

Environmental and Land-Based Science

General Certificate of Secondary Education

Unit **B493/02**: Management of the Natural Environment (Higher Tier)

Mark Scheme for June 2011

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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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Any enquiries about publications should be addressed to:

OCR Publications
PO Box 5050
Annesley
NOTTINGHAM
NG15 0DL

Telephone: 0870 770 6622
Facsimile: 01223 552610
E-mail: publications@ocr.org.uk

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

MARK SCHEME: B493/02

Question			CBT Question Numbers	Answer	Mark	Guidance
1			1	deposition - above sedimentary erosion - at top of diagram	2	
2	a		2	B	1	
2	b		3	lime	1	
3			4	caterpillars.....to top box rabbits..... to third box down	2	
4			5	mulching black polythene	2	
5			6	D organic content of the soil is high	1	
6			7	slipping on rocks and breaking leg; hot weather and sunstroke; cold weather and hypothermia; ORA	2	description must be linked to problem answers need not refer to rocky shore accept: water and drowning
7	a		8	sand / sandy	1	accept: not mouldable reject: sandy loam / grit / gravel

Question		CBT Question Number	Answer	Mark	Guidance
7	b	8	cannot hold onto nutrients; warms up quickly in spring / cools quickly in autumn; particles do not stick together	1	accept: reference to good drainage / big air spaces reject: easier to dig / use; acidic / alkaline; reference to colour
8		9	two from: cultivated land / land with buildings / military / racecourses / land normally used for training horses / aerodromes / railway land / quarries / surface mineral workings / golf courses	2	accept: conservation areas; SSI; protected wildlife areas schools / motorways / building sites reject: private property; barns; farms
9	a	10	two from: temperature / light / humidity / water / nutrients / CO ₂	1	two answers required for 1 mark
9	b	10	monitor levels (probe / sensor) adjust automatically; specific examples eg temperature – open and close vents	2	2 marks: 1 for monitoring; 1 for adjusting
10		11	large amount of power produced on less land than other alternative methods; large amounts of power produced per mass of fuel; no (or little) carbon dioxide produced so less effect than fossil fuel on global warming; uranium costs less to mine than fossil fuels; waste is highly compact so is easier to transport;	2	accept: replace fossil fuels; cleaner / greener IF qualified; reliable; efficient; provides jobs reject: renewable

Question		CBT Question Number	Answer	Mark	Guidance
11		12	use correct quantities / concentration / dilution leave buffer zone / headlands around sensitive areas / water courses; reduce off target drift; consider impact of weather – do not spray in wind / rain; spray body of field first then outer edge to minimise pesticide on tractor wheels; ensure crop is at the right stage of growth so not harmed; use GPS and sensors to read where pests are and only spray where needed; used charged particles in the spray	2	reject: do not spray often / reference to organic / biodegradable
12		13	preservation implies NO CHANGE whereas conservation implies MANAGEMENT	1	
13	a	14	B	1	
13	b	14	rates are equal / balanced	1	
14		15	10800 [(5x2)x1080]	1	

Question		CBT Question Number	Answer	Mark	Guidance
15	a	16	1984 and 1986	1	both answers correct for 1 mark accept: 1980 and 1982
15	b	17	two from: qualified reference to shape of graph ie rise, fall, levelling off; fall for farmland species is greater / larger effect	2	
16		18	visual; large amount of waste produced; less land required; high energy consumption; increased use of antibiotics / medicines; habitat loss; soil damage; ORA	3	one point in detail = 2 marks accept: air pollution if qualified (methane); waste pollutes water sources reject: water pollution UNLESS qualified

Question	CBT Question Number	Answer	Mark	Guidance
17	19	noise / vibration disturbing wildlife; transport killing animals; changes in water drainage changes habitats; surface and ground water / flooding / drying; dust can have harmful effects on animal health / respiratory problems; can cause abrasions of leaves / damage internal leaf structure / slow photosynthesis; water turbidity (specified impact on plants and / or animals); pH changes; creation of new habitats	2	one good explanation = 2 marks
18	20	pH decreases; soil degradation; altered mineral availability; loss of microorganisms; reduced biodiversity; drying out of wetland habitats; impact on soil erosion; reduces run off; increase in some species eg wood ants	2	accept: poor humus; less nitrate; build up of disease in soil reject: all nutrients
		Total	[36]	

OCR (Oxford Cambridge and RSA Examinations)
1 Hills Road
Cambridge
CB1 2EU

OCR Customer Contact Centre

14 – 19 Qualifications (General)

Telephone: 01223 553998

Facsimile: 01223 552627

Email: general.qualifications@ocr.org.uk

www.ocr.org.uk

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OCR (Oxford Cambridge and RSA Examinations)
Head office
Telephone: 01223 552552
Facsimile: 01223 552553