



Cambridge Assessment
International Education

Cambridge Lower Secondary Sample Test
For use with curriculum published in
September 2020

Science Paper 2
Mark Scheme
Stage 9

General guidelines on marking

Many descriptive answers can be expressed in a variety of ways. Professional judgement can be used in these cases, providing it matches the marking points and further information in the mark scheme.

Answers may have words spelt incorrectly. Credit is normally given for phonetically correct answers, unless the word has a scientifically different meaning. For example, where the answer should be antennae, credit will be given for antenna but not for anthen (too close to anther).

Only the science is being assessed, so answers do not need to be grammatically correct. Significant figures will be indicated in the question or in the mark scheme.

Unless specified all marking points are independent.

Annotations and abbreviations

/ OR alternate responses for the same marking point

() brackets the words or units in brackets do not need to be stated, for example, (recycles or releases or provides) minerals = minerals scores the mark

Underline exact word is required

Accept an acceptable response

Do not accept indicates an incorrect response that would contradict another otherwise correct alternative

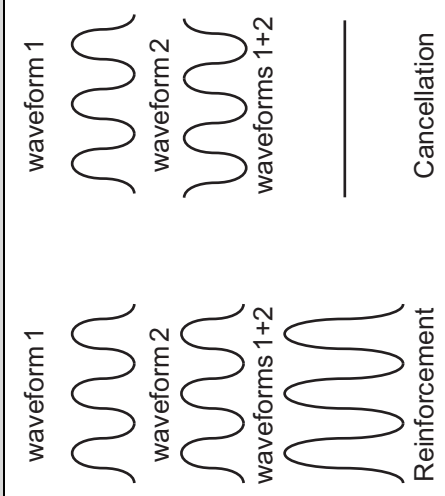
Ignore indicates an irrelevant answer that is not creditworthy. Full marks can still be achieved even with answers that are ignored.

Note provides extra information when necessary

ecf error carried forward; marks are awarded if an incorrect response has been carried forward from earlier working, provided the subsequent working is correct

ora or reverse argument; for example, as mass increases, volume increases could be written as mass decreases, volume decreases

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)	<p>any two from</p> <p>same shoot / same plant</p> <p>same number of leaves / surface area</p> <p>same species of plant</p> <p>same humidity</p> <p>keep out of draughts</p> <p>take measurements over same time interval</p> <p>same amount of light</p>	2	
1(b)(iii)	<p>volume of water lost</p> <p>in a given time</p> <p>or</p> <p>time taken</p> <p>to lose a fixed volume of water</p>	1	<p>Accept amount for volume</p> <p>Accept reference to how far the water level drops</p>
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	left hand box shows reinforcement, i.e. wave taller than either of the individual waves left hand box wave has an amplitude twice as high as individual waves (judge by eye) right hand box shows cancellation, i.e. a straight line	3	 <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)	<p>A = photosynthesis</p> <p>B = respiration</p> <p>C = combustion /burning</p> <p>D = nutrition /feeding /eating</p>	4	each correct answer = 1 mark
4(b)	<p>reduce the levels of CO₂ in the atmosphere /less of an increase of CO₂ in the atmosphere</p> <p>any one from</p> <p>(burning) fossil fuels produce carbon dioxide</p> <p>(but) renewable energy does not produce carbon dioxide</p>	2	<p>mark prediction and explanation where seen</p> <p>Accept idea that fossil fuels will remain for longer</p> <p>Accept coal, coke, oil or natural gas instead of fossil fuel</p> <p>Accept wind turbine or solar panels instead of renewable energy resource</p>
4(c)(i)	<p>(historical records about)</p> <p>global temperatures / sea levels /area of the polar ice caps / weather</p>	1	Accept any valid point
4(c)(ii)	<p>any two from</p> <p>sea level rises</p> <p>(more) flooding</p> <p>(more) drought</p> <p>extreme weather events</p> <p>(increased) melting of ice caps and glaciers</p>	2	<p>Accept other effects, e.g.</p> <p>extinction of some species</p> <p>disruption of food chains /webs</p> <p>more forest fires</p> <p>famine</p> <p>loss of habitats</p> <p>increased competition for dwindling resources</p>

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)	$A_2 = 0.8 (A)$ $A_3 = 0.8 (A)$ $A_4 = 1.6 (A)$	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	

BLANK PAGE