



GCSE Science A 1

Foundation Tier

Unit 5F

SPECIMEN MARK SCHEME

Version 1.0

Quality of Written Communication and levels marking

In Question 16(c) candidates are required to produce extended written material in English, and will be assessed on the quality of their written communication as well as the standard of the scientific response.

Candidates will be required to:

- use good English
- organise information clearly
- use specialist vocabulary where appropriate.

The following general criteria should be used to assign marks to a level:

Level 1: basic

- Knowledge of basic information
- Simple understanding
- The answer is poorly organised, with almost no specialist terms and their use demonstrating a general lack of understanding of their meaning, little or no detail
- The spelling, punctuation and grammar are very weak.

Level 2: clear

- Knowledge of accurate information
- Clear understanding
- The answer has some structure and organisation, use of specialist terms has been attempted but not always accurately, some detail is given
- There is reasonable accuracy in spelling, punctuation and grammar, although there may still be some errors.

Level 3: detailed

- Knowledge of accurate information appropriately contextualised
- Detailed understanding, supported by relevant evidence and examples
- Answer is coherent and in an organised, logical sequence, containing a wide range of appropriate or relevant specialist terms used accurately.
- The answer shows almost faultless spelling, punctuation and grammar.

In order to attain a mark within a certain level, **both** the science **and** the QWC must be of a standard appropriate to that level.

COMPONENT NUMBER: SCA1FP

COMPONENT NAME: GCSE Science A 1 Unit 5F

STATUS: Specimen V1.0

question	answers	extra information	mark
1(a)	to kill microorganisms	extra boxes ticked cancels the mark	1
1(b)	25 °C	extra boxes ticked cancels the mark	1
1(c)	S widest clear area		1 1
Total			4

question	answers	extra information	mark
2(a)	A – sperm B – egg C – fertilised egg D – embryo		1 1 1 1
2(b)	insert into mother womb / uterus		1 1
Total			6

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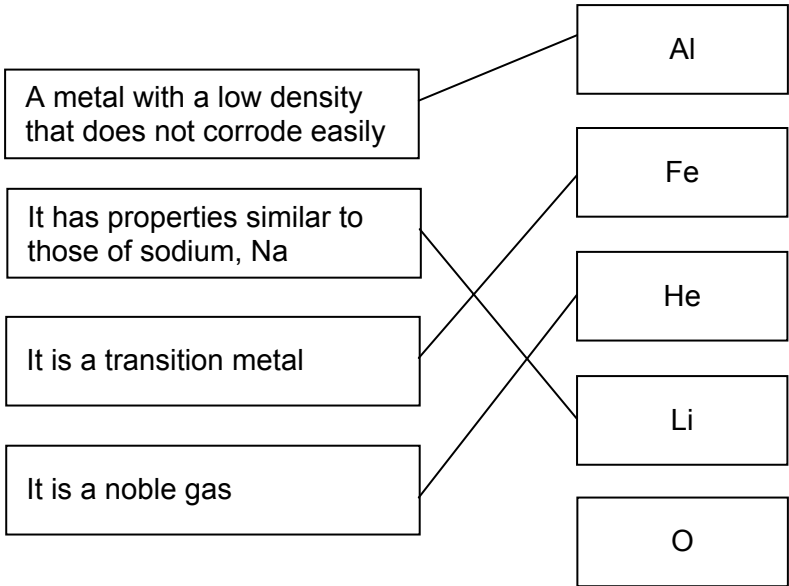
question	answers	extra information	mark
3(a)(i)	some deaths related to more than one factor		1
3(a)(ii)	answer in the range of 8 – 17 inclusive		1
3(b)	metabolic rate		1
	blood cholesterol level		1
Total			4

question	answers	extra information	mark
4	receptor detects stimulus / sharp object		1
	impulse / information / message passes along sensory neurone to spinal cord		1
	from spinal cord along motor neurone to muscle		1
	muscle contracts		1
Total			4

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question	answers	extra information	mark
5(a)(i)	this atom has a nucleus this atom has four electrons or two electrons in the inner shell / energy level and two electrons in the outer shell / energy level	accept this atom has electron(s) without indication of number(s) for 1 mark	1 2
5(a)(ii)	six / 6		1
5(b)	award 1 mark for each correct link line 		4
Total			8

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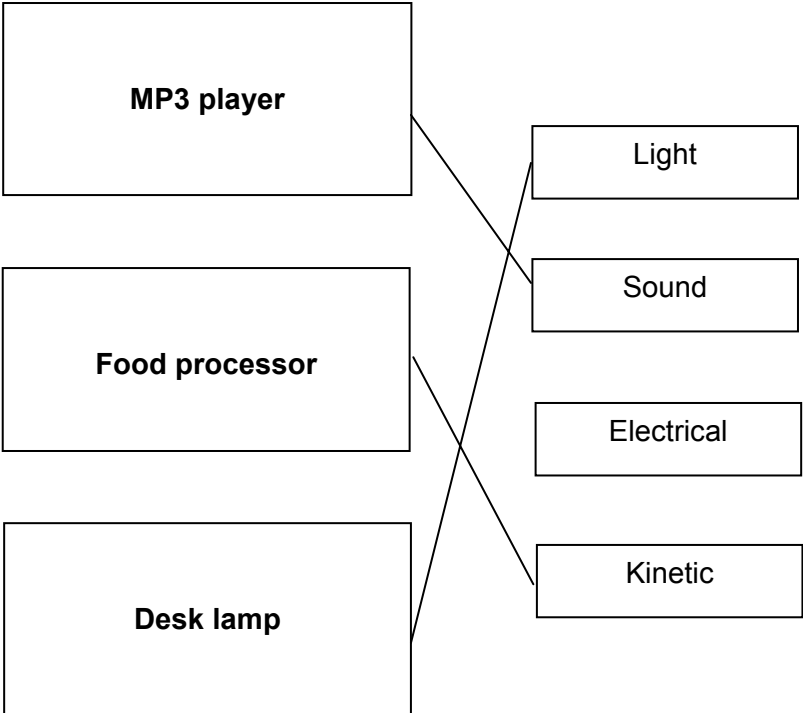
question	answers	extra information	mark
6(a)	causes dust pollution increases traffic		1 1
6(b)(i)	decomposition		1
6(b)(ii)	44(g)		1
6(c)	(calcium) hydroxide (calcium) carbonate	substances must be in the order shown	1 1
Total			6

question	answers	extra information	mark
7(a)	decane has the largest molecules methane and butane are gases at 20°C		1 1
7(b)(i)	water		1
7(b)(ii)	carbon dioxide		1
7(c)	sulfur dioxide is produced when sulfur burns therefore sulfur must be removed from these fuels because sulfur dioxide causes acid rain		1 1
Total			6

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STATUS: Specimen V1.0

question	answers	extra information	mark
8(a)	3 lines correct	allow 1 mark for each correct line more than 1 line drawn from any appliance and all those lines are incorrect 	3
8(b)(i)	light and sound	must have both for the mark	1

question	answers	extra information	mark
8(b)(ii)	0.6 or 60 %	for correct answer only NB answer 0.6 with any unit or 60 without % gains 1 mark only if answer is incorrect allow 1 mark for useful energy = 480	2
8(b)(iii)	transferred to surroundings	accept goes into the air accept heats the surroundings up accept gets spread out	1
Total			7

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STATUS: Specimen V1.0

question	answers	extra information	mark
9(a)	1		1
9(b)	3 and 4 or 1 and 2		1
9(c)	U-values for the 20 mm windows are the same or higher than those for the 16 mm windows therefore the 20 mm windows are no more energy efficient than 16 mm windows	accept so the 16 mm windows are as energy efficient as 20 mm windows	1 1
9(d)	1 and 2	must have both and no other	1
9(e)	Type B glass transmits less infrared than Type A glass and as infrared has a heating effect the conservatory will remain cooler	accept radiation / heat for infrared accept Type B glass absorbs more infrared than Type A glass	1 1
Total			7

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STATUS: Specimen V1.0

question	answers	extra information	mark
10(a)	solid		1
10(b)	gas		1
10(c)	solid		1
Total			3

question	answers	extra information	mark
11(a)	energy needed to produce evaporation comes from the body		1
	therefore this stops the body temperature rising		1
11(b)	the silver space blanket reflects energy back to the runner	accept heat for energy	1
	and this reduces the energy transferred from the body by radiation		1
Total			4

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STATUS: Specimen V1.0

question	answers	extra information	mark
12(a)	because there is insufficient data for line graph		1
12(b)	injection with no testosterone		1
12(c)	the performance of testosterone group improved more than that of placebo group		1
	quantitative figure given eg about 4 times greater		1
12(d)	(no) there was a significant improvement after 6 weeks	allow significant improvement after 3 weeks	1
Total			5

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STATUS: Specimen V1.0

question	answers	extra information	mark
13(a)	dead / inactive form of virus introduced into body		1
	white blood cells stimulated to produce antibodies		1
	correct antibodies rapidly made if the body is infected with the virus		1
13(b)	the percentage of children vaccinated fell to zero in 1995		1
	but the number of children developing autism rose and fell during the period when % vaccinations was falling		1
	number of children developing autism peaked after MMR vaccination had ceased		1
	which suggests that something other than MMR vaccination was causing autism		1
Total			7

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question	answers	extra information	mark
14(a)	because the traditional method of extraction produces large amounts of solid waste		1
	because the traditional method of extraction would cause atmospheric pollution due to the release of carbon dioxide / sulfur dioxide		1
14(b)(i)	because iron is cheap	accept because iron is much more abundant than copper	1
14(b)(ii)	iron is more reactive than copper		1
	therefore iron displaces copper from solutions of its salts / copper sulfate solution		1
Total			5

question	answers	extra information	mark
15(a)	oxygen / O ₂ / O		1
15(b)(i)	zinc boils / evaporates out of furnace because of its low boiling point		1
	therefore because lead has a high boiling point it remains in the furnace		1
15(b)(ii)	on cooling the zinc forms a solid and the lead remains liquid	accept because zinc is less dense it floats on lead	1
	therefore the lead can be poured off / decanted from the zinc	accept therefore the zinc can be poured off / decanted from the lead	1
Total			5

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question	answers	extra information	mark
16(a)	16 800 000	allow 1 mark for substitution into correct equation ie $100 \times 4200 \times 40$	2
16(b)	7	allow ecf from part (a)	1

16(c)			
Marks awarded for this answer will be determined by the Quality of Written Communication (QWC) as well as the standard of the scientific response. Examiners should also refer to the information on page 2.			
0 marks	Level 1 (1-2 marks)	Level 2 (3-4 marks)	Level 3 (5-6 marks)
No relevant content.	There is a brief explanation of the advantages and disadvantages of using solar energy to heat the water rather than using an electric immersion heater, including either advantages or disadvantages from the examples below.	There is some explanation of the advantages and disadvantages of using solar energy to heat the water rather than using an electric immersion heater, with at least one advantage and one disadvantage from the examples below.	There is a clear, balanced and detailed explanation of the advantages and disadvantages of using solar energy to heat the water rather than using an electric immersion heater, with a minimum of two advantages and two disadvantages from the examples below.
examples of the points made in the response advantages <ul style="list-style-type: none"> • a renewable energy source • energy is free • does not pollute the atmosphere • no fuel is burnt • energy can be stored (in the water) disadvantages <ul style="list-style-type: none"> • only available in daylight hours • availability fluctuates • insufficient hours of sunlight in some countries • average low intensity in some countries 		extra information accept specific examples of polluting gases accept unreliable energy source	

Total			9
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