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COMBINED SCIENCE

0653/61

Paper 6 Alternative to Practical

May/June 2017

MARK SCHEME

Maximum Mark: 60

Published

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This document consists of **7** printed pages.

| Question | Answer | Marks | | | | | | | | | | | | | | | | |
|-----------|---|---------------|-------------------|-------------|-------------|--------|--------------------------------|-------------|-------------------|----------|-------------|-------------|-------------------|-----------|-------------|---------------|--------------|----------|
| 1(a) | Benedict's test ; | 1 | | | | | | | | | | | | | | | | |
| 1(b) | 1 mark per column ;; <table border="1" data-bbox="349 323 1288 550"> <thead> <tr> <th></th> <th>Benedict's test</th> <th>biuret test</th> <th>iodine test</th> </tr> </thead> <tbody> <tr> <td>banana</td> <td>yellow/green/orange/red</td> <td>blue</td> <td>blue-black</td> </tr> <tr> <td>chickpea</td> <td>blue</td> <td>blue</td> <td>blue-black</td> </tr> <tr> <td>egg white</td> <td>blue</td> <td>purple</td> <td>brown</td> </tr> </tbody> </table> | | Benedict's test | biuret test | iodine test | banana | yellow/green/orange/red | blue | blue-black | chickpea | blue | blue | blue-black | egg white | blue | purple | brown | 3 |
| | Benedict's test | biuret test | iodine test | | | | | | | | | | | | | | | |
| banana | yellow/green/orange/red | blue | blue-black | | | | | | | | | | | | | | | |
| chickpea | blue | blue | blue-black | | | | | | | | | | | | | | | |
| egg white | blue | purple | brown | | | | | | | | | | | | | | | |
| 1(c) | same volume of apple juice ; same volume / concentration of Benedict's solution / excess Benedict's ; same temperature / same time ; yellow/green = less (concentrated) / orange/red = more (concentrated) ; | max 3 | | | | | | | | | | | | | | | | |
| 1(d) | (dissolve in) ethanol ; (add) water ; cloudy / emulsion ; | 3 | | | | | | | | | | | | | | | | |

| Question | Answer | Marks |
|-----------------|---|--------------|
| 2(a) | (solution H could be) barium nitrate (or) silver nitrate ; (solution J could be) ammonia (or) sodium hydroxide ; | 2 |
| 2(b)(i) | add excess copper oxide to sulfuric acid in a beaker (and stir) ; warm ; filter / filtrate is copper sulfate solution ; | 3 |
| 2(b)(ii) | H is barium nitrate (solution) ; J is ammonia (solution) ; | 2 |
| 2(c) | (iron(III) sulfate) gives same result / brown ppt. with both sodium hydroxide and ammonia ; so does not test/distinguish between sodium hydroxide and ammonia ; it would identify barium nitrate/ H / still gives white ppt. with H ; | 3 |

| Question | Answer | Marks |
|----------|---|-------|
| 3(a) | 0.36 (V) ; | 1 |
| 3(b)(i) | 2.00 ; 6.78 ; | 2 |
| 3(b)(ii) | choice of scales and linear ($\geq \frac{1}{2}$ the grid used) ; plots correct to $\frac{1}{2}$ small square ; good best-fit straight line judgement ; | 3 |
| 3(c)(i) | candidate's R value at $l = 10$ cm ; | 1 |
| 3(c)(ii) | (directly) proportional (if through origin) ; | 1 |
| 3(d) | reading meter scale ; observe perpendicularly / repeat / digital meter ; OR measuring the length of wire ; observe perpendicularly / repeat (for decreasing lengths of wire) ; OR wire gets hot / resistance changes ; switch off between readings ; | max 2 |

| Question | Answer | Marks |
|-----------|--|----------|
| 4(a) | wear gloves / safe disposal of needle / use sterilised/clean needle/equipment ; | 1 |
| 4(b)(i) | line to a red blood cell and labelled ; line to a platelet and labelled ; | 2 |
| 4(b)(ii) | quality drawing more than half of box with nucleus ; irregular cell (freehand) with nucleus – 3 lobes ; two of: nucleus labelled ; cytoplasm labelled ; (cell) membrane ; | 4 |
| 4(c)(i) | measurement 8(.0)/8.5/9(.0)/9.5/10(.0)mm ; | 1 |
| 4(c)(ii) | measurement to the nearest 0.5 mm AND larger than (c)(i) ; | 1 |
| 4(c)(iii) | magnification correctly calculated to the nearest whole number ; | 1 |

| Question | Answer | Marks |
|-----------------|--|--------------|
| 5(a) | label syringe/measuring cylinder/burette ; drawing of gas syringe/burette/up-turned measuring cylinder or graduated test-tube filled with water and in water ; | 2 |
| 5(b) | 6, 13.5, 28, 54.5, 65 ; | 1 |
| 5(c) | 2.5 AND largest volume of gas/most gas (collected in 2 minutes/same amount of time) ; | 1 |
| 5(d)(i) | stop watch/clock ; | 1 |
| 5(d)(ii) | pipette/burette ; | 1 |
| 5(e)(i) | temperature ; | 1 |
| 5(e)(ii) | reliability / to take an average / spot anomalies ; | 1 |
| 5(f) | CO ₂ ; turns limewater milky ; | 2 |

| Question | Answer | Marks |
|-----------------|--|--------------|
| 6(a) | clamp/retort (stand) ; | 1 |
| 6(b) | don't touch the (hot) lamp ; | 1 |
| 6(c)(i) | two plots ; | 1 |
| 6(c)(ii) | smooth curve (through most of the points) ; not through anomalous point / not taking into account anomalous point ; | 2 |
| 6(c)(iii) | value from graph ; line / marking on graph ; | 2 |
| 6(c)(iv) | as height increases temperature decreases ; non-linear / T becomes constant ; | 2 |
| 6(c)(v) | no further decrease in temperature / temperature stayed the same / reached room temperature ; | 1 |