AQA GCSE Science Combined Foundation

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
01.1	carbohydrase – carbohydrates protease – proteins lipase – lipids	1 mark for one or two correct 2 marks for all correct	2	AO1 4.2.2.1
01.2	glucose		1	AO1 4.2.2.1
01.3	speeds up a reaction / does not get used up itself		1	AO1 4.2.2.1
02.1	catalysts increase specific active		1 1 1 1	AO1 4.2.2.1
02.2	A		1	AO2 4.2.2.1
02.3	any **one** from: • pH • enzyme concentration • substrate concentration		1	AO1 4.2.2.1
03.1	fatty acids **and** glycerol	both needed for the mark	1	AO1 2.2.1
03.2	pancreas **or** small intestine		1	AO1 2.2.1

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03.3	temperature		1	AO2 2.2.1
03.4	so they both were at the correct temperature / temperature being investigated		1	AO2 2.2.1
03.5	as temperature increased (until 35°C) rate of reaction increased / time taken to break down the lipid decreased		1	AO3 2.2.1
03.6	any **two** from: • no substrate/lipid was broken down • lipase/enzyme denatured • structure changed so it could no longer bind to lipid / lipid could not fit in active site		2	AO3 AO2 2.2.1
04.1	between 10°C and 30°C, as temperature increases the rate of reaction increases the enzyme does not catalyse the reaction at 60°C		1 1	AO3 4.2.2.1
04.2	37°C		1	AO3 MS4a 4.2.2.1
04.3	stop denatured active		1 1 1	AO1 4.2.2.1
05.1	proteins		1	AO1 4.2.2.1

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05.2	to form proteins/enzymes/hormones/antibodies/structural tissue	accept other sensible roles of amino acids	1	AO1 4.2.2.1
05.3	2.2		1	AO3 MS4a 4.2.2.1
05.4	stomach		1	AO2 4.2.2.1
05.5	stomach has low pH, as does the enzyme / optimum pH for enzyme in acidic conditions/low pH		1	AO1 4.2.2.1

06	**Indicative content for method**: **1** using the measuring cylinder, add fixed volume (e.g. 5 cm^3) of starch solution to each test tube **2** using the pipette, alter pH of starch solutions by adding fixed volume (e.g. 1 cm^3) of a different pH buffer solution to each tube **3** add one drop of iodine solution to each point on the spotting tile **4** using a pipette, add fixed volume (e.g. 1 cm^3) carbohydrase solution to the first tube and stir/mix. **5** start stopwatch **6** using glass rod, remove a droplet of starch–carbohydrase mixture and add to the iodine solution **7** repeat this step every minute until iodine solution does not turn blue-black **8** record time value **9** repeat for all pH values being investigated **Safety precautions**: • wear goggles • ensure glassware is kept in centre of workspace • use test-tube rack to hold test tubes **Control variables**: • solutions at same temperature (check with thermometer) • use same volume of starch/carbohydrase/pH buffer in each tube • use same concentration of starch/carbohydrase/pH buffer in each tube	award up to 4 marks for description of a valid method to determine the time taken for amylase to digest starch, including correct identification and use of apparatus award 1 mark for correctly identifying at least two control variables award 1 mark for identifying at least one relevant safety precaution	6	AO2 AO3 4.2.2.1

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OXFORD Revise

Question	Answers	Extra information	Mark	AO / Specification reference
07.1	enzyme		1	AO1 4.2.2.1
07.2	orange to blue-black		1	AO1 4.2.2.1
07.3	points plotted to ±1 mm smooth curve plotted through points	award 2 marks if all points plotted correctly, award 1 mark for 3 or 4 plotted correctly	2 1	AO2 AO3 4.2.2.1
07.4	pH 7		1	AO3 4.2.2.1
08.1	fatty acids **and** glycerol		1	AO1 4.2.2.1
08.2	pancreas		1	AO1 4.2.2.1
08.3	lock specific active protein lipid		1 1 1 1 1	AO1 4.2.2.1
09.1	lipase		1	AO1 4.2.2.1

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09.2	0.04		1	AO2 4.2.2.1
09.3	the enzyme/lipase is denatured (at this temperature) / the active site has changed shape		1	AO2 4.2.2.1
10.1	single-celled organisms have a large surface-area-to-volume ratio		1	AO1 4.1.3.1 4.2.2.2
10.2	any **four** from: • diaphragm contracts / flattens • intercostal muscles contract pulling ribcage up and out • volume of chest cavity increases • pressure inside chest cavity decreases • external / atmospheric air pressure greater (causing air to move into the lungs)		4	AO1 4.2.2.2
10.3	spherical shape gives large surface area to maximise area for diffusion thin walls allow a shorter diffusion distance good blood supply maintains large diffusion gradient		1 1 1	AO1 4.1.3.1 4.2.2.2