

Maintaining biodiversity

Q1. (2018)

01.1

Factor	Biotic	Abiotic
Diseases	✓	
Herbivores	✓	
Temp		✓
Water		✓

allow 1 mark for 2 or 3 correct

2

AO1
4.7.1.3
4.7.1.2

Q2. (2018)

A)

01.2

(leaves block light near tree so)
more light (as you move
outwards)allow low light intensity under
tree
ignore Sun

1

AO2
4.7.2.1

for photosynthesis

allow less photosynthesis under
the tree

1

AO1
4.7.2.1
4.4.1.1
4.4.1.3(which) produces (more)
glucose / proteins (for growth)ignore growth
ignore food

1

AO1
4.7.2.1
4.4.1.1
4.4.1.3allow molecules, cell
components or other correct
substances instead of proteinsif no other mark awarded allow
less water / ions / minerals /
nutrients under the tree

B)

01.3

quadrat

in this order

1

AO1
4.7.2.1

light meter

correct spelling only

allow lux meter
allow light intensity meter
allow light data logger

1

C)

01.4

1.5(0) (m²)allow 15 000 cm²

1

AO2
4.7.2.1

D)

01.5

to keep light (intensity) as
similar as possibleallow the light (intensity) might
change

1

AO3
4.7.2.1ignore references to
temperature
ignore weather
ignore Sun

E)

01.6

any **one** from:

- repeat (investigation) around the tree
- repeat (investigation) for other trees / areas
- sample every one metre
- count the number of each species present (rather than percentage cover)

allow repeat in different
directions

1

AO3
4.7.2.1ignore repeats unqualified
ignore repeat at different times /
days / seasons
ignore different size quadrat
ignore random sampling

F)

01.7	daisy		1	AO3 4.7.2.1
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G)

01.8	as light (intensity) increased so did the percentage / cover of plants	ignore directly proportional ignore positive correlation unqualified	1	AO3 4.7.2.1
	up to 100% / maximum at 175 (arbitrary units)	ignore distance	1	

H)

01.9	any pair from: • (lack of) water / rain (1) because the leaves are stopping the rain or because the roots of the tree are absorbing it (1) • (lack of) minerals / ions (1) because the tree (roots) have absorbed them (1) • temperature (1) because less thermal energy from the sun is reaching under the tree canopy (1)	ignore carbon dioxide do not accept oxygen allow soil moisture allow magnesium / nitrate / nutrients allow too cold / cooler allow 'heat' for thermal energy allow pH / acidity (1) because (some) fallen leaves are acidic (1)	2	AO2 4.7.2.1
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Q3. (2018)

07.5	any two from: • global warming may be raising temperature of water and killing oysters • pollutants in the water may be toxic and kill the oysters or increased acidity of the oceans is killing oysters • new competitors / triploid oysters are using up the normal food source • new pathogens may be causing diseases • new predators eating oysters	allow correctly named pollutant with reason ignore over harvesting	2	AO2 4.7.3.5 4.7.3.2 4.7.1.2 4.7.1.3
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Q4. (2021)

A)

02.1	increases (from 2005) to 690 million or increases to 2008	allow peak in 2008 allow peak at 690 million	1	AO2 4.7.3.1 4.7.3.6
	decreases (from 2008) to 630 million	if no other mark awarded, allow overall increase from 470 million or overall increase to 630 million or (overall) increase of 160 million or increases to 690 and decreases to 630 (without units) for 1 mark	1	

B)

02.2	$\frac{690(\text{million}) - 460(\text{million})}{690(\text{million})} \times 100$	allow $\frac{230(\text{million})}{690(\text{million})} \times 100$	1	AO2 4.7.3.1 4.7.3.6
	33.3 (%)	ignore number of decimal places allow calculated value from incorrect graph readings	1	
	33 (%)	allow calculated answer correctly given to 2 significant figures	1	

Q5. (2021)

02.4	any two from: • reduce pollution	ignore references to carbon dioxide, greenhouse gases or global warming allow reduce named example of pollution, eg smoke or acidic gases or sewage or fertiliser allow reduce toxic waste dumping	2	AO1 4.7.3.1 4.7.3.2 4.7.3.4 4.7.3.6
	• plant trees	allow afforestation allow reforestation ignore reduce / stop deforestation		
	• breeding programmes (for endangered species)			
	• rewilding / regeneration of habitats / hedgerows / meadows	allow planting wild flower seeds		
	• (reintroducing) wider field margins			
	• plant a variety of crops	allow reduce monoculture		
	• reduce use of pesticide / herbicide / insecticide			
		ignore recycling ignore protect / conserve habitat(s) / areas		

Q6. (2022)

A)

06.3	<p>any two from: <i>in autumn</i></p> <ul style="list-style-type: none"> no / fewer seals left on ice or all / most seals are in the sea seals are adults / older so swim faster more <u>competition</u> between polar bears 	ignore seals are in the sea unqualified	2	AO3 4.7.3.5
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B)

06.4	Level 2: A judgement, strongly linked and logically supported by a sufficient range of correct reasons, is given.	3–4	AO3
	Level 1: Some logically linked reasons are given. There may also be a simple judgement.	1–2	AO2
	No relevant content	0	
	<p>Indicative content</p> <p><i>may decrease because:</i></p> <ul style="list-style-type: none"> global warming is melting sea ice less sea ice each year so less habitat / hunting area as ice / habitat disappears seals will decrease in number having to swim longer distances to find seals, wastes energy increased metabolic rate means more food is required not building up fat stores in the autumn means fewer will survive each winter decrease in mass / height may reduce hunting ability / strength hunting in some / most areas continues less likely to find mates eventually the species may become extinct <p><i>may increase / maintain numbers if:</i></p> <ul style="list-style-type: none"> more laws put in place to stop hunting or laws to stop hunting will allow bears to reproduce quotas introduced to reduce hunting nations / people work to reduce carbon dioxide emissions to halt global warming (feeding / hunting) behaviour of polar bears changes <p>For Level 2 both increase / maintenance and decrease of the polar bear population must be considered</p>		4.7.1.1 4.7.3.5

Q7. (2023)

A)

03.1	measure / string / transect / line at right angles to river (edge)	allow measure / string perpendicular to river (edge) allow shown on Figure 1 allow measure / string / transect / line straight from the river into the field ignore measure / string / transect / line from the river into the field unqualified	1	AO1
	place <u>quadrat</u> at intervals (along transect)	allow place <u>quadrat</u> at named intervals (of between 1 m and 10 m) allow place <u>quadrats</u> along transect do not accept place quadrat at random intervals	1	AO1
	count the (different plant) species (in each quadrat) at each distance	ignore references to counting numbers of plants or percentage cover	1	AO1
	repeat for 2 more transects	allow 2 or more repeats (of transect) allow repeat at 2 or more locations (along the river) allow 3 or more correct transect lines shown on Figure 1	1	AO1 4.7.2.1 RPA7

B)

03.2	the mean value students can be most certain about is 5 metres from the river		1	AO3 4.7.2.1 RPA7
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