AQA GCSE Biology

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
01.1	50		1	AO2 4.7.2.1 Ms4a
01.2	200% increase	award 1 mark for increase from 800 to 2400 award 2 marks for 3× increase	3	AO2 4.7.2.1 Ms 1c, 4a
01.3	when many moose available, food is available to support larger population of wolves more wolves survive (and reproduce), increasing the wolf population as the wolf population increases, more moose are killed so the moose population falls less food is available for wolves so fewer survive (and reproduce), so the wolf population falls		1 1 1 1	AO2 4.7.2.1
01.4	any **two** from: • (new) disease could reduce population • extreme weather could kill wolves / cause offspring to perish, reducing population • human hunters could kill wolves, reducing population • population of other prey species could increase, enabling a larger population of wolves to survive	accept other reasonable suggestion with linked explanation accept converse	2	AO3 4.7.2.1

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AQA GCSE Biology

Practice answers

OXFORD Revise

Question	Answers	Extra information	Mark	AO / Specification reference
02.1	14		1	AO2 4.7.2.1 Ms 2f
02.2	12		1	AO2 4.7.2.1 Ms2b, 2f
02.3	either: **median** because this average ignores the outlier which may not be indicative of 1/8th of the school field area or: **mean** because the outlier is a true value and may be indicative of areas of the school field and so should be included in the students' calculation	marks are awarded for the explanation, not for selection of mean or median do not award marks if the explanation does not link to the selected average type	 1 1 **or**: 1 1	AO3 4.7.2.1
02.4	area = 350 × 200 either: if median selected in **02.3**: number = 70 000 × 14 = 980 000 or if mean selected: number = 70 000 × 12 = 840 000		1 1 1	AO2 4.7.2.1 MS 5c, 2d

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02.5	any **two** from: • trampled area – which has prevented daisies establishing • shaded area – preventing daisies growing • random variation • no daisies established there / competition from other species	to award full marks, answers should include two valid suggestions with linked explanations accept other valid suggestions with linked explanations	4	AO3 4.7.2.1
03.1	presence of daisies		1	AO2 4.7.2.1
03.2	quadrat		1	AO2 4.7.2.1
03.3	random sampling / place quadrats randomly using a grid and random number generator. count the number of thistles in the quadrat repeat and calculate a mean multiply the mean number of thistles per m^2 by the area of the lawn		1 1 1 1	AO2 4.7.2.1
03.4	repeat as many times as possible to minimise the effect of outlier values	accept other reasonable suggestions with linked explanations	1 1	AO3 4.7.2.1
04.1	D		1	AO2 4.7.2.2

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Question	Answers	Extra information	Mark	AO / Specification reference
04.2	combustion / burning		1	AO2 4.7.2.2
04.3	oceans / atmosphere / fossil fuels / trapped in rocks		1	AO1 4.7.2.2
04.4	break down the bodies of dead organisms releasing carbon dioxide to the atmosphere this can then be used by plants through photosynthesis		1 1 1	AO1 4.7.2.2
05.1	blue tit		1	AO2 4.7.2.1 4.7.4.1
05.2	producers / organisms which make their own food by photosynthesis		1	AO1 4.7.2.1 4.7.4.1
05.3	owl		1	AO2 4.7.2.1 4.7.4.1
05.4	break down the bodies of dead organisms releasing carbon dioxide to the atmosphere / nutrients into the soil this can then be used by plants through photosynthesis / absorbed and used for growth / protein synthesis		1 1 1	AO2 4.7.2.3

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06.1	s^{-1}		1	AO1
06.2	0.024	award 1 mark for 1/41	2	AO2 MS 1c
06.3	*y*-axis: linear scale, rate of reaction (s^{-1}) points plotted to ±1 mm smooth curve through points		1 1 1	AO2 AO3x1 MS4a, 4c
06.4	Value in range 38–40 °C	Accept 36 °C / 37 °C / 41 °C / 42 °C for 1 mark	2	AO2 Ms4a
06.5	enzymes denature so are unable to catalyse digestion of lipids		2	AO2
06.6	lipase is an enzyme as it digests lipids in milk fatty acids produced causing pH to drop which mirrors process when bacteria cause decay of milk leading to the formation of lactic acid, causing pH to drop		6	AO3
07.1	oak tree		1	AO2 4.7.2.1
07.2	hawk		1	AO2 4.7.2.1

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Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
07.3	light / sun		1	AO1 4.7.2.1
07.4	caterpillar / sparrow		1	AO2 4.7.2.1
07.5	any **one** from: • camouflage – so organism is harder to see • good hearing – so can detect predator coming and move away • named defence mechanism, e.g. warning colouration – to mimic poisonous plants	allow 1 mark for a sensible adaptation and 1 mark for linked explanation	2	AO2 4.7.2.1 4.7.1.4
07.6	fewer hawk / no hawk to eat the sparrows so sparrow population would increase so number of caterpillars would go down / more caterpillars would be eaten		1 1 1	AO3 4.7.2.1

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Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
08.1	any **six** from: • precipitation – water falls to land as rain, snow, hail, or sleet • run off – water runs into stream / river / lake / ocean from the ground • percolation – water trickles through gaps in soil / rock • respiration – water released from animals and plants during life / death during decay • transpiration – water released into atmosphere by plants • evaporation – water turned from liquid to water vapour as sun heats earth's surface • condensation – water vapour condensed back to liquid (to form clouds) as moist air rises	term and correct description needed for each mark	6	AO1 4.7.2.2
08.2	any **two** from: • respiration – water produced as a waste product when glucose and oxygen react to release energy • sweat – water evaporates out of sweat to cool an organism when it is too hot • urine – excess water is filtered out of the blood by the kidneys into the urine	award 2 marks for correct source and 2 marks for linked explanation	4	AO1 4.7.2.2

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Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
08.3	any **four** from: • water is a major constituent of all living cells • chemical reactions of life (photosynthesis and respiration) take place in solution / in water • water needed by plants for support / rigidity • water transports dissolved minerals / nutrients to an area • water helps dissipate some waste materials from an area		4	AO1 4.7.2.2
08.4	carbon / nitrogen	accept any other appropriate material	1	AO1 4.7.2.2
09.1	**Level 3:** All key steps are identified and logically sequenced.		5–6	AO2 4.7.2.1
	Level 2: Most steps are identified, but the method is not fully logically sequenced.		3–4	
	Level 1: Some relevant steps are identified, but links are not made clear.		1–2	
	No relevant content		0	

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Question	Answers	Extra information	Mark	AO / Specification reference
	Indicative content • lay out a measuring tape (perpendicular) from the footpath • place a quadrat a distance of 1 m from the footpath • count the number of animals at this point • note the percentage ground cover of plants at this point • move quadrat 1 m further away from footpath, and repeat measurements • repeat at 1 m intervals until 10 m from footpath			
09.2	spiders		1	AO2 Ms 4a 4.7.2.1
09.3	any **two** from: • trampled ground has a greater proportion of bare ground • mosses are found in every area • oak trees are found at least 5 m from the path • ants are found furthest away from the path	accept any two relevant conclusions from the data	2	AO3 4.7.2.1

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Question	Answers	Extra information	Mark	AO / Specification reference
09.4	gather evidence / data from other areas with same conditions, e.g. trampled ground and compare the conclusions drawn / data gathered with the original area	award 2 marks for complete belt transect and compare results from multiple areas with original findings	1 1	AO3 4.7.2.1
10.1	any **six** from: • burning / combustion • converting carbon in fuel into carbon dioxide • photosynthesis • converting atmospheric carbon dioxide into carbon compounds in plants • respiration • converting carbon from food sources into (atmospheric) carbon dioxide • feeding • carbon passed from organism to organism	allow 6 marks for an appropriately labelled diagram accept decay / decomposition	6	AO1 4.7.2.2
10.2	increased rate of combustion (of fossil fuels) increases atmospheric co_2 concentration deforestation reduces rate of CO_2 removal from atmosphere		1 1 1 1	AO1 4.7.2.2

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Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
11.1	plankton → small fish → large fish → human		1	AO2 4.7.4.1 4.7.4.2
11.2	0.097%	award 1 mark for $\frac{70}{72\,000}$	2	AO2 MS1c 4.7.4.3
11.3	any **two** from: • not all biomass is absorbed, some lost in faeces • some biomass is lost as CO_2 / water from respiration / urea in urine • not all parts of an organism are eaten		2	AO2 4.7.4.3
11.4	4.49 GJ / 4.49×10^9 J	accept for 1 mark each: energy per kg of small fish = 6 000 000 J / 6 MJ / 6×10^6 J energy in small fish trophic level = 39 GJ / 3.9×10^{10} J proportion of energy transferred = 0.115 / 11.5% energy in large fish = 0.115 × 39 GJ	5	AO2 MS 1b, 1c 4.7.4.3

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Question	Answers	Extra information	Mark	AO / Specification reference
11.5	any **four** from: • bioaccumulation • lead enters oceans, and is absorbed by plankton • small fish eat many plankton, so concentration of lead increases (but not to toxic level for small fish) • large fish eat many small fish, so concentration of lead increases further (but not to toxic level for large fish) • humans eat many fish; concentration of lead in humans reaches level to cause health disorder		4	AO3 4.7.4.3
12.1	predator–prey as when the lynx population is large, the hare population decreases	accept words to that effect accept converse	1 1	AO2 4.7.2.1
12.2	yes population of both hare and lynx vary according to a cycle reaching a (relatively) consistent high / low value named values, e.g. maximum lynx population reaches 70 000–80 000 in cycles, decreases, then recovers		1 1 1 1	AO3 4.7.2.1
12.3	700% increase	award 1 mark for change = 32 000 – 4000 award 2 marks for $\frac{32\,000 - 4000}{32\,000}$	3	AO2 4.7.2.1 MS 1c

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Question	Answers	Extra information	Mark	AO / Specification reference
12.4	any **two** from: • bumper supply of grass / other plant product for hares to eat • decrease in population of another animal that predates hares • large population of other prey species for lynx to feed on		2	AO3 4.7.2.1
12.5	lynx population will decrease so hare population will increase decrease in producer population reducing level of vegetation in area		1 1 1	AO3 4.7.2.1
13.1	stimulus → sensory neurone → relay neurone → motor neurone → effector		1	AO1 4.5.2.1
13.2	0.02(1) s	award 1 mark for $\frac{1.4}{65.5}$	2	AO2 4.5.2.1 MS1c
13.3	any **two** from: • long axon – can transmit an electrical impulse over a long distance • myelin sheath / insulation – to speed up impulse / stop the impulse being scrambled • lots of dendrites – to connect with other cells		2	AO1 4.5.2.1

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Question	Answers	Extra information	Mark	AO / Specification reference
13.4	similarities – any **two** from: • both involve a stimulus • both involve an organ which responds • both bring about a response differences – any two from: • nervous responses carried in nerves / hormonal in blood • nervous response more rapid than hormonal • hormonal response longer lasting • nervous signal transmitted by electrical impulses / hormonal signal via chemicals	answer must contain at least one similarity and one difference	4	AO1 4.5.2.1 4.5.3.1
14.1	any **four** from: • you get half your genetic material from either parent • passed on through gametes / egg and sperm • join together during fertilisation • combination of genes / genetic material a child inherits depends on which gametes join • each sibling has a different combination of genes / genetic material		4	AO1 4.6.2.1
14.2	a change in the order of DNA bases / DNA		1	AO1 4.6.2.1

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Question	Answers	Extra information	Mark	AO / Specification reference
14.3	advantage – any **one** from: • disease resistance • pest resistance • antibiotic resistance disadvantage – any **one** from: • disease • cancer	accept other appropriate suggestion for advantage and disadvantage	1 1	AO3 4.6.2.1

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