

**CAMBRIDGE**  
INTERNATIONAL EXAMINATIONS

**NOVEMBER 2002**

**INTERNATIONAL GCSE**

**MARK SCHEME**

**MAXIMUM MARK : 80**

**SYLLABUS/COMPONENT : 0625/2**

**PHYSICS  
(CORE)**



UNIVERSITY *of* CAMBRIDGE  
Local Examinations Syndicate

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

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5. (a) changes into a different nucleus/substance/isotope/nuclide  
 OR loses/emits part of itself/particles  
 OR loses/emits an alpha/beta particle/gamma ray  
 OR mass decreases OR different mass no.
- (b) evidence of 2 half-lives
- 56 (years)
- F C C A1  
 B1 C1 3
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6. (a) temperature *NOTHING ELSE* 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.e. on temp axis  
 allow 100°C MUST BE CLEAR C B1  
 5
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7. (a) rub them together F B1  
 (b) G.L.E? OR pick up fluff etc OR crackles when discharged  
 leaf deflects OR makes hair rise etc F B1
- (c) region (or equiv.) C B1  
 where electric charge experiences a force/attraction/repulsion  
 Not "effect" C B1
- (d) (i) moves away/repel/deflects/spins F M1  
 (ii) like charges (NOT poles) repel F A1
- (e) copper is a conductor (or similar comment) /copper can't be charged  
 Bo for conductor of heat C B1  
 7
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8. (a) volt OR volts OR V F B1  
 (b) resistance = p.d./current in any form, allow symbols or mixture 2F B2  
 (allow B1 for just p.d./ current)
- (c)  $4.7 = V/0.5$  F C1  
 2.35 (V) F A1
- (d) (i) increases OR is a maximum F B1  
 (ii) decreases condone "to zero" F B1
- (e)  $10 - 4.7$  C C1  
 5.3 ( $\Omega$ ) C A1  
 9
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9. (a) avoid problems with echoes C B1
- (b) time would have been too small to measure (with stopwatch)  
*or to give a greater time interval or for accuracy* C B1
- (c) tape-measure OR trundle wheel OR metre rule  
 OR range-finder OR calibrated strides F B1
- (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  $s = \frac{ad}{t}$  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
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- 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  
*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  
 rotates anticlockwise F B1
- 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 or equiv.	C	B1
		<u>8</u>

12. (a) (i) ray refracted down at A not below normal	F	M1
refracted down at 2nd surface	C	A1
(ii) refraction /refracted OR deviation	F	B1
(b) violet greater refraction than red at A 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 <del>above</del> 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	B1
		<u>10</u>