

## **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 2016**

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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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Question			Answer/Indicative content	Mark	Guidance
1.			Cut off by tide Slipping over	1 1	
2.			a) Fuel crop	1	
3.			sand; silt; clay	3	
4.	a	i	All coordinates to be marked on graph in correct places 1930 2.4 1950 2.8 1970 3.9 1990 6.0 2010 8.7	3	1. error = 2 marks 2. errors = 1 mark 3. errors = 0 marks
	a	ii	14.0	1	allow answers between 12.0 and 16.0
	a	iii	Improved pesticides; higher yielding varieties; improvement to management systems; (targeted) fertiliser applications; disease resistant varieties; weed control; mechanisation;	3	Allow other valid responses e.g. Climate change if qualified; Increase in field size;
	b		2.9 tonnes/ hectare	1	A: 2.89
	c		Poorer soils; drought; high levels of pest/disease; lack of fertilisers; poorer education/ advisory services; climate/weather; lack of mechanisation owtte;	2	Allow other valid responses  Reject 'conditions' without clarification.
5			2 from: cattle; sheep; goats; horses; pigs; chickens; turkey; ducks; geese; poultry	2	Do not allow 'non-farm' animals eg foxes, badgers A marks for specific breeds which fall into the allowed categories.

Question		Answer/Indicative Content	Marks	Guidance	
				Content	Levels of response
6		Response to include: visual enhancements reducing the extreme variance in temperature ( from buildings alone) Shading / cooling Improvements to air quality/ removal of pollution Reduction in vandalism/ graffiti Reduction to air speed/ eddy currents Increase in house prices Availability of habitats for other organisms Soil reduces the risk of flash flooding Noise Soil stabilisation	Up to 6 marks	<ul style="list-style-type: none"> <li>marks not awarded for specific points: Level of Response descriptors should be applied.</li> </ul>	<p>A well structured response, showing a clear understanding of the subject area including the more complex issues. Work uses appropriate technical language. Information is relevant and well laid out few if any errors in grammar, spelling and punctuation. ( 5-6 marks)</p> <p>[Level 2] Identifies a range of correct answers but not as extensive a range as in level 3. There is a structure to the format of the answer, occasional errors in grammar, spelling and punctuation (3-4 marks)</p> <p>[Level 1] Some correct ideas listed and/ or examples given but in a reduced range. Limited use of terminology and errors in grammar, punctuation and spelling. (1-2 marks)</p> <p>[Level 0] Insufficient or irrelevant response, answer not worth of credit. ( 0 marks)</p>

Question		Answer/Indicative Content			Marks	Guidance
7			<b>extensive</b>	<b>intensive</b>	4	Allow alternative valid answers 2 correct for each mark ( not necessarily in same row)
		<b>Poultry</b>	Free range	Battery /caged production		
		<b>Fish</b>	Rivers/ lake/ sea	Fish farm		
		<b>Farm animal</b>	Field production	Barn/ caged/ battery		
		<b>Crop</b>	Field production	greenhouse		

Question		Answer/Indicative Content	Marks	Guidance	
				Content	Levels of response
8		Responses to include:  Intelligent animal Agile Omnivorous Sharp teeth for catching prey Warm blooded/ fur ( to regulate temperature) Good eyesight Keen sense of smell Good hearing Care for young Successful urban scavengers	Up to 6 marks	<ul style="list-style-type: none"> <li>marks not awarded for specific points: Level of Response descriptors should be applied.</li> </ul>	<p>A well structured response, showing a clear understanding of the subject area. Includes a broad range of reasons. Work uses appropriate technical language. Information is relevant and well laid out few if any errors in grammar, spelling and punctuation. ( 5-6 marks)</p> <p>[Level 2] Identifies a range of correct reasons but not as extensive a range as in level 3. There is a structure to the format of the answer, occasional errors in grammar, spelling and punctuation (3-4 marks)</p> <p>[Level 1] Some correct ideas listed but in a reduced range. Limited use of terminology and errors in grammar, punctuation and spelling. (1-2 marks)</p> <p>[Level 0] Insufficient or irrelevant response, answer not worth of credit. ( 0 marks)</p>

Question		Answer/Indicative Content	Marks	Guidance
9		ii. decay	1	
10		2 from: Identify when risk of frost is over; (calculation of) when to water plants; evaluate soil temperature; calculate the optimum time for sowing/ planting; cultivate before frosts; when soil is dry	2	NB records will provide general guidance but would not be used to provide a weather forecast.

Question		Answer/Indicative Content	Marks	Guidance	
				Content	Levels of response
11		<p>Responses to include:</p> <p>Assist in the breaking down of organic matter into humus &amp; nutrients</p> <p>Digestive enzymes break down cell walls.</p> <p>Mixing of soil</p> <p>Aeration assists drainage Aeration allows oxygen to plant roots</p> <p>Changes in crumb structure (as a result of activity) may affect water holding capacity</p> <p>Tunnels used by other animals</p> <p>Act as food for other soil organisms which also affect the quality of the soil.</p> <p>Take organic matter into the soil.</p>	Up to 6 marks	<ul style="list-style-type: none"> <li>marks not awarded for specific points: Level of Response descriptors should be applied.</li> </ul>	<p>A well structured response, showing a clear understanding of the subject area including the more complex concepts. Work uses appropriate technical language. Information is relevant and well laid out few if any errors in grammar, spelling and punctuation. ( 5-6 marks)</p> <p>[Level 2] Identifies a range of correct answers but not as extensive a range as in level 3. There is a structure to the format of the answer, occasional errors in grammar, spelling and punctuation (3-4 marks)</p> <p>[Level 1] Some correct ideas listed and/ or examples given but in a reduced range. Limited use of terminology and errors in grammar, punctuation and spelling. (1-2 marks)</p> <p>[Level 0] Insufficient or irrelevant response/ science, answer not worth of credit. ( 0 marks)</p>

Question		Answer/Indicative Content	Marks	Guidance
12		a) conduction	1	
13.		3 from: Compaction; poor drainage; loss of air; soil organisms harmed; tramways; oil leak (or similar) polluting the soil	3	Allow: Crushed or squashed soil as an alternative to compacted. R: air pollution
14		C) reduce the amount of light for the crop	1	
15	a	pH 7.0	1	
	b	Change in soil type; spillage of another substance (with different pH); dead animal; faeces; inaccuracies in pH meter; poor use of method; error in reading results	1	R: sampled in a different area. A: decay of pine needles ( to acidify soil locally)

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