AQA GCSE Biology

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
01.1	yes – spread of organism will be representative of population size no – cells are recording only if present or not so exact population numbers are unrecorded		1 1	AO3 4.7.1.1 4.7.1.3
01.2	over time the grey population has increased and the red squirrel population has decreased red population has decreased at a steady rate grey population has increased at an ever-increasing rate		1 1 1	AO2 4.7.1.1 4.7.1.3 MS 2g
01.3	any **four** from: • rate of reproduction of grey squirrels higher • and survival probability higher • so (even though life expectancy shorter) population will grow at a greater rate • *Parapox* virus may decrease population of red squirrels • but grey squirrels are unaffected by the virus (as they are carriers)		4	AO2 4.7.1.1 4.7.1.3 MS 1c

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01.4	36	accept for 1 mark number of offspring = 5 × 6 × 2 × 4 accept for 2 marks number of offspring = 240 accept for 3 marks number of offspring surviving = 240 × 0.15 accept for 4 marks number of offspring surviving = 240 × 0.15 = 36	4	AO2 4.7.1.1 4.7.1.3
01.5	any **three** from: higher because: • offspring are likely to reproduce as well as original population • red squirrels may migrate naturally to this area lower because: • predation may reduce population • disease may reduce population • number of offspring per litter likely to be less than 6		3	AO3 4.7.1.1 4.7.1.3

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02.1	any **two** from: • streamlined – provides less resistance through the water • flippers / webbed feet – provides effective propulsion to move through water • blubber – provides natural buoyancy / helps the seal float	award 1 mark for each adaptation and 1 mark for linked explanation	4	AO2 4.7.1.4
02.2	to prevent water entering them		1	AO3 4.7.1.4
02.3	more blubber / thicker fur – to provide more insulation (as water will be colder) white fur – to camouflage with ice	award 1 mark for each adaptation and 1 mark for linked explanation	2 2	AO3 4.7.1.4
03.1	animals and plants present in an ecosystem		1	AO1 4.7.1.1
03.2	temperature / light intensity / soil pH / water availability / oxygen availability / carbon dioxide availability / mineral availability	accept any other named abiotic factor	1	AO2 4.7.1.1 4.7.1.2
03.3	food availability / presence of predators / competition with other species / pathogens	accept any other named biotic factor	1	AO2 4.7.1.1 4.7.1.3

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03.4	any **two** from: • light • space • water • minerals / mineral ions		2	AO2 4.7.1.1
03.5	beech trees produce food by photosynthesis / provide shelter to increase probability of animals' survival		1	AO2 4.7.1.1
04.1	length – enables them to maximise access to light thorns – prevents them from being eaten		1 1	AO2 4.7.1.4
04.2	eaten by animals / birds dispersed through droppings		1 1	AO2 4.7.1.4
04.3	reduces competition for light / water / space / minerals / nutrients /water		1 1	AO2 4.7.1.4
05.1	bees depend on the cereal crop flowers for nectar / food source bees pollinate the cereal plants needed to produce new seeds / reproduce to produce more cereal plants to (continue to) feed the next generation of bees		1 1 1 1	AO2 4.7.1.1
05.2	species and environmental factors are in balance so population sizes remain (fairly) constant		1 1	AO1 4.7.1.1

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Question	Answers	Extra information	Mark	AO / Specification reference
05.3	plant a hedgerow provides another source of nectar for bees / shelter for animals that might eat mice which eat crops grow different crops in the areas of the same field / neighbouring field which increases biodiversity / provides different food sources so supporting different populations	award 1 mark for any appropriate suggestion and a further 1 mark for linked explanations	1 1 1 1	AO3 4.7.1.1
06.1	extremophile		1	AO1 4.7.1.4
06.2	any **two** from: • very cold • high pressure • no light / very dark		2	AO3 4.7.1.4
06.3	mutualistic		1	AO1 4.7.1.4
06.4	light will attract other organisms which will provide a food source for the angler fish		1 1	AO3 4.7.1.4

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Question	Answers	Extra information	Mark	AO / Specification reference
07	any **six** from: • rolled-up leaves reduce surface area in contact with air • so reduce rate of transpiration • (when dry, leaves roll up) so stomata open onto an enclosed moist space • water vapour accumulates in the space • through transpiration • this reduces the diffusion gradient between outside and inside of the leaf • preventing further water loss / rate of transpiration slows • hairs prevent water vapour being blown away • so maintains humidity / small diffusion gradient / air has a high water potential • waxy cuticle prevents water loss by evaporation		6	AO2 4.7.1.4
08.1	habitat		1	AO2 4.7.1.1
08.2	mass of grass present hunting		1 1	AO2 4.7.1.1

Question	Answers	Extra information	Mark	AO / Specification reference
08.3	any **two** from: • mates – to produce new offspring / to pass on genes to the next generation • food – to survive • territory / space – for shelter / access to food / find mates	factor and reason required to award 2 marks	4	AO2 4.7.1.1
08.4	increased light intensity increases rate of photosynthesis plants grow larger more food available for deer so deer population is able to increase	accept converse	1 1 1	AO2 4.7.1.2 4.7.1.3

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Question	Answers	Extra information	Mark	AO / Specification reference
09	positives: • (water clarity improved so) more light passes through water increasing the rate of photosynthesis / growth rate of plant material • providing a greater food supply to / supporting a larger population of organisms which feed on this material • more pollutants will be filtered from the water increasing the purity of the water • enabling species that are killed / strongly affected by pollution to re-establish / increase in population negatives: • removal of small organisms / organic material (disrupts the existing food web) meaning some organisms will lose (much of) their food supply • reducing the population of these organisms • native populations that use the same food supply are out-competed for resources • reducing their population	to award **six** marks, answers should include at least one advantage and at least one disadvantage, with the effect on native populations explained	6	AO3 4.7.1.1
10.1	camouflage / blend into their environment to hide from predators / prey	accept either option for each mark, and other sensible suggestions	1 1	AO2 4.7.1.4
10.2	for insulation to provide traction / to avoid slipping		1 1	AO3 4.7.1.4

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Practice answers

OXFORD Revise

Question	Answers	Extra information	Mark	AO / Specification reference
10.3	1 : 5	accept SA = 6 x 30 x 30 or 5400 for 1 mark accept volume = 30 x 30 x 30 or 27#000 for 1 mark	3	AO2 4.1.3.1 MS 1c
10.4	body heat will be lost / transferred through external surfaces Arctic foxes need to minimise heat loss so have a smaller surface area : volume ratio	 accept converse accept desert fox SA : V ratio = 1.5× greater than Arctic fox for 1 mark	1 1 1	AO2 4.1.3.1 4.7.1.4
11.1	protease		1	AO1 4.2.2.1
11.2	amino acids		1	AO1 4.2.2.1
11.3	*x*-axis: pH, with suitable linear scale *y*-axis: rate of reaction (mmol per minute), with suitable linear scale points plotted to ±1 mm smooth line of best fit plotted		1 1 1 1	AO2 4.2.2.1 MS 4a, c
11.4	accept answer in range pH 1.5 to 1.8		1	AO3 4.2.2.1 MS 4a

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Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
11.5	any b from: • enzyme has been denatured • structure of enzyme has been changed • protein can no longer bind to the active site • so no amino acid / product is formed		3	AO2 4.2.2.1
11.6	in the stomach		1	AO3 4.2.2.1
12.1	DNA / genetic material		1	AO1 4.6.4
12.2	(Carl) Linneaus		1	AO1 4.6.4
12.3	order		1	AO1 4.6.4
12.4	*Panthera leo*		1	AO2 4.6.4
12.5	understand how living things are related / allow links to be made between species recognise biodiversity present in the world provide scientists with a common language to communicate (even if different languages spoken)		1 1 1	AO1 4.6.4

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Practice answers

OXFORD Revise

Question	Answers	Extra information	Mark	AO / Specification reference
13.1	can be used in areas where vitamin A deficiency is common so can help prevent blindness		1 1	AO2 4.6.2.4
13.2	any **four** from: • identify the characteristic of beta carotene production in another organism / bacteria • identify the gene that codes for this characteristic • remove the gene using enzymes • place into a vector / plasmid / virus • insert into rice cells (at an early stage of a development)		4	AO2 4.6.2.4
13.3	any **two** from: • beta carotene levels in golden rice may not be high enough to make a difference – no advantage of eating the new rice • it may cross-breed with wild rice – causing wild varieties to die out / produce unfertile rice plants • concerns that food from GM plants might contain toxins / cause allergies – affecting health • seed for GM plants can be expensive – only rich farmers can afford it, making poorer farmers worse off	award 2 marks for appropriate suggestions award a further 2 marks for linked explanations accept other appropriate suggestions and explanations	4	AO3 4.6.2.4

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Question	Answers	Extra information	Mark	AO / Specification reference
14.1	fermentation		1	AO1 4.4.2.1
14.2	glucose carbon dioxide		1 1	AO1 4.4.2.1
14.3	(bubble through) limewater turns (from clear to) cloudy		1 1	AO1 4.4.2.1
14.4	water bath		1	AO2 4.4.2.1
14.5	any **three** from: • as temperature increases rate of respiration increases • until an optimum / maximum point • after that respiration decreases / stops • as enzymes are denatured		3	AO2 4.4.2.1