**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**Cambridge International General Certificate of Secondary Education**

# MARK SCHEME for the October/November 2015 series

## 0620 CHEMISTRY

**0620/61** Paper 6 (Alternative to Practical), maximum raw mark 60

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.

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**Abbreviations used in the Mark Scheme**

- ; separates marking points
- / separates alternatives within a marking point
- () the word or phrase in brackets is not required but sets the context
- **A** accept (a less than ideal answer which should be marked correct)
- **I** ignore (mark as if this material were not present)
- **R** reject
- ecf credit a correct statement that follows a previous wrong response
- ora or reverse argument
- owtte or words to that effect (accept other ways of expressing the same idea)

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| Question | Answer | Marks | Guidance |
|---|---|---|---|
| 1(a) | (teat) pipette;<br>evaporating dish / basin; | 1<br>1 | <br>**R:** watch glass / clock glass / crucible / petri dish |
| 1(b)(i) | wire;<br>(metal) with high melting point; | 1<br>1 | |
| 1(b)(ii) | open; | 1 | |
| 1(c)(i) | pH > 7 / purple / blue / dark green; | 1 | |
| 1(c)(ii) | milky / white / white precipitate / cloudy; | 1 | |

| Question | Answer | Marks | Guidance |
|---|---|---|---|
| 2(a) | straight line, drawn with a ruler, missing the point at n = 3; | 1 | |
| 2(b) | 2 from:<br>• measuring / recording error / anomalous result;<br>• equal amounts not burnt;<br>• heat losses;<br>• incomplete combustion; | 2 | **R:** human error<br>**I:** impurities |
| 2(c) | reading from the graph / expected answer 4100 ± 50;<br>indication of extrapolation from the graph; | 1<br>1 | |
| 2(d) | for butane n = 4, ethane n = 2;<br>value for ethane = 1550;<br>butane = 2800 / about twice value or not exactly twice value; | 1<br>1<br>1 | |

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| Question | Answer | Marks | Guidance |
|---|---|---|---|
| 3(a) | electrolysis; | 1 | |
| 3(b) | bulb lights / bubbles; | 1 | |
| 3(c) | platinum; | 1 | **R:** copper |
| 3(d) | glowing splint;<br>relights; | 1<br>1 | **R:** relights a lighted splint<br>**A:** lighted splint glows brighter |
| 3(e) | hydrogen (ions) positive / opposites attract | 1 | |
| 3(f) | chlorine produced;<br>poisonous / toxic; | 1<br>1 | |

| Question | Answer | Marks | Guidance |
|---|---|---|---|
| 4(d) | all time readings correctly recorded: 48, 68, 96, 132<br><br>4 correct = 3<br>3 correct = 2<br>2 correct = 1<br>0 or 1 correct = 0<br><br>in seconds; | 3<br><br><br><br><br><br>1 | |
| 4(e) | all points correctly plotted: 48, 68, 96, 132<br><br>4 correct = 2<br>3 correct = 1<br>2 or fewer correct = 0<br><br>smooth line graph; | 2<br><br><br><br><br>1 | |
| 4(f)(i) | value from the graph, 0.7;<br>shown clearly on the graph; | 1<br>1 | |

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| Question | Answer | Marks | Guidance |
|---|---|---|---|
| 4(f)(ii) | value from the graph, e.g. 34 s;<br>extrapolation shown clearly; | **1**<br>**1** | |
| 4(g) | idea of fair test / comparability; | **1** | |
| 4(h) | 21 (°C);<br>49 (°C); | **1**<br>**1** | |
| 4(i)(i) | exothermic / redox / displacement; | **1** | **I:** neutralisation |
| 4(i)(ii) | hydrogen; | **1** | |
| 4(i)(iii) | values halved; | **2** | 'smaller temperature change' = 1 mark |
| 4(j) | *apparatus*<br>gas syringe / thermometer;<br><br>*measurements*<br>volume of gas / temperature of reaction;<br>over time; | <br>**1**<br><br><br>**1**<br>**1** | |

| Question | Answer | Marks | Guidance |
|---|---|---|---|
| 5(a) | yellow / green; | **1** | **R:** reference to ppt. |
| 5(b) | white precipitate; | **1** | |
| 5(c) | green;<br>precipitate; | **1**<br>**1** | |
| 5(d) | green precipitate; | **1** | |
| 5(e) | brown;<br>precipitate; | **1**<br>**1** | |
| 5(i) | silver / lead;<br>nitrate; | **1**<br>**1** | |

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| Question | Answer | Marks | Guidance |
|---|---|---|---|
| 6 | 7 from:<br>• weighed amount / *x* g of toothpaste;<br>• add water;<br>• stir / heat;<br>• filter (to obtain calcium carbonate);<br>• wash;<br>• dry;<br>• weigh residue;<br>• calculate percentage calcium carbonate; | **7** | |

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