edexcel

Mark Scheme (Results)

Summer 2015

PLSC Science (LSC01/01)

Edexcel International Lower Secondary Curriculum

Y9 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.

SECTION A

Question Number	Answer	Mark
1	A	1
2	C	1
3	D	1
4	C	1
5	B	1
6	C	1
7	A	1
8	C	1
9	B	1
10	A	1

<table>
<tr><th>Question</th><th>Acceptable answers</th><th>Additional guidance</th><th>Mark</th></tr>
<tr><td>11(a)</td><td><table><tr><td>Properties</td><td>Sugar</td><td>Wax</td></tr><tr><td>Does it dissolve in water?</td><td>Yes</td><td>No</td></tr><tr><td>Is it magnetic?</td><td>No</td><td>No</td></tr></table>1 mark per correct column.</td><td>Accept unambiguous ticks/crosses or Y/N as an alternative to Yes/No.</td><td>2</td></tr>
<tr><td>11(b)(i)</td><td>Is it magnetic/is it non-magnetic (1)</td><td>Accept (iron is) magnetic/magnet
Accept <u>sand</u> is not/non magnetic

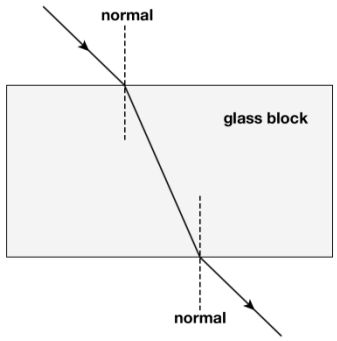
Accept magnetism</td><td>1</td></tr>
<tr><td>11(b)(ii)</td><td>Does it dissolve (in water) OWTTE (1)</td><td>Accept salt dissolves in water or copper does not dissolve in water

Ignore dissolving by itself

Accept solubility</td><td>1</td></tr>
<tr><td></td><td></td><td>Total for question</td><td>4</td></tr>
</table>

Question	Acceptable answers	Additional guidance	Mark
12	nucleus (1) characteristics (1) DNA (1)	Answers must be in the correct order	3
		Total for question	3

Question	Acceptable answers	Additional guidance	Mark
13(a)	aluminium nitrate + silver (1)	For each equation, accept the correct answers in either order. Ignore symbols Do not credit a blank space for 13(c)	1
13(b)	copper nitrate + silver (1)		1
13(c)	no reaction **or** gold + calcium chloride (1)		1
		Total for question	3

Question	Acceptable answers	Additional guidance	Mark
14		**1 mark** for light ray that bends inwards as it enters the block **1 mark** for light ray that bends outwards as it leaves the block If additional arrows (e.g. reflected ray) then max 1 mark for question Ignore labels/normals Ignore arrows unless incorrect The emergent ray should be (approx) parallel to the incident ray.	2
		Total for question	2

Question Number	Answer	Mark
15	D	1
16	C	1
17	D	1
18	C	1
19	B	1
20	B	1
21	D	1
22	B	1
23	B	1
24	D	1

Question	Acceptable answers	Additional guidance	Mark
25(a)	gravitational pull/gravity (from the Earth)		1
25(bi)	(Orbit in) a fixed position (above the equator/Earth)	Accept orbits at same speed (and direction) as Earth Accept takes one day to make each orbit	1
25(bii)	Any **one** from: • Weather/meteorology/pollution monitoring • Communications (or named example, eg radio, television, telephone, internet) • Global Positioning/GPS/sat nav/mapping • Climate change research/ environmental research • Military uses eg surveillance/intelligence gathering (1)	Ignore unqualified military/scientific/research Ignore taking pictures/photographs unqualified	1
		Total for question	3

Question	Acceptable answers	Additional guidance	Mark
26	<table><tr><th></th><th>Inherited</th><th>Environment</th></tr><tr><td>tongue rolling</td><td>✓</td><td></td></tr><tr><td>favourite music</td><td></td><td>✓</td></tr><tr><td>gender</td><td>✓</td><td></td></tr></table>	All 3 correct = 2 marks 2 correct = 1 mark 1 correct = 0 marks Ignore crosses in blank answer boxes	2
		Total for question	2

Question	Acceptable answers	Additional guidance	Mark
27(a)	Bb (1)	Accept bB	1
27(b)	(The brown eye allele is) <u>dominant</u> (1)	Ignore blue eye recessive	1
		Total for question	2

Question Number	Answer	Mark
28	D	1
29	A	1
30	A	1
31	C	1
32	B	1
33	B	1
34	C	1
35	A	1
36	D	1
37	C	1

Question	Acceptable answers	Additional guidance	Mark
38	<table><tr><td>4</td><td>growth and implantation of embryo into surrogate mother sheep</td></tr><tr><td>2</td><td>removal of DNA from egg cell nucleus</td></tr><tr><td>(1)</td><td>(removal of an udder cell from sheep X)</td></tr><tr><td>3</td><td>place udder cell DNA into egg cell</td></tr></table>	Correct sequence 2 marks One mark for 4 in top box. One mark for 2 and 3 in correct boxes	2
		Total for question	2

Question	Acceptable answers	Additional guidance	Mark
39(a)	Most: B D A C :Least (2)	Order must be fully correct for two marks allow one mark if B most reactive **and** C least reactive No credit if not used the letters	2
39(b)(i)	(Metal A) Bubbles form very slowly (1)		1
39(b)(ii)	(Metal C) No reaction (1)		1
		Total for question	4

Question	Acceptable answers	Additional guidance	Mark
40(a)(i)	Any **one** from: • the pressure on the point/bottom/tip (of the drawing pin) is high(er) • the smaller the (surface) area the higher the pressure (1)	Ignore references to force alone Accept converse: the pressure on the flat end/top (of the drawing pin) is low(er) Accept converse: the greater the (surface) area the lower pressure No credit for answers which do not use pressure eg flat at top but pointed at bottom	1
40(a)(ii)	• (with large tyres) it does not sink/get stuck (1) • (with large tyres) less pressure (1)	Ignore references to force or area alone Ignore references to grip alone (with small tyres) it might sink/get stuck (with small tyres) greater pressure	2

40(b)	(4500 / 0.8 =) 5625 (1) N/m^2 or Pa (1) OR 5.625 (1) kPa (1)	 Accept Nm^{-2}	2
		Total for question	5

SECTION B

Question	Acceptable answers	Additional guidance	Mark
41(a)(i)	Any **one** from: • volume of sodium thiosulfate • concentration of sodium thiosulfate • total volume of liquids • size of flask/reaction vessel/ depth of liquid • width/size/colour of cross on paper • position of person/height above cross/flask OWTTE	Ignore 'temperature' (given in stem) Ignore stirring/not stirring Ignore reference to hydrochloric acid	1
41(a)(ii)	Any **one** from: • wear goggles/<u>safety</u> glasses/<u>safety</u> spectacles (1) • don't breathe in vapours (1)	Ignore reference to glass breaking/clean up spillages etc Accept gloves Accept (use) well-ventilated room Ignore wear (gas) mask/face shields/safety shield/lab coat Ignore references to (protective) clothing and hair	1

41(b)	Increasing linear scale on each axis (1) Correct plotting of all five points (1) Line of best fit (1)	Must use at least half of "graph paper" Tolerance: middle of cross/dot/blob within a small square Must be a curve through all their five points Ignore extrapolation beyond grid	3
41(c)	(Conclusion 2 selected) followed by: When a greater volume of/more acid was present, the reaction took place in a shorter time (1) Correct reference to data eg. $5cm^3$ acid took 24 seconds/took less time/was fastest (1)	Must be a comparison/description of trend Accept when acid was more concentrated Accept reaction was faster/quicker Accept when greater volume of /more water present reaction took more time/was slower	2
		Total for question	7

Question	Acceptable answers	Additional guidance	Mark
42(a)	Any one from (same): • Size/mass/weight/length/volume of shape • Height of drop • Volume/depth/height of liquid/tube or same liquid	Ignore area Accept place where dropped from Accept amount of liquid Accept water in place of liquid Accept temperature	1
42(b)	Units (for time) (1)	Accept example of units eg seconds/minutes	1
42(c)(i)	E (1)	Accept 4.2	1
42(c)(ii)	Repeat OWTTE (1)		1
		Total for question	4

Question	Acceptable answers	Additional guidance	Mark
43(a)	Independent: <u>light</u> (1) Dependent: <u>height</u> (of plant) (1)		2
43(b)	Any two from: • volume of water • temperature • same type of beans/starting height/age • concentration of carbon dioxide • soil quality/type of soil/soil nutrients/minerals/fertiliser/ amount of soil/size of pot • same colour light • (measured over same) time	Accept amount of water Accept amount of carbon dioxide	2

43(c)(i)	Accept one from: • ruler (1) • tape measure (1) • metre stick (1)		1
43(c)(ii)	(Measure) in mm/to the nearest mm (1)	Ignore not taking measurements to nearest cm	1
		Total for question	6

Question	Acceptable answers	Additional guidance	Mark
44(a)(i)	to prevent/decrease/reduce heat loss (to the air) (1)	Accept to trap/retain heat Accept thermal energy for heat Ignore to prevent evaporation	1
44(a)(ii)	as a control/for comparison/to compare (1)	Accept to see if insulating had an effect/made a difference	1
44(b)	the temperature was/remained/stayed high**er** (with cotton wool) OR (the water/cup with) aluminium foil lost heat faster OR less heat lost (with the cotton wool) OR Temperature quoted for both materials after same time eg after 15 mins the water/cup (with cotton wool) was 72°C, water/cup (with foil) was 65°C (1)	Accept the temperature went down less (with cotton wool) Accept converse arguments	1
		Total for question	3