









Cambridge Assessment
International Education

Cambridge Lower Secondary Sample Test
For use with curriculum published in
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Science Paper 2
Mark Scheme
Stage 9

Question	Answer	Marks	Further Information
1(a)(i)	diffusion	1	Accept osmosis
1(a)(ii)	xylem (vessels)	1	
1(a)(iii)	leaves / stomata	1	
1(b)(i)	temperature (of the air)	1	
1(b)(ii)	any two from same shoot / same plant same number of leaves / surface area same species of plant same humidity keep out of draughts take measurements over same time interval same amount of light	2	
1(b)(iii)	volume of water lost in a given time or time taken to lose a fixed volume of water	1	Accept amount for volume Accept reference to how far the water level drops
1(b)(iv)	as temperature (of the air) increases the rate of transpiration increases / ora	1	Note answer must be comparative

Question	Answer	Marks	Further Information
2(a)	covalent shared (pairs of) electrons	2	
2(b)	(group) 6	1	Accept VI / 16

Question	Answer	Marks	Further Information
3	<p>left hand box shows reinforcement, i.e. wave taller than either of the individual waves</p> <p>left hand box wave has an amplitude twice as high as individual waves (judge by eye)</p> <p>right hand box shows cancellation, i.e. a straight line</p>	3	<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>waveform 1</p>  <p>waveform 2</p>  <p>waveforms 1+2</p>  <p>Reinforcement</p> </div> <div style="text-align: center;"> <p>waveform 1</p>  <p>waveform 2</p>  <p>waveforms 1+2</p>  <p>Cancellation</p> </div> </div> <p>Accept correct answer in any horizontal position in the box</p> <p>The waveform must have a minimum of three peaks and two troughs for first marking point</p> <p>Ignore frequency of wave</p>

Question	Answer	Marks	Further Information
4(a)	A = photosynthesis B = respiration C = combustion/burning D = nutrition/feeding/eating	4	each correct answer = 1 mark
4(b)	reduce the levels of CO ₂ in the atmosphere/less of an increase of CO ₂ in the atmosphere any one from (burning) fossil fuels produce carbon dioxide (but) renewable energy does not produce carbon dioxide	2	mark prediction and explanation where seen Accept idea that fossil fuels will remain for longer Accept coal, coke, oil or natural gas instead of fossil fuel Accept wind turbine or solar panels instead of renewable energy resource
4(c)(i)	(historical records about) global temperatures/sea levels/area of the polar ice caps/ weather	1	Accept any valid point
4(c)(ii)	any two from sea level rises (more) flooding (more) drought extreme weather events (increased) melting of ice caps and glaciers	2	Accept other effects, e.g. extinction of some species disruption of food chains/webs more forest fires famine loss of habitats increased competition for dwindling resources

Question	Answer	Marks	Further Information
5(a)	density = mass / volume 4.5 (g/cm ³)	2	correct answer on its own = 2 marks Accept density = 90 / 20 for the formula for density Accept answers in table but answer line takes precedence
5(b)	B has very low / lowest density	2	Accept ecf from table

Question	Answer	Marks	Further Information
6(a)	conduction	1	Do not accept conductor
6(b)	convection	1	
6(c)(i)	This is because wood is a good insulator .	1	Do not accept insulation
6(c)(ii)	Copper is a metal, so it is a good conductor .	1	Do not accept conduction

Question	Answer	Marks	Further Information
7(a)(i)	DNA	1	Accept genes
7(a)(ii)	fuse	1	Accept join together / combine Ignore mix together / add together
7(a)(iii)	sperm (no marks) and any two from sperm has either X or Y chromosomes / only the sperm can contain Y chromosomes the eggs only contain X chromosomes presence of Y chromosome (in sperm) leads to male presence of X chromosome (in sperm) leads to female	2	If egg is given = 1 mark maximum Accept one contains X and the other contains X or Y = 1 mark
7(b)(i)	variation	1	
7(b)(ii)	any one from different genetic material different parents	1	Accept different genes / different DNA Accept idea of selective breeding

Question	Answer	Marks	Further Information
8(a)	particles have more energy / particles move faster more collisions	2	Accept more frequent collisions / more successful collisions / more energetic collisions = 2 marks
8(b)	use powdered zinc / higher concentration of acid	1	Accept use stronger acid Accept shaking or stirring Accept increase the surface area of the zinc
8(c)	correct apparatus to measure volume of gas, e.g. gas syringe, inverted measuring cylinder, upturned burette or graduated test-tube workable method	2	Accept name or drawing of apparatus Accept workable method mark if apparatus collects but does not measure volume of gas
8(d)	to stop (hydrochloric) acid from entering his eyes	1	Do not accept 'to keep things from going in his eye' this is not sufficient

Question	Answer	Marks	Further Information
9(a)	current splits at X current rejoins at Y	2	Accept current splits at Y and rejoins at X = 1 mark Accept current splits and rejoins = 1 mark
9(b)	2.8 circled in the table	1	Accept answer in the space, circled answer takes precedence
9(c)	$A_2 = 0.8 \text{ (A)}$ $A_3 = 0.8 \text{ (A)}$ $A_4 = 1.6 \text{ (A)}$	1	all three required for 1 mark

Question	Answer	Marks	Further Information
10(a)	resistance = 3 ohms/ Ω	2	each correct answer = 1 mark
10(b)	decreases/get smaller	1	