Cambridge Assessment International Education

# Cambridge Lower Secondary Sample Test

## For use with curriculum published in September 2020

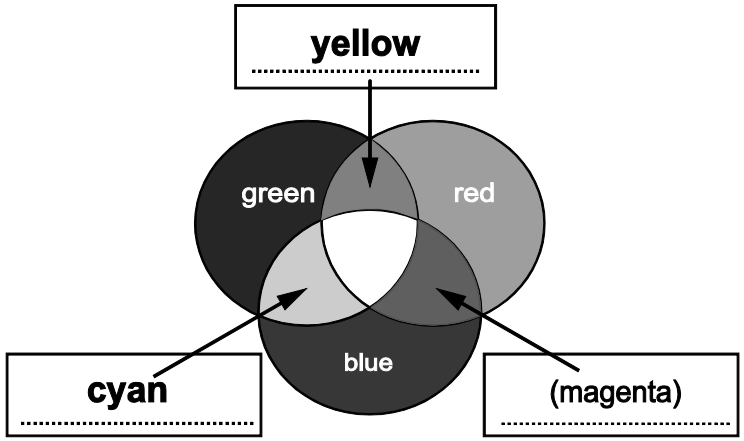
# Science Paper 2

# Mark Scheme

Stage 8

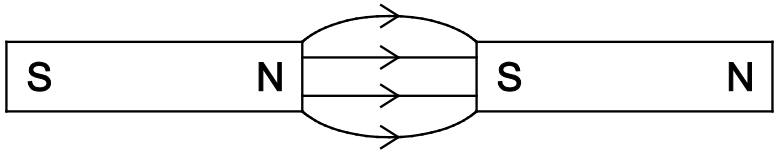
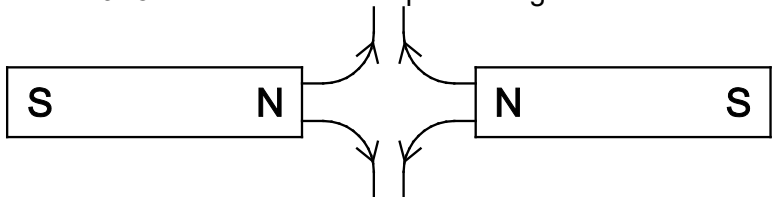
| Question | Answer | Marks | Further Information |
|---|---|---|---|
| 1(a)(i) | red (blood cell) / erythrocyte | **1** | |
| 1(a)(ii) | **W** X Y Z | **1** | **Accept W** circled on diagram<br><br>**Accept** any indication of the correct answer, e.g. ticking or underlining but circling takes precedence |
| 1(b) | idea of white blood cells fight disease / kill germs | **1** | **Accept** fight infection<br><br>**Accept** higher level answers, e.g. kill pathogens / make antibodies |
| 1(c)(i) | plasma | **1** | **Accept** serum |
| 1(c)(ii) | (transports) nutrients / carbon dioxide / hormones / urea | **1** | **Ignore** blood cells<br><br>**Accept** named hormone / named nutrient / antibodies |
| 1(d)(i) | 10 (mm) | **1** | **Accept** to within ± 1 mm<br><br>**Measure the diameter on the printed copy** |
| 1(d)(ii) | 5.0 (microns) | **1** | **Accept** ecf as **(d)(i)** × 0.5<br><br>**Accept** 5 |

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Further Information</th></tr>
<tr><td>2(a)</td><td><table><tr><th>particle</th><th>charge</th></tr><tr><td>proton</td><td>+ / positive</td></tr><tr><td>neutron</td><td>0 / no charge</td></tr><tr><td>electron</td><td>– / negative</td></tr></table></td><td>2</td><td>all three correct = 2 marks<br>one or two correct = 1 mark<br>For proton accept +1 or 1+<br>Do not accept 2+, +3 etc.<br>For electron accept –1 or 1–<br>Do not accept –2, 3– etc.</td></tr>
<tr><td>2(b)</td><td>nucleus</td><td>1</td><td></td></tr>
</table>

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th><th>Further Information</th></tr>
<tr><td>3(a)</td><td> 
</td><td>2</td><td>each correct colour = 1 mark</td></tr>
<tr><td>3(b)</td><td>blue light no light white light yellow light</td><td>1</td><td>Accept any indication of the correct answer, e.g. ticking or underlining but circling takes precedence</td></tr>
</table>

| Question | Answer | Marks | Further Information |
|---|---|---|---|
| 4(a)(i) | idea of groups of living organisms interacting with their environment | 1 | **Accept** living things and their surrounding<br><br>**Accept** an answer that includes an example e.g. the inhabitants of a tropical rain forest |
| 4(a)(ii) | **any two from**<br><br>fewer competitors<br>fewer predators<br>abundance of food<br>lots of places to breed<br>more suitable habitats<br>more shelter<br>suitable climate / favourable climate<br>fewer diseases | 2 | <br><br>**Accept** no competitors<br><br>**Accept** no predators |
| 4(a)(iii) | may eat all the plants idea / outcompete other species / introduce disease / destroy habitats / affect food chains or food webs | 1 | **Accept** eat lots of plants<br><br>**Do not accept** eats other animals |
| 4(b)(i) | **any one from**<br><br>counting the number of foxes<br><br>description of suitable sampling technique | 1 | <br><br><br><br>examples may include setting cameras to sample different area / (humane) traps to sample different areas |
| 4(b)(ii) | idea of an organism that outcompetes a (native) organism | 1 | **Accept** species, animal or plant for organism |
| 4(b)(iii) | **any one from**<br><br>idea that the map shows a pattern of spread (from the South) across most of Australia<br><br>foxes are found in areas they were not introduced | 1 | |

| Question | Answer | Marks | Further Information |
|---|---|---|---|
| 5(a) | (mass) increases | 1 | |
| 5(b) | 105 ± 1 (g) | 1 | **Accept** a range of answers provided they are in the given range e.g. 104 – 106 |
| 5(c) | 69 ± 1 (°C) | 1 | **Accept** a range of answers provided they are in the given range e.g. 68 – 70 |

| Question | Answer | Marks | Further Information |
|---|---|---|---|
| 6a |  | 2 | at least **two** lines going from N to S that do not cross or touch = 1 mark<br><br>at least **one** correct arrow not contradicted = 1 mark |
| 6b | at least **two** lines in the correct pattern e.g.<br>  | 1 | **Ignore** direction of arrows if direction is incorrect in **(a)** |

| Question | Answer | Marks | Further Information |
|---|---|---|---|
| 7(a) | galaxy | **1** | |
| 7(b) | (stellar) dust / gas | **1** | **Accept** moons / asteroids / comets / sub-atomic particles / meteors |
| 7(c) | solar system | **1** | |

| Question | Answer | Marks | Further Information |
|---|---|---|---|
| 8(a) | magnesium + oxygen → magnesium oxide | **1** | **Accept** correct formulae or correct mix of words and formulae but word question takes precedence<br>e.g. $Mg + O_2 \rightarrow MgO$ |
| 8(b) | gold is at the bottom of the reactivity series | **1** | **Accept** gold is inert |
| 8(c) | calcium hydroxide<br><br>hydrogen | **2** | **Accept** $Ca(OH)_2$ but name takes precedence<br><br>**Accept** $H_2$ / H but name takes precedence |

| Question | Answer | Marks | Further Information |
|---|---|---|---|
| 9(a) | 400 × 3 = Oliver's weight × 2 **or**<br><br>Oliver's weight = (400 × 3) ÷ 2<br><br>600 (N) | **2** | 600 (N) on its own = 2 marks |
| 9(b) | pressure = force ÷ area<br><br>Pierre's pressure = (440 ÷ 0.04) = 11 000 ($N/m^2$)<br><br>Rajiv's pressure = (500 ÷ 0.05) = 10 000 ($N/m^2$) | **3** | **two** correct pressure answers = 3 marks<br><br>**Accept** correct numerical substitution into equation(s) = 1 mark |

| Question | Answer | Marks | Further Information |
|---|---|---|---|
| 10(a) | **C** | **1** | **Accept** any indication of the correct answer on the diagram but answer line takes precedence |
| 10(b) | core | **1** | must have the **name** not the letter |
| 10(c) | **compass** electromagnet forcemeter voltmeter | **1** | **Accept** any indication of the correct answer e.g. underlining or ticking but circling takes precedence |

| Question | Answer | Marks | Further Information |
|---|---|---|---|
| 11(a) | to make it a fair test / to control the variables | 1 | **Ignore** references to reliability or accuracy |
| 11(b) | measure the temperature (of the acid) before adding metal<br><br>measure the temperature of the reaction mixture at the end of the reaction | 2 | measure temperature at start and end / measure the temperature change = 2 marks<br><br>**Accept** measure the temperature = 1 mark if no other mark awarded<br><br>**Ignore** other measurements |

| Question | Answer | Marks | Further Information |
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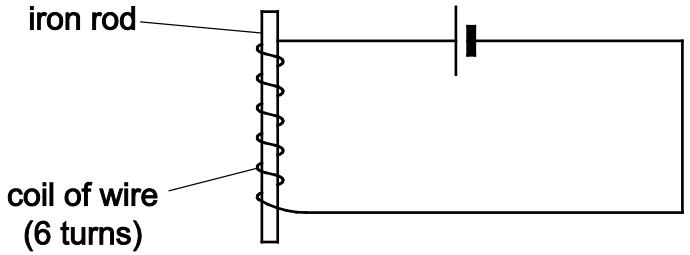
| 12 |  <br><br>correct pieces of apparatus selected<br><br>coil of wire on iron rod<br><br>circuit correctly drawn | 3 | labels not needed<br><br>iron rod, wire and cell = 1 mark<br><br>**Ignore** ammeter, voltmeter and switch<br><br>written or as part of the diagram even if diagram not correct = 1 mark<br><br>**Accept** circuit correctly drawn = 3 marks<br><br>If ammeter, voltmeter and switch shown they must be in the correct place in the circuit |

| Question | Answer | Marks | Further Information |
|---|---|---|---|
| 13(a) | records allow trends and patterns to be observed | **1** | |
| 13(b)(i) | to increase the validity of the results / to increase the reliability of the results / to enable you to make averages | **1** | **Accept** the Earth has a large surface area<br><br>**Ignore** reference to accuracy |
| 13(b)(ii) | **any one from**<br><br>the changes may be very small<br><br>(takes a long time) to see a pattern<br><br>even out any anomalies | **1** | |