GCSE Additional Science Physics 2

Foundation Tier

Physics 2F

SPECIMEN MARK SCHEME

Version 1.0

Quality of Written Communication and levels marking

In Question 10(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: PH2FP

COMPONENT NAME: GCSE Additional Science Physics 2F

STATUS: Specimen V1.0

question	answers	extra information	mark
1	**A** – switch **B** – cell **C** – diode		1 1 1
Total			**3**

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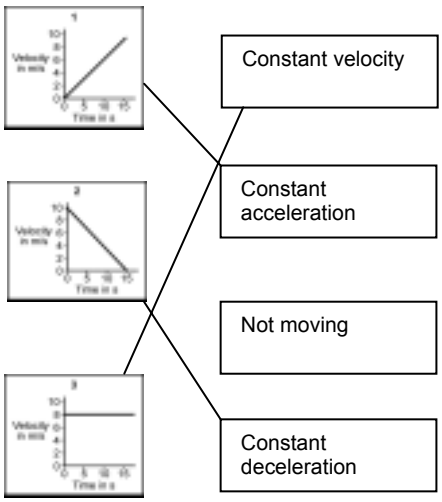
STATUS: Specimen V1.0

question	answers	extra information	mark
2	**1** mark for each line  	if more than 1 line is drawn from a graph in List A then all those lines are marked incorrect	3
Total			**3**

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STATUS: Specimen V1.0

question	answers	extra information	mark
3(a)	gravity		1
3(b)	air resistance		1
3(c)	bigger than accelerates downwards	correct order only	1 1
Total			**4**

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COMPONENT NAME: GCSE Additional Science Physics 2F

STATUS: Specimen V1.0

question	answers	extra information	mark
4(a)	plastic	accept rubber	1
	as it is a good electrical insulator	accept as it is a poor electrical conductor any mention of heat negates this mark	1
	copper		1
	as it is a good electrical conductor	any mention of heat negates this mark	1
4(b)	all ticks and crosses in the correct places **A** – × **B** – ✓ **C** – × **D** – ✓	allow **1** mark for 3 correct	2
Total			**6**

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STATUS: Specimen V1.0

question	answers	extra information	mark
5(a)(i)	1500	allow **1** mark for subtraction shown ie 2000 – 500	2
5(a)(ii)	it accelerates in a forward direction	accept gains speed/velocity	1 1
5(b)(i)	23 (m)		1
5(b)(ii)	20 (m)	only this answer	1
5(b)(iii)	any **one** from: • drinking alcohol • taking drugs • tired	accept (a specific) distraction accept any factor that affects the driver's reactions	1
Total			**7**

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COMPONENT NAME: GCSE Additional Science Physics 2F

STATUS: Specimen V1.0

question	answers	extra information	mark
6(a)(i)	all 3 correct kettle 13 A hair straighteners 3 A coffee maker 13 A	allow **1** mark for 2 correct	2
6(a)(ii)	fuse will (get hot and) melt causing the circuit to be broken	allow blow for melt do **not** accept snap/break	1 1
6(b)(i)	the hairdryer is double insulated	accept has a plastic cover	1
6(b)(ii)	1150	allow **1** mark for substitution into correct equation ie 5 × 230 allow **both** marks for 1.15 provided the unit is changed to kW	2
Total			**7**

COMPONENT NUMBER: PH2FP

COMPONENT NAME: GCSE Additional Science Physics 2F

STATUS: Specimen V1.0

question	answers	extra information	mark
7(a)(i)	boiling water in a beaker		1
7(a)(ii)	any **two** from: • more precise • sensitive • accurate		2
7(b)	higher the temperature, lower the resistance plus additional detail eg resistance falls fastest between 0–20 ^{o}C resistance falls slowest between 80–100 ^{o}C	 maximum of **2** marks, 1 for each additional correct detail accept for **1** mark resistance is not constant (at all temperatures)	3
7(c)	one that acts as a thermostat to switch heating on and off		1
Total			**7**

COMPONENT NUMBER: PH2FP

COMPONENT NAME: GCSE Additional Science Physics 2F

STATUS: Specimen V1.0

question	answers	extra information	mark
8(a)	4 (N)	allow **1** mark for substitution into correct equation ie 0.4 × 10	2
8(b)	4.8	their (a) × 1.2 correctly calculated gains **2** marks allow **1** mark for substitution into correct equation ie 4 × 1.2 or their (a) × 1.2	2
	joule or J		1
Total			**5**

COMPONENT NUMBER: PH2FP

COMPONENT NAME: GCSE Additional Science Physics 2F

STATUS: Specimen V1.0

question	answers	extra information	mark
9(a)(i)	cosmic		1
9(a)(ii)	longer the flight time, greater the dose	accept positive correlation do **not** accept directly proportional	1
9(a)(iii)	accept any value between 0.055 and 0.062 inclusive receive higher dose than an 8 hour flight but less than an 11 hour flight		1 1
9(b)	he should not be concerned because additional dose is very small (1.5) / additional dose is only 1.5 which is well below the dose that may cause cancer	accept 0.75 for 1.5	1 1

Question 9 continues on the next page . . .

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STATUS: Specimen V1.0

Question 9 continued . . .

question	answers	extra information	mark
9(c)	almost the same number of non-aircrew developed leukaemia / cancer		1
	therefore other factors could be involved	accept specific examples for either aircrew or other sample	1
Total			**8**

COMPONENT NUMBER: PH2FP

COMPONENT NAME: GCSE Additional Science Physics 2F

STATUS: Specimen V1.0

question	answers	extra information	mark
10(a)	**Y** and **Z** same number of protons	both required, either order	1 1
10(b)	fusion energy	correct order only	1 1

10(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 description of the life cycle of a star like the sun.	There is some description of the life cycle of a star like the sun.	There is a clear and detailed description of the life cycle of a star like the sun.

examples of the physics points made in the response	extra information
	to score full marks either the term red giant or white dwarf **must** be used
• gases and dust pulled together by gravity	
• nuclear fusion begins	
• when forces are balanced star is stable	
• expands	
• cools	
• becomes a red giant	do **not** accept red supergiant
• shrinks	
• temperature rises	
• glows much brighter	
• becomes a white dwarf	any mention of supernova negates a mark any mention of black hole negates a mark
	individual points must be linked in a correct sequence

Total			10