2008 Chemistry

Standard Grade − General

Finalised Marking Instructions

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, C_3H_8 burned to give 82.4 kJ of energy.

    $C_3H_8(g) + 5O_2(g) \longrightarrow 3CO_2(g) + 4H_2O(l)$

    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_3COOH	1.65
$CH_2ClCOOH$	1.27
$CHCl_2COOH$	0.90
CCl_3COOH	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 Cl_2, 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.

2008 Standard Grade Chemistry
General Level

Marking Instructions

Part 1 – 20 marks

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

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

Part 2

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
10 (a)	Distillation/fractional distillation	**1**	Fractioning/fractionating	
(b)	Smaller	**1**		Smaller and more viscous/ higher boiling point
(c)	Aluminum (Al), silicon (Si), oxygen (O) (O_2) - all 3 required	**1**		

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
11 (a)	Burns with a pop/lit splint and it pops	**1**	Glowing splint/pop test	
(b)	Alkaline	**1**		
(c)	Too reactive/react violently/very reactive Prevents it reacting with air/oxygen/water Prevents oxidation/corrosion	**1**	Prevents rusting/Stop it reacting/ unstable	

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
12 (a)	Carbon carbon monoxide/CO 4 × ½ marks distillation sodium/Na	**2**		
(b)	Alloy	**1**	compound	
(c)	76 % titanium ½ mark 4 % zirconium ½ mark 20 % ½ mark other metals ½ marks	**2**		

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
13 (a) (i)	Glowed very brightly/brighter than zinc/burns/bright flame/light/white light	**1**	More reactive/glowed brightly	
(ii)	Faster/increase	**1**		
(b)	Gold/mercury/platinum or correct symbols	**1**		

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
14 (a)	Carbohydrates/saccharides	**1**	Sugar/monosaccharide/disaccharide	
(b) (i)	Fermentation/anaerobic respiration	**1**		
(ii)	Ethanol	**1**		

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
15 (a)	Mass/mg and all bars labelled ½ mark Vertical scale ½ mark Bar heights correct (+/- ½ box) 1 mark • Accept spike graph. • Deduct ½ mark for each missing bar or error in bar height up to a maximum of 1. • Deduct a maximum of ½ mark if <u>less</u> than half the graph paper is used in either direction. • Line graph drawn − maximum of 1 mark.	**2**		
(b) (i)	CO_2	**1**		
(ii)	Milky/chalky/cloudy/white	**1**		

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
16 (a)	Parsnip	**1**		
(b)	Enzyme	**1**	Natural/specific catalyst	
(c)	20 cm^3/25^oC/1g All for 1 mark	**1**		

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
17 (a)	chloroethene	**1**	chloroethane	
(b)	Last long/longer/will not rot/decay/decompose/break down	**1**	Hard wearing/recycled/reuse	
(c) (i)	Stronger/greater/higher Natural are weaker	**1**		
(ii)	Natural	**1**		

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
18 (a)	Hydrogen sulphide + oxygen → sulphur dioxide + water Hydrogen Sulphide + oxygen → sulphur dioxide + water Hydrogen sulphide + oxygen ↓ sulphur dioxide + water If formulae equation written every formulae must be correct (ignore balancing) (allow heat above the arrow) ALL MUST BE CORRECT FOR 1 MARK NO ½ MARKS	**1**	= sign	
(b) (i)	To speed up reaction/less heat/energy.	**1**	Can be reused/not used up without the mention of speeding reaction up.	
(ii)	It decreases/goes down/gets lower or decreasing temperature increases %	**1**		

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
19 (a)	Acid (accept any named acid)	**1**	Lead acid	
(b)	2	**1**		
(c)	A substance which burns/reacts with oxygen ½ mark releasing energy/heat ½ mark	**1**	Releasing energy/heat with no mention of burning	
(d)	Carbon dioxide (CO_2) ½ mark Water (H_2O) ½ mark	**1**		

Question	Acceptable Answer	Mark	Unacceptable Answer	Negates
20 (a)	Lettuce	**1**		
(b)	Lime/carbonate/base/an alkali/alkali fertiliser/any named alkali/carbonate/base	**1**	Water/Fertiliser/alkali metal/ ammonium	
21 (a)	Below 7/less than 7/any number lower than 7/<7	**1**	0-7/1-7	
(b)	More food needed/larger population so more food need	**1**	Bigger/larger plants with no mention of food/population Larger population on its own	
(c)	Zinc chloride ($ZnCl_2$)	**1**		

[END OF MARKING INSTRUCTIONS]