SCIENCE

Paper 1

MARK SCHEME

Maximum Mark : 50

IMPORTANT NOTICE

Mark Schemes have been issued on the basis of one copy per Assistant examiner and two copies per Team Leader.
Science mark schemes – Achievement Test

Guidelines for marking test papers
These mark schemes are designed to provide you with all the information necessary to mark the Primary Achievement Tests. As far as possible, the mark schemes give you full guidance regarding acceptable and unacceptable alternative answers and, where appropriate, include examples of student work to illustrate the marking points. However, it is not always possible to predict all the alternative answers that may be produced by students and there could be places where the marker will have to use their professional judgement. In these cases it is essential that such judgement be applied consistently.

The guidelines below should be followed throughout (unless the mark scheme states otherwise):

- A correct answer should always be awarded full marks even if the working shown is wrong.
- Where more than one mark is available for a question the mark scheme explains where each mark should be awarded. In some cases marks are available for demonstration of the correct method even if the final answer is incorrect. The method marks can be awarded if the correct method is used but a mistake has been made in the calculation, resulting in a wrong answer. Method marks can also be awarded if the calculation is set up and performed correctly but incorrect values have been used, e.g. due to misreading the question or a mistake earlier in a series of calculations.
- If a question uses the answer to a previous question or part question that the child got wrong, all available marks can be awarded for the latter question if appropriate calculations are performed correctly using the value carried forward. Places where such consideration should be made are indicated in the mark schemes. In these cases, it is not possible to provide all the alternative acceptable answers and the marker must follow the child’s working to determine whether credit should be given or not.
- Half marks should not be awarded and at no point should an answer be awarded more than the maximum number of marks available, regardless of the quality of the answer. Similarly, negative marks should never be awarded.
- If the child has given more than one answer or has supplied additional redundant information the marks can be awarded if all the answers given are correct and non-contradictory (even if some are irrelevant). However, if any incorrect answers/information are given the marks should not be awarded, similarly if additional information contradicts the first answer the marks should not be awarded (marks for correct working out can still be gained).
- If the answer line is blank but the correct answer is given elsewhere, e.g. an annotation on a graph or at the end of the working out, the marks can be awarded provided it is clear that the child has understood the requirements of the question.
- If the child has produced redundant additional working after the correct answer has been reached the marks can be awarded provided the extra work does not contradict that already done.

- Each question and part question should be considered independently and marks for one question should not be disallowed if they are contradicted by working or answers in another question or part question.

- Any legible crossed-out work that has not been replaced can be marked; but if work has been replaced the crossed-out part should be ignored.

- Diagrams, symbols or words are acceptable for explanations or responses.

- Where students are required to indicate the correct answer in a specific way, e.g. by underlining or ticking boxes, marks should be awarded for any unambiguous indication, e.g. circling, crossing boxes etc.

- Any part of speech is acceptable, e.g. refraction, refracting, refracted, and singular and plural forms are acceptable unless otherwise stated, e.g. alveolus, alveoli.

- Spelling errors should not be penalised where the meaning is clear. In the case of specific scientific vocabulary, misspellings should only be accepted if the child’s response is phonetically equivalent to the correct answer.

For questions involving quantities, e.g. length, mass, time or money, correct units must be given in the answer. The table shows acceptable and unacceptable versions of the answer 1.85m.

<table>
<thead>
<tr>
<th>Units are not given on answer line and the question does not specify a unit</th>
<th>Correct answer</th>
<th>Also accept</th>
<th>Do not accept</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correct conversions provided that the unit is stated, e.g. 1m 85cm 185cm 1850mm 0.00185km</td>
<td>1.85m</td>
<td>1.85</td>
<td>185m</td>
</tr>
<tr>
<td>If the unit is given on the answer line, e.g. ............m</td>
<td>............1.85..... m</td>
<td>Correct conversions, provided the unit is stated unambiguously, e.g. ............185cm..... m</td>
<td>............185.....m ............1850.... m etc.</td>
</tr>
<tr>
<td>If the question states the unit that the answer should be given in, e.g. “Give your answer in metres”</td>
<td>1.85m</td>
<td>1.85 1m 85cm</td>
<td>185; 1850 Any conversions to other units.</td>
</tr>
</tbody>
</table>
Note: if the answer line is left blank but the correct answer is given elsewhere on the page it can be marked correct if the units match those on the answer line or are unambiguously stated.

Each question on the test paper has a box beside it for the teacher to record the mark obtained. It is advisable to use these boxes so that students, and others looking at the test papers, can clearly see where the marks have been awarded. It is also useful to use the boxes because it makes the process of entering the data into the analysis tool easier. The page total boxes can be used to aid addition but care must be taken not to accidentally enter these values into the analysis tool.

Finally, it is advisable to use a pen of a different colour to that used by the students so that the marks and comments can be clearly seen. It should also be noted that marking in red ink and using the mark boxes is an essential requirement for the Achievement tests.
<table>
<thead>
<tr>
<th>Question</th>
<th>Mark</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>4Be1</td>
<td>1 where they live</td>
</tr>
<tr>
<td>b</td>
<td>4Be1</td>
<td>1 in the soil</td>
</tr>
<tr>
<td>c</td>
<td>4Be1</td>
<td>2 1. food/things to eat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. shelter/protection/a home</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Allow any sensible description of these, any order.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Do not allow a repeat of feeding as in 1.</td>
</tr>
<tr>
<td>2a</td>
<td>5Bp5</td>
<td>1 stigma</td>
</tr>
<tr>
<td>b</td>
<td>5Bp5</td>
<td>1 eggs or ovules</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Do not allow seeds as the flower still has petals.</td>
</tr>
<tr>
<td>c</td>
<td>5Bp6</td>
<td>1 fertilisation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Do not allow pollination.</td>
</tr>
<tr>
<td>3a</td>
<td>6Bh1</td>
<td>1 brain</td>
</tr>
<tr>
<td>b</td>
<td>4Bh1</td>
<td>1 inside it</td>
</tr>
<tr>
<td>c</td>
<td>4Bh2</td>
<td>1 to move / support / give us shape</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Allow to protect organs.</td>
</tr>
<tr>
<td>4a</td>
<td>6Bh1</td>
<td>1 lung or lungs</td>
</tr>
<tr>
<td>b</td>
<td>6Bh3</td>
<td>2 oxygen, carbon dioxide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 mark for each in correct order.</td>
</tr>
<tr>
<td>c</td>
<td>6Bh3</td>
<td>3 TRUE, true, false, false</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 mark for each</td>
</tr>
<tr>
<td>5a</td>
<td>3Cm1</td>
<td>1 C or plastic duck or duck or plastic.</td>
</tr>
<tr>
<td>b</td>
<td>3Cm1</td>
<td>1 B or glass vase or glass or vase.</td>
</tr>
<tr>
<td>c</td>
<td>3Cm1</td>
<td>1 A or cotton towel or cotton or towel.</td>
</tr>
<tr>
<td>Question</td>
<td>Mark</td>
<td>Answer</td>
</tr>
<tr>
<td>----------</td>
<td>------</td>
<td>--------</td>
</tr>
<tr>
<td>6</td>
<td>3Cm3</td>
<td>2</td>
</tr>
</tbody>
</table>

**Metal**
- Aluminium (very light)
- Copper (conducts electricity)
- Gold (easy to shape and very shiny)
- Iron (hard and very strong)

**Use**
- Aeroplanes
- Hammer
- Jewellery
- Wires

2 marks for all 4 correct
1 mark for 2 or 3 correct
0 mark for 1 correct

<table>
<thead>
<tr>
<th>Question</th>
<th>Mark</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>5Cs1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>5s2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6Cc4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of process</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condense</td>
<td>All the substances are stirred together.</td>
</tr>
<tr>
<td>Evaporate</td>
<td>The mixture is poured into paper in a funnel.</td>
</tr>
<tr>
<td>Filter</td>
<td>The salt and water mixture is warmed.</td>
</tr>
<tr>
<td>Dissolve</td>
<td>Water vapour cools to a liquid.</td>
</tr>
</tbody>
</table>

3 marks for all 4 correct
2 marks for 3 correct
1 mark for 2 correct
0 mark for 1 correct

<table>
<thead>
<tr>
<th>Question</th>
<th>Mark</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>8a</td>
<td>5Cs4</td>
<td>2</td>
</tr>
</tbody>
</table>

1 mark for number, 1 mark for units.

100°C or degrees Celsius

Allow an answer of less than 100°C if the pupils live at high altitudes (teacher will know the boiling point of water under local conditions).

b       | 5Cs4 | 1 stays the same |

c       | 5Cs1 | 1 Some water is evaporating/turns to gas/goes into the air. |

d       | 6Cc6 | 1 They were dissolved in the water. |

<table>
<thead>
<tr>
<th>Question</th>
<th>Mark</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>9a</td>
<td>3Pf1</td>
<td>1</td>
</tr>
</tbody>
</table>

B
A

<table>
<thead>
<tr>
<th>Question</th>
<th>Mark</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>9b</td>
<td>3Pf2</td>
<td>1 It will stop.</td>
</tr>
</tbody>
</table>

c       | 3Pf1 | 1 An arrow vertically downwards anywhere on or under the box. |
<table>
<thead>
<tr>
<th>Question</th>
<th>Mark</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>10a</strong></td>
<td>4Pe4</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td><img src="chart_10a.png" alt="Diagram" /></td>
</tr>
</tbody>
</table>

| **b**    | 4Pe5 | 1      |
|          |      | Iron, steel, (nickel or cobalt) |

| **c**    | 4Pe4 | 1      |
|          |      | They push away. Do not allow “do not attract”. Candidates must indicate that there is a force. |

<table>
<thead>
<tr>
<th>Question</th>
<th>Mark</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>11a</strong></td>
<td>4Ps2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Radio speaker 2. Air 3. Ear Drum. 1 mark for correct order</td>
</tr>
</tbody>
</table>

| **b**    | 4Ps3 | 1      |
|          |      | gets less, quieter, muffled. Do not allow gets lower as this could mean pitch. |

| **c**    | 4Ps2 | 2      |
|          |      | ![Table](chart_11c.png) |

<table>
<thead>
<tr>
<th>Question</th>
<th>Mark</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>12a(i)</strong></td>
<td>6Pf2</td>
<td>1</td>
</tr>
<tr>
<td><strong>a(ii)</strong></td>
<td>6Pf2</td>
<td>1</td>
</tr>
<tr>
<td><strong>b</strong></td>
<td>6Pf2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Newton</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The astronaut’s weight reduces.</td>
</tr>
</tbody>
</table>
### Question 13a

<table>
<thead>
<tr>
<th>Mark</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>3Sc2</td>
<td>19</td>
</tr>
</tbody>
</table>

**b**

<table>
<thead>
<tr>
<th>Mark</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>4So4</td>
<td>All 4 bars correct (to the eye/no need to measure) = 2 marks</td>
</tr>
<tr>
<td></td>
<td>1 mark for 2 or 3 bars correct</td>
</tr>
</tbody>
</table>

If 2 marks cannot be awarded:

Allow one mark if tops of bars are at correct level but “unconventional” e.g. a single line or drawn across to y axis.

### Question 13c

<table>
<thead>
<tr>
<th>Mark</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>4Sc1</td>
<td>less</td>
</tr>
<tr>
<td>3Sc2</td>
<td>conclusion</td>
</tr>
</tbody>
</table>

### Question 14a

<table>
<thead>
<tr>
<th>Mark</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>5Pl1</td>
<td>Light is blocked / light cannot pass through her hand.</td>
</tr>
</tbody>
</table>

Do not allow answers that could mean that light bends round an object e.g. “light passes round her hand”.

Do not allow answers that could apply for a transparent object, e.g. “her hand is in the way of the light”.

Both of these could be accepted if qualified by a correct answer, e.g. “her hand is in the way of the light and it cannot get through”.

### Question 14b

<table>
<thead>
<tr>
<th>Mark</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>5Pl2</td>
<td>move her hand closer or nearer to the torch</td>
</tr>
</tbody>
</table>

### Question 14c

<table>
<thead>
<tr>
<th>Mark</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>5Pl2</td>
<td>larger/bigger</td>
</tr>
</tbody>
</table>

Only allow answers that show a continuous relationship, e.g. do not allow large or big.