



2007 Chemistry

Standard Grade – General

Finalised Marking Instructions

© Scottish Qualifications Authority 2007

The information in this publication may be reproduced to support SQA qualifications only on a non-commercial basis. If it is to be used for any other purposes written permission must be obtained from the Assessment Materials Team, Dalkeith.

Where the publication includes materials from sources other than SQA (secondary copyright), this material should only be reproduced for the purposes of examination or assessment. If it needs to be reproduced for any other purpose it is the centre's responsibility to obtain the necessary copyright clearance. SQA's Assessment Materials Team at Dalkeith may be able to direct you to the secondary sources.

These Marking Instructions have been prepared by Examination Teams for use by SQA Appointed Markers when marking External Course Assessments. This publication must not be reproduced for commercial or trade purposes.

Standard Grade Chemistry

General information for markers

The general comments given below should be considered during all marking.

1. Marks should **not** be deducted for incorrect spelling or loose language as long as the meaning of the word(s) is conveyed.

Example: Answers like “distilling” (for “distillation”) and “it gets hotter” (for “the temperature rises”) should be accepted.

2. A right answer followed by a wrong answer should be treated as a cancelling error and no marks should be given.

Example: What is the colour of universal indicator in acid solution?

The answer “red, blue” gains no marks.

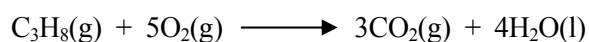
3. If a right answer is followed by additional information which does not conflict, the additional information should be ignored, whether correct or not.

Example: Why can the tube not be made of copper?

If the correct answer is “It has a low melting point”, and the candidate's answer is “It has a low melting point and is coloured grey” this would **not** be treated as a cancelling error.

4. Full marks should be awarded for the correct answer to a calculation on its own; the part marks shown in the Marking Instructions are for use when working is given.
5. A half mark should be deducted in a calculation for each arithmetic slip.
6. A half mark should be deducted for incorrect or missing units **only when stated in the Marking Instructions**.
7. Where a wrong numerical answer (already penalised) is carried forward to another step, no further penalty is incurred provided the end result is used correctly.
8. Ignore the omission of one H atom from a full structural formula provided the bond is shown.
9. A symbol or correct formula should be accepted in place of a name.
10. If an answer comes directly from the text of the question, no marks should be given.

Example: A student found that 0.05 mol of propane, C₃H₈ burned to give 82.4 kJ of energy.



Name the kind of enthalpy change which the student measured.

No marks should be given for “burning” since the word “burned” appears in the text.

11. A guiding principle in marking is to give credit for (partially) correct chemistry rather than to look for reasons not to give marks.

Example: A student measured the pH of four carboxylic acids to find out how the strength is related to the number of chlorine atoms in the molecule. The results are shown.

Structural Formula	pH
CH ₃ COOH	1.65
CH ₂ ClCOOH	1.27
CHCl ₂ COOH	0.90
CCl ₃ COOH	0.51

How is the strength of the acids related to the number of chlorine atoms in the molecule?

Although not completely correct, an answer such as “the more Cl₂, the stronger the acid” should gain the full mark.

12. Unless the question is clearly about a non-chemistry issue, eg costs in industrial chemistry, a non-chemical answer gains no marks.

Example: Why does the (catalytic) converter have a honeycomb structure?

A response such as “to make it work” may be correct but it is not a chemical answer and the mark should not be given.

13. When it is very difficult to make a decision about a partially correct answer, a half mark can be awarded.
14. When marks have been totalled, a half mark should be rounded up.

**2007 Standard Grade Chemistry
General Level**

Marking Instructions

Part 1 – 20 marks

1	(a)	E	1 or 0
	(b)	B	1 or 0
	(c)	D and F	1 or 0
2	(a)	B	1 or 0
	(b)	C	1 or 0
	(c)	C	1 or 0
3	(a)	B	1 or 0
	(b)	D and E	1 or 0
4	(a)	B	1 or 0
	(b)	C	1 or 0
	(c)	A and B	1 or 0
5	(a)	D	1 or 0
6	(a)	F	1 or 0
	(b)	C	1 or 0
	(c)	F	1 or 0
7	(a)	A	1 or 0
	(b)	C	1 or 0
8	(a)	A and F	1 or 0
	(b)	B and D	2 or 1 or 0

Please note that **NO HALF MARKS** are awarded in Part 1.

Marking Instructions**Chemistry Standard Grade – General****Part 2**

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
9 (a)	Carbon and hydrogen – both required No half marks	1	H ₂	Any other element
(b) (i)	Oxygen or O ₂	1	O	
(ii)	Carbon dioxide or CO ₂	1		Carbon monoxide with carbon dioxide

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
10 (a)	Chlorine/Cl ₂ (½) Catalyst (½) Cracking (½) Vinyl chloride (½)	2	Addition Chamber Cl	
(b)	Table drawn (½) Suitable headings (½) Correct entries (1) Deduct ½ mark for each missing/incorrect pair of entries up to a max of 1 mark	2	Poly as a heading	
(c)	Ethene or correct formula eg C ₂ H ₄ $ \begin{array}{cc} \text{H} & \text{H} \\ & \\ \text{C} & = & \text{C} \\ & \\ \text{H} & \text{H} \end{array} $	1		
(d)	It increases	1	Any reference to a description rather than trend	

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
11 (a)	Vertical scale (½) Correct labelling of bars (½) Bars drawn correctly (½ box tolerance) Deduct ½ mark for each incorrect bar up to max of 1 If line graph drawn – max 1 mark Deduct ½ mark if less than half the graph paper has been used in either axis	2		
(b)	C ₂ H ₄ O ₂ in any order	1	CH ₃ COOH Empirical formula	Empirical formula
(c)	Add the indicator (½ mark)/pH paper (to the ethanoic acid) and check the colour (½ mark) against a chart	1		
(d)	Increase	1		
(e)	H ⁺ or hydrogen ion or hydrogen/H	1	H ⁻ H ₂	

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
12 (a)	Prevents oxygen (or air) and/or water reaching the steel Acts as a barrier to air and/or water Waterproof coating	1	Physical barrier Acts as a barrier	
(b)	Oiling, greasing, plastic coating, metal/electroplating, sacrificial protection, galvanising, cathodic protection/ attach to negative terminal of battery/wax Attach Zn/Mg blocks Dip coating	1	Sacrificial protection using tin	
(c) (i)	Mixture or blend of metals/mixture of metals and non- metals	1	Compound	
(ii)	280 – 310	1	Greater than a number within the range eg > 300	

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
13 (a)	Magnesium zinc lead or correct symbols	1		
(b)	Hydrogen or H ₂	1	H	
(c)	The rate would increase	1	More bubbles on its own	

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
14 (a)	Structure correctly drawn with no bonds missing between carbon atoms Allow 1 missing carbon to hydrogen bond or 1 hydrogen missing Correct shortened structural formula acceptable	1		
(b) (i)	$ \begin{array}{ccc} & \text{H} & \text{H} \\ & & \\ \text{C}_2\text{H}_4 & \text{C} = \text{C} & \text{CH}_2\text{CH}_2 \\ & & \\ & \text{H} & \text{H} \end{array} $	1	ene family	
(ii)	It is unsaturated/not saturated It has a carbon to carbon double bond It is an alkene It is ethene	1		
(c) (i)	0.1/same mass	1		
(ii)	Al_2O_3 ignore ion charges	1		

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
15 (a)	(i) Portable/lower voltage Safer	1	Cheaper Rechargeable Can be used in power cut	Cheaper
	(ii) The chemicals are used up/run out No more chemical energy No more reactions Elements run out	1	No more energy Electrolyte/electrons/ions used up/ run out/goes flat/leaks/runs out of power/energy	
(b)	(i) Arrow on or near the wire from zinc to nickel	1		Arrow through lemon
	(ii) Higher	1		

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
16 (a)	Add I ₂ iodine solution (½) Turns blue/black (½) Or purple	1	Correct colour with incorrect chemical Brown/blue Tyndall effect	
(b)	Condensation/polymerisation	1	Addition Polymerisation	Addition Polymerisation
(c) (i)	Sucrose	1		
(ii)	Same mass of carbohydrate/quantity/amount Same distance of carbohydrate from test tube Same test tube/particle size/surface area	1	Same starting time Same apparatus Size of carbohydrate	
(d)	Respiration	1		

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
17 (a)	(i) Power pack or battery or dc source/lab pack/power supply Correctly drawn symbol for battery	1	Mains electricity	Ammeter/voltmeter
	(ii) Lead iodide $\longrightarrow$ Lead + iodine Formulae equation using either lead (ii) iodide or lead (iv) iodide	1	Equal sign in place of arrow	
(b)	The ions are not free to move Ions held in lattice	1	Electrons not free to move Atoms/particles not free to move Only conduct when molten/aqueous	
(c)	Carbon/C/graphite	1		

[END OF MARKING INSTRUCTIONS]