

# **Environmental and Land-Based Science**

General Certificate of Secondary Education

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

## **Mark Scheme for January 2011**

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

/	=	alternative and acceptable answers for the same marking point
<b>(1)</b>	=	separates marking points
<b>not</b>	=	answers which are not worthy of credit
<b>reject</b>	=	answers which are not worthy of credit
<b>ignore</b>	=	statements which are irrelevant
<b>allow</b>	=	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
OWTTE	=	or words to that effect

Question		Expected Answer	Mark	Rationale/Additional Guidance
1		earthworm ----- soil squirrel ----- woodland stickleback ----- pond	1	all three answers must be correct for the mark
2	(a)	<b>B</b> (herbicides)	1	
2	(b)	<i>Any two of:</i> personal protection (PPE) avoid contact with skin wear gloves face mask environmental issues do not spray near water animals plants do not spray in wind follow instructions dispose of correctly keep children away when using	2	<b>allow</b> only spray weeds
3		walkers.....lay wooden boarding across wet areas motorcycles..... build stiles dog 'mess'..... provide bags and bins	2	all three correct for two marks one or two correct for one mark <b>allow</b> (correct) students versions of set answers
4		<b>C</b> (they increase the nitrogen level of the soil)	1	
5		<b>B</b> (genetically)	1	
6		<b>C</b> (hedges need maintaining) <b>E</b> (bigger machinery can be used)	2	one mark for each answer. Either order.
7		<b>B</b> (acid rain)	1	

Question	Expected Answer	Mark	Rationale/Additional Guidance
8	air movement ----- wind turbine sunlight ----- solar cell	2	
9	(a)	1	stops sun blinding drivers prevents soil erosion <b>not:</b> absorbs rainwater / absorbs pollution / overgrow / looks better
9	(b)	1	could fall <u>onto road</u> <b>not:</b> can crash into / maintenance / damage road
10	(a)	1	
falling into water Weil's disease stuck in mud bank crumbling ora			
10	(b)	1	<b>allow</b> watch where standing
footwear behave sensibly no drinking or eating work in pairs wash hands ora			
11		1	<b>allow:</b> traps water / inactive when tide is out / idea of strong adhesive foot / large contact area <b>not:</b> blends in / camouflage
idea of streamlined / low shape / protective shell / strong shell / shape (qualified)			
12		2	one mark for definition / awareness of pollution meaning  one mark for an example
something that contaminates the environment, eg, gases in atmosphere / visual / OWTTE  gases (names not needed) can contribute to global warming / climate change / cause acid rain / produce smog			

Question		Expected Answer	Mark	Rationale/Additional Guidance
13		any reasonable answer	2	no mark for name of conservation body <b>not</b> RSPCA as not a conservation body
14	(a)	90	1	
14	(b)	75	1	<b>allow</b> 74 to76
15	(a)	A (15)	1	
15	(b)	C (55.3%)	1	
16	(a)	Y (inorganic)	1	
16	(b)	D (5.5)	1	
17		<b>no</b> mark for choice of area, marks awarded for effects: greater / less variety of habitat greater / less variety of plants therefore greater / lesser variety of animals	3	
18		work done faster more work done less labour needed access to more land available OWTTE	2	<b>allow</b> can carry bigger loads / heavier machinery <b>not:</b> better
19		compaction can reduce drainage / water cannot penetrate / seeds unable to root / fertiliser unable to penetrate deep grooves / ruts air content reduced	3	one mark for each reason or maximum marks for detailed explanation <b>allow</b> clogged up (if qualified) <b>not:</b> easier / harder for crops to grow <b>not:</b> hard to plough <b>not:</b> reference to light or food <b>not:</b> stops soil being damaged
<b>Total</b>			<b>[36]</b>	

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