

**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>



QU.	SCHEME	TARGET GRADE	M
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>	F	B1
	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>↓</i> <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.)	C	B1
	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>B0 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) $4.7 = V/0.5$	F	C1
	2.35 (V)	F	A1
	(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) $10 - 4.7$	C	C1
	5.3 ( $\Omega$ )	C	<u>A1</u> 2

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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

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

allow answers in form of current in field experiences a force

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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 or equiv. C B1  
8

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