



Mark Scheme (Results)

October 2021

Pearson Edexcel International Lower
Secondary Curriculum
In Science (LSC11) Paper 01
Year 9 Achievement Test

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General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Mark scheme

Question number	Answer	Mark
1	<p>The only correct answer is A oesophagus</p> <p><i>B is not correct because the label is pointing to the oesophagus not the pancreas</i></p> <p><i>C is not correct because the label is pointing to the oesophagus not the small intestine</i></p> <p><i>D is not correct because the label is pointing to the oesophagus not the stomach</i></p>	(1)

Question number	Answer	Mark
2	<p>The only correct answer is D area S</p> <p><i>A is not correct because area P contains the alkali metals</i></p> <p><i>B is not correct because area Q contains only metals</i></p> <p><i>C is not correct because area R contains only metals</i></p>	(1)

Question number	Answer	Mark
3	<p>The only correct answer is B NaCl</p> <p><i>A is not correct because C does not represent chlorine</i></p> <p><i>C is not correct because So does not represent sodium</i></p> <p><i>D is not correct because So does not represent sodium and there is only one chlorine atom in sodium chloride</i></p>	(1)

Question number	Answer	Mark
4	<p>The only correct answer is B the capillaries</p> <p><i>A is not correct because the brain is part of the nervous system</i></p> <p><i>C is not correct because the kidneys are part of the urinary system</i></p>	(1)

	<i>D is not correct because the pancreas is part of the endocrine system</i>	
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Question number	Answer	Mark
5	<p>The only correct answer is D by light waves</p> <p><i>A is not correct because the energy is not transferred by electricity</i></p> <p><i>B is not correct because the energy is not transferred by heating</i></p> <p><i>C is not correct because the energy is not transferred by forces</i></p>	(1)

Question number	Answer	Additional guidance	Mark																
6	<table border="1"> <thead> <tr> <th>Microorganism</th> <th>Cell wall</th> <th>Mitochondria</th> <th>Nucleus</th> </tr> </thead> <tbody> <tr> <td>fungi</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>viruses</td> <td>x</td> <td>x</td> <td>x</td> </tr> <tr> <td>bacteria</td> <td>✓</td> <td>x</td> <td>x</td> </tr> </tbody> </table>	Microorganism	Cell wall	Mitochondria	Nucleus	fungi	✓	✓	✓	viruses	x	x	x	bacteria	✓	x	x	<p>All three correct gains 2 marks</p> <p>One correct gains 1 mark</p>	(2)
Microorganism	Cell wall	Mitochondria	Nucleus																
fungi	✓	✓	✓																
viruses	x	x	x																
bacteria	✓	x	x																

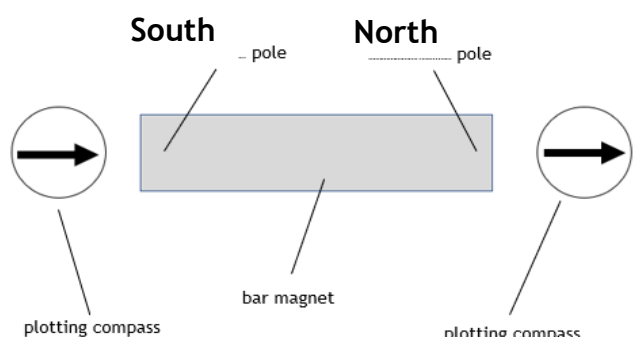
Question number	Answer	Additional guidance	Mark
7 (a)	<p>Elements S, P and T will have similar properties.</p>	<p>All three needed, in any order.</p>	(1)

Question number	Answer	Additional guidance	Mark
7 (b)	Elements P, Q and R are from the same period.	All three needed, in any order.	(1)

Question number	Answer	Additional guidance	Mark
8 (a)(i)	fox		(1)

Question number	Answer	Additional guidance	Mark
8 (a)(ii)	blackberry plant		(1)

Question number	Answer	Mark
8 (b)	the direction (1) of the transfer/flow of energy (1)	(2)

Question number	Answer	Additional guidance	Mark
9		<p>Both poles need to be labelled.</p> <p>ALLOW N for north and S for south.</p> <p>Reject positive/+ and negative/-</p>	(1)

Question number	Answer	Additional guidance	Mark
10 (a)	<p>The mass number of chromium is52.....</p> <p>and its atomic number is24.....</p>	Both needed in correct place for 1 mark	(1)
Question number	Answer	Additional guidance	Mark

10 (b)	The number of neutrons in this atom of chromium is28.....		(1)
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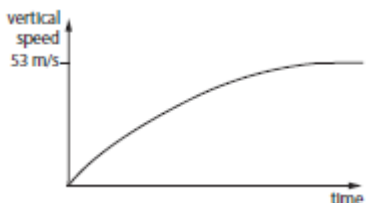
Question number	Answer	Additional guidance	Mark
11	Substitution and rearrangement (1) Evaluation (1) eg $I = 4.5/30$ $= 0.15 \text{ A}$	Correct answer without working scores 2 ALLOW $1.5/30 = 0.05$ for 1 mark	(2)

Question number	Answer	Additional guidance	Mark
12	wave A would be louder (1) and higher pitched (1)	ALLOW answers in either order ALLOW reverse argument ALLOW reverse argument	(2)

Question number	Answer	Mark
13	The only correct answer is B joules <i>A is not correct because amps are the unit for current</i> <i>C is not correct because m/s are used for speed</i> <i>D is not correct because newtons measure force</i>	(1)

Question number	Answer	Mark
14	The only correct answer is B the Moon's gravitational field strength is smaller than the Earth's <i>A is not correct because the atmosphere does not significantly affect weight</i> <i>C is not correct because the astronaut's mass is the same on Earth and on the Moon</i>	(1)

	<i>D is not correct because the Moon does have gravity.</i>	
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Question number	Answer	Mark
15	<p>The only correct answer is D</p>  <p><i>A is not correct because it does not show the initial acceleration</i></p> <p><i>B is not correct because the acceleration would not be constant</i></p> <p><i>C is not correct because this shows a deceleration</i></p>	(1)

Question number	Answer	Mark
16	<p>The only correct answer is C H₂</p> <p><i>A is not correct because the product is hydrogen not oxygen</i></p> <p><i>B is not correct because 2H is the incorrect formula for a hydrogen molecule</i></p> <p><i>D is not correct because the product is hydrogen not oxygen</i></p>	(1)

Question number	Answer	Mark
17	<p>The only correct answer is B</p> $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$ <p><i>A is not correct because this equation does not balance</i></p> <p><i>C is not correct because this equation does not balance</i></p> <p><i>D is not correct because the formula for oxygen is incorrect</i></p>	(1)

Question number	Answer	Mark
18	any two of the following cell wall (1) chloroplasts (1) (central/permanent/large) vacuole (1)	(2)

Question number	Answer	Mark
19(a)	idea that something can decay/decompose/rot/break down (naturally/by bacteria/microorganisms/fungi)	(1)

Question number	Answer	Mark
19(b)(i)	cause pollution (of the seas)/fill up landfill/difficult to dispose of accept any other appropriate response	(1)

Question number	Answer	Mark
19(b)(ii)	any one of the following use natural/biodegradable materials (1) dispose of waste plastics carefully (1) recycle/reuse (1) accept any other appropriate response eg reduce use	(1)

Question number	Answer	Additional guidance	Mark
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20	accept any two of the following exercise increases energy demand/needs energy muscles/body needs more oxygen (1) muscles/body needs more glucose/fuel (1) muscles need to get rid of more waste/CO ₂ (1)	In the absence of any other mark accept "to pump more blood" for max of 1	(2)
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Question number	Answer	Mark
21 (a)	100 (N)	(1)

Question number	Answer	Mark
21(b)	An explanation including any two of the following object B displaces less water (than object A) (1) upthrust on object B is smaller (than 100N/ its weight) (1) resultant force on B is downwards/forces on B are unbalanced (1) object B is more dense than water (1)	(2)

Question number	Answer	Mark
22(a)	gold	(1)

Question number	Answer	Mark
22(b)	rubber	(1)

Question number	Answer	Mark	
23(a)	0.9 m	(1)	
Question number	Answer	Additional guidance	Mark
23 (b)	substitution and rearrangement (1) evaluation (1) $\text{force} = 18/0.9 \text{ (1)}$ $= 20 \text{ N (1)}$	Correct answer without working scores 2 0.2N scores 1 mark	(2)

Question number	Answer	Mark
24	<p>The only correct answer is A to carry blood towards the heart</p> <p><i>B is not correct because arteries carry blood away from the heart</i></p> <p><i>C is not correct because veins carry deoxygenated blood away from the brain</i></p> <p><i>D is not correct because veins do not pump blood</i></p>	(1)

Question number	Answer	Mark
25	<p>The only correct answer is B</p> $\text{CuCO}_3 + 2\text{HCl} \rightarrow \text{CuCl}_2 + \text{H}_2\text{O} + \text{CO}_2$ <p><i>A is not correct because the equation does not balance</i></p> <p><i>C is not correct because the equation does not balance</i></p> <p><i>D is not correct because the equation does not balance</i></p>	(1)

Question number	Answer	Mark
26	<p>The only correct answer is C light intensity</p> <p><i>A is not correct because competition is a biotic factor</i></p> <p><i>B is not correct because disease is a biotic factor</i></p> <p><i>D is not correct because the presence of predators is a biotic factor</i></p>	(1)

Question number	Answer	Mark
27	<p>The only correct answer is D protons only</p> <p><i>A is not correct because neutrons are uncharged</i></p> <p><i>B is not correct because electrons are not found in the nucleus</i></p> <p><i>C is not correct because neutrons are uncharged</i></p>	(1)

Question number	Answer	Mark
28	<p>The only correct answer is B the spheres will repel each other because they both have the same charge</p> <p><i>A is not correct because the objects will repel</i></p> <p><i>C is not correct because the objects will repel</i></p> <p><i>D is not correct because the objects will repel</i></p>	(1)

29(b)	Reduces the loss of water from the surface of the leaves/stops the leaves drying out	Accept reduces evaporation (of water)	(1)
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Question number	Answer	Mark
30(a)	When phenolphthalein is added to a strong alkali it is pink (1)	(1)
30(b)	But when added to an acid it is colourless (1)	(1)

Question number	Answer	Mark
31	streamlined/aerodynamic shape (1) helps to reduce friction/drag/air resistance (1)	(2)

Question number	Answer	Mark
32 (a)	population of rabbits will increase (1)	(1)

Question number	Answer	Mark
32 (b)	the population of rabbits will stop increasing/level off/decrease (1)	(1)

Question number	Answer	Additional guidance	Mark
33		All three correct scores 2 One correct scores 1 If more than one line from/to a box then do not award mark for that box	(2)

	type of reaction	description		
	endothermic	breaking down a compound using heat		
	thermal decomposition	a reaction which produces an acidic solution		
	exothermic	a reaction which gives out heat energy		
		a reaction which produces a neutral solution		
		a reaction which takes in energy from the surroundings		

Question number	Answer	Mark
34	substitution (1) evaluation (1) eg av speed = $270/4.5$ (1) = 60 km/hr (1)	(2)

Question number	Answer	Additional guidance	Mark
35	B		(2)

	C A D	All correct scores 2 marks 1 or 2 correct scores 1 mark	
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Question number	Answer	Additional guidance	Mark
36(a)	70		(1)

Question number	Answer	Mark
36(b) (i)	check plot to \pm half square (Allow ecf from prev) (1)	(1)

Force needed to move the box in newtons (N)

Weight of box and weights, in Newtons (N)

Question number	Answer	Mark
36(b)(ii)	Circle round point at 80 N	(1)
Question number	Answer	Mark
36(b)(iii)	Straight line drawn missing out the point at 80 N	(1)
36(c)	take repeat readings (and average)	(1)

Question number	Answer	Additional guidance	Mark
36(d)(i)	comparative statement (1) eg the bigger the weight of the box and weights the greater the force needed (1) OR each 20 N increase in weight increases the force required to move it by 14 N (1)	ACCEPT "force needed is directly proportional to the weight"	(1)
36(d)(ii)	the line would be steeper		(1)

Question number	Answer	Mark
37(a)	C – A - F – B correct order (2) if order incorrect then any 2 in correct sequence eg C-A or A-F or F-B (1)	(2)

Question number	Answer	Additional guidance	Mark
37(b)(i)	measuring cylinder (1)	ACCEPT burette/pipette/volumetric flask REJECT beaker/jug	(1)

Question number	Answer	Additional guidance	Mark
37(b)(ii)	safety precaution – wear goggles/safety glasses (1) reason – (dilute hydrochloric) acid is harmful/irritant (1)	Accept gloves	(2)

Question number	Answer	Mark
37(c)(i)	temperature increase/rise	(1)

Question number	Answer	Mark
37(c)(ii)	any two from concentration of the acid (1) mass/amount of metal/volume of metal (1) surface area of the metal (1)	(2)

Question number	Answer	Mark
37(c)(iii)	effect of temperature/acid concentration on the reaction (between metal and dilute hydrochloric acid)	(1)

Question number	Answer	Mark
38(a)	75000 Accept 75 thousand	(1)

Question number	Answer	Mark
38(b)	any three from idea that both kill bacteria (1) cleaner B kills more bacteria than cleaner A (1) more living bacteria are left by cleaner B (1) neither cleaner kills all bacteria (1) cleaner A kills 75% of the bacteria present but cleaner B only kills 50% (1)	(3)