MARK SCHEME for the May/June 2012 question paper
for the guidance of teachers

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.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2012 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.
<table>
<thead>
<tr>
<th></th>
<th>Mark Scheme: Teachers’ version</th>
<th>Syllabus</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>a</strong> tripod (1) <strong>accept:</strong> stand spatula (1) not: spoon</td>
<td>[2]</td>
<td></td>
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<tr>
<td></td>
<td><strong>b</strong> fizz/bubbles/effervescence stops (1) solid/iron/powder visible / no more iron dissolves/reacts (1)</td>
<td>[2]</td>
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<td></td>
<td><strong>c</strong> evaporation of water/steam (1) solid/residue/crystals formed (1) colour change turns brown/darker green (1) effect of heat on solid solid breaks down (1) max 3</td>
<td>[3]</td>
<td></td>
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<td><strong>Total:</strong> 7</td>
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<tr>
<td>2</td>
<td><strong>a</strong> thermometer readings correct (3), –1 for any incorrect methanol 25 28 3 ethanol 26 39 13 propanol 23 46 23 butanol 24 58 34 temperature rises correct (1)</td>
<td>[4]</td>
<td></td>
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<tr>
<td></td>
<td><strong>b</strong> points plotted correctly ±1/2 small square (3) straight line drawn with a ruler (1)</td>
<td>[4]</td>
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<tr>
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<td><strong>c</strong> value from graph (1) unit (1) 44°C extrapolation shown on grid (1)</td>
<td>[3]</td>
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<tr>
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<td><strong>d</strong> temperature rises would be greater/faster/quicker (1) copper is a good conductor (1)</td>
<td>[2]</td>
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<td><strong>Total:</strong> 13</td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td><strong>a</strong> pestle (1) mortar (1)</td>
<td>[2]</td>
<td></td>
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<tr>
<td></td>
<td><strong>b</strong> stir/mix/shake (1) allow: heat/boil</td>
<td>[1]</td>
<td></td>
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<tr>
<td></td>
<td><strong>c</strong> diagram showing funnel (1) indication of filter paper (1) note: labels not necessary</td>
<td>[2]</td>
<td></td>
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<tr>
<td></td>
<td><strong>d</strong> heat/evaporation (1) to crystallising point or description (1) in fume cupboard (1) max 2</td>
<td>[2]</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>e</strong> melting point/description of (1) <strong>allow:</strong> chromatography <strong>ignore:</strong> bp</td>
<td>[1]</td>
<td></td>
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<td><strong>Total:</strong> 8</td>
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</table>

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4 (a) Table of results  **ignore**: units in table
   volume of aqueous potassium chloride boxes completed correctly (1) 1, 2, 4, 5, 6, 7
   heights of solid boxes completed ±1mm (2) 4, 8, 16, 20, 24, 24
   in mm (1)  [4]

   (b) all points correctly plotted (2), −1 for any incorrect
   straight line graphs (2) **note**: one for each line, doesn't have to go through origin  [4]

   (c) value from graph 14 (1) unit (1) shown clearly (1)  [3]

   (d) precipitation (1) **allow**: double decomposition ignore: exo/endothermic  [1]

   (e) (i) same (1) no ecf  **not**: almost the same
   all lead nitrate reacted/reaction finished/lead nitrate is limiting factor (1)  [2]

   (ii) same heights/owtte (1)
   lead nitrate is limiting factor/same amount of lead nitrate/excess potassium chloride (1)  [2]

   (g) yellow (precipitate) (1)  [1]

   (h) improvement (1) e.g. use burette/pipette/leave solid to settle longer/repeat
   explanation (1) e.g. instead of a measuring cylinder/heights more accurate/take average  [2]

   **Total: 19**

5 (c) fizz/bubbles/effervescence (1) limewater (1)
   milky/cloudy/white ppt (1) **cond**: on limewater  [3]

   (e) ammonia (1)  [1]

   (f) non-transition metal (1)
   ammonium (salt or carbonate) (2) **not**: ammonia max [2]

   **Total: 6**

6 steel nail(s) in test-tube/suitable glass container (1)
   x cm³ (1)
   water (1)  no water = max 3
   known volume of inhibitor added (1)
   observe effect after suitable time (1) note: minimum time = 1 day
   repeat using other inhibitors (1)
   observe/comparison of results (1)  [7]

   **Total: 7**

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