AQA GCSE Biology

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
01.1	any **two** from: • sexual intercourse • blood • using contaminated needles		2	AO1 3.1.1 3.1.2
01.2	viral particles have a protein coat bacterial cells have a cell wall viral particles are much smaller than bacteria cells bacteria are 0.5 – 5 µm in size / 10 – 100× larger		1 1 1 1	AO2 3.1.2
01.3	any **four** from: • virus infects a suitable host cell (through blood / body opening) • virus replicates itself many times • it copies its genetic material and protein coat • this causes the host cell to burst, releasing the many copies of the virus • other cells can then be infected		4	AO1 3.1.1
01.4	15 µm = 15×10^{-6} m; 120 nm = 120×10^{-9} m difference in size = $\frac{15\times10^{-6}}{120\times10^{-9}}$ = 125 difference = 2 orders of magnitude / 102× / 100×	award 1 mark for either conversion correct	1 1 1 1	AO2 3.1.1 1.1.1 MS2h

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OXFORD Revise

Question	Answers	Extra information	Mark	AO / Specification reference
01.5	any **four** from: • new drugs developed • which prevent HIV infection • education programmes launched / become more effective • encouraging use of condoms / barrier protection during intercourse • fewer people infected in previous years • means fewer people will be infectious so risk of catching infection decreases	to gain four marks, answers should include **two** suggestions and **two** linked explanations accept other reasonable suggestion and linked explanation	4	AO3 4.3.1.2
02.1	as time increases, number of bacteria present increase at an ever-increasing rate	Award 2 marks for exponential increase	1 1	AO2 3.1.1
02.2	simple cell division / binary fission		1	AO1 3.1.1
02.3	200 min		1	AO2 3.1.1 MS4a
02.4	from graph, time to double population = 30 min time at population 250 000 = 240 min 250 000 doubled = 500 000; doubled again = 1 000 000 time = 240 + 30 + 30 = 300 min	award 4 marks for 300 min	1 1 1 1	AO2 3.1.1 MS3d MS4a

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Question	Answers	Extra information	Mark	AO / Specification reference
02.5	same shape but 'stretched' on x-axis any **one** explanation from: • rate of reproduction slower • enzymes / metabolic reactions occur more slowly		1 1	AO3 3.1.1
03.1	measles – virus salmonella – bacteria rose black spot – fungus malaria – protist	all correct – 3 marks two or three correct – 2 marks one correct – 1 mark deduct 1 mark for each additional line drawn above four lines	3	AO1 3.1.2 3.1.3 3.1.4 3.1.5
03.2	fever / red skin		1	AO1 3.1.2
03.3	droplet infection		1	AO1 3.1.2
03.4	14.4 × 16 000 000 = 950.4	accept 950	1	AO2 3.1.2 MS1c
03.5	1204 – 14.4 = 1189.6 cases		1	AO2 3.1.2 MS1c
04.1	protist		1	AO1 3.1.5

Question	Answers	Extra information	Mark	AO / Specification reference
04.2	mosquito		1	AO1 3.1.5
04.3	any **six** from: **avoidance / awareness:** • avoid areas likely to host mosquitos (damp / swamp) • be aware of malaria risk in region to be visited • be aware of symptoms of malaria **prevention:** • sleep under mosquito nets • use pesticide- / insecticide-impregnated mosquito nets • use mosquito repellent • cover up where possible **controlling infection:** • take antimalarial drugs which kill pathogen in blood • have blood test on return for possible malaria infection • early treatment of malaria is more effective	answers from all three sections: 5–6 marks answers from two sections: 3–4 marks answer from one section: 1–2 marks	6	AO1 3.1.2

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Question	Answers	Extra information	Mark	AO / Specification reference
05.1	Tobacco mosaic virus (TMV) - Discolouration of leaves Gonorrhoea - Yellow or green discharge from sexual organs Rose black spot - Purple or black spots on leaves Salmonella - Fever, vomiting, diarrhoea	All correct – 3 marks Two or three correct – 2 marks One correct – 1 mark Deduct one mark for each additional line drawn above four lines	3	AO1 3.1.2 3.1.3 3.1.4 3.1.5
05.2	HIV gonorrhoea condoms / female condoms barrier	accept other correctly named STD for either / both of the first 2 marks	1 1 1 1	AO1 3.1.2 3.1.3
05.3	send infected children home prevent visitors from coming into the school wash surfaces down with disinfectant	deduct 1 mark for any additional incorrect answers ticked **in addition to** the three correct answers	1 1 1	AO3 4.3.1.1
06.1	washing hands before preparing food – avoids transferring a pathogen to food covering face when coughing or sneezing – prevents droplet infection wiping down surfaces with disinfectant – kills pathogens on surfaces isolation of infected people – prevents risk of transferring pathogen to other people		 1 1 1 1	AO2 3.1.1.1

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Question	Answers	Extra information	Mark	AO / Specification reference
06.2	any **four** from: • store at low temperatures / freeze • to reduce / prevent growth of pathogens; • cook meat products thoroughly • to kill any pathogens present; • maintain good hygiene, e.g. washing hands after handling meat • to prevent contaminating other food products	answer should contain **two** suggestions and **two** linked explanations	4	AO1 × 2 AO2 × 2 3.1.1
06.3	any **three** from: • bacteria reproduce rapidly inside body • bacteria release toxins • toxins damage cells • bacteria can damage cells directly		3	AO2 3.1.3
06.4	any **one** suggestion and explanation pair from: • vaccination of birds • prevents chickens catching disease; • slaughter of infected birds • avoids supplying infected meat to the market; • prevent imports of infected meat • avoids supplying infected meat to the market	answer should include suggestion and explanation for 2 marks	2	AO1 AO2 3.1.1

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Question	Answers	Extra information	Mark	AO / Specification reference
07.1	fungus		1	AO1 3.1.4
07.2	any **two** from: • purple / black spots on leaves • leaves yellow • leaves drop early		2	AO1 3.1.4
07.3	less chlorophyll present this reduces photosynthesis (in chloroplasts) less glucose for respiration		2	AO1 3.1.4
07.4	any **two** from: • use fungicides • use disinfectant on tools / area around plant / on footwear • remove infected leaves / plants		2	AO1 3.1.4
08.1	(recurrent) fever / muscle pain / vomiting / diarrhoea		1	AO1 3.1.5
08.2	mosquitos are the vector for the disease malaria is caused by a protist / *Plasmodium* (carried by mosquitos)		1 1	AO2 3.1.5

Question	Answers	Extra information	Mark	AO / Specification reference
08.3	(steady) decrease in number of deaths over time any **two** reasons from: • better sanitation • better healthcare / drugs • better education / awareness of prevention • more effective control of mosquito populations • draining land (for agriculture / housing), removing habitat for mosquitos		1 2	AO2 x 1 AO3 x 2 3.1.5
08.4	300 000	accept answer in range 290–300 000 award 1 mark for answer in range 280–290 000 or 310–320 000	2	AO3 3.1.5
08.5	the greater the GDP, the fewer deaths (per 100 000 population) due to malaria	award 1 mark for negative correlation	2	AO2 3.1.5
08.6	more wealthy countries have better education systems so population more aware of causes of malaria / ways to avoid catching malaria; more wealthy countries spend more on mosquito control so fewer cases of malaria result; more wealthy populations can afford mosquito control measures, e.g. mosquito nets / screens to prevent mosquitos reaching / biting people	answer must include **two** suggested treatments and **two** linked explanations for 4 marks	4	AO3 3.1.5

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Question	Answers	Extra information	Mark	AO / Specification reference
09.1	caused by a microorganism / pathogen spread between organisms / plants		1 1	AO1 3.1.1
09.2	any **four** from: • the leaves turn yellow / white / discoloured • less chlorophyll present • this reduces photosynthesis (in chloroplasts) • less glucose for respiration • so plants do not grow as well		4	AO1 3.1.2
09.3	chloroplast		1	AO2 3.1.2
09.4	any **four** from: • use chemicals / disinfectant • to destroy virus on workers' tools / clothing; • use pesticides / insecticides • to kill insects which transfer the virus; • burning of crop • to kill virus in soil; • removal of soil around infected plants • to remove virus from soil	answer must include **two** suggested treatments and **two** linked explanations for 4 marks	4	AO2 3.1.2

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Question	Answers	Extra information	Mark	AO / Specification reference
10.1	HIV attacks immune system patient becomes infected with another disease / cancer patient dies due to infection / condition		1 1 1	AO1 3.1.2
10.2	antiretroviral	do not accept antiviral	1	AO1 3.1.2
10.3	between 1990 and 2005 shows (steady) increase and between 2005 and 2015 shows (steady) decline maximum number of deaths in 2005		1 1	AO3 3.1.2
10.4	any **one** suggestion AND explanation from: • better education / wider awareness • so people are aware of means of transmission / use condoms / don't share needles; • better sanitary conditions • so body fluids are less likely to be shared; • more effective treatments • so infection with HIV is less likely to lead to death.	answer must include suggestion and reason for 2 marks	2	AO3 3.1.2
10.5	18 per 100 000 people		1	AO2 3.1.2

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Question	Answers	Extra information	Mark	AO / Specification reference
10.6	deaths: 1998 – 12 cases per 100 000; 2005 – 19 cases per 100 000 change = 7 per 100 000 percentage increase = $\frac{7}{12} \times 100 = 58.3\%$		1 1 1	AO2 3.1.2
11.1	fungus		1	AO1 4.3.1.4
11.2	fungicide		1	AO1 4.3.3.1
12.1	pesticide	accept insecticide	1	AO1 4.3.3.1
12.2	any **one** reason and explanation from: • act as a vector – transferring pathogens between plants • open plant structure to the environment – enabling pathogens to enter the plant	answer requires the reason and explanation for both marks	2	AO3 4.3.3.1
12.3	toxic chemicals / poisons to deter / kill aphids bark / thick outer stem / tough waxy cuticle to prevent aphids accessing plant structure / sap		1 1 1 1	AO2 4.3.3.2

Question	Answers	Extra information	Mark	AO / Specification reference
12.4	$\frac{7.5}{7.5 - 5.0}$ = 33% reduction	award 2 marks for correct answer with no working shown	1 1	AO3 MS 1c
12.5	any **four** from: • the more pesticide used, the greater the crop yield • because crop pests are killed / vectors are removed from fields, limiting transfer of pathogens • a reduction in 50% usage of pesticides makes a small / less than 10% reduction in yield / makes little / no change to yield • implying there is overuse of pesticides by farmers / too many pesticides are in use (unnecessarily) • increasing pesticide use has an increasing effect on crop yield but at a decreasing rate • so there is an optimum cost-benefit point	two conclusions and two reasons are required for 4 marks accept other valid conclusions with reasons	4	AO2 x 2 AO3 x 2 4.3.3.2
13.1	active transport the plant cells have a higher concentration of mineral ions than the pond water so energy is needed to transport the minerals from an area of low concentration to an area of high concentration / against a concentration gradient		1 1 1	AO2 1.3.3

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13.2	air spaces make the plant less dense (than water), so it floats the (small) roots help stabilise the plants / keep them upright		1 1	AO3 1.1.3 2.3.2
13.3	stomata on underside would be underwater and water could not be lost through them. stomata on top surface enable effective gas exchange through direct exposure to air / oxygen / carbon dioxide		1 1	AO3 2.3.2
13.4	excess transpiration not a risk as plants live in water no shortage of water to bring up from roots to replace that lost in transpiration		1 1	AO3 2.3.2