



Mark Scheme (Results)

January 2018

Pearson Edexcel GCSE

In Chemistry (5CH1F)

Paper 01

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January 2018

Publications Code 5CH1F_01_1801_MS

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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.

Question number	Answer	Acceptable answers	Marks
1 (a)(i)	electrolysis		1

Question number	Answer	Acceptable answers	Marks
1 (a)(ii)	An explanation linking <ul style="list-style-type: none"> toxic / poisonous (gas) (1) fume cupboard removes gas / stated effect of chlorine (1) 		2

Question number	Answer	Acceptable answers	Marks
1 (a)(iii)	hydrogen	H ₂ Reject H, H ²	1

Question number	Answer	Acceptable answers	Marks
1 (b)(i)	B kills bacteria		1

Question number	Answer	Acceptable answers	Marks
1 (b)(ii)	C calcium carbonate		1

Question number	Answer	Acceptable answers	Marks
1 (c)	magnesium chloride (1) water (1)	ignore formulae	2

Total for Question 1 = 8 marks

Question number	Answer	Acceptable answers	Marks
2 (a)(i)	nitrogen (1)	N ₂ reject N, N ²	1

Question number	Answer	Acceptable answers	Marks
2 (a)(ii)	name: oxygen (1) percentage: allow anything from 20-21 (1)	O ₂ reject O, O ² % \geq 20 and \leq 21	2

Question number	Answer	Acceptable answers	Marks
2 (a)(iii)	B argon		1

Question number	Answer	Acceptable answers	Marks
2 (a)(iv)	78 (%)		1

Question number	Answer	Acceptable answers	Marks
2 (b)(i)	(released by) volcanoes (1)		1

Question number	Answer	Marks
2 (b)(ii)	An explanation linking any two of the following <ul style="list-style-type: none"> • Earth cooled (1) • water vapour condensed/ formed rain (1) • amount water vapour in atmosphere reduced (1) 	2

Total for Question 2 = 8 marks

Question number	Answer	Acceptable answers	Marks
3 (a)	C ores		1

Question number	Answer	Acceptable answers	Marks
3 (b)	<ul style="list-style-type: none"> • carbon (1) • carbon dioxide/carbon monoxide (1) 	ignore formulae	2

Question number	Answer	Acceptable answers	Marks
3 (c)	<ul style="list-style-type: none"> • aluminium is less dense than iron / aluminium has low density (1) • aluminium does not corrode (1) 	allow 'light' ignore 'does not rust'	2

Question number	Answer	Acceptable answers	Marks
3 (d)	An explanation linking : <ul style="list-style-type: none"> • B has no water (1) • A has water and oxygen and C has no oxygen (1) 	allow air for oxygen	2

Question number	Answer	Acceptable answers	Marks
3 (e)(i)	<ul style="list-style-type: none"> • mixture (1) • metals (1) 	ignore 'compound'	2

Question number	Answer	Acceptable answers	Marks
3 (e)(ii)	Any one from <ul style="list-style-type: none">• iron rusts/corrodes/ reacts with air and water/ ORA (1)• iron is soft / bends easily / ORA (1)		1

Total for Question 3 = 10 marks

Question number	Answer	Acceptable answers	Marks
4 (a) (i)	C a polymer		1

Question number	Answer	Acceptable answers	Marks
4 (a) (ii)	<ul style="list-style-type: none"> • double bond breaks (in monomer) (1) • molecules link together (1) 		2

Question number	Answer	Acceptable answers	Marks
4 (b)(i)	<ul style="list-style-type: none"> • breaking down/ decomposing • by biological action/ by bacteria/ by enzymes 		2

Question number	Answer	Acceptable answers	Marks
4 (b)(ii)	<ul style="list-style-type: none"> • C • because no loss in mass/ no change 		2

Question number	Answer	Acceptable answers	Marks
4 (b)(iii)	no/little solid waste / releases (heat) energy		1

Question number	Answer	Acceptable answers	Marks
4 (c)	carbon and hydrogen and chlorine	ignore symbols	1

Total for Question 4 = 9 marks

Question number	Answer	Acceptable answers	Marks
5 (a)(i)	An explanation linking two of the following <ul style="list-style-type: none"> • build up of sediment (1) • compaction/ squashing/high pressure on layers (1) • long period of time (1) • fossils are caused by skeletons of marine animals / bones/shells (1) 		2

Question number	Answer	Acceptable answers	Marks
5 (a)(ii)	An explanation linking the following <ul style="list-style-type: none"> • breaking down (of a compound) (1) • by heat (energy) (1) 		2

Question number	Answer	Acceptable answers	Marks
5(a)(iii)	An explanation linking the following <ul style="list-style-type: none"> • gas / carbon dioxide / CO₂ formed (1) • (gas) {escapes/is lost/given off/released/ evolved} (1) 		2

Question number		Indicative Content	Marks
QWC	*5(b)	<p>A description to include some of the following points</p> <p>LARGE SCALE USES</p> <ul style="list-style-type: none"> • making construction materials • making cement • making concrete • making glass • making steel • limestone can be used to neutralise acidic gases from (coal-fired) power station chimneys • {calcium oxide / (quick)lime or calcium hydroxide / slaked lime} can be made from it and used to neutralise acidic soils <p>DISADVANTAGES</p> <ul style="list-style-type: none"> • loss of jobs • depression of local economy • supply of limestone reduced <p>ADVANTAGES</p> <ul style="list-style-type: none"> • noise pollution reduced • less dust /smoke • less dust that can cause health problems (asthma/breathing difficulty) • less traffic on roads • use of empty quarry eg water park/ wildlife park etc • may improve tourism • no further damage to natural habitats of birds/animals/plants 	(6)
Level	0	No rewardable content	
1	1 - 2	<ul style="list-style-type: none"> • A limited description of a use or an advantage or a disadvantage • answer communicates ideas using simple language and uses limited scientific terminology • spelling, punctuation and grammar are used with limited accuracy 	
2	3 - 4	<ul style="list-style-type: none"> • A simple description of a use and an advantage/disadvantage or two advantages/disadvantages • the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately • spelling, punctuation and grammar are used with some accuracy 	
3	5 - 6	<ul style="list-style-type: none"> • A detailed description to include uses, advantages and disadvantages • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors 	

Total for Question 5 = 12 marks

Question number	Answer	Marks
6 (a)	D fractional distillation	1

Question number	Answer	Acceptable answers	Marks
6 (b)(i)	An explanation linking the following <ul style="list-style-type: none"> • P (1) • molecular formula is C_8H_{18} / has 8 carbon atoms and 18 hydrogen atoms (1) 		2

Question number	Answer	Acceptable answers	Marks
6(b)(ii)	An explanation linking the following <ul style="list-style-type: none"> • P and Q (1) • saturated/ no C=C / no double bonds/ alkanes (1) 		2

Question number	Answer	Acceptable answers	Marks
6(b)(iii)	An explanation linking the following <ul style="list-style-type: none"> • molecules containing carbon and hydrogen (atoms) (1) • only (1) 		2

Question number		Indicative Content	Marks
QWC	*6(c)	<p>A description to include some of the following points</p> <p>Advantages of hydrogen</p> <ul style="list-style-type: none"> • water (only) formed • water is not harmful • no carbon dioxide released on combustion • renewable • hydrogen is obtain from water <p>Disadvantages of hydrogen</p> <ul style="list-style-type: none"> • hydrogen filling stations not readily available • hydrogen a gas so harder to store • hydrogen must be stored under pressure • hydrogen must be stored in heavy containers • if produced by electrolysis, carbon dioxide may be released in electricity production • expensive to produce by electrolysis <p>Advantages of petrol</p> <ul style="list-style-type: none"> • petrol readily available • petrol a liquid so easy to store • petrol releases a lot of energy when burned <p>Disadvantages of petrol</p> <ul style="list-style-type: none"> • carbon dioxide formed • carbon dioxide a greenhouse gas • other harmful products may include- carbon monoxide, nitrogen oxides, sulfur dioxide, unburnt hydrocarbons • non-renewable 	(6)
Level	0	No rewardable content	
1	1 - 2	<ul style="list-style-type: none"> • A limited description of the products of burning one fuel or an advantage or a disadvantage of hydrogen • answer communicates ideas using simple language and uses limited scientific terminology • spelling, punctuation and grammar are used with limited accuracy 	
2	3 - 4	<ul style="list-style-type: none"> • A simple description of the products of burning of both fuels OR advantages and disadvantages of hydrogen • the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately • spelling, punctuation and grammar are used with some accuracy 	
3	5 - 6	<ul style="list-style-type: none"> • A detailed description to include the products of burning of both fuels and advantages and disadvantages of hydrogen • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors 	

Total for Question 6 = 13 marks

