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]

TUESDAY 28 FEBRUARY 2012
11.00 am–11.45 am

MARK SCHEME

				AVAILABLE MARKS
1	**(a)**	**(i)** $NaHCO_3$	[1]	
		(ii) $FeSO_4$	[1]	
	(b)	6	[1]	
	(c)	Zinc carbonate	[1]	4
2	**(a)**	Number of protons and neutrons [1] in (the nucleus of) an atom [1] or in the nucleus unless wrongly qualified	[2]	
	(b)	protons 15	[1]	
		electrons 15	[1]	
		neutrons 31 − 15 = 16	[1]	5
3	**(a)**	2,8 arrangement for sodium	[1]	
		2,8 arrangement for oxygen	[1]	
	(b)	Na_2O	[1]	3
4	**(a)**	metal oxide, non-metal oxide	[2]	
	(b)	carbon monoxide/water/any suitable	[1]	
	(c)	alkali	[1]	4
5	**(a)**	nitrogen	[1]	
	(b)	as temp. increase solubility decreases [1] for (all) gases [1]	[2]	
	(c)	there is less oxygen (dissolved) in the water	[1]	4
6	**(a)**	electrolysis	[1]	
	(b)	cathode NOT negative	[1]	
	(c)	oxygen, carbon dioxide	[2]	4

				AVAILABLE MARKS
7	**(a)**	correct sharing [1] correct number of electrons [1]	[2]	
	(b)	covalent	[1]	
	(c)	chlorine gas, oxygen gas	[2]	5
8	**(a)**	It combines the properties of more than one material [1] to produce a better material for a particular purpose.	[2]	
	(b)	1 correct property qualified [1] 2 correct properties unqualified [1] 3 correct properties unqualified [2] 2 correct properties 1 qualified [2] 2 correct properties 2 qualified [3] 3 correct properties 1 qualified [3]	[3]	5
9	**(a)**	neutralisation	[1]	
	(b)	$H^+_{(aq)} + OH^-_{(aq)} \longrightarrow H_2O_{(l)}$ LHS [1] RHS [1] state symbols [1]	[3]	4
10	**(a)**	C	[1]	
	(b)	B [1] D [1]	[2]	
	(c)	D	[1]	
	(d)	diamond/quartz	[1]	5
11	**(a)**	$Ca(HCO_3)_2$	[1]	
	(b)	Ca^{2+} ions [1] are replaced by Na^+ ions [1] if wrongly qualified max [1]	[2]	3
12	**(a)**	Ions must be free to move/idea of conducting electricity	[1]	
	(b)	bromine	[1]	
	(c)	$Pb^{2+} + 2e^- \longrightarrow Pb$ [1] [1]	[2]	4
			Total	**50**