

**JUNE 2002**

**INTERNATIONAL GCSE**

**MARK SCHEME**

**MAXIMUM MARK : 60**

**SYLLABUS/COMPONENT : 0652/2**

**PHYSICAL SCIENCE  
(CORE)**



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1. (a) (i) Two rays continuing from originals hitting the spot ..... 1
- (ii) Focal length ..... 1      2
- (b) Energy from/rays of sun are concentrated / *small area* ..... 1
- ~~on a small area~~ / so it gets hot ..... +1      2

**Total 4**

2. Number of bonds: 4 ..... 1
- Number of bonds: 3 ..... 1
- Description diamond; three dimensional/ tetrahedral/  
all strong bonds ..... 1
- Description of graphite; two dimensional/ layered/  
strong bonds in layers/ weak bonds between layers ..... 1
- NOT a property nor a use*

**Total 4**

3. (a) (i) Due to Earth's magnetic field ..... 1
- (ii) North (seeking) pole ..... 1
- (iii) Compass ..... 1      3
- (b) (i) Any metal except iron/steel\*/cobalt/nickel. *or reactive metals* ..... 1  
*eg Sodium*
- (ii) Iron/steel\*/cobalt/nickel ..... 1
- (iii) Steel\* ..... 1  
(\* Except stainless!)

- (iv) They would attract ..... 1      4

**Total 7**

4. (a)	Universal Indicator (paper) <i>(accept red Ans like litmus)</i> .....	1	
	goes green <i>(stays same)</i> .....	1	2
(b)	warm the solution .....	1	
	leave to cool .....	1	2
			<b>Total 4</b>
5. (a)	Line(s) showing circulation (as in convection) .....	1	
	Good .....	+1	2
(b) (i)	Convection .....	1	
(ii)	Conduction .....	1	
(iii)	Radiation .....	1	3
(c) (i)	Hot air rises (not heat rises) (up the stairs) .....	1	
	supplying more oxygen .....	+1	2
			<b>Total 7</b>
6. (a)	same number of protons or electrons/ same atomic (proton number) .....	1	
	different number of protons or electrons/ different number of neutrons (Neutron number).....	1	2
(b)	solution goes red (range according to concentration).....	1	
	chlorine goes to chloride ions		
	iodide ions go to iodine		
	chlorine is more reactive than iodine		
	chlorine oxidises iodide ion etc.		
	ANY TWO VALID COMMENTS .....	1 + 1	3
			<b>Total 5</b>

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7. (a)(i)	3.8 .....	1	
	N .....	1	2
(ii)	Moment = Force x distance OR attempt to multiply force or mass by distance .....	1	
	76 Ncm or ecf .....	1	2
(b)	Density = Mass/Volume or attempt to put in figures .....	1	
	Rearrangement of equation to give volume .....	1	
	Volume = 20 cm <sup>3</sup> .....	1	3
(c)	Bottom of series/ low reactivity .....	1	1
			<b>Total 8</b>
8. (a)	Safety precaution liquid might overflow & ignitor vapour might ignite ANY TWO VALID COMMENTS .....	1 + 1	2
(b) (i)	cooling .....	1	
	solidifying .....	1	
	exothermic .....	1	
(ii)	37 °C .....	1	
(iii)	single melting temperature .....	1	
(iv)	room temperature .....	1	6
			<b>Total 8</b>

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9. (a) (i)	Any comment linking energy to ability to do work .....	1	
(ii)	joule OR J.....	1	2
(b) (i)	Heat/Thermal.....	1	
(ii)	friction ... ..	1	2
			<i>Total 4</i>

10. (a)	Hydrogen is less dense than air ( <sup>except</sup> <del>NOT</del> lighter) ... ..	1	
	rises/stays in test tube/ or valid comment .....	1	2
(b) (i)	Lighted splint (not glowing) .....	1	
	pops/explodes .....	1	
(ii)	$2\text{H}_2 + \text{O}_2 \longrightarrow 2\text{H}_2\text{O}$ all formulae correct .....	1	
	then balanced ... ..	1	4
(c) (i)			
	correct shared pairs of electrons ... ..	1	
	correct numbers of outer electrons ... ..	1	
(ii)	covalent ... ..	1	3
			<i>Total 9</i>