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**CHEMISTRY**

**0620/51**

Paper 5 Practical

**October/November 2017**

MARK SCHEME

Maximum Mark: 40

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**Published**

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This document consists of **5** printed pages.

| Question | Answer                                                                                                                 | Marks    |
|----------|------------------------------------------------------------------------------------------------------------------------|----------|
| 1(a)     | temperature boxes completed correctly with decreasing trend shown                                                      | <b>1</b> |
|          | results comparable to the supervisor's                                                                                 | <b>1</b> |
| 1(b)     | temperature boxes completed correctly with increasing trend shown                                                      | <b>1</b> |
|          | results comparable to the supervisor's                                                                                 | <b>1</b> |
| 1(c)     | all points plotted                                                                                                     | <b>2</b> |
|          | two smooth line graphs                                                                                                 | <b>1</b> |
|          | both graphs appropriately labelled                                                                                     | <b>1</b> |
| 1(d)(i)  | value from graph                                                                                                       | <b>1</b> |
|          | shown clearly                                                                                                          | <b>1</b> |
| 1(d)(ii) | value from graph                                                                                                       | <b>1</b> |
|          | shown clearly                                                                                                          | <b>1</b> |
| 1(e)     | exothermic                                                                                                             | <b>1</b> |
| 1(f)     | room temperature / initial temperature from table<br><b>AND</b><br>reaction has finished / all the solid has dissolved | <b>1</b> |

| Question | Answer                                                                                                                 |                                                               | Marks    |
|----------|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|----------|
| 1(g)     | <b>source of error</b>                                                                                                 | <b>improvement</b>                                            | <b>4</b> |
|          | heat losses                                                                                                            | use a lid / lag the apparatus                                 |          |
|          | use of a measuring cylinder                                                                                            | use a pipette/burette                                         |          |
|          | wet cup in the second experiment                                                                                       | use new/another cup <b>OR</b> dry the cup                     |          |
|          | the solid absorbs water from the air                                                                                   | store in a sealed container / airtight container / desiccator |          |
|          | only done once                                                                                                         | repeat <b>and</b> average                                     |          |
|          | different masses of solids used / masses of solids not measured                                                        | use same mass of solid / weigh the solids                     |          |
| 1(h)     | fewer data / less detail / fewer readings / graph not as good / not enough readings taken whilst the solid is reacting |                                                               | <b>1</b> |

| Question  | Answer                                                                   | Marks |
|-----------|--------------------------------------------------------------------------|-------|
| 2(a)      | blue (liquid)                                                            | 1     |
| 2(b)(i)   | green                                                                    | 1     |
|           | precipitate                                                              | 1     |
| 2(b)(ii)  | green solution / precipitate dissolves                                   | 1     |
| 2(b)(iii) | (red) litmus paper / Universal Indicator paper                           | 1     |
|           | (red litmus paper) turns blue / (Universal Indicator paper) turns purple | 1     |
| 2(c)      | pH 8–11                                                                  | 1     |
| 2(d)(i)   | dark / deep blue (solution)                                              | 1     |
| 2(d)(ii)  | blue                                                                     | 1     |
|           | precipitate                                                              | 1     |
| 2(e)      | grey-green                                                               | 1     |
|           | precipitate                                                              | 1     |
| 2(f)      | chromium                                                                 | 1     |
|           | nitrate                                                                  | 1     |
| 2(g)      | ammonia / $\text{NH}_3$                                                  | 1     |

| Question | Answer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Marks |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 3        | <p><i>heating to dryness method</i></p> <p>max [6]:<br/> <b>M1</b> weigh (any) sample of washing soda<br/> <b>M2</b> heat (to remove water of crystallisation)<br/> <b>M3</b> in named container<br/> <b>M4</b> cool<br/> <b>M5</b> reweigh<br/> <b>M6</b> repeat heating<br/> <b>M7</b> to constant mass<br/> <b>M8</b> appropriate calculation suggested for the percentage of water</p> <p><i>mass of water method</i></p> <p>max [6]:<br/> <b>M1</b> weigh (any) sample of washing soda<br/> <b>M2</b> heat to remove water of crystallisation<br/> <b>M3</b> in named container<br/> <b>M4</b> using apparatus capable of collecting water (vapour)<br/> <b>M5</b> cool / condense (water vapour)<br/> <b>M6</b> continue until no more collects<br/> <b>M7</b> weigh water<br/> <b>M8</b> appropriate calculation suggested for the percentage of water</p> | 6     |