

Environmental and Land-Based Science

General Certificate of Secondary Education

Unit **B493/01**: Management of the Natural Environment (Foundation Tier)

Mark Scheme for January 2012

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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.

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Annotations

Used in the detailed Mark Scheme:

Annotation	Meaning
/	alternative and acceptable answers for the same marking point
(1)	separates marking points
not/reject	answers which are not worthy of credit
ignore	statements which are irrelevant – applies to neutral answers
allow/accept	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

	indicate uncertainty or ambiguity
	benefit of doubt
	contradiction
	incorrect response
	error carried forward
	draw attention to particular part of candidate's response
	draw attention to particular part of candidate's response
	draw attention to particular part of candidate's response
	no benefit of doubt

	reject
	correct response
	draw attention to particular part of candidate's response
	information omitted

Subject-specific Marking Instructions

- If a candidate alters his/her response, examiners should accept the alteration.
- 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 two correct boxes.

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

This would be worth 1 mark.

Put ticks (✓) in the two correct boxes.

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

This would be worth 0 marks.

Put ticks (✓) in the two correct boxes.

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

This would be worth 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

Edinburgh	
Manchester	
Paris	
Southampton	

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).

Edinburgh			✓			✓	✓	✓	✓	
Manchester	✓	x	✓	✓	✓				✓	
Paris				✓	✓		✓	✓	✓	
Southampton	✓	x		✓		✓	✓		✓	
Score:	2	2	1	1	1	1	0	0	0	NR

MARK SCHEME:

Question		CBT Question Numbers	Answer	Mark	Guidance
1		1	slug (1) woodlouse (1)	2	
2		2	A acid rain	1	
3		3	B (kestrel) C (duck) A (heron)	2	all three correct for two marks one mark for one correct
4		4	aphids ----- herbivore plant stem ----- producer	2	
5		5	C food grown without artificial pesticides	1	
6	(a)	6	clay	1	
	(b)	6	humus	1	
7	(a)	7	air pollution; visual pollution	1	accept air reject chemical / smoke
	(b)	7	water pollution; noise pollution; smell	1	accept visual / sight / radiation
8		8	two of: space; water; nutrients / minerals; carbon dioxide	2	reject food / goodness accept moisture / room
9	(a)	9	warmer	1	reject reference to pests
	(b)	9	to allow water into the soil OWTTE; to allow for machinery wheels to pass; less plastic is needed so cheaper	1	reject air / oxygen
10		10	two of: more soil; deeper soil; more nutrients; denser soil	2	accept more humus / less salt accept reference to water retention
11		11	1 mark for way and 1 mark for effect from: burrowing – improve drainage; improve air content; egestion / feeding / excretion – improve water holding capacity; mineral / nutrient content; improve crumb structure	2	

Question		CBT Question Numbers	Answer	Mark	Guidance
12	(a)	12	72 % (oil (2%) + gas (30%) + coal (40%))	1	
	(b)	12	less use to reduce carbon dioxide / CO ₂ emissions; increased use of other fuels; government policy	1	reject running out
	(c)	13	two of: wind; solar; biomass	1	two answers required for one mark.
13	(a)	14	1300	1	
	(b)	14	388 300 (370 000 + 18 300)	1	
14	(a)	15	2001	1	
	(b)	16	year 1996 – 2 chicks year 1997 – 8 chicks year 2000 – 25 chicks year 2002 – 44 chicks	1	correct bars filled in on the graph
	(c)	17	8 breeding pairs	1	
15		18	machines can do more work; they can work more quickly; they can cover more space; less man-power required	3	any 3
16		19	increase – more food (greenfly) as robins not eating it. decrease – more eaten by hawks as they have no robins to eat	2	one mark for explaining reasons for increase one mark for explaining reasons for decrease
17		20	three of: nitrogen fixing bacteria in root nodules of legumes convert nitrogen into ammonia (fixation); nitrifying bacteria in soil oxidise ammonia / nitrates to form nitrates (nitrification); energy from lightning breaks nitrogen molecules enabling (combination with oxygen to form) nitrogen oxides which dissolve in rain to form nitrates	3	one mark for each
				Total	36

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