



Rewarding Learning

**General Certificate of Secondary Education
2011–2012**

Science: Double Award (Modular)

Using Materials and Understanding Reactions

End of Module Test

Higher Tier

[GDB02]

WEDNESDAY 9 NOVEMBER 2011

9.15 am–10.00 am

**MARK
SCHEME**

- 1 (a) 3 different elements [1]
 (b) 2 oxygen atoms [1]
 (c) 5 [1]
 (d) 1^- or -1 [1]
 (not negative or $-$)
 (e) hydrogen ion [1]
 allow H^+ (not H)

- 2 (a) Idea that the brown colour has spread throughout the gas jars [1]
 (b) (3rd option) some of the oxygen moved into the lower jar and some of the bromine moved into the top gas jar [1]
 (c) diffusion [1]

3

Particle	Relative charge	Relative mass	Position in atom: shells/nucleus
proton	+1	1 [1]	nucleus [1]
electron	-1 [1]	$\frac{1}{1840}$	shells
neutron	0	1 [1]	nucleus

- 4 (a) Soap (solution) [1]
 (b) Idea it takes most soap solution to produce a lather [1]
 (c) A [1]
 (d) C [1]

5

Mass number	Number of protons	Number of neutrons	Number of electrons
206	82	124	82
207	82	125	82
208	82	126	82

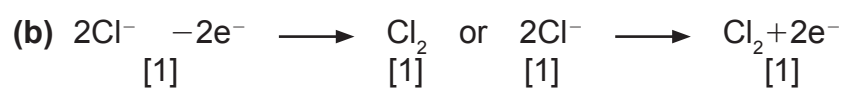
[1] [1] [1] [1] [4]

AVAILABLE MARKS	
5	
3	
4	
4	
4	

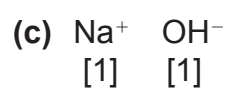
			AVAILABLE MARKS
6	(a) False	[1]	4
	(b) True	[1]	
	(c) True	[1]	
	(d) True	[1]	
7	(a) correct sharing [1] correct number of electrons [1] second mark dependent on first	[2]	3
	(b) third box – shared electrons	[1]	
8	$P_1 V_1/T_1 = P_2 V_2/T_2$ $80 \times 10\,000/300 = 20\,000 \times V/400$ 53.3[3] cm ³ [1] up to two method marks available – second method mark must involve a computation	[4]	4
9	(a) hydrated [1] iron (III) oxide [1]	[2]	5
	(b) galvanising	[1]	
	(c) zinc is more reactive than iron [1] It reacts in place of the iron or first [1] (not quicker)	[2]	
10	(a) A	[1]	4
	(b) B	[1]	
	(c) (i) diamond [1] (ii) no delocalised electrons/mobile electrons [1]	[2]	
11	(a) The formation of crystals/solid forming	[1]	5
	(b) Temperature at which crystals form not just temperature	[1]	
	(c) Idea of repeating stage 3 [1] Subsequent Action – waiting for crystals to form/take temperature at which crystals form (to obtain more results) [1] Idea of continuing investigation [1]	[3]	

12 (a) hydrogen

[1]



[2]



[2]

Total

**AVAILABLE
MARKS**

5

50