OCR
Oxford Cambridge and RSA

GCSE

Environmental and Land Based Science

Unit **B683/01**: Commercial Horticulture, Agriculture and Livestock Husbandry (Foundation Tier)

General Certificate of Secondary Education

Mark Scheme for June 2017

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of candidates of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, Cambridge Nationals, Cambridge Technicals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

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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.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

Abbreviations, annotations and conventions used in the detailed Mark Scheme.

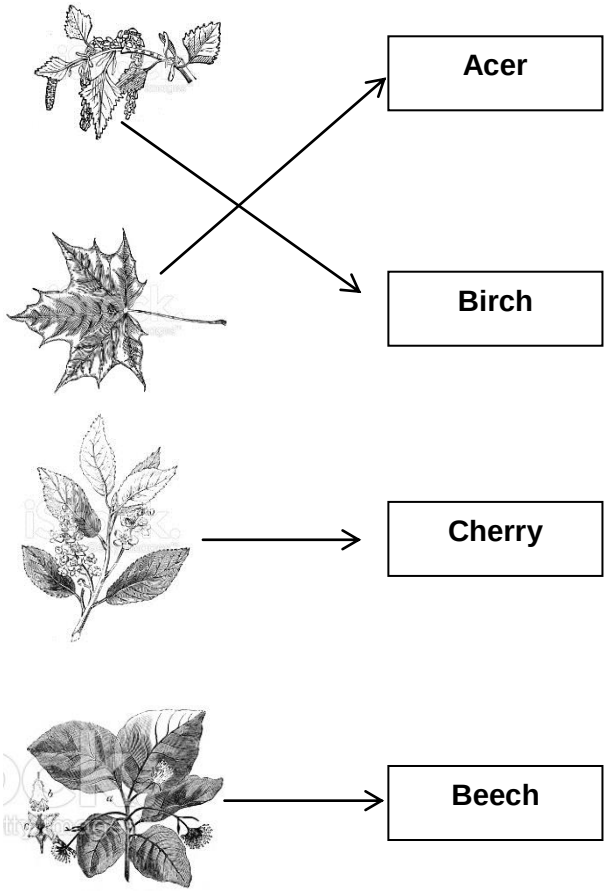
/ = alternative and acceptable answers for the same marking point
(1) = separates marking points
not = answers which are not worthy of credit
reject = answers which are not worthy of credit
ignore = statements which are irrelevant
allow = answers that can be accepted
( ) = words which are not essential to gain credit
__ = underlined words must be present in answer to score a mark
ecf = error carried forward
AW = alternative wording
ora = or reverse argument

Annotations: the following annotations are available on RM ASSESSOR.

✓ = correct response
✗ = incorrect response
bod = benefit of the doubt
nbod = benefit of the doubt **not** given
ECF = error carried forward
^ = information omitted
I = ignore
R = reject

Highlighting is also available to highlight any particular points on the script.

The following questions should be annotated with ticks to show where marks have been awarded in the body of the text:

Expected Answers			Marks	Additional Guidance
1	(a)		3	3 or 4 correct = 3 marks 2 correct = 2 marks 1 correct = 1 mark

1	**(b)**	**LOR** **[Level 3]** A good description of the range of different features of trees at different times of the year together with a named example of each, Quality of written communication does not impede communication of the science at this level. (5 – 6 marks) **[Level 2]** A description of the some range of different features of trees at different times of the year with some named examples. Quality of written communication partly impedes communication of the science at this level. (3 – 4 marks) **[Level 1]** Names some features of trees at different times of the year. Quality of written communication impedes communication of the science at this level. (1 – 2 marks) **[Level 0]** Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)	6	**This question is targeted at grades up to C** **Indicative scientific points may include:** • Evergreen trees for winter interest • Deciduous trees autumn colour • Deciduous trees spring colour • Trees with fruit / cones for autumn winter interest • Flowering trees • Trees with coloured / variegated leaves • Trees with coloured / textured bark • Trees with structural interest • Food source/ encourage wildlife • Credit given for named examples of the features described

<table>
<tr><td>1</td><td>(c)</td><td>Descriptions of any two from:

Pruning;
Dead heading;
Watering;
Feeding ;
Mulching;
Pest control;
Weed control;</td><td>2</td><td></td></tr>
<tr><td>2</td><td>(a)</td><td><table><tr><th>Symptom</th><th>Cause</th></tr><tr><td>Plant is wilting</td><td>water</td></tr><tr><td>Plant growth is yellow and stunted</td><td>nutrients</td></tr><tr><td>Plant growth is yellow and long</td><td>light</td></tr></table></td><td>2</td><td>2 or 3 correct = 2 marks
1 correct =1 mark</td></tr>
<tr><td>2</td><td>(b)</td><td>$6\ CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$</td><td>1</td><td></td></tr>
</table>

3	**(a)(i)**	A & B	1	
3	**(a)(ii)**	B	1	
3	**(a)(iii)**	C	1	
3	**(b)**	Any **one** from: **Advantages** – no need for cables, plugs, power, can be used in damp conditions **Disadvantages** – more maintenance, difficulty starting, need to buy fuel, heavier, more expensive, noise /atmospheric pollution	 1 1	

4	**(a)**	**LOR** **[Level 3]** A good description of the different methods of protected cultivation with an explanation how each is used. Quality of written communication does not impede communication of the science at this level. (5 – 6 marks) **[Level 2]** A description of some different methods of protected cultivation with some examples of their uses. Quality of written communication partly impedes communication of the science at this level. (3 – 4 marks) **[Level 1]** A description of the some different methods of protected cultivation. Quality of written communication impedes communication of the science at this level. (1 – 2 marks) **[Level 0]** Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)	6	**This question is targeted at grades up to E** **Indicative scientific points may include:** Description of the use of • Glasshouses • Poly tunnels • Cloches • Fleece Examples of uses and reasons why • Extend the growing season • Grow crops not suitable for UK climate • Protection from pests • Warming the soil prior to planting • Hardening off crops • Protection from extreme weather • Supply of crops at a premium when scarce • Protection of quality/ look of crop Allow references to the advantages of one type of equipment compared to another.

4	**(b)(i)**	£1.32/ 132p	1	units must be shown
4	**(b)(ii)**	6 pots	1	
4	**(b)(iii)**	Any **two** from: Chemical control is the cheapest overall; Chemical material costs lowest; Biological labour costs lowest;	2	Accept converse arguments Accept figures used to compare but only gaining a second mark if a calculation is done to compare
4	**(b)(iv)**	Any **two** from: Which is most effective If the treatments needed to be repeated; If the crop is worth more using organic biological method; effect on crop quality re taste/ chemical residues; Environmental impact	2	

<table>
<tr>
<td>5</td>
<td>(a)</td>
<td>
<table>
<tr><th>Vitamin or Mineral</th><th>Deficiency Problem</th></tr>
<tr><td>Vitamin A</td><td>Poor eye sight</td></tr>
<tr><td>Vitamin …C…</td><td>Scurvy</td></tr>
<tr><td>Vitamin D</td><td>Rickets</td></tr>
<tr><td>Mineral …Fe….</td><td>Anaemia</td></tr>
<tr><td>Mineral Calcium</td><td>Poor bones and teeth</td></tr>
</table>
</td>
<td>4</td>
<td>Accept symptoms of deficiency diseases</td>
</tr>
<tr>
<td>5</td>
<td>(b)</td>
<td>All the correct nutrients in the diet

In the correct amounts</td>
<td>1

1</td>
<td>Accept mention of 3 major food groups plus vitamins or minerals</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Sperm produced in the testes travels down the males sperm duct and is released inside the female.
In the female eggs produced in the ovary travel down the oviduct towards the uterus where they meet the sperm.</td>
<td>3</td>
<td>4 or 5 correct = 3 marks
3 correct = 2 marks
2 correct = 1 mark</td>
</tr>
</table>

7	**(a)**	**LOR** **[Level 3]** A full description of how to weigh a named farm animal with due regard to safety. A good range of reasons for weighing farm animals. Quality of written communication does not impede communication of the science at this level. (5 – 6 marks) **[Level 2]** A description of how to weigh a named farm animal with some reference to safety. Examples of reasons Quality of written communication partly impedes communication of the science at this level. (3 – 4 marks) **[Level 1]** A brief description of how to weigh a farm animal, with at least one reason farm animals are weighed or clear safety comments Quality of written communication impedes communication of the science at this level. (1 – 2 marks) **[Level 0]** Insufficient or irrelevant science. Answer not worthy of credit. (0 marks)	6	**This question is targeted at grades up to C** **Indicative scientific points may include:** **Weighing process –** • How to approach a farm animal • Equipment used to weigh a farm animal • Stages in weighing the animal • Health and safety concerns – such as operator safety, clothing, hand washing etc. **Reasons for weighing farm animals.** • To ensure the animal is healthy / developing properly • To calculate the food conversion ratio / ensure correct feeding • To check the animal has reached marketable weight • To see if the animal is suitable for breeding.

7	**(b)(i)**	Any **two** from: The daily gain increases until a body mass of 400kg 390-420 kg static or max 3.6 kg/day Then declines (at 420kg)	2	
7	**(b)(i)**	3.6 kg/day	1	
7	**(b)(i)**	350 kg	1	
		Total	**50**	

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