



**GCSE**

**Environmental and Land Based Science**

**Unit B682/01: Plant Cultivation and Small Animal Care (Foundation Tier)**

General Certificate of Secondary Education

**Mark Scheme for June 2014**

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

All examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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

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These are the annotations, (including abbreviations), including those used in scoris, which are used when marking

Used in the detailed Mark Scheme:

| Annotation          | Meaning   |
|---------------------|---|
| /                   | alternative and acceptable answers for the same marking point |
| (1)                 | separates marking points                                      |
| <b>not/reject</b>   | answers which are not worthy of credit                        |
| <b>ignore</b>       | statements which are irrelevant - applies to neutral answers  |
| <b>allow/accept</b> | answers that can be accepted                                  |
| (words)             | words which are not essential to gain credit                  |
| words               | underlined words must be present in answer to score a mark    |
| ecf                 | error carried forward   |
| AW/owtte            | alternative wording   |
| ORA                 | or reverse argument   |

Available in scoris to annotate scripts

|            |   |
|------------|---|
| <b>BP</b>  | Blank Page – this annotation must be used on all blank pages within an answer booklet (structured or unstructured) and on each page of an additional object where there is no candidate response. |
| <b>?</b>   | indicate uncertainty or ambiguity   |
| <b>BOD</b> | benefit of doubt  |
| <b>CON</b> | contradiction   |
| <b>X</b>   | incorrect response  |
| <b>ECF</b> | error carried forward   |
| <b>○</b>   | draw attention to particular part of candidate's response   |
| <b>—</b>   | draw attention to particular part of candidate's response   |
| <b>~~</b>  | draw attention to particular part of candidate's response   |

|   |   |
|---|---|
| <b>NBOD</b>   | no benefit of doubt                                       |
| <b>R</b>  | reject  |
|  | correct response  |
|  | draw attention to particular part of candidate's response |
|  | information omitted                                       |

**Subject-specific Marking Instructions**

- a. If a candidate alters his/her response, examiners should accept the alteration.
- b. Crossed out answers should be considered only if no other response has been made. When marking crossed out responses, accept correct answers which are clear and unambiguous.

E.g.

For a one mark question, where ticks in boxes 3 and 4 are required for the mark:

Put ticks (✓) in the Put ticks (✓) in the Put ticks (✓) in the  
two correct boxes. two correct boxes. two correct boxes.

|                          |                          |                                     |
|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|

|                          |                          |                                     |
|--------------------------|--------------------------|-------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|--------------------------|--------------------------|-------------------------------------|

|                                     |                                     |                                     |
|-------------------------------------|-------------------------------------|-------------------------------------|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|-------------------------------------|-------------------------------------|-------------------------------------|

|                                     |                                     |                                     |
|-------------------------------------|-------------------------------------|-------------------------------------|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|-------------------------------------|-------------------------------------|-------------------------------------|

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--------------------------|--------------------------|--------------------------|

This would be worth This would be worth This would be worth  
1 mark. 0 marks. 1 mark.

## c. The list principle:

If a list of responses greater than the number requested is given, work through the list from the beginning. Award one mark for each correct response, ignore any neutral response, and deduct one mark for any incorrect response, e.g. one which has an error of science. If the number of incorrect responses is equal to or greater than the number of correct responses, no marks are awarded. A neutral response is correct but irrelevant to the question.

## d. Marking method for tick boxes:

Always check the additional guidance.

If there is a set of boxes, some of which should be ticked and others left empty, then judge the entire set of boxes.

If there is at least one tick, ignore crosses. If there are no ticks, accept clear, unambiguous indications, e.g. shading or crosses.

Credit should be given for each box correctly ticked. If more boxes are ticked than there are correct answers, then deduct one mark for each additional tick. Candidates cannot score less than zero marks.

E.g. If a question requires candidates to identify a city in England, then in the boxes

|                    |  |
|--------------------|--|
| <b>Edinburgh</b>   |  |
| <b>Manchester</b>  |  |
| <b>Paris</b>       |  |
| <b>Southampton</b> |  |

the second and fourth boxes should have ticks (or other clear indication of choice) and the first and third should be blank (or have indication of choice crossed out).

|                    |                          |          |                          |                          |                          |                          |                          |                          |                          |           |
|--------------------|--------------------------|----------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----------|
| <b>Edinburgh</b>   |                          |          | <input type="checkbox"/> |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |           |
| <b>Manchester</b>  | <input type="checkbox"/> | <b>x</b> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                          |                          |                          | <input type="checkbox"/> |           |
| <b>Paris</b>       |                          |          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |                          |           |
| <b>Southampton</b> | <input type="checkbox"/> | <b>x</b> |                          | <input type="checkbox"/> |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          | <input type="checkbox"/> |           |
| <b>Score:</b>      | <b>2</b>                 | <b>2</b> | <b>1</b>                 | <b>1</b>                 | <b>1</b>                 | <b>1</b>                 | <b>0</b>                 | <b>0</b>                 | <b>0</b>                 | <b>NR</b> |

## MARK SCHEME:

| Question |   | Answer   | Mark   | Guidance  |
|----------|---|--|--------|---|
| 1        | a | (Hoe) <b>B</b>   | 1      |   |
| 1        | b | Weeding  | 1      | Accept:<br>Loosen soil<br>Break up clumps of soil<br>Produce a tilth/seed bed<br>Produce a line/drill (for sowing seeds)              |
| 2        | a | (Pricking out) <b>B</b>  | 1      |   |
| 2        | b | To give seedlings more room to grow / reduce competition   | 1      | Ignore: Plants are too big<br>Accept: reference to how competition will be reduced such as to gain more nutrients or provide new soil |
| 2        | c | 5  | 1      | No units required   |
| 3        |   | Dig / spread / add it to the soil;<br>To improve crumb structure / as humus/ as organic matter/adds nutrients/ as a fertiliser | 1<br>1 |   |

| Question | Answer   | Mark | Guidance   |
|----------|--|------|--|
| 4        | <p><b>[Level 3]</b><br/>A good description of of the mechanisms of asexual propagation together with named examples of each.<br/>Quality of written communication does not impede communication of the science at this level.<br/>(5 – 6 marks)</p> <p><b>[Level 2]</b><br/>Describe the mechanisms of asexual propagation together with some named examples.<br/>Quality of written communication partly impedes communication of the science at this level.<br/>(3 – 4 marks)</p> <p><b>[Level 1]</b><br/>Name some of the mechanisms of asexual propagation with a named example.<br/>Quality of written communication impedes communication of the science at this level.<br/>(1 – 2 marks)</p> <p><b>[Level 0]</b><br/>Insufficient or irrelevant science. Answer not worthy of credit.<br/>(0 marks)</p> | 6    | <p><b>This question is targeted at grades up to D</b></p> <p><b>Indicative scientific points may include:</b></p> <ul style="list-style-type: none"> <li>• Runners are <b>above ground stems</b> from which a plantlet grows and develops roots. When the plantlet is large enough it separates from the parent plant producing a clone.</li> <li>• Strawberry and spider plant produce runners</li> <li>• Rhizomes are <b>below ground stems</b> from which a new plant grows.</li> <li>• Asparagus, ginger, couch grass, iris produce rhizomes</li> <li>• Tubers are <b>swollen, underground stems or roots</b> that store food. The stored food is used to produce new growth from buds.</li> <li>• Potato produces stem tubers, Dahlia produces root tubers</li> <li>• Corms are (vertical) swollen underground plant stems that store food over winter ready for growth in spring.</li> <li>• Gladiolus and crocus are corms</li> <li>• Bulbs are short underground stems with swollen leaves that store food.</li> <li>• Daffodil and onion are bulbs</li> </ul> <p>Candidates may use diagrams to help illustrate their answers.<br/><b>Use the L1, L2, L3 annotations in Scoris; do not use ticks.</b></p> |

| Question |   | Answer  | Mark | Guidance  |
|----------|---|---|------|---|
| 5        | a | 99,000  | 1    |   |
| 5        | b | A (no mark)<br>Any two from:<br>Small/ unattractive flowers;<br>Anthers hang outside the flowers;<br>stigmas hang outside the flowers;<br>light pollen;<br>large quantities of pollen   | 2    | Accept: flowers hang down (to catch the wind)<br>Accept: general features of wind pollinated plants. Accept ORA |
| 6        | a | E   | 1    |   |
| 6        | b | (Compound E)<br>Is more expensive but;<br>Is more effective (at killing the pests);<br>less will be needed;<br>It lasts longer/breaks down less quickly;<br>so will not have to be applied so often;<br>It is specific / kills fewer pollinators  | 3    | ORA   |
| 6        | c | Two from:<br>Keep cool;<br>Keep dry;<br>Keep airtight;<br>High carbon dioxide / nitrogen;<br>Lack of oxygen / ethene / ethylene;<br>Regular inspection;<br>removal of rotten crops;<br>Systems to prevent pests getting into the crop;<br>Genetic modification;<br>Pesticides;<br>Dark; | 2    | other correct responses that are specific to named crops  |
| 7        |   | warm; light<br>provide support;<br>Water;<br>Fertilise / feed/add nutrients;<br>Use a better growing medium;<br>Sheltered/away from the wind;   | 2    | Ignore: sun<br>Ignore: protect from the weather   |

| Question |  | Answer  | Mark | Guidance  |
|----------|--|---|------|---|
|          |  | Pot on/ in its own pot  |      |   |
| <b>8</b> |  | Hamster / Gerbil / Mouse;<br>Any two from<br>Sleeping area;<br>Wheel for exercise;<br>secure;<br>water (bottle);<br>feed (bowl);<br>sufficient room OWTTE;<br>objects/toys/tubes for enrichment;<br>plastic so easy to clear;<br>well ventilated;<br>suitable bedding   | 3    |   |
| <b>9</b> |  | Wash her hands before handling;<br>wear gloves/ cover skin;<br>Wash her hands after handling;<br>Hold him firmly without squeezing/ do not drop him;<br>Hold him by his body/ not by his tail;<br>Hold him for short periods of time;<br>Do not make any sudden movements;<br>Keep fingers away from his mouth; | 2    | Accept: hold him in the correct way for a gecko |

| Question |   |  | Answer   | Mark | Guidance  |
|----------|---|--|--|------|---|
| 10       | a |  | Food A<br>It contains a variety of different types of food / the nuggets in Food B are all the same  | 1    | No mark for A   |
| 10       | b |  | They do not get a balanced diet/ all the nutrients that they need OWTTE  | 1    |   |
| 11       |   |  | (Caecum) A   | 1    |   |
| 12       |   |  | <p><b>[Level 3]</b><br/>A wide range of different reasons given for keeping a variety of different small animals including an explanation of how their treatment is determined by their purpose. Some quantitative reference is made to the data from the chart.<br/>Quality of written communication does not impede communication of the science at this level.<br/>(5 – 6 marks)</p> <p><b>[Level 2]</b><br/>A range of different reasons given for keeping different small animals including a description of how their treatment is determined by their purpose or reference is made to the data from the chart.<br/>Quality of written communication partly impedes communication of the science at this level.<br/>(3 – 4 marks)</p> <p><b>[Level 1]</b><br/>Different reasons are given for keeping small animals.<br/>Quality of written communication impedes communication of the science at this level.<br/>(1 – 2 marks)</p> <p><b>[Level 0]</b><br/>Insufficient or irrelevant science. Answer not worthy of credit.<br/>(0 marks)</p> | 6    | <p><b>This question is targeted at grades up to E</b><br/><b>Indicative scientific points may include:</b></p> <ul style="list-style-type: none"> <li>• Dogs, cats, rabbits, hamsters, fish and rats are kept as pets</li> <li>• Dogs and cats are specifically kept for companionship.</li> <li>• They're the most popular small animals at 20% and 35%</li> <li>• Rabbits can be kept for food. These would be kept in enclosed spaces, usually indoors to reduce the amount of energy lost.</li> <li>• Small animals e.g. rats can be kept for research. These would be kept in special laboratories away from other animals and not be allowed outside.</li> <li>• There are more rats kept than hamsters because they are kept for research as well as pets. 15% compared to 7%</li> <li>• Dogs can be kept for security. These animals must be given the freedom to roam around the area they are to protect.</li> <li>• Animals can be kept for showing. They may be valuable so kept indoors</li> <li>• Dogs can be kept for competitions e.g. agility</li> <li>• Dogs are kept to hunt foxes and deer and as working dogs to collect bird carcasses after shoots. These animals would be very active and require a lot of exercise.</li> </ul> |

| Question |   |  | Answer  | Mark | Guidance  |
|----------|---|--|---|------|---|
|          |   |  |   |      | <ul style="list-style-type: none"> <li>Working dogs can be kept as guide dogs for the blind, hearing dogs for the deaf and as police dogs to sniff drugs or apprehend criminals, sheep dogs. These animals are very intelligent and would require very specific training.</li> <li>Dogs can be kept for a large number of reasons which is why they have the largest percentage, 35%</li> <li>Fish are easy to keep, for ornamental reasons and for breeding</li> </ul> <p><b>Use the L1, L2, L3 annotations in Scoris; do not use ticks.</b></p> |
| 13       | a |  | Large dogs age faster / reach old age earlier than small dogs;<br>Comparative figures   | 1    | At 20 small dogs are the equivalent of 100 human years whereas at 14 large dogs are the equivalent of 98  |
| 13       | b |  | Small dogs 12 / 13 years or 60-65<br>Medium dogs 11 / 12 years or 66-72<br>Large dogs 10 / 11 years or 70-77  | 2    | 2 marks for three correct answers<br>1 marks for two correct answers  |
| 13       | c |  | <p><b>[Level 3]</b><br/>A description of why older pets need more health checks. A range of different health checks described, including those which can be done at home and by the vet, clearly linked to reasons why they're carried out with specific reference to health issues of older pets. Quality of written communication does not impede communication of the science at this level.<br/>(5 – 6 marks)</p> <p><b>[Level 2]</b><br/>Some reasons why older pets need more health checks. A range of different health checks mentioned which can be done at home and by the vet.</p> | 6    | <p><b>This question is targeted at grades up to C</b><br/><b>Indicative scientific points may include:</b><br/><b>Why older pets need more health checks:</b></p> <ul style="list-style-type: none"> <li>- increased risk of cancer</li> <li>- teeth wear / loss</li> <li>- eye problems</li> <li>- arthritis / bone joints</li> <li>- blood pressure rises</li> <li>- kidney failure</li> <li>- digestive problems</li> <li>- hair / feather loss</li> <li>- diabetes</li> </ul> <p><b>Health checks:</b></p>                                    |

| Question |   | Answer  | Mark | Guidance  |
|----------|---|---|------|---|
|          |   | <p>Quality of written communication partly impedes communication of the science at this level.<br/>(3 – 4 marks)</p> <p><b>[Level 1]</b><br/>Different health checks mentioned, or reasons why they are carried out on older pets.</p> <p>Quality of written communication impedes communication of the science at this level.<br/>(1 – 2 marks)</p> <p><b>[Level 0]</b><br/>Insufficient or irrelevant science. Answer not worthy of credit.<br/>(0 marks)</p> |      | <ul style="list-style-type: none"> <li>• Blood pressure. High blood pressure can be an indication of heart disease</li> <li>• Mobility checks for arthritis/ joint problems</li> <li>• Urine tests to give indication of kidney damage / diabetes</li> <li>• Blood tests to check for abnormal levels of antibodies that could indicate disease</li> <li>• Physical examination to check for lumps which could indicate cancerous growth</li> <li>• Dental check (teeth, gums, breath) to check that there are no infections</li> <li>• Check eyes for cloudiness / cataracts</li> <li>• Check on the condition of the coat. Loss of fur/feather symptoms of underlying problems</li> <li>• Loss of weight indicates dietary problems/teeth problems / cancer</li> <li>• Loss of appetite due to virus/disease or dental problems</li> <li>• General behaviour. If listless then there might be an underlying cause.</li> </ul> <p><b>Use the L1, L2, L3 annotations in Scoris; do not use ticks.</b></p> |
| 14       | a | 22 - 37 kg  | 1    |   |
| 14       | b | To take into account:<br>different breeds;<br>genetic variation;<br>Gender;<br>Diet;<br>Environment   | 1    | <p>Accept: different height/ build/ birth weight<br/>Ignore:reference to mass</p>   |

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