OCR
Oxford Cambridge and RSA

GCSE

Environmental and Land Based Science

Unit **B681/02:** Management of the Natural Environment (Higher 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.

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

Question			Answer/Indicative content	Mark	Guidance
1.			air moisture	1	1 mark for two correct answers
2.			Three from: Accuracy is improved; less risk of error; predictive abilities of data trends; reduction in wages/ staffing; less need to work antisocial hours; more efficient use of resources; can handle large amounts of data; easier storage/ retrieval of data;	3	"cheaper" requires clarification
3.	a	i	14.0	1	Allow answers between 12.0 and 16.0
		ii	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		Two from: Ability to grow in (currently) unfavourable environments ; Extension to growing season; (ability of plant) to have higher yields; pest or disease resistance; ability to grow with lack of fertiliser input; grows faster/ shorter life cycle; better quality	2	Allow an example of unfavourable environment if one explicitly stated. R: general concepts of increasing yield without clarification.
4			herbicides	1	
5			Two from: Less risk of unexpected supply cut; additional resource in drier periods/ summer; reduction in costs of using (metered) water supply; control over quality of water	2	

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	Up to 6 marks	• marks not awarded for specific points: Level of Response descriptors should be applied.	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) [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) [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) [Level 0] Insufficient or irrelevant response, answer not worth of credit. (0 marks)

Question			Answer/Indicative content	Mark	Guidance
7			Conservation is active; preservation is passive (owtte); 1 mark for an example of a conservation activity eg coppicing	3	Naming of conservation body/ organisation is not to be credited.

Question			Answer/Indicative Content	Marks	Guidance	
					Content	Levels of response
8			Factors: Dangerous machinery Unpredictable animals Lone working Uneven terrain Changing weather conditions Examples of ways to address issues could include: Additional training Use of safety guards/ design of machines use of specialists for specific (high risk) tasks Use of appropriate equipment for situation (dynamic) risk assessment of jobs. Avoid lone working or use phones to communicate Use weather forecasts when planning jobs Regular maintenance	Up to 6 marks	• marks not awarded for specific points: Level of Response descriptors should be applied. Other valid responses to be considered.	A well structured response, showing a clear understanding of the subject area including the more complex issues.. Relevant examples given of suitable ways to address the issues identified. Information is relevant and is laid out well, using appropriate terms , few if any errors in grammar, spelling and punctuation. (5-6 marks) [Level 2] Identifies a range of reasons but not as extensive a range as in level 3. The majority of reasons have solutions linked to them. There is a structure to the format of the answer, occasional errors in grammar, spelling and punctuation (3-4 marks) [Level 1] Some reasons listed and/ or solutions given but in a reduced range. Limited use of terminology and errors in grammar, punctuation and spelling. (1-2 marks) [Level 0] Insufficient or irrelevant response, answer not worth of credit.(0 marks)

Question			Answer/Indicative content	Mark	Guidance
9	ai		675209	1	
	aii		1 mark for calculation: $\frac{675209}{2121426}$ X 100 1 mark for answer 31.83%	2	Allow ecf from 9ai Allow 31.8%, 32% and ecf
	b		Two from: The majority of land in SSSIs is in good condition; Approximately a third/ 31.8% of land in SSSIs needs additional management to improve its status; Only a small percentage is declining or destroyed (therefore the strategy of SSSIs is working)	2	Allow other valid answers. Allow conclusions drawn from ecf data.
10			2 marks for suitable examples of damage to habitat from: soil erosion; litter; noise; visual impact; deforestation; trampling; pollution (if source specified); 2 marks for suitable, valid ways of reducing the damage linked to the problem named.	4	1 mark for each valid example (max 2) 1 mark for each valid to reduce damage (max 2)
11			Three from: Reduces the ability of grass to recover (less leaves to photosynthesise)/ weakening the plants; change in balance of vegetation to plants that can be grazed shorter; risk of erosion; inability to flower/ seed; eradication of certain species from the field; poaching of soil; compaction.	3	

Question			Answer/Indicative content	Mark	Guidance
12.			Three from: Legumes will have put nitrogen into the soils initially/ brassicas will benefit/ higher yields; Over time a reduction in yield as nutrients depleted; Build up of pests; Increase in disease; Damage to soil structure due to similar cultivations each year;	3	

Question			Answer/Indicative Content	Marks	Guidance	
					Content	Levels of response
13			Responses could include: Development for fuel crops for burning (i.e. willow/ short rotation coppice/ straw etc.) Development of crops for biodiesel (sunflowers, oilseed rape, other oils) Use of wind power (turbines) Solar power (installation of solar panels) Water power (use of streams, rivers or tide) Gas production (Anaerobic digestion- development of methane gas) Geothermal (Ground source heat pumps) Ignore responses linked to tidal energy or other (typically) non-farm locations.	Up to 6 marks	• marks not awarded for specific points: Level of Response descriptors should be applied.	[Level 3] A well structured response, showing a clear understanding of the subject area including the more complex technologies. Examples given of each technology type. Information is relevant and is laid out well, using appropriate terms , few if any errors in grammar, spelling and punctuation. (5-6 marks) [Level 2] Identifies a range of fuel sources but not as extensive a range as in level 3. The majority of sources have examples linked to them. There is a structure to the format of the answer, occasional errors in grammar, spelling and punctuation (3-4 marks) [Level 1] Some types of power source listed and/ or examples given but in a reduced range. Limited use of terminology and errors in grammar, punctuation and spelling. (1-2 marks) [Level 0] Insufficient or irrelevant response, answer not worth of credit. (0 marks)

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