GCSE Science A Physics 1

Foundation Tier

Physics 1F

SPECIMEN MARK SCHEME

Version 1.0

Quality of Written Communication and levels marking

In Question 11(d) 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

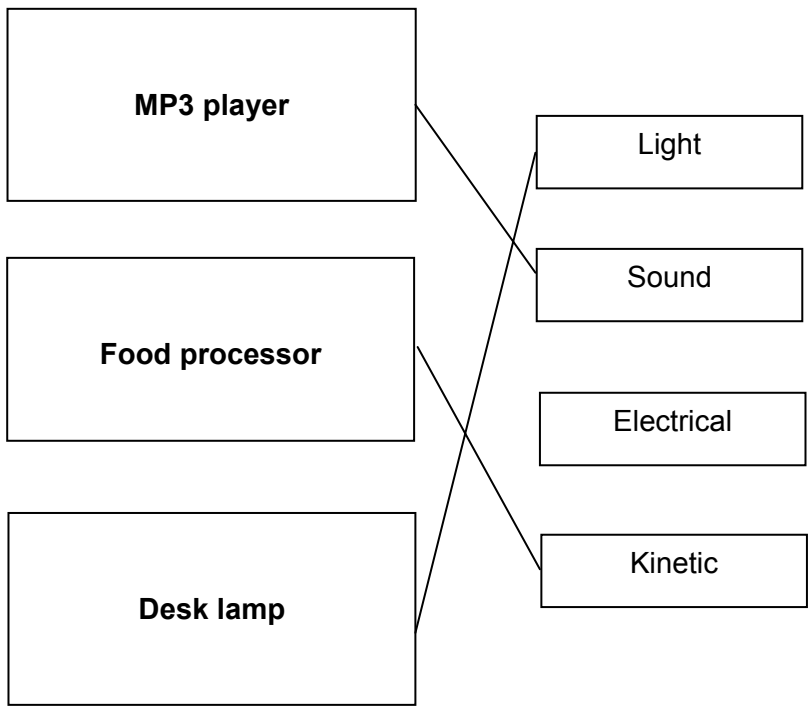
- Knowledge of accurate information appropriately contextualised
- Detailed understanding, supported by relevant evidence and examples
- Answer is coherent and in an organised, logical sequence, containing a wide range of appropriate or relevant specialist terms used accurately.
- The answer shows almost 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: PH1FP

COMPONENT NAME: GCSE Science A Physics 1F

STATUS: Specimen V1.0

question	answers	extra information	mark
1	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
Total			**3**

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STATUS: Specimen V1.0

question	answers	extra information	mark
2(a)	boiler generator		1 1
2(b)	0.3 or 30%	allow **1** mark for substitution of 2 correct values taken from the Sankey diagram into correct equation	2
2(c)	decrease		1
2(d)	any named biofuel eg wood, ethanol, straw		1
2(e)	(nuclear) fission		1
Total			**7**

COMPONENT NUMBER: PH1FP

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STATUS: Specimen V1.0

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

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STATUS: Specimen V1.0

question	answers	extra information	mark
4(a)	**b** **c**	correct order only	1 1
4(b)	mirror opposite road junction mirror facing correct way, angle correct	 judged by eye	1 1
Total			**4**

question	answers	extra information	mark
5(a)(i)	oscillation direction	correct order only	1 1
5(a)(ii)	sound		1
5(b)	1.6	allow **1** mark for correct substitution into correct equation ie 2 x 0.8	2
5(c)	as the wavelength increases so does the wave speed extra information eg wave speed increases faster between 0–40 m than between 100–140 m **or** not in proportion		1 1
Total			**7**

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COMPONENT NAME: GCSE Science A Physics 1F

STATUS: Specimen V1.0

question	answers	extra information	mark
6(a)(i)	red-shift		1
6(a)(ii)	expanding		1
6(b)	**C** it is furthest from the Earth **or** it is furthest away **or** it has the largest red-shift **or** it is moving (away) the fastest	 only score if **C** is chosen	1 1
Total			**4**

question	answers	extra information	mark
7(a)	48	allow **1** mark for calculating energy as 3.2 kWh	2
7(b)	largest power <u>and</u> longest time to run		1
Total			**3**

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STATUS: Specimen V1.0

question	answers	extra information	mark
8(a)	**1**		1
8(b)	**3** and **4** **or** **1** and **2**		1
8(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
8(d)	**1** and **2**	must have both and no other	1
8(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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COMPONENT NAME: GCSE Science A Physics 1F

STATUS: Specimen V1.0

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

question	answers	extra information	mark
10(a)(i)	to compare mobile phone usage between the two groups		1
10(a)(ii)	enough data to indicate relationships **or** reduce effect of anomalous data		1
10(b)(i)	ethical		1
10(b)(ii)	research may be biased (in favour of companies) negative effects on health may not get published	 accept negative effects on health may be played down	1 1
10(b)(iii)	it allows people to easily identify lower risk phones and this allows people to make a more informed choice	 accept and this allows a comparison to be made	1 1
Total			**7**

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COMPONENT NAME: GCSE Science A Physics 1F

STATUS: Specimen V1.0

question	answers	extra information	mark
11(a)	because black is a good absorber of radiation		1
	there will be a faster transfer of energy	allow the temperature of the water rises faster	1
11(b)	16 800 000	allow **1** mark for substitution into correct equation ie 100 x 4200 x 40	2
11(c)	7	allow ecf from part (b)	1

Question 11 continues on the next page . . .

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STATUS: Specimen V1.0

<table>
<tr><td colspan="4">11(d)</td></tr>
<tr><td colspan="4">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.</td></tr>
<tr><td>0 marks</td><td>Level 1 (1-2 marks)</td><td>Level 2 (3-4 marks)</td><td>Level 3 (5-6 marks)</td></tr>
<tr><td>No relevant content.</td><td>There is a brief description 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.</td><td>There is a description of some 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.</td><td>There is a clear, balanced and detailed description 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.</td></tr>
<tr><td colspan="2">examples of the points made in the response

advantages
• a renewable energy source
• energy is free
• does not pollute the atmosphere
• no fuel is burnt
• energy can be stored (in the water)

disadvantages
• only available in daylight hours
• availability fluctuates
• insufficient hours of sunlight in some countries
• average low intensity in some countries</td><td colspan="2">extra information

accept specific examples of polluting gases

accept unreliable energy source</td></tr>
</table>

Total			**11**