AQA GCSE Biology

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
01.1	a disease caused by a pathogen that can be transferred between organisms		1	AO1 4.1.1.6
01.2	any **two** from: • size of disc • concentration of antiseptic used • temperature	accept other sensible control variable	2	AO2 4.1.1.6
01.3	both antiseptics kill *Streptococcus pyogenes* antiseptic 1 is more effective than antiseptic 2		1 1	AO2 4.1.1.6
01.4	$154mm^2$		3	AO2 4.1.1.6
01.5	may be toxic		1	AO3 4.1.1.6
02.1	antibodies are specific to only one antigen these antibodies will only bind to the antigen on HCG		1 1	AO2 4.3.2.1 4.3.2.2
02.2	C		1	AO3 4.3.2.2

AQA GCSE Biology

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
02.3	any **six** from: • urine applied to exposed section of testing strip • urine diffuses along the testing strip • HCG hormone binds to the mobile HCG antibody (at position 2) • HCG hormone binds to the immobilised HCG antibodies at the results window / at position 3 • dye becomes visible / accumulates to show positive result • antibodies which do not attach to HCG • bind to immobilised antibodies in control window / at position 4 • dye becomes visible when sufficient antibodies reach position 4, confirming test has worked correctly / urine has moved the full length of the test stick		6	AO2 4.3.2.2
03.1	binary fission		1	AO1 4.1.1.6

AQA GCSE Biology

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
03.2	any **two** from: • oxygen • nutrients / glucose / amino acids • ideal temperature / warmth • access to moisture		2	AO1 4.1.1.6
03.3	similarities (any **two** from): • DNA is replicated • daughter cells are genetically identical • one cell division (per cycle) difference: • no chromosomes (in bacteria)	Answers should contain similarities and the difference for all three marks	2 1	AO1 4.1.1.6 4.1.2.2
03.4	1.2×10^{24}	award 1 mark for 80 replications award 2 marks for 2^{80}	3	AO2 4.1.1.6
04.1	X		1	AO3 4.3.2.2
04.2	malaria protein / antigen binds to monoclonal antibody X this is carried by the buffer solution to the results window monoclonal antibody Z will bind to the monoclonal antibody X–malarial antigen complex as this accumulates, the dye makes the result line become visible		1 1 1 1	AO3 4.3.2.2

Question	Answers	Extra information	Mark	AO / Specification reference
04.3	to show that the buffer solution / monoclonal antibodies X / blood have been transported along the test strip monoclonal antibody Y binds to monoclonal antibody X when it reaches the control line dye accumulates making the control line visible		1 1 1	AO3 4.3.2.2
05.1	any **two** from: • wear safety goggles • tie long hair back • work standing up • wash hands after the experiment is finished • use aseptic technique	Allow description of aseptic technique	2	AO2 4.1.1.6

Question	Answers	Extra information	Mark	AO / Specification reference
05.2	any **four** from: • sterilise all equipment / wipe bench with IMS • sterilise inoculating loop by heating in a Bunsen flame until red hot • (allow to cool) then dip inoculating loop into known bacteria culture • wipe bacteria across the surface of the plate in a zigzag motion • replace lid of petri dish and seal with tape – a small gap must be left to allow oxygen to enter • incubate upside down for a number of days		4	AO2 4.1.1.6
05.3	D no zone of inhibition / no bacteria killed		1 1	AO2 4.1.1.6
05.4	Diameter of B= $\pi \times 10.4^2 = 340mm^2$ Diameter of C= $\pi \times 6.2^2 = 121mm^2$ B was ×2.8 more effective than C		3	AO2 4.1.1.6
06.1	to detect pregnancy / pathogens / level of hormones / identify specific molecules such as cancer / treat some forms of cancer	accept another appropriate use	1	AO1 4.3.2.2

AQA GCSE Biology

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
06.2	any **six** from: • an antigen is injected into a mouse • mouse produces lymphocytes • (lymphocytes) produce antibodies specific to the antigen • lymphocytes are removed from the mouse spleen • lymphocytes are fused with tumour / myeloma cells • these form hybridoma cells • hybridoma cells are cloned / divide to produce identical cell • they produce large amounts of monoclonal antibodies / antibodies can be collected and purified		6	AO1 4.3.2.1
07.1	4 hours	award 1 mark for $256 = 2^8$ **or** $\log_2 256 = 8$ award 2 marks for 240 min (8 divisions × 30 min)	3	AO2 4.1.1.6
07.2	40 min	award 1 mark for $32 = 2^5$ **or** $\log_2 32 = 5$	2	AO2 4.1.1.6
08.1	using an autoclave heating an inoculating loop until red hot		1 1	AO1 4.1.1.6

AQA GCSE Biology

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
08.2	sterilise wire loop by heating in Bunsen flame dip loop into bacterial culture make zigzag streaks on the surface of the agar plate fix petri dish lid loosely	accept flame lid of container / neck of bottle holding bacteria	1 1 1 1	AO1 4.1.1.6
08.3	D		1	AO1 4.1.1.6
08.4	any **two** from : • petri dish must not be sealed to prevent growth of anaerobic bacteria • growing bacteria at 30 °C or more could result in growth of pathogens • petri dish should be upside down to prevent condensation falling onto the agar		2	AO2 4.1.1.6
09.1	antibiotic kill bacteria inside the body antiseptic kill bacteria on the skin disinfectant kill bacteria on surfaces in the home	award 2 marks for all three correct award 1 mark for one or two correct deduct one mark if more than one line joins a box	2	AO1 4.1.1.6
09.2	area where bacteria are killed / cannot grow		1	AO1 4.1.1.6
09.3	B		1	AO2 4.1.1.6

AQA GCSE Biology

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
09.4	all of the solutions tested created a clear area around the disc so must have killed bacteria on the agar plate surface		1 1	AO2 4.1.1.6
10.1	discolouration of leaves / dropping leaves / areas of decay / growths		1	AO1 4.3.3.1
10.2	any **two** from: • use of reference manual / internet images • compare appearance with reference image • take infected plant to a laboratory • use a testing kit containing monoclonal antibodies / DNA analysis (to identify pathogen) • identify the insects on the leaves		2	AO1 4.3.3.1
10.3	any **three** from: • magnesium (ions) required to manufacture chlorophyll • without chlorophyll, light cannot be absorbed • photosynthesis cannot occur / glucose cannot be made • plant dies / rate of growth slows / stops		3	AO1 4.3.3.1