

Environmental and Land-Based Science

General Certificate of Secondary B493/02

Management of the Natural Environment

Mark Scheme for June 2010

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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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Question		Expected Answer	Mark	Rationale/Additional Guidance
1		C there is safety in numbers	1	
2		D GM crops might breed with wild species	1	
3		D – between organic remains and nitrogen in the soil F – between nitrogen in the air and leguminous plants / organic remains	1 1	
4		shingle spit – tidal action (tides) deposition chalk cliffs – wave action (waves) erosion	1 1	
5		A	1	
6		D lowland heathland	1	
7		A water clarity probe	1	
8		C	1	
9	a	poison other organisms that eat it / poison goes into food chain	1	
	b	place in limited entry containers / mix with chemicals that only slugs like / colour blue to put other animals off	1	
10	a	treatment does not rely on chemicals / no environmental side effects	1	
	b	acts as a mulch / prevents light getting to weeds	1	

Question		Expected Answer	Mark	Rationale/Additional Guidance
11		adaptation – reduced / spine like / thick skinned leaves benefit – prevents excess water loss in exposed / windy conditions	1 1	ACCEPT ref to nodules fixing nitrogen in poor soil
12		compete with native birds with same feeding niche, OWTTE; compete for nesting sites / habitat niche; disturb native species by their numbers which then do not breed; introduce disease	2	
13		low tyre pressure	1	
14		1 soil can form a ball or sausage when moist / smooth to touch clay Soil cannot form a ball or sausage when moist / rough to touch go to 2 2 rough to the touch / forms a loose structure when damp sand very rough to touch / dose not form any structure when damp gravel	3	1 mark for a table any valid key
15	a	dairy	1	
	b	dairy sheep [any order]	1	
16	a	small – 48% of 607 is highest number of farms	1	ACCEPT small without justification
	b	13% - 1+37+49 = 87 87-100 = 13	1	ACCEPT 13% without justification

Question		Expected Answer	Mark	Rationale/Additional Guidance
17	a	water vole – highest decline (88%) to date, competition from mink; red squirrel – 64% down, grey squirrels dominant / spread virus disease; hazel dormouse – lowest number. so vulnerable	1	A – any mammal with reasoned argument Reference to % not needed for mark
	b	water vole $\frac{875\,000 \times 100}{12} = 7.2$ million c.f. harvest mouse = 4.8 million hedgehog = 1.6 million	1	
18		definition – growing same crop, year after year, in same place effects – visual pollution; hedgerow destruction; soil exhaustion; reduces biodiversity	1 2	
19		for each; comment on availability; cost of effectiveness; environmental impact / carbon footprint; feasibility for third world	2	answers must show an understanding of process selected to gain marks two reasons are needed for 2 marks
20		for – beavers were native; harmless herbivore; add biodiversity; dams will aid water filtration; aesthetic reasons against – disturb current balance in river ecosystem; damage trees; damage river banks c.f. coypu; not a valid conservation project; island now more populated	3	level of response: well argued with good supporting detail based on science = 3 two good points expressed = 2 one valid point developed in general terms = 1
Total			36	

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