Cambridge Secondary 1 Progression Test

Mark scheme

Cambridge Secondary 1

Science

Stage 7

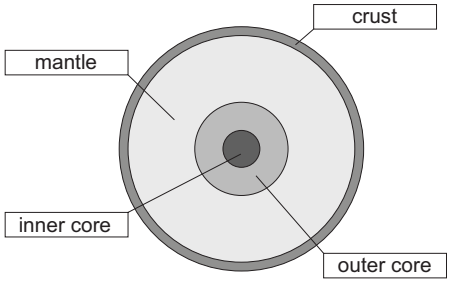
V2

UNIVERSITY of CAMBRIDGE
International Examinations

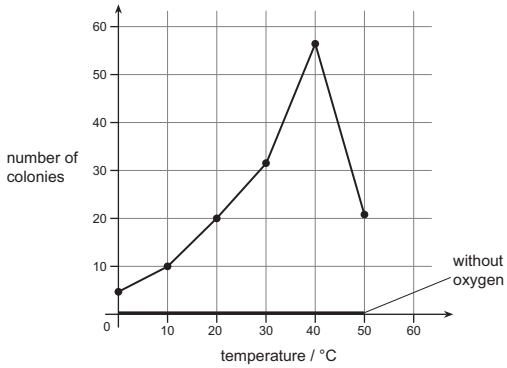
This table gives general guidelines on marking answers involving units of length. For questions involving other quantities, correct units are given in the answers. The table shows acceptable and unacceptable versions of the answer 1.85 m.

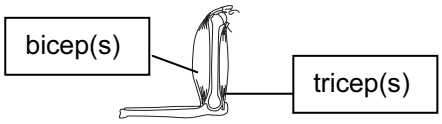
	Correct answer	**Also accept**	**Do not accept**
Units are not given on answer line and the question does not specify a unit	1.85 m	Correct conversions provided the unit is stated, e.g. 1 m 85 cm 185 cm 1850 mm 0.00185 km	1.85 185 m
If the unit is given on the answer line, e.g. …… m	……1.85…… m	Correct conversions, provided the unit is stated unambiguously, e.g. ……185 cm…… m	……185…… m ……1850…… m etc.
If the question states the unit that the answer should be given in, e.g. "Give your answer in metres"	1.85 m	1.85 1 m 85 cm	185; 1850 Any conversions to other units.

Stage 7 Paper 1 Mark Scheme

Question	1		
Part	**Mark**	**Answer**	**Further Information**
(a)	**2**		all 4 labels correct = 2 marks 2/3 labels correct = 1 mark 1 label correct = 0 marks
(b)	**2**	The inner core is the hottest part of the Earth. ✓ Iron and nickel are only found in the crust. Solid rocks are found in all the layers. The mantle is made up of semi-molten rock called magma. ✓	each correct answer = 1 mark 3 boxes are ticked, 2 correct = 1 mark 4 boxes are ticked, 2 correct = 0 marks
Total	**4**		

Question	2		
Part	**Mark**	**Answer**	**Further Information**
	1	The torch battery is an energy source. It stores **chemical** energy.	each correct sentence = 1 mark
	1	This is **electrica**l energy.	
	1	Energy is transferred by the bulb to the surroundings as **thermal (heat)** energy and **light** energy	Accept reverse order, i.e. **light** energy and **thermal (heat)** energy.
Total	**3**		

Question	3		
Part	**Mark**	**Answer**	**Further Information**
(a)	**1**	no colonies found (without oxygen) / number of colonies is always 0 / colonies only found where there is oxygen	Accept the correct idea, e.g. nothing grows.
(b)	**1**	measure the (surface) area of colonies / diameter / use a ruler / use a scale	Accept microscope scale.
(c) (i)	**2**		all points plotted correctly = 1 mark line joining points = 1 mark (Line joining points can be dot-to-dot or best fit.)
(ii)	**1**	without oxygen = 0 with oxygen = anywhere in the range of 20 to 0	both answers correct = 1 mark
Total	**5**		

Question	4		
Part	**Mark**	**Answer**	**Further Information**
(a)	**3**	**organ system** / **main function** digestive → transport nutrients circulatory → break down nutrients nervous → remove waste excretory → gas exchange respiratory → co-ordination	5 correct = 3 marks 3/4 correct = 2 marks 1/2 correct = 1 mark more than one line from one organ system = 0 marks for this one organ system
(b) (i)	**1**		both answers correct = 1 mark
(ii)	**2**	(idea of) antagonistic (muscles) one muscle / bicep contracts **and** the other muscle / tricep relaxes	the idea of antagonistic = 1 mark Accept the correct idea, e.g. they work against each other / and they work in the opposite way. how they work = 1 mark Accept the correct idea, e.g. one tightens **and** the other lengthens.
Total	**6**		

Question	5		
Part	**Mark**	**Answer**	**Further Information**
(a)	**2**	4.5 (cm) 22.5 (units)	each correct answer = 1 mark Accept 4.4 – 4.6(cm) (Printed versions may vary. Accept +/- 0.1 cm.). Accept the diameter given x 5.
(b)	**1**	Mercury Saturn Venus	all three in any order = 1 mark
Total	**3**		

<table>
<tr><td>Question</td><td>6</td><td colspan="2"></td></tr>
<tr><td>Part</td><td>Mark</td><td>Answer</td><td>Further Information</td></tr>
<tr><td>(a) (i)</td><td>2</td><td>heating the same point / position on the rod
same distance from flame / heat source
same flame / heat source
same thickness of wax
same type of wax
same cross section of metal rod
same mass of rod
same length of rod</td><td>any two

each correct answer = 1 mark
Accept same temperature.</td></tr>
<tr><td>(ii)</td><td>1</td><td>Measurement – length of bare metal / length of unmelted wax
Apparatus – ruler

or

Measurement – mass / amount / weight of wax melted
Apparatus – balance/scales</td><td></td></tr>
<tr><td>(iii)</td><td>2</td><td>example of type of table
<table><tr><td>rod</td><td>distance wax melted in mm</td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table></td><td>table with headings with suitable measurements = 1 mark

headings given, including at least one correct unit = 1 mark

Accept measurements given in 6(a)(ii) even if incorrect e.g. density.</td></tr>
<tr><td>(b) (i)</td><td>1</td><td>(metal) B</td><td></td></tr>
<tr><td>(ii)</td><td>1</td><td>ductile / does not corrode / un-reactive / flexibility</td><td>Accept idea of easy to bend</td></tr>
<tr><td>Total</td><td>7</td><td colspan="2"></td></tr>
</table>

Question	7		
Part	**Mark**	**Answer**	**Further Information**
(a)	**2**	beak: large / long / sharp / pointed eyes: good vision / good eyesight / either side of head wings: to fly / strong / big legs: long	any two each correct answer = 1 mark Do not accept just: / 'has a beak / has eyes / has wings / has legs.
(b)	**1**	predator	Accept carnivore.
Total	**3**		

Question	8		
Part	**Mark**	**Answer**	**Further Information**
(a)	**2**	The force of friction between the **tyre(s)** and the **road / tarmac / surface / brake** makes the cars stop. This is because the force of friction has **increased**.	each correct sentence = 1 mark Accept reverse order, e.g. **road** and **tyres**. Accept brake and the wheel Accept any indication of increased, e.g. gone up, become more.
(b)	**2**	Water on the road surface increases friction. ☐ Oil on the road surface decreases friction. ✓ Ice on the road surface does not change friction. ☐ Rougher road surface increases friction. ✓ Smoother road surface does not change friction. ☐	each correct answer = 1 mark 3 boxes ticked, 2 correct = 1 mark 4 or more boxes ticked = 0 marks
Total	**4**		

Question	9		
Part	**Mark**	**Answer**	**Further Information**
	2	further apart than the particles in a liquid. ☐ further apart than the particles in a gas. ☐ able to vibrate about a fixed point. ✓ arranged in a more fixed pattern than particles in a liquid. ✓ not able to vibrate when they reach 0°C. ☐ able to vibrate more as they gain energy. ✓	3 correct = 2 marks 2 correct = 1 mark 1 correct = 0 marks If 4 boxes ticked, 3 correct = 1 mark If 4 boxes ticked, 2 correct = 0 marks If 5/6 boxes ticked = 0 marks
Total	**2**		

Question	10		
Part	**Mark**	**Answer**	**Further Information**
	3		each correct answer = 1 mark

appearance	function
(idea of) many branches	to carry electrical impulses
tiny cell with a nucleus and a long tail	**(idea of) swim to egg cell / carry genetic information / fertilise egg / reproduction**
cell contains lots of chloroplasts	**(idea of) to carry out photosynthesis**

Total	**3**

Question	11		
Part	**Mark**	**Answer**	**Further Information**
(a)	**1**	igneous rock	Accept any clear indication.
(b)	**1**	non-metal does not conduct electricity	non-metal **and** piece of information = 1 mark Accept any clear indication of correct response in the box.
(c) (i)	**1**	fossil	Accept impression.
(ii)	**1**	sedimentary rock	Accept any clear indication.
Total	**4**		

Question	12		
Part	**Mark**	**Answer**	**Further Information**
(a)	**2**	**renewable** hydroelectric solar tidal wind wave **non-renewable** gas oil	4/5 correct renewables in any order = 1 mark all 2 correct non-renewables in any order = 1 mark
(b)	**1**	(idea of) a source that cannot be replenished / grown / generated / sustained	Accept idea that it takes millions of years to form.
Total	**3**		

Question	13		
Part	**Mark**	**Answer**	**Further Information**
(a)	**1**	air resistance	Accept friction / drag.
(b)	**1**	(idea that for same push on pedal) greater forward force	Accept it moves faster.
(c)	**1**	improves / better	Accept idea of less fuel used.
Total	**3**		

Stage 7 Paper 2 Mark Scheme

Question	1		
Part	**Mark**	**Answer**	**Further Information**
(a)	**2**	**name** flower **function** reproduction **name** leaf **function** photosynthesis / to make food	each correct name and function = 1 mark
(b)	**1**	root(s) → stem(s) → leaf/leaves	all correct and in correct order = 1 mark
Total	**3**		

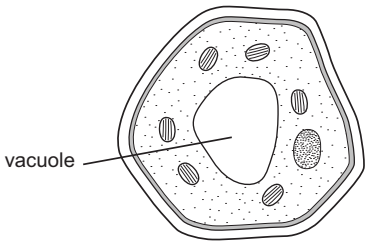
Question	2		
Part	**Mark**	**Answer**	**Further Information**
(a)	**1**	Fuel is stored in bags. → solid Fuel flows along a pipe to where it is needed. → liquid Fuel is stored under pressure in cylinders. → gas	all correct = 1 mark Accept fuel flows along pipe to where it is needed connected to gas.
(b) (i)	**2**	**solid** freezing **liquid** → **gas** evaporation	each label in correct position = 1 mark
(ii)	**1**	**solid** (melting) **liquid**	Accept arrow pointing to liquid on line already drawn between solid and liquid.
Total	**4**		

Question	3		
Part	**Mark**	**Answer**	**Further Information**
(a) (i)	**1**	mango	
(ii)	**1**	lemon	
(b)	**1**	dark blue	
(c)	**1**	neutralisation	Accept neutralise.
Total	**4**		

Question	4		
Part	**Mark**	**Answer**	**Further Information**
(a)	**1**	1 hour 1 day 1 week 1 month <u>1 year</u>	Accept clear indication of correct response, e.g. 365 days / circled / ticked / starred. more than one circled / underlined = 0 marks
(b)	**1**	1 hour <u>1 day</u> 1 week 1 month 1 year	Accept clear indication of correct response, e.g. 24 hours / circled / ticked / starred. more than one circled / underlined = 0 marks
(c)	**1**	(idea of) relative movement / (idea that) Earth is moving (but we do not feel it is)	Accept Earth spins.
Total	**3**		

Question	5		
Part	**Mark**	**Answer**	**Further Information**
(a) (i)	**1**	grass → grasshopper → (toad)→ hawk	Accept correct connections made with arrows between the pictures.
(ii)	**1**	grass	
(iii)	**1**	(hawks) have no food / starve / die	Accept hawks eat something else e.g. grasshoppers / move away (to find food). Accept correct explanations from incorrect answer given in 5(a)(i).
(b)	**2**	animal vertebrate bird	Accept any clear indication of correct response, e.g. circle / tick etc. 3 correct = 2 marks 1/2 correct = 1 mark 4 underlined, 2/3 correct = 1 mark Any other combination = 0 marks
Total	**5**		

Question	6		
Part	**Mark**	**Answer**	**Further Information**
(a) (i)	**1**	silty	Accept pH 7
(ii)	**1**	peaty	Accept pH 4.5
(iii)	**1**	water passes straight through it / is free draining	
(b) (i)	**2**	sandy (because) pH is 8 **and** idea that there are no stones in sandy soil	each answer in correct order = 1 mark
(ii)	**1**	nutrients / permeability / drainage / texture	Accept other suitable soil properties, e.g. appearance under a microscope.
Total	**6**		

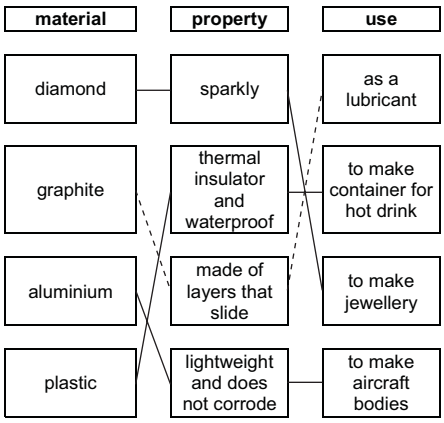
Question	7		
Part	**Mark**	**Answer**	**Further Information**
(a)	**1**		
(b) (i)	**1**	leaf (cell)	Accept green cell / stem cell / palisade cell / spongy mesophyll cell.
(ii)	**1**	root (cell)	Accept bulb and other underground plant structures.
(c)	**1**	chloroplast **and** cell wall	both in either order = 1 mark Accept (large) vacuole for one of the answers.
Total	**4**		

Question	8			
Part	**Mark**	**Answer**		**Further Information**
	1	**planet**	**order**	all correct = 1 mark
		Earth	**2**	
		Mercury	(1)	
		Mars	**3**	
		Saturn	**4**	
		Neptune	**5**	
Total	**1**			

Question	9		
Part	**Mark**	**Answer**	**Further Information**
	2	The hot air balloon has the most kinetic energy when moving the fastest. ✓ The hot air balloon has the most kinetic energy after it has landed on the ground. The chemical energy in the propane fuel is changed into heat energy. ✓ The hot air balloon has no light or sound energy when it is travelling through the air The hot air balloon has the most potential energy when it is the highest in the sky. ✓	3 correct = 2 marks 1/2 correct = 1 mark 4 ticks, 2/3 correct = 1 mark
Total	**2**		

Question	10		
Part	**Mark**	**Answer**	**Further Information**
(a) (i)	**2**	**A** = air resistance **B** = gravity / g	Accept upthrust / friction. Accept weight.
(ii)	**1**	downwards / towards Earth / accelerating	
(iii)	**1**	downwards / towards Earth / constant speed	
(b) (i)	**1**	(Idea) **1** and (idea) **4**	both in either order = 1 mark
(ii)	**1**	(Idea) **5**	
(iii)	**1**	any sensible prediction, e.g. the bigger the area the longer time it takes to fall	Predictions do not have to be correct to gain the mark, just looking for the idea of what a prediction is.
(iv)	**1**	not safe to test on people / to compare different conditions / to compare results to real situations	Accept other plausible reasons, e.g. takes too long / costs too much / difficult to measure.
(c)	**3**	possible measurements – linked equipment: time – stop watch / clock height of drop / distance of fall – ruler mass of parachute – balance / scales size of parachute / area of parachute – ruler	two correct measurements linked to the correct equipment = 3 marks a measurement and the correct link to a piece of equipment = 2 marks a correct measurement = 1 mark
Total	**11**		

Question	11		
Part	**Mark**	**Answer**	**Further Information**
(a)	**1**	(difference in) height / circumference / size of canopy	
(b) (i)	**1**	number of rings	Accept: count the rings.
(ii)	**1**	(idea of) outer ring size	
(c)	**2**	(mention of) temperature over the year (mention of) rainfall (mention of) amount of sunlight during growing season	any two each correct answer = 1 mark
Total	**5**		

Question	12		
Part	**Mark**	**Answer**	**Further Information**
	2		all correct = 2 marks all three correct links between material and property = 1 mark all three correct links between property and use = 1 mark
Total	**2**		