Mark Scheme

Sample Assessment Material 2018

Pearson Edexcel International GCSE
in Science (Single Award) (4SS0)
Paper 1C

Question number	Answer	Additional Guidance	Marks
1 (a)	**M1** (X) melting **M2** (Y) boiling **M3** (Z) freezing		3
(b)	**A** (the particles vibrate about their fixed positions)		1
(c)	**D** (solid to gas)		1
(d) (i)	endothermic		1
(ii)	$H_2O(s) \rightarrow H_2O(l)$		1

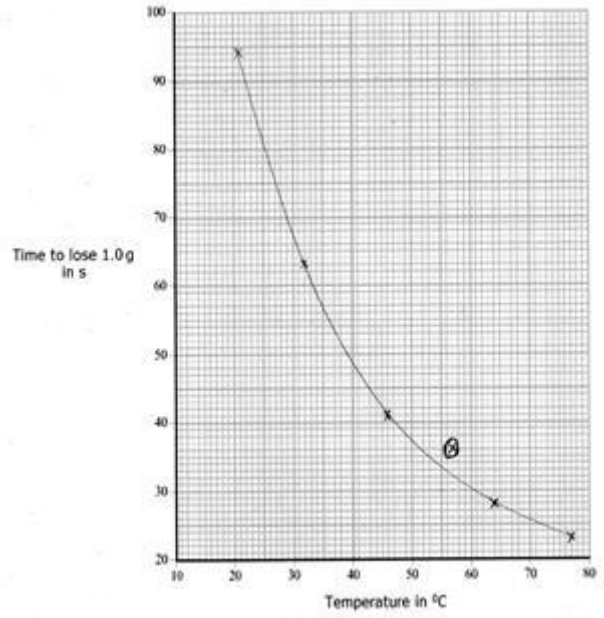
Total for Question 1 = 7 marks

Question number	Answer	Additional guidance	Marks
2 (a)	**M1** NH_4^+ **M2** Cl^-	**ACCEPT** answers in either order	2
(b)	**M1** moist/damp red litmus **M2** turns blue	**ACCEPT** pH/UI paper **ACCEPT** blue/indigo/violet/purple if pH/UI paper used	2
(c) (i)	An explanation that links together the following two points: **M1** ammonia diffuses more quickly **M2** because it has travelled further (along the tube in the same time)	 **ACCEPT** reverse argument for hydrogen chloride	2
(ii)	it is corrosive / it burns / it damages the skin / it damages the eyes	**IGNORE** irritant / harmful / toxic / poisonous	1
(iii)	wear eye protection e.g. goggles or mask / wear gloves	**ACCEPT** use tongs if reference made to handling the cotton wool **IGNORE** references to wearing a lab coat.	1
(d) (i)	**M1** add universal indicator to the solution **M2** match the colour obtained to a pH chart		2
(ii)	any value between 4 and 6 inclusive		1

Total for Question 2 = 11 marks

Question number	Answer	Additional guidance	Marks
3 (a)	**M1** hydrogen **M2** carbon	**ACCEPT** answers in either order	2
(b) (i)	bitumen		1
(ii)	bitumen		1
(c)	**M1** (kerosene) aircraft fuel / fuel for central heating / fuel for small heaters and lamps **M2** (fuel oil) fuel for ships / industrial heating oil / fuel for power stations / lubrication		2
(d) (i)	a substance that releases thermal energy/heat energy when burned		1
(ii)	**M1** water (vapour)	**ACCEPT** answers in either order	1
	M2 carbon dioxide		1
(iii)	An explanation that links the following two points: **M1** carbon monoxide is produced/a poisonous gas is produced **M2** which reduces the capacity of the blood to carry oxygen	**ACCEPT** toxic gas	2

Total for Question 3 = 11 marks

Question number	Answer	Additional guidance	Marks
4 (a) (i)		All points plotted correctly to nearest gridline	1
(ii)	circle drawn around point (57,36)		1
(iii)	suitable curve of best fit drawn for points plotted		1
(iv)	Any one from: • the marble chips had a smaller surface area • the temperature of acid was lower than 57 ^{0}C • the acid used had a lower concentration		1
(b)	**M1** vertical line drawn to curve at 40°C **M2** value read correctly to nearest gridline	Expected value 48-49 s	2

Question number	Answer	Additional guidance	Marks
(c)	**M1** 1.0 ÷ **M2** from (b) **M2** numerical value for rate correctly evaluated **M3** (unit) g/s	 Example calculation: 1.0 ÷ 48 = 0.021 **ACCEPT** any number of sig figs except 1, e.g. 0.02083 **ACCEPT** g s^{-1}	3
(d)	rate increases as temperature increases	**ACCEPT** reverse argument **REJECT** directly proportional/ proportional	1
(e)	An explanation that links the following two points: **M1** it reduces the loss of thermal/heat energy **M2** and therefore the liquid stays at the correct temperature		2

Total for Question 4 = 12 marks

Question number	Answer	Additional guidance	Marks
5 (a)	Any value between 40 and 110 °C	Correct value is 59 °C	1
(b)	**M1** (state) solid **M2** (colour) black	 **ACCEPT** very dark grey	2
(c) (i)	$H_2 + Cl_2 \rightarrow 2\ HCl$		1
(ii)	any value between 0 and 3		1
(iii)	neutralisation		1
(d)	An explanation that links the following points: **M1** the (electrostatic) forces (of attraction) between the (oppositely charged) ions in NaCl **M2** are much stronger than **M3** the intermolecular forces (of attraction) in HCl **M4** and therefore more energy is required to overcome (the forces of attraction between the ions in NaCl	 **ACCEPT** ionic bonding	4

Total for Question 5 = 10 marks

Question number	Answer	Additional guidance	Marks
6 (a)	the molecule contains a (carbon to carbon) double bond		1
(b)	**M1** no change (in colour) with compound A **M2** bromine water is decolourised with compound F	 **ACCEPT** turns colourless **IGNORE** clear	2
(c)	**M1** has no double bond/is saturated **M2** formula is C_4H_{10} which fits the general formula of an alkane C_nH_{2n+2}		2
(d)	C		1
(e)	An explanation that links the following points: • addition polymers are non-biodegradable • so landfill sites get filled up • burning produces poisonous/toxic gases		3

Total for Question 6 = 9 marks