

IGCSE Biology 0610 Paper 5 Practice Paper

(Core) - ANSWERS

Total: 40 marks · 1 hour 15 minutes · 4 questions · 20 parts

Part	Answer	Marking points	Marks
1(a)	Iodine solution; the colour changes from yellow-brown to blue-black.	1 mark: iodine solution. 1 mark: turns blue-black.	2
1(b)	Put about 2 cm ³ of the food solution in a test tube, add an equal volume of Benedict's solution and heat it in a water bath at about 75 °C for a few minutes. A positive result is a change from blue to green, yellow or a brick-red precipitate.	1 mark: add Benedict's solution. 1 mark: heat in a water bath. 1 mark: positive = green / yellow / brick-red.	3
1(c)	$0.50 / 2.0 \times 100 = 25\%$.	1 mark: correct working ($0.50 / 2.0 \times 100$). 1 mark: 25%.	2
1(d)	A water bath heats the tube evenly at a controlled temperature (about 75 °C), so the solution does not suddenly boil over. Direct heating makes one part of the tube much hotter, so the solution can spit out and scald the student, and the tube may crack.	1 mark: even heating / controlled temperature. 1 mark: avoids boiling over / scalding or cracking the tube.	2
1(e)	Wear eye protection and hold the test tube with a test-tube holder so that hot water and reagents are not touched directly.	1 mark: eye protection / test-tube holder / no direct contact with hot water or reagents.	1
2(a)	Increase in mass = $5.4 - 4.8 = 0.6$ g; $0.6 / 4.8 \times 100 =$ a 12.5% increase.	1 mark: 0.6 g change / correct working. 1 mark: +12.5% (increase).	2
2(b)	$5.0 - 4.4 = 0.6$ g; $0.6 / 5.0 \times 100 =$ a 12.0% decrease.	1 mark: $0.6 / 5.0 \times 100$. 1 mark: 12.0%.	2
2(c)	Distilled water is pure and has the highest water potential; the potato cell sap contains solutes and has a lower water potential. Water moves by osmosis through the partially permeable membranes from the higher	1 mark: higher water potential outside. 1 mark: water enters through partially permeable	3

	water potential outside into the cells, so the cells become turgid and the mass increases.	membranes (osmosis). 1 mark: cells become turgid / mass increases.	
2(d)	So that surface water is not included in the mass and the change in mass only shows water that has entered or left the cells.	1 mark: stops surface water affecting the mass / makes the result accurate.	1
2(e)	15.0% is much further from the other two, so it is anomalous. Mean of the other two = $(12.5 + 12.1) / 2 = 12.3\%$.	1 mark: 15.0% identified as anomalous. 1 mark: 12.3%.	2
3(a)	Percentage increase = $(42 - 18) / 18 \times 100 = \text{about } 133\%$.	1 mark: $(42 - 18) / 18 \times 100$. 1 mark: about 133%.	2
3(b)	A higher temperature gives the enzyme and substrate molecules more kinetic energy, so they collide more often. More enzyme-substrate complexes form, respiration speeds up and more carbon dioxide is released.	1 mark: more kinetic energy / more collisions. 1 mark: faster respiration / more carbon dioxide released.	2
3(c)	The high temperature denatures the enzyme, which is a protein. The active site changes shape so the substrate can no longer bind, no enzyme-substrate complexes form and the rate of respiration falls greatly. This denaturation is irreversible.	1 mark: enzyme denatured / active site changed shape. 1 mark: substrate cannot bind. 1 mark: irreversible / rate falls greatly.	3
3(d)	The concentration and volume of the yeast suspension: use the same concentration and the same volume every time (for example 10 cm ³ of 2% suspension). Alternatively keep the time between placing the tube in the bath and starting the count the same (for example 5 minutes).	1 mark: suitable variable (yeast concentration / volume / time / substrate amount). 1 mark: a specific way of controlling it.	2
3(e)	The bubbles are not all the same size and some stick to the tube, so counting them does not measure the gas volume accurately; a gas syringe or a pressure sensor should be used instead.	1 mark: uneven bubble size / counting inaccurate (use a gas syringe or sensor).	1
4(a)	Magnification = image length / actual length = $45 / 0.15 = \times 300$.	1 mark: $45 / 0.15$. 1 mark: $\times 300$.	2
4(b)	It is drawn with a sharp pencil using clear unbroken lines and no shading or colour; the proportions are accurate and the structures are the right size; labelling lines are straight and do not cross, and labels, a title and the magnification are given.	1 mark: pencil, clear lines, no shading or colour. 1 mark: accurate proportions / straight label lines with labels and magnification.	2

4(c)	12 / 0.25 = 48 per mm ² .	1 mark: 12 / 0.25. 1 mark: 48 per mm ² with unit.	2
4(d)	The lower surface is shaded and cooler, so water is lost more slowly. Stomata there still let carbon dioxide in and oxygen out while reducing transpiration, and they are less likely to be blocked by dust or rainwater.	1 mark: shaded / less water lost. 1 mark: gas exchange still possible (CO ₂ in, O ₂ out).	2
4(e)	Peel a very thin layer (one cell thick) and lay it flat on the slide, then lower the cover slip at about 45 degrees to avoid air bubbles. Bubbles appear as dark circles and hide the cells, so the observation is unreliable.	1 mark: thin peel / laid flat without folding. 1 mark: cover slip lowered at an angle to avoid bubbles (bubbles hide cells).	2