



Cambridge Primary Checkpoint

SCIENCE

0097/02

Paper 2

MARK SCHEME

Maximum Mark: 40

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Markers were instructed to award marks. It does not indicate the details of the discussions that took place at a Markers' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the End of Series Report. Cambridge will not enter into discussions about these mark schemes.

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 antena 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
<u>Underline</u>	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)	respiratory system	1	more than one answer circled = 0 marks Accept any indication of the correct answer, e.g. ticking or underlining, but circling takes precedence
1(b)	oxygen blood (stream/vessel)	1	both answers correct in the correct order for 1 mark Accept symbol e.g. O ₂ or O ₂ Ignore air Accept higher level answers e.g. red blood cells or haemoglobin

Question	Answer	Marks	Further Information
2(a)	(reactant) magnesium or vinegar (product) hydrogen (gas) or magnesium ethanoate	2	each correct answer = 1 mark Do not accept substances not named in the experiment e.g. baking soda Accept just 'ethanoate' Ignore just 'gas' Do not accept substances not named in the experiment e.g. carbon dioxide
2(b)	temperature change colour change	2	each correct answer = 1 mark Accept increase/decrease in heat/temperature Ignore just 'temperature' or heat Accept ideas of a colour change e.g. becomes clear Ignore just 'colour' Ignore gas is made or fizzes/bubbles or new substance is made or magnesium disappears Accept as an extra marking point smell changes but Ignore just 'smell'

Question	Answer	Marks	Further Information
3(a)	reflection	1	Accept versions of reflection e.g. reflected or reflects Ignore bounces or change of direction
3(b)	any two from (angle) B decreases (in size) (angle) C increases (in size) (angle) C is the same (size) as (angle) A	2	each correct answer = 1 mark Ignore just '(angle) C remains the same' Accept for an extra marking point (idea that angles) A , B and C always add up to $180(^{\circ})$

Question	Answer	Marks	Further Information
4(a)	any one from virus parasite fungi or fungus	1	Accept protozoa Ignore named diseases e.g. measles Ignore germs or pathogens Ignore worms or insects e.g. mosquito

Question	Answer	Marks	Further Information
4(b)	<p>any two from</p> <p>(idea of) washing something e.g. wash hands or wash food or wash (kitchen) surfaces or wash plates</p> <p>cook (food fully)</p> <p>(idea of) keeping cooked food and uncooked food separate</p> <p>keep food chilled</p> <p>cover food</p> <p>boil (water) or sterilise (water)</p> <p>(idea of) checking food is not past its expiry date</p>	2	<p>each correct answer = 1 mark</p> <p>Ignore heat (food)</p> <p>Accept use different cutting boards (for meat and vegetables)</p> <p>Accept (idea of) freeze food or not keeping food outside when it is hot or do not keep food at room temperature or do not leave food out for too long</p> <p>Accept do not leave food exposed</p> <p>Accept filter (water)</p>

Question	Answer	Marks	Further Information
5	any two from colourless compressible mass flows (easily) takes the shape of the container or does not have (a fixed) shape does not have a fixed volume	2	each correct answer = 1 mark Accept transparent or cannot be seen or invisible Accept can be squeezed/squashed Accept (light)weight Ignore light Accept takes up all the space or fills the space of the container Ignore references about particles e.g. large spaces between particles Accept as extra marking points: low melting point or low boiling point low density or less dense (than solids/liquids) or poor thermal/electrical conductivity

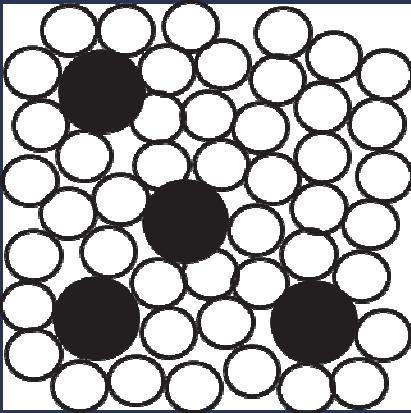
Question	Answer	Marks	Further Information
6(a)	sand	1	Accept air or water or moisture or minerals or silt
6(b)	Soil with lots of organic material is best for honeysuckle because this soil allows water to pass through.	1	more than one answer ticked = 0 marks Accept any indication of the correct answer, e.g. circling or underlining, but ticking takes precedence
6(c)	type of pot number of seeds volume of water	1	Accept any indication of the correct answer, e.g. ticking or underlining, but circling takes precedence all three answers needed for the mark if four circled = 0 marks

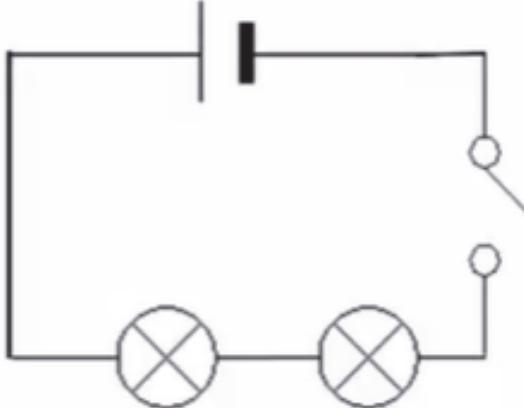
Question	Answer	Marks	Further Information
7(a)	A Mercury D Mars G Uranus	1	all three correct = 1 mark Ignore numbers
7(b)	E B G	2	all three correct = 2 marks one or two correct = 1 mark Accept Jupiter Accept Venus Accept Uranus
7(c)	spins or rotates or turns orbits	1	both answers correct for the mark Accept revolves or circles or (is) tilted Ignore just 'moves' Accept circles Accept (idea of) moves/rotates/spins/revolves (a)round

Question	Answer	Marks	Further Information
8(a)	(idea of) fair test	1	<p>Accept it is a control variable or to make the experiment fair or to be fair</p> <p>Ignore answer about results e.g. to get fair reliable/accurate results</p> <p>Ignore to give time for heart rate to change</p>
8(b)	<p>(independent) activity</p> <p>(dependent) heart rate</p>	2	<p>each correct answer = 1 mark</p> <p>Accept exercise(s)</p> <p>Accept heart rate in each activity or heart rate after activity</p> <p>Accept pulse rate or (number of) beats per minute or number of beats</p>
8(c)	<p>y-axis correctly labelled – heart rate in number of beats in 1 minute</p> <p>all bars correctly drawn</p>	2	<p>each correct answer = 1 mark</p> <p>Accept pulse rate for heart rate</p> <p>Accept heart rate in beats per minute/bpm or heart rate in one minute</p> <p>Note tolerance of $\pm \frac{1}{2}$ small square</p> <p>Ignore width of bars or touching bars</p>

Question	Answer	Marks	Further Information
8(d)	<p>(description) (idea of) repeat or use more people and</p> <p>(explanation) (idea of) to make the results more reliable or to check results or to identify anomalous results</p> <p>or</p> <p>(description) (idea of) using an electronic heart monitor and</p> <p>(explanation) (idea of) more accurate (than counting)</p> <p>or</p> <p>(description) (idea of) doing more activities or using more people and</p> <p>(explanation) (idea of) more evidence or more data</p>	1	<p>both description and linked explanation are required for the mark</p> <p>Accept do the same investigation 3 times or do it again</p> <p>Ignore to be more precise or to get a better result</p> <p>Do not accept to make the results more accurate or to make it a fair test</p> <p>Accept use a pulse meter or fitbit or pulse monitor or use (named) technology</p> <p>Accept more precise</p>

Question	Answer	Marks	Further Information
9	<p>any two from</p> <p>shows the names of the forces or shows the types of the forces</p> <p>shows the size of the forces or shows the strength of the forces</p> <p>shows the direction of the forces</p> <p>(idea that) it shows if the forces on the car are balanced or shows if the forces on the car are not balanced</p>	2	<p>each correct answer = 1 mark</p> <p>Accept it shows you all the forces or to show how many forces</p> <p>Ignore shows named force e.g. shows air resistance or just 'shows forces'</p> <p>Accept it shows how much force or to show which force is stronger</p> <p>Accept shows direction of a named force e.g. shows gravity is downwards</p> <p>Accept shows which direction the car is moving</p> <p>Ignore to know the car is moving</p>

Question	Answer	Marks	Further Information
10(a)		2	<p>citric acid particles and water particles in model = 1 mark</p> <p>Note citric acid particles must be shaded or appear larger than water particles or be identified e.g. label or key</p> <p>irregular arrangement to represent a liquid with an attempt at having most water particles surrounding citric acid particles = 1 mark</p> <p>Note some of the water particles must be touching</p> <p>Do not accept if most citric acid particles are touching the bottom of the box or there are many clearly floating citric acid particles above the water particles or the citric acid particles are clumped together (i.e. not surrounded by water particles)</p>
10(b)	<p>dissolves more citric acid or (citric acid dissolves) faster</p> <p>particles move faster or particles have more energy</p>	2	<p>each correct answer = 1 mark</p> <p>Accept dissolve quickly or easier to dissolve</p> <p>Accept particles spread out more</p>

Question	Answer	Marks	Further Information
11(a)		3	<p>correct symbols for 2 lamps = 1 mark correct symbol for cell = 1 mark correct symbol for open switch = 1 mark</p> <p>Note maximum 2 marks if parallel circuit drawn or series circuit not drawn</p> <p>Ignore gaps in series circuit but must be clear it is a series circuit</p>
11(b)	circuit A is series and circuit B is parallel	1	<p>Accept (idea that) circuit A has one path/loop/circuit and circuit B has two/multiple paths/loops/circuits</p> <p>Accept a difference without specifying circuit A or circuit B e.g. one is parallel and one is series</p> <p>Accept a difference due to the circuits being series and parallel e.g. if one of the lamps does not work in A the other lamp does not work and if one of the lamps does not work in B the other lamp works</p> <p>Ignore the lamps are in different places or (ideas about) sharing the cell</p>

Question	Answer	Marks	Further Information
11(c)	dim(mer) or less bright or not bright (the) same or equal	1	both required for 1 mark

Question	Answer	Marks	Further Information
12	(risk)(idea of) cut or injury or harm (make safer) wear protective gloves or wear thick gloves	1	both correct for 1 mark Accept just 'gloves' Accept moving nail away from (other) hand or keep your (other) hand away Ignore protective clothing or goggles

Question	Answer	Marks	Further Information
13	refraction	1	Accept versions or refraction e.g. refracted or refracts or refracting Ignore change of direction