Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

CHEMISTRY **0620/63**

Paper 6 Alternative to Practical **October/November 2019**

MARK SCHEME

Maximum Mark: 40

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2019 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

This syllabus is regulated for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

PUBLISHED

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Question	Answer	Marks
1(a)	measuring cylinder	**1**
1(b)	volume of gas / oxygen	**1**
	time	**1**
1(c)(i)	concentration of hydrogen peroxide / reactant decreases	**1**
1(c)(ii)	all hydrogen peroxide / reactant decomposed	**1**
1(d)(i)	filtration	**1**
1(d)(ii)	**method 1** • dry / evaporate water • (re-)weigh (the manganese(IV) oxide / catalyst after the reaction) • mass should be unchanged / 0.5 g **OR** **method 2** • use same sample MnO_2 / dry MnO_2 • repeat experiment • results would be the same	**3**

Question	Answer	Marks
2(a)	table of results for experiments initial and final reading boxes completed correctly 10.2 23.1 6.3 0.0 2.7 1.2	2
	differences completed correctly 10.2, 20.4, 5.1	1
	all values to 1 or 2 decimal places	1
2(b)	yellow	1
	orange / pink / red	1
2(c)	no sharp colour change / no (clear) end point	1
2(d)(i)	(Experiment) 3 (needed smallest) **and** (Experiment) 2 (needed largest)	1
2(d)(ii)	1 : 2	1
2(d)(iii)	most concentrated S R least concentrated T	1
2(e)	no effect / none	1
	concentration of reactants not affected / unchanged / same	1
2(f)	repeat the experiment	1
	compare / to check for anomalous results / until concordant results owtte	1

Question	Answer	Marks
2(g)	measurement to be taken	1
	use of results to draw conclusion	1
	reactant / method	1
	thermometric • measure temperature (change) • highest temperature (change) is most concentrated • add (xs) hydrochloric acid precipitation of metallic hydroxide • measure mass / height of precipitate • most precipitate is most concentrated • add (xs aqueous) copper sulfate (for example) gas produced • measure volume of gas made • largest volume is most concentrated • add an ammonium salt or aluminium evaporation • mass of solid • most mass is most concentrated • evaporate solution pH meter • measure pH • highest pH is most concentrated • pH meter dissolving • measure time taken for solid to dissolve • shortest time is most concentrated • aluminium / aluminium oxide / zinc / zinc oxide	

Question	Answer	Marks
3(a)	blue / purple / green / violet	1
3(b)(i)	green	1
	precipitate	1
3(b)(ii)	green solution / precipitate dissolves	1
3(c)	grey-green precipitate	1
3(d)	any **two** from: • effervescence • (damp red / purple) litmus / pH paper • turns blue / pH 8–10	2
3(e)	fuel / organic	1

Question	Answer	Marks
4	any **six** from: • known volume / amount of (distilled) water • initial temperature (of water before solid is added) • add measured mass / stated mass of potassium nitrate or ammonium chloride • stir / mix / dissolve / swirl / shake • final temperature of solution / temperature every 30 s • repeat with (same mass of) other solid (and volume / amount of water) OR measured mass of other solid • greater temperature change / decrease OR lowest final temperature is larger energy change / calculate energy change per gram	Max 6