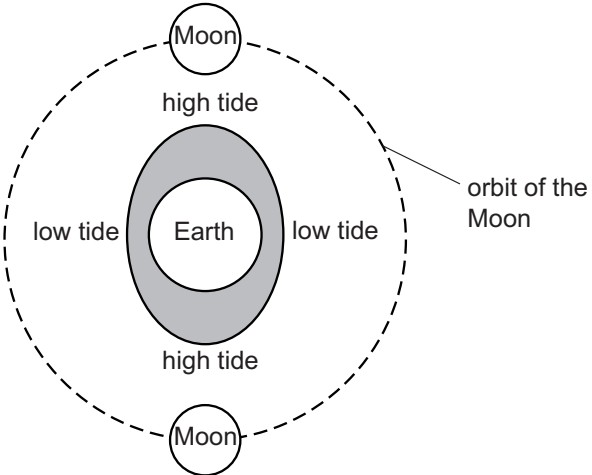
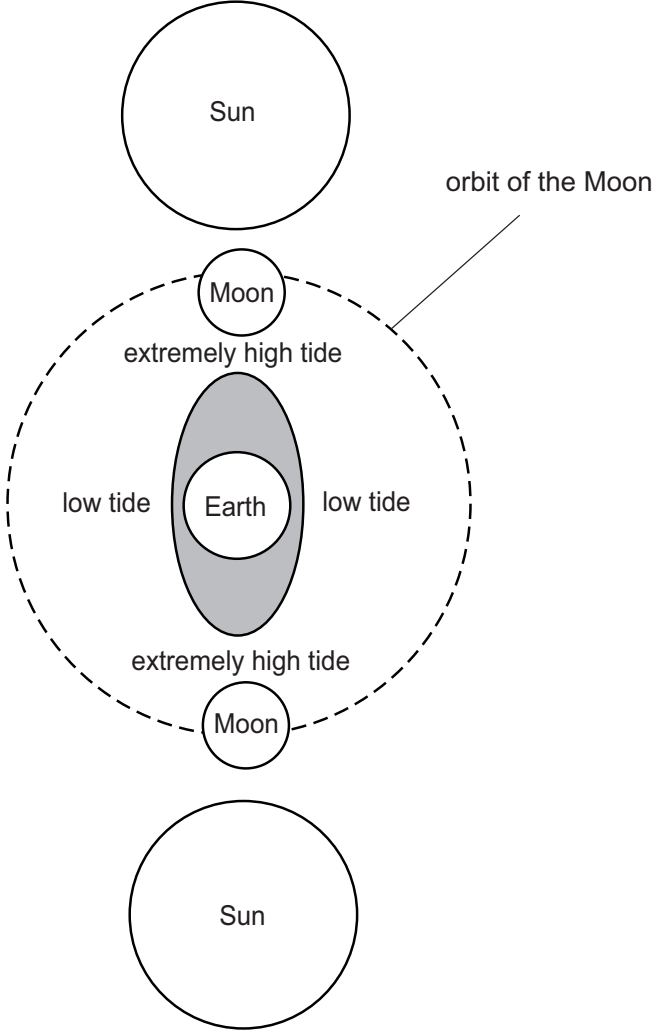


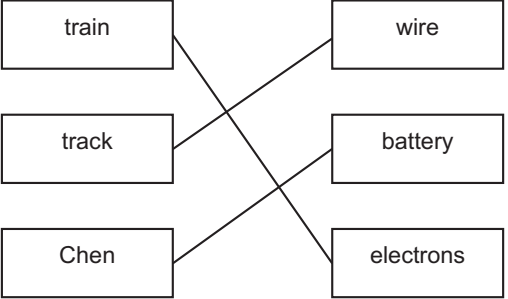
Question	Answer	Marks	Further Information
1(a)	B, D, E, F	1	<b>all four</b> correct any order = 1 mark
1(b)	<b>any two from</b> they <b>only</b> have a cell membrane / they do <b>not</b> have a cell wall they do <b>not</b> have a (large sap) vacuole they do <b>not</b> have chloroplasts	2	each correct answer = 1 mark
1(c)	one (cell)	1	<b>Accept</b> a single cell

Question	Answer	Marks	Further Information
2(a)	a mixture	1	<p>more than <b>one</b> box ticked = 0 marks</p> <p><b>Accept</b> any indication of the correct answer, e.g. circling or completing the sentence, but ticking takes precedence</p>
2(b)	<p><b>any two from</b></p> <p>the atoms are different sizes</p> <p>the layers or pattern of atoms are distorted</p> <p>more difficult for atoms to move / more difficult for atoms to slide</p>	2	<p>each correct answer = 1 mark</p> <p><b>Accept</b> carbon atoms are smaller / iron atoms are bigger</p> <p><b>Note</b> assume answer refers to steel unless iron is specified</p> <p><b>Accept ora</b> if iron specified</p> <p><b>Accept</b> reference to particles or ions instead of atoms</p>

Question	Answer	Marks	Further Information
3(a)	it takes longer for the feather to reach the ground / the feather travels slower  (because there is) <b>more</b> air resistance with the feather	2	each correct answer = 1 mark  <b>Accept ora</b> for the ball  <b>Accept ora</b> for the ball
3(b)	yes  <b>and</b>  there is <b>no</b> air resistance (in a vacuum)	1	answer no = 0 marks  <b>Note</b> answer must have yes <b>and</b> an explanation for the mark

Question	Answer	Marks	Further Information
4(a)	 <p>The diagram shows Earth at the center with a dashed circular orbit around it. Two positions of the Moon are marked on the orbit: one at the top and one at the bottom. The top position is labeled 'high tide' and the bottom position is labeled 'high tide'. The left and right positions are labeled 'low tide'. A label 'orbit of the Moon' points to the dashed line.</p>	1	<b>Accept</b> the Moon shown in either position

<p>4(b)</p>	 <p>(idea that) there is a combined gravitational pull of the Sun and the Moon</p>	<p><b>2</b> <b>Accept</b> the Sun in either position <b>and</b> Moon in either position = 1 mark</p> <p><b>Note</b> the Sun and Moon must both be on the same side of the Earth for this mark</p> <p>correct explanation = 1 mark</p>
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Question	Answer	Marks	Further Information
5(a)		1	all three lines correct = 1 mark
5(b)(i)	<p><b>any one from</b></p> <p>(idea that) it helps to show the electrons which cannot be seen</p> <p>(idea that) the circuit must be complete</p> <p>(idea that) Chen provides the energy to move the train (like a cell)</p> <p>(idea that) Chen will get tired and slow down which represents a battery running down</p>	1	<p><b>Accept</b> it helps to show the flow of current which cannot be seen</p> <p><b>Accept</b> higher level answers, e.g. (idea that) the friction between the track and the wheels models resistance</p>
5(b)(ii)	<p><b>any two from</b></p> <p>Chen may not always push with the same amount of strength</p> <p>Chen might not always push at the same speed</p> <p>(idea that) limited number of components</p> <p>(idea that) electrons would be throughout the wire but the train is only in one place</p>	2	<p>each correct answer = 1 mark</p> <p><b>Accept</b> named examples of components, e.g. there is no model for ammeter to measure current</p>

Question	Answer	Marks	Further Information
6(a)	4 (amps)	1	
6(b)	decreases <b>and</b> there is more resistance	1	increases = 0 marks for the question <b>Accept</b> numbers less than 4 (amps) <b>Note</b> answer must have both decreases <b>and</b> an explanation for the mark

Question	Answer	Marks	Further Information
7(a)	<pre> graph TD     cactus --&gt; rat     cactus --&gt; grasshopper     rat --&gt; tarantula     rat --&gt; hawk     grasshopper --&gt; lizard     tarantula --&gt; snake     lizard --&gt; hawk     snake --&gt; microorganisms     hawk --&gt; microorganisms     microorganisms --&gt; cactus   </pre>	3	<p><b>all three</b> food chains correctly drawn with <b>nine</b> correct arrows = 3 marks</p> <p><b>two</b> food chains correctly drawn in a web = 2 marks</p> <p>incorrect food web that starts with cactus and ends with microorganisms = 1 mark</p> <p><b>Ignore</b> arrow from microorganisms to cactus</p>
7(b)	<p>decrease</p> <p><b>and</b></p> <p>they will <b>not</b> have any food to eat/they will migrate to other areas to find food</p>	1	<p>increase = 0 marks for the question</p> <p><b>Accept</b> they all die / more die</p> <p><b>Note</b> answer must have both decrease <b>and</b> an explanation for the mark</p>
7(c)(i)	to decompose (dead material)	1	<b>Accept</b> to break down / decay (dead material)
7(c)(ii)	to release nutrients (back into the ground)	1	<p><b>Accept</b> to recycle nutrients</p> <p><b>Accept</b> minerals for nutrients</p> <p><b>Ignore</b> to stop dead bodies building up</p>

Question	Answer	Marks	Further Information
8(a)(i)	insoluble precipitate	2	each correct answer = 1 mark
8(a)(ii)	formation of a precipitate / colour change	1	<b>Accept</b> formation of a solid <b>Ignore</b> a gas is made
8(b)	precipitation	1	

Question	Answer	Marks	Further Information
9(a)	neutralisation	1	
9(b)	solution is changing from an acid to an alkali / solution is being neutralised	1	
9(c)	25 (cm <sup>3</sup> )	1	
9(d)	(description) repeats the experiment (explanation) see if the results are the same/similar	2	each correct answer = 1 mark

Question	Answer	Marks	Further Information
10(a)	(group of organisms) that can reproduce to make <b>fertile</b> offspring	2	each correct answer = 1 mark
10(b)	<b>any three from</b> nutrition / feeding movement reproduction	2	<b>all three</b> correct = 2 marks <b>one</b> or <b>two</b> correct = 1 mark  <b>Accept</b> respire / respiration as extra marking point <b>Accept</b> sensitivity as extra marking point <b>Accept</b> excretion as extra marking point
10(c)	no (because) viruses are <b>not</b> made out of cells / do <b>not</b> grow / they do <b>not</b> show all seven characteristics  <b>or</b> yes (because) they can reproduce	1	<b>Accept</b> other correct ideas  <b>Accept</b> other correct ideas

Question	Answer	Marks	Further Information
11	<p>9 (g) (harmful gases) released with a two-way catalytic converter</p> <p><b>and</b></p> <p>3 (g) (harmful gases) released with a three-way catalytic converter</p> <p><math>9 \div 3 = 3</math> (times)</p>	2	<p>correct answer only = 2 marks</p> <p>sight of 9 (g) <b>and</b> 3 (g) = 1 mark</p> <p><b>Accept ecf</b> using incorrect reading from bar chart</p> <p><b>Accept</b> the three-way catalytic converter is three times more effective for 2 marks</p>
Question	Answer	Marks	Further Information
12	<p><b>any two from</b></p> <p>sound wave</p> <p>is reflected</p> <p>this is an echo</p>	2	<p>each correct answer = 1 mark</p> <p><b>Ignore</b> bounce</p>
Question	Answer	Marks	Further Information
13(a)	(idea that) the pieces of cloth will fold upwards	1	
13(b)(i)	tectonic plates / continental plates	1	
13(b)(ii)	layers of rock	1	<b>Accept</b> Earth's crust
13(c)	<p><b>any one from</b></p> <p>add more layers of cloth</p> <p>reduce the height of the boxes</p>	1	<b>Accept</b> other suitable suggestions, e.g. the table top as the Earth's crust should also move

Question	Answer	Marks	Further Information
14(a)	<p><b>any one from</b></p> <p>(idea that) it happened a long time ago</p> <p>(idea that) there is no evidence / no proof</p> <p>(idea that) humans have <b>not</b> observed new planets forming in our Solar System</p>	<b>1</b>	
14(b)	<p><b>any two from</b></p> <p>(idea that) there are new planets being formed around other stars</p> <p>more advanced telescopes (to use for observation)</p> <p>use of computer modelling (to test their hypothesis)</p> <p>satellites can observe planets and asteroids</p> <p>(idea that) asteroids can be sampled</p>	<b>2</b>	each correct answer = 1 mark