

WJEC (Eduqas) Biology GCSE
Topic 6.3 Biodiversity
Questions by Topic - Mark
Scheme

1.	Sub-section	Mark	Answer	Accept	Neutral answer	Do not accept
	(a)	1	3;	3 per m ² 3/m ² 3 m ⁻²		3m ²
	(b)	1	540m ² ; unit needed			
	(c)	1	1620; allow ecf from (a) and (b)			
	(d)	1	29.6; allow ecf from (c)	30		
	(e)	1	Any one from: <ul style="list-style-type: none"> increase {number/ area/ size} of quadrats/ repeat investigation / do two separate studies – one of shaded area and one in the full sunlight area; 	Use a bigger sample size/ throw quadrat more often	Throw the quadrat more	Use transects
	Total Mark	5				

2.	Question	Marking details	Marks Available
	(a)	Place the quadrats randomly within the sample area;	1
	(b)	(i) Mean = 6.2;	1
		(ii) Estimated no of lugworms = 6.2 x 3200; = 19 840; Allow ECF from (b)(i) (If answer is correct award 2 marks directly)	2
	(c)	Any ref to evidence not available on surface (to count)/hidden by grass/ {casts/holes/burrows} are <u>hidden by the grass</u> / earthworms move/ earthworms do not stay in one burrow/ Accept ref to 3D aspect of population of earthworms ie there can be many earthworms at the same vertical point in the soil;	1

Question 2 Total

[5]

3.	Sub-section	Mark	Answer	Accept	Neutral answer	Do not accept
	(a) i	1	Transect (correct spelling);			
	ii	2	Quadrat (correct spelling); Tape measure/ {Tape/ rope} marked at (2) m intervals;			Ruler/ meter stick
	(b)	2	(2/25) x 100 = 8% Method; Answer; Correct answer on its own = 2			

4.		Sub-section	Mark	Answer	Accept	Neutral answer	Do not accept
(a)			2	Two throws would give them {two figures/ both the (horizontal and vertical) coordinates} needed to place the quadrat; This method removes sampler bias/gives a random sample;		fair	
(b)			2	Area of rocky shore = $20 \times 20 = 400 \text{ (m}^2\text{)}$ Area of quadrat = $0.5 \text{ m} \times 0.5 \text{ m} = 0.25 \text{ m}^2$ 4 quadrats to the square metre 1600 quadrats cover whole area 2% of 1600 = 32 quadrats = 2 marks If answer incorrect award 1 mark for any one of: <ul style="list-style-type: none"> • recognising area of sample area = $400 \text{ (m}^2\text{)}$ • for recognising 4 quadrats to the square metre • Area of quadrat = 0.25 • $1600 \times \frac{2}{100}$ 			
(c)			1	{If half/ more than half/ most/ the majority} of the {specimen/ flower/ barnacle/ object/ organism} is in the quadrat it can be counted/if less than half the specimen is in the quadrat do not count it;			plural/ reference to species
(d)			1	transect/line transect/belt transect			
Total Mark			6				

5.	Question	Marking details	Marks Available
	(a)	4 3 1 2 3 or 4 correct = 3 marks 2 correct = 2 marks 1 correct = 1 mark	3
	(b)	Make reference to {avoiding bias/validity}; NOT {fair test/reliability} (could be neutral)/ not to favour an area/give a true result	1
	Question 5 Total		[4]

6.

Question	Marking details	Marks Available
6 (a)	$\frac{200 \times 200}{20}$;	2

Answer = 2000;
2 marks for correct answer

(c)	<p>Sample {size/area} may be too small/sample from only one part of lake;</p> <p>Sampling needs to be repeated (and averaged);</p> <p>Immigration;</p> <p>Predation may have reduced numbers marked/differential predation due to dye/dye makes fish more visible to predators;</p> <p>The dye adds bias to recapture/ dye makes fish easier to see to recapture;</p> <p>(ignore ref to time given to sampling)</p>	Max 3
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7.

Question	Marking details	Marks available					
		AO1	AO2	AO3	Total	Maths	Prac
(a)	<p>39 = 2 marks</p> <p>39.1 = 1 mark</p> <p>if answer is incorrect award 1 mark for correct method:</p> <p>$23 \times 17 \div 10 = 1$ mark for method</p>		2		2	2	2
(b)	<p>sampled each area once on the first day and once on the second day/</p> <p>sampled each area early in morning/</p> <p>sampled each area on damp day/</p> <p>allowed {one week/ time} to allow marked snails to mix with the rest of the population</p>		1		1		1
(c)	<ul style="list-style-type: none"> (Number of song thrushes increased because) white ink spot made the snails {more conspicuous/ less camouflaged/ more visible} / OWTTE (1) use ink which blends in with the background colour of snail/ make markings less obvious/ mark snail on underside (1) 			2	2		2
	Question 7 Total	0	3	2	5	2	5

8.	Mark	Answer
6		<i>Indicative content:</i>
QWC		<p>Reference to international trade in species -Legislation aims to prevent trade in endangered species.</p> <p>Sites of special scientific interest -Allow ecosystems to develop unharmed.</p> <p>Captive breeding - Endangered spp. can be reintroduced to their habitats.</p> <p>National parks/ nature reserve - Allow large scale management of ecosystems via controlled ecotourism/ stop destruction of habitat</p> <p>Seed banks - Preservation of rare species for future planting.</p> <p>Legislation of fishing quotas - Prevents over fishing and allows build-up of stocks.</p> <p>Prevent poaching/ hunting of animals - increase in legislation to stop hunting</p> <p>Educational awareness e.g. WWF – make people aware of advantages of conservation</p> <p>Legislation against pollution/ litter – relevant examples</p> <p>5-6 marks The candidate constructs an articulate, integrated account correctly linking relevant points, such as those in the indicative content, which shows sequential reasoning. The answer fully addresses the question with no irrelevant inclusions or significant omissions. The candidate uses appropriate scientific terminology and accurate spelling, punctuation and grammar.</p> <p>3-4 marks The candidate constructs an account correctly linking some relevant points, such as those in the indicative content, showing some reasoning. The answer addresses the question with some omissions. The candidate uses mainly appropriate scientific terminology and some accurate spelling, punctuation and grammar.</p> <p>1-2 marks The candidate makes some relevant points, such as those in the indicative content, showing limited reasoning. The answer addresses the question with significant inaccuracies in spelling, punctuation and grammar.</p> <p>0 marks The candidate does not make any attempt or give a relevant answer worthy of credit.</p>

9.	Sub-section	Mark	Answer	Accept	Neutral answer	Do not accept	
	(a)	(i)	1	Any one (x1) from Immigration/ owtte; Emigration/ owtte; Predation; Not enough samples taken; Not enough time to allow mixing of populations;	ref. to marking method affecting survival/recapture		Reference to reproduction/ death unqualified
		(ii)	1	Repeat the procedure/ take larger samples/ give more time for mixing of populations;	ref to inconspicuous marking technique/ material		Reference to other orchards
	(b)	(i)	1	Biological control/ biocontrol;			

10.	Question	Marking details	Marks Available		
	10	(a)	(i)	extinct in the wild/ extinct;	1
			(ii)	It will be {reduced/lower/smaller}/ there will be fewer species/less diverse;	1
		(b)	(i)	Because they are receiving payment/they do not want the monkey to become extinct/ stop it becoming extinct;	1
		(c)		Any one from: SSSIs; captive breeding programme; NOT breeding in zoos/wildlife parks alone National parks; seed banks; {wildlife/nature} reserve; Legislation on deforestation;	Max 1
				Question 10 Total	[8]

11.			Sub-section	Mark	Answer	Accept	Neutral answer	Do not accept
(a)	(i)			1	Forest;	trees		
	(ii)			2	Agriculture; Building /Towns;	Farms/ farmland/ use of land to grow crops		deforestation

12.			Question	Marking details	Marks available					
					AO1	AO2	AO3	Total	Maths	Prac
	(a)	(i)		B		1		1		
		(ii)		(biodiversity) reduce and Other species do not survive/killed/out-competed		1		1		
	(b)	(i)		Biological control/biocontrol	1			1		
		(ii)		Correct answer = 10 (m) = 2 marks If incorrect allow 0.6 x 25 =15 (1)		2		2	2	
	(c)	(i)		Any one (x1) from (louse) does not affect any other (non-target) species Reproduces well in summer (when needed)		1		1		
		(ii)		By other scientists undertaking the same investigation/ comparing with other scientists		1		1		1
				Question 12 Total	1	6	0	7	2	1