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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Education

Environmental Studies 1441

ENVS1 The Living Environment

Mark Scheme

2009 examination – June series

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Environmental Studies

June 2009 **ENVS1**

Instructions: ; = 1 mark / = alternative response A = accept R = reject

Question 1

	Answers	Mark
1		

Conservation Designation	Letter	
Area designated for conservation under the European Union Birds Directive	(D)	
Coastal area that is of national importance and is managed for wildlife	**B**	;
Important and representative habitat, under the European Union Habitats Directive	**E**	;
Area with particular biological, geological or physiographic importance	**A**	;
Large accessible area of naturally beautiful countryside that is used to promote recreation, education and landscape conservation	**G**	;
Areas of land that are good examples of important habitats and contain complete communities of species	**C**	;

Total		**5**

Question 2

	Answers	Mark
2(a)	Two of clearance for farming/roads/mining/settlement/logging/timber trade/ fires/removal of wildlife habitat/use of pesticides/hunting/qualified climate change/medicines/introduction of non-native species/pet trade/qualified pollution/urbanisation**;;** [**A** flooding]	2
2(b)	In B qualified reference to edge effects**;** more exposure to wind**;** more exposure to light**;** drying effect/less humid**;** warmer soil**;** greater fluctuations of air temperature/temperature increase**;** fire less likely to affect whole forest**;**	MAX 2
2(c)	Qualified food sources become depleted/more competition for food**;** reduced area of shade/more light**;** smaller foraging area**;** smaller area of habitat/living space**;** isolated breeding populations/population fragmentation/gene pools**;** easier for invading organisms to become established**;** fewer mates/nest sites/materials**;** more susceptible to predation**;**	MAX 4
2(d)(i)	Mark on x axis under where curves cross**;** [**A** mark at crossing point]	1
2(d)(ii)	Food/prey availability/competition/disease/predation/nest site**;** [**R** space/shelter unless qualified] [**A** availability of water]	1
Total		**10**

Question 3

	Answers	Mark
3(a)(i)	Reproduction/natural increase/recruitment not enough/death rate greater than birth rate**;** (harvesting too great so) population declines/becomes extinct**;** mean age is younger**;** mean size of individuals is smaller**;**	MAX 2
3(a)(ii)	5.4 (million)**;** [**A** 5.2 – 5.6]	1
3(a)(iii)	Death rate/natural mortality**;** population increase rate/birth interval/time for reproduction**;** number of offspring/birth rate**;** population size**;**	MAX 2
3(a)(iv)	Threat of extinction**;** moral reasons/ethical/stewardship**;** ecological reasons eg food chain/species interdependence**;** medical**;** educational/scientific research**;** aesthetic/recreational reasons**;** qualified economic use**;**	MAX 2
3(b)	Fishing by-catch**;** ghost fishing**;** farm/forestry harvesting/cultivation**;** pesticide use**;** soil erosion effects**;** habitat loss/degradation**;** [**A** named example] organic waste/fertiliser use**;** infrastructure/transport eg roadkill/boat collisions/construction**;** introduction of alien species/genetic mixing with wild species**;**	MAX 3
Total		**10**

Question 4

<table>
<tr><th></th><th>Answers</th><th>Mark</th></tr>
<tr><td>4(a)</td><td>Recycle (plant) nutrients/make nutrients available/breakdown of dead organisms/litter;
organic sorting/improve soil structure/aeration;
food source/part of food webs;
increasing surface area for decomposers/make easier for decomposers;</td><td>MAX 2</td></tr>
<tr><td>4(b)</td><td>Suitable method for collecting sample eg pitfall traps;
[A description]
suitable area/searching time for collecting sample/random/stratified/ systematic sampling/several traps;
marking in a way that does not affect behaviour/increase vulnerability to predators/does not rub off;
left long enough to <u>mix/mingle</u> with remaining population;
assume no natural population change in time interval;
collect second sample <u>using identical method</u>;
count number marked <u>and</u> unmarked in second sample;
apply Lincoln Index/ $\frac{n_1 \times n_2}{n_m}$ /formula for calculation given or described/eg of calculation;
repeat (whole sampling process) to get mean/repeat in different seasons/throughout year;
multiply up to area of woodland; max 6

Quality of Written Communication
<table><tr><th>Mark</th><th>Descriptor</th></tr><tr><td>2</td><td>All material is logically presented in clear, scientific English and continuous prose. Technical terminology has been used effectively and accurately throughout. At least half a page of material is presented.</td></tr><tr><td>1</td><td>Account is logical and generally presented in clear, scientific English. Technical terminology has been used effectively and is usually accurate.
Some minor errors. At least half a page of material is presented.</td></tr><tr><td>0</td><td>The account is generally poorly constructed and often fails to use an appropriate scientific style to express ideas.</td></tr></table>max 2</td><td>8</td></tr>
<tr><td>Total</td><td></td><td>10</td></tr>
</table>

Question 5

	Answers	Mark
5(a)(i)	EIA/Environmental Impact Assessment**;**	1
5(a)(ii)	Water**;** topography**;** air**;** subsidence**;** noise**;** [**R** climatic factors]	MAX 2
5(b)(i)	$\frac{(7656)}{2176}$ **OR** $\frac{(7656)}{72+182+420+20+1482}$**;** 3.5 (3.5184/3.52)**;**	2
5(b)(ii)	One which is most diverse**;** more tree diversity provides more food/niches/resources**;** native species should be kept/non-native removed/**A** has fewer non-natives**;** more diverse is more stable**;** less noise/ air pollution from road**;** more aesthetically pleasing/road screened from houses/screening effect**;** correct reference to stream diversion**;**	MAX 5
Total		**10**

Question 6

	Answers	Mark
6(a)(i)	Impact of named practice on wildlife**;;;** Suitable practices (must be linked to impacts on wildlife) include: 1 fertilisers 2 pesticides 3 ploughing/cultivation 4 harvesting 5 land take/woodland clearance/hedgerow reduction/pond removal 6 increase in monoculture 7 introduction (for agricultural purposes) of non-native species/genetically modified organisms/biological control agents 8 over grazing 9 irrigation 10 drainage Expansion, explanation or other examples**;;;**	MAX 6
6(a)(ii)	Crop rotation/fallow/set aside**;** strip systems eg headlands/boundary strips**;** examples of habitat <u>management</u>**;;;** eg remove undesirable species provide nesting sites/nesting materials/shelter from predators/weather supplementary feeding/forage timing of harvesting/ploughing examples of habitat <u>creation/restoration</u>**;;;** eg planting trees,hedgerows,coppicing,digging ponds,beetle banks,skylark scrapes,selective grazing,controlled flooding credit ref to replacement of inorganic fertilisers with organic fertilisers, and pesticides with biological control agents	MAX 4
6(a)(iii)	(Environmental) Stewardship scheme/ESA/ESS**;** [**A** Environmentally Sensitive Area/ Sheep and Wildlife Enhancement scheme/Single Payment schemes/ Woodland grants/single farm payment]	1
6(b)(i)	Deflected succession/interruption of succession/climax community not reached**;** maintained by human activities**;** [**A** an example]	2
6(b)(ii)	Grazing/mowing/burning/coppicing/ploughing/use of appropriate/selective herbicides**;** prevent development of more dominant/competitive species/scrub/ woodland**;**	2
Total		**15**