheel OR metre rule F B1  
 OR range-finder OR calibrated strides
- (d) light travels fast/ instantaneously/ at  $3 \times 10^8$  m/s C B1
- sound travels slowly/ slower/ at 330 ( $\pm 30$ ) m/s F B1
- (Note: "sound travels much slower than light"  
 OR "light travels much faster than sound" scores B1, B1)  
*"sound travels slower than light" etc gets B1, B0*
- (e) speed = distance/time allow  $s = d/t$  F C1
- 238/0.7 F C1
- 340 F A1
- m/s C B1
- (f) effect of air movement OR take average OR repetition to check C B1  
*NOT "for accuracy", unless adequately explained* 10

allow answers  
in form of  
current in  
field  
experiences a  
force

10. (a) (i) moves (ignore any direction) *NOT vibrates* F B1
- (ii) conductor experiences force in magnetic field C B1  
 current-carrying conductor C B1
- (iii) moves in opposite direction to (i) F B1
- (b) (i) commutator OR split ring *allow commutator* C B1  
*NOT slip rings*  
 brush OR contact *NOT spring* F B1  
 magnet OR pole F B1
- (ii) commutator OR split ring e.c.f. from (i) C B1
- (iii) *rotates?* rotates other way / to the left F B1  
*rotates anticlockwise* 9

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11. (a)	current causes magnetic field	F	B1
	iron reeds magnetised	C	B1
	magnetised in same direction OR adjacent ends opposite polarity	C	B1
	(ends) attract each other	C	B1
(b)	temperature rises	F	B1
	resistance decreases	F	B1
	(eventually) enough current to close relay	C	B1
	current flows in lamp circuit <i>or equiv.</i>	C	<u>B1</u> 8

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12. (a) (i)	ray refracted down at A	} <i>condone dispersion; Mark worst ray</i>	F	M1
	not below normal		C	A1
	refracted down at 2nd surface		F	B1
	(ii) refraction / <i>refracted</i> OR deviation		F	B1
(b)	violet greater refraction than red <i>at A</i>		F	B1
	2 rays diverging all the way to the screen from A <i>condone repetition of errors in (i)</i>		C	B1
(c)	spectrum (or equiv.) OR colours OR rainbow <i>NOT dispersion beyond</i>		F	B1
(d) (i)	X marked <i>above</i> position of red		F	B1
	(ii) not in visible spectrum OR invisible		C	B1
	(iii) any example of a suitable I.R. detector <i>NOT "IR/heat sensor/detector"</i>		C	<u>B1</u> 10

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