Mark Scheme (Results)

Pearson Edexcel

Additional Sample Assessment Materials GCSE 9-1
Combined Science
Paper 3: Chemistry 1
1SC0/1CF

First examination 2018

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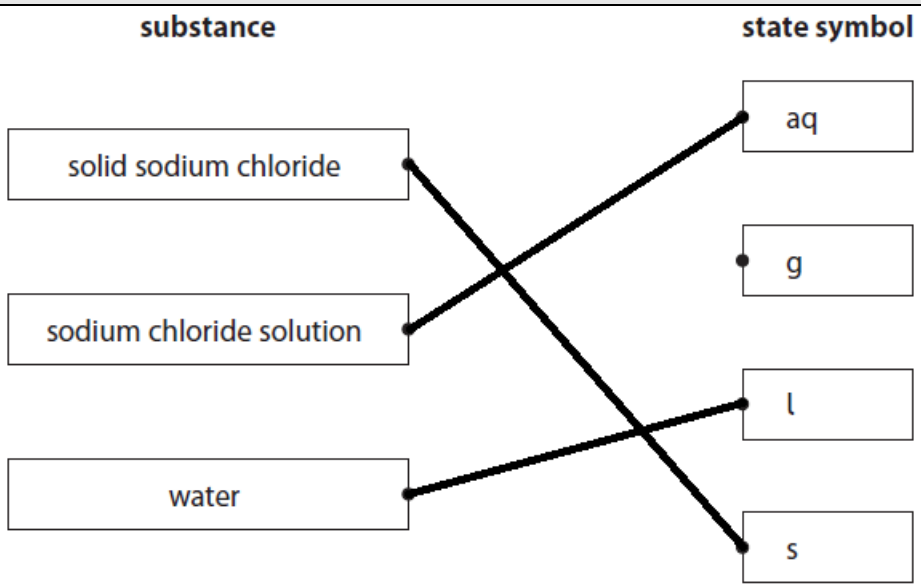
Summer 2017

General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Pearson Edexcel Leve1 1/Level 2 GCSE (9-1) in Combined Science

Paper 1SC0/1CF – Mark scheme

Question Number	Answer	Mark
1(a)	 all 3 correct = 2 any 2 correct = 1 none or one correct = 0	**(2)**

Question Number	Answer	Mark
1(b)	**D** NaCl H_2O	**(1)**

Question Number	Answer	Mark
1(c)	step 1 • use distilled water (1) • because it is pure (1) OR • measure water with measuring cylinder (1) • which is more accurate than scale on beaker / a full beaker does not contain 100 cm^3 (1) step 2 • stir/ shake (1) • so that the solid can dissolve (1)	**(4)**

Question Number	Answer	Additional guidance	Mark
1(d)(i)	(white/colourless) solid/crystals	ignore reference to colourless solution	**(1)**

Question Number	Answer	Mark
1(d)(ii)	filtration	**(1)**

(Total for Question 1 = 9 marks)

Question Number	Answer	Mark
2(a)	hydrogen + chlorine → hydrogen chloride	**(1)**

Question Number	Answer	Mark
2(b)(i)	5 molecules of each have reacted/ 5:5 (1) 1: 1 (1)	**(2)**

Question Number	Answer	Mark
2(b)(ii)	**C** $H_2 + Cl_2 \rightarrow 2HCl$	**(1)**

Question Number	Answer	Mark
2(c)(i)	hydrochloric acid	**(1)**

Question Number	Answer	Mark
2(c)(ii)	**C** pink-red	**(1)**

(Total for Question 2 = 6 marks)

Question Number	Answer	Mark
3(a)(i)	**A** tap water	**(1)**

Question Number	Answer	Mark
3(a)(ii)	white solid: sodium chloride (1) colourless liquid: water (1)	**(2)**

Question Number	Answer	Mark
3(b)	**A** calcium **B** magnesium **C** silver **D** copper 4 correct = 3 marks 2/3 correct = 2 marks 1 correct = 1 mark	**(3)**

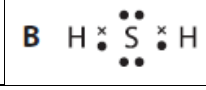
Question Number	O	Mark
3(c)	An explanation that combines identification - application of knowledge (1 mark) and reasoning/justification - application of understanding (2 marks): • weak, intermolecular forces (1) **AND** **EITHER** • molecules have enough energy (at room temperature) (1) • overcome these forces (1) **OR** • forces are not strong enough (1) • to hold molecules together in lattice/solid (at room temperature) (1)	**(3)**

(Total for Question 3 = 9 marks)

Question number	Answer	Mark
4(a)	particle **A** proton particle **B** neutron particle **C** electron all three correct 2 marks one or two correct 1 mark	**(2)**

Question number	Answer	Mark
4(b)(i)	• atomic number is 16 because 16 protons (1) • mass number is 32 because 16 protons and 16 neutrons (1)	**(2)**

Question number	Answer	Mark
4(b)(ii)	2.8.6	**(1)**

Question number	Answer	Mark
4(c)(i)	**B** 	**(1)**

Question number	Answer			Mark
4(c)(ii)	**C**	low	low	poor conductor	**(1)**

Question number	Answer	Mark
4(d)(i)	(formula showing) simplest ratio of atoms (of each element in a substance)	**(1)**

Question number	Answer	Additional guidance	Mark
4(d)(ii)	no. S atoms : no. F atoms = $\frac{4.8}{32}$ (0.15) : $\frac{17.1}{19}$ (0.9) (1) = $\frac{0.15}{0.15}$ (1) : $\frac{0.9}{0.15}$ (6) (1) empirical formula SF_6 (1)	correct formula with no working scores 1	**(3)**

(Total for Question 4 = 11 marks)

Question Number	Answer	Mark
5(a)(i)	Diagram to show • filter funnel and filter paper (1) • collecting vessel / beaker / conical flask (1)	**(2)**

Question Number	Answer	Mark
5(a)(ii)	An explanation that combines identification - application of knowledge (1 mark) and reasoning/justification - application of understanding (1 mark) • to react all the (nitric) acid in the solution (1) • so that the calcium nitrate solution is pure (1)	**(2)**

Question Number	Answer	Mark
5(a)(iii)	$CaCO_3 + 2HNO_3 \rightarrow Ca(NO_3)_2 + H_2O + CO_2$ (3) left hand side formulae (1) right hand side formulae (1) balancing correct formulae (1)	**(3)**

Question Number	Answer	Mark
5(b)	• 88 + (14 + 16x3) x 2 (1) • = 212 (1)	**(2)**

Question Number	Answer	Mark
5(c)	• 0.4 dm^3 (1) • 100/0.4 (1) • = 250 (g dm^{-3}) (1) OR • 400 cm^3 contain 100 g 1 cm^3 contains $\frac{100}{400}$ g (1) • 1 dm^3 contains $\frac{100 \times 1000}{400}$ g (1) • = 250 (g dm^{-3}) (1)	**(3)**

(Total for Question 5 = 12 marks)

Question Number	Answer	Mark
6(a)	(place) ammeter / lamp (in circuit) (1)	**(1)**

Question Number	Answer	Mark
6(b)	**D** cathode	**(1)**

Question Number	Answer	Mark
6(c)(i)	chlorine (1)	**(1)**

Question Number	Answer	Mark
6(c)(i)	A description to include • lighted splint / ignite gas (1) • gas burns / (squeaky) pop (if air is present) (1)	**(2)**

Question Number	Answer	Mark
6(d)	An explanation that combines identification - application of knowledge (1 mark) and reasoning/justification - application of understanding (1 mark): • sodium and chloride ions present (1) • these ions can move (in solution) (1)	**(2)**

Question Number	Indicative content	Mark
***6(e)**	An answer that combines knowledge (3 marks) and understanding (3 marks) to provide a logical description: • place zinc chloride in crucible • heat to melt zinc chloride • use inert electrodes • connect to d.c. supply • zinc chloride is ionic • contains zinc ions and chloride ions • ions can move in liquid • positive zinc ions move to cathode • zinc ions gain electrons • zinc metal forms • as silver shiny solid formed • negative chloride ions move to anode • chloride ions lose electrons • chlorine forms • as (yellow-) green gas	**(6)**

Level	Mark	Descriptor
	0	No awardable material.
Level 1	1–2	• Demonstrates elements of chemical understanding, some of which is inaccurate. Understanding of scientific, enquiry, techniques and procedures lacks detail. (AO1) • Presents a description which is not logically ordered and with significant gaps. (AO1)
Level 2	3–4	• Demonstrates chemical understanding, which is mostly relevant but may include some inaccuracies. Understanding of scientific ideas, enquiry, techniques and procedures is not fully detailed and/or developed. (AO1) • Presents a description of the procedure that has a structure which is mostly clear, coherent and logical with minor steps missing. (AO1)
Level 3	5–6	• Demonstrates accurate and relevant chemical understanding throughout. Understanding of the scientific ideas, enquiry, techniques and procedures is detailed and fully developed. (AO1) • Presents a description that has a well-developed structure which is clear, coherent and logical. (AO1)

(Total for Question 6 = 13 marks)