OCR
Oxford Cambridge and RSA

GCSE

Environmental and Land Based Science

Unit **B681/01:** Management of the Natural Environment (Foundation Tier)

General Certificate of Secondary Education

Mark Scheme for June 2017

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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 SCORIS.

✓ = 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		C -eats a wide range of food	1	
2		May not be adapted to low temperatures owtte; Reduction in availability of food; Lack of availability of other foods for their predator	3	**Allow other reasonable answers** A: killed by cold owtte;
3	a	All one type of plant grown; Less types of food to sustain a range of animals; Use of chemicals/ pesticides may affect other organisms	1	
3	b	Spray drift/ use of pesticides kills beneficial insects; Reduced range of habitats for animals/ habitats are destroyed; Machinery/ noise pollution; Risk of run off of fertilisers;	3	
4	a	(steady) reduction in numbers employed	1	R "it goes down"- response must relate to the numbers employed. Specific values not required. Although allow " it went from 'X' to 'X'"
4	b	(600 – 450/600) x 100; 25(%)	2	2 marks for correct answer without showing working
4	c	See LOR markscheme	6	
5	a	3700	1	
	b	20%	1	
	c	2 from: Water for livestock; Cleaning the milking parlour/ washing machinery; Cooling milk; Cleaning the yard	2	
	d	See LOR markscheme	6	
6		Four from:	4	**Allow other reasonable answers**

<table>
<tr><th colspan="3">Expected Answers</th><th>Marks</th><th>Additional Guidance</th></tr>
<tr><td></td><td></td><td>Check for hazards on the route;
Keep animals calm/ do not stress animals;
Have enough labour available/ sheepdogs;
Identify (and rectify) any routes of escape;
All staff know what the plan is;
Have a means of communication;
Do not rush;
Check the new field is secure;
Be aware of the condition of the sheep/ health/pregnant/age/suckling;
Wear PPE;
Size of flock/ number of animals;
Count livestock owtte;
Weather conditions:</td><td></td><td></td></tr>
<tr><td>7</td><td></td><td><table><tr><th>Energy source</th><th>method</th></tr><tr><td>wind</td><td>(wind) turbines</td></tr><tr><td>water</td><td>Water wheel/ turbines/ hydroelectric schemes/ tidal barrages</td></tr><tr><td>sun</td><td>Solar panels</td></tr><tr><td>crops</td><td>Incineration/ anaerobic digester/</td></tr></table></td><td>4</td><td>R: Dam if not qualified

A: (processing of) biofuels</td></tr>
<tr><td>8</td><td>a</td><td>See LOR markscheme</td><td>6</td><td></td></tr>
<tr><td></td><td>b</td><td>RSPB</td><td>1</td><td></td></tr>
<tr><td>9</td><td>a</td><td>1.3</td><td>1</td><td>No credit for the upper and lower values only</td></tr>
<tr><td></td><td>b</td><td>6.4</td><td>1</td><td></td></tr>
<tr><td></td><td>c</td><td>i Result D
ii 6.3</td><td>1
1</td><td>
Allow 6.28 or 6.29 and ECF from 9ci</td></tr>
<tr><td></td><td>d</td><td>Add lime to the soil</td><td>1</td><td>Allow chalk/ calcium carbonate/ alkaline substance</td></tr>
<tr><td>10</td><td></td><td>Monoculture</td><td>1</td><td></td></tr>
</table>

Expected Answers			Marks	Additional Guidance
		Organic production Genetically Modified production	1 1	
		Total	50	

Question	Answer	Marks	Guidance
4c	**[Level 3]** Demonstrates a knowledge of a wide range of facts and able to explain their impact with some detail Quality of written communication does not impede communication of the science at this level. (5-6 marks) **[Level 2]** An explanation of a narrow range of technological improvements. Information is accurate but brief. Quality of written communication partly impedes communication of the science at this level. (3-4 marks) **[Level 1]** A list of some of technological improvements that have been made. Quality of written communication impedes communication of the science at this level. (1-2 marks) **[Level 0]** Insufficient or irrelevant science of technical information. Answer not worthy of credit. (0 marks)	6	**This question is targeted at grades up to C** **Indicative topics likely to be included:** • Improved efficiency (generally) • Greater mechanisation (more work by less people in less time) • Improved growing blueprints (crops ready as set times) • Better varieties/ breeds (increased yield or more rapid growth) • Improved irrigation (improved yield) • Greater use of pesticides (less waste) • Improvements in fertilisers • Targeted use of pesticides • GM • Less waste produce • Intensive livestock production in sheds • Better knowledge of soils and how to improve them • Use of legumes/cover crops • Less soil erosion • Use of ICT to monitor conditions in glasshouses

Question	Answer	Marks	Guidance
5d	**[Level 3]** An extensive description of a wide range of methods used to obtain water for use on the crop. Quality of written communication does not impede communication of the science at this level. (5-6 marks) **[Level 2]** A description of a limited range of methods for obtaining water for growing. Quality of written communication partly impedes communication of the science at this level. (3-4 marks) **[Level 1]** A list of some of the methods of obtaining water 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:** • Mains supply • Borehole • Recycling of irrigation water • Collection from the roof of structures • Rivers • Reservoir on the farm. Responses may also identify criteria for this water (ie not polluted, not salty)

Question	Answer	Marks	Guidance
8a	**[Level 3]** A full description of the likely changes to the food web- describing	6	**This question is targeted at grades up to E**

	issues of predation **and** also competition for food. Quality of written communication does not impede communication of the science at this level. (5-6 marks) **[Level 2]** A description the food web, showing an understanding of the impact but lacking detail of the impact of competition. Quality of written communication partly impedes communication of the science at this level. (3-4 marks) **[Level 1]** Simplistic analysis of the changes to the food web. 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)		• Reduction in hawk numbers (as less food) • Smaller numbers of blue tits (less to breed/ find mates) • More parasitic wasps (less eaten by blue tits) • Less scale insects (more wasps and more caterpillars competing for food) • More caterpillars (less blue tits) • Justification for the effect on the willow (more eaten by caterpillars or less scale insects feeding) • Impact on Woolly aphid (justified from change in population from other insects) • Impact of the change of woolly aphids on ladybird numbers

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