



**GCSE Physics 3**

**Foundation Tier**

**Physics 3F**

**SPECIMEN MARK SCHEME**

**Version 1.0**

## Quality of Written Communication and levels marking

In Question 11 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: PH3FP**

**COMPONENT NAME: GCSE Physics 3F**

**STATUS: Specimen V1.0**

question	answers	extra information	mark
<b>1(a)</b>	<b>A</b> – lens		1
	<b>B</b> – retina		1
	<b>C</b> – pupil		1
<b>1(b)</b>	<b>L</b>		1
	it diverges the light (before entering the eye) <b>or</b> it will make the light focus on the retina	accept spreads for diverges	1
<b>Total</b>			<b>5</b>

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question	answers	extra information	mark
<b>2(a)</b>	centripetal		1
<b>2(b)</b>	<b>B</b>		1
<b>2(c)</b>	decreases		1
<b>Total</b>			<b>3</b>

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<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>3(a)</b>	<b>X</b> drawn at the centre of the tyre	judge by eye	1
<b>3(b)(i)</b>	second		1
<b>3(b)(ii)</b>	decreases it		1
<b>Total</b>			<b>3</b>

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<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>4(a)(i)</b>	must use an a.c.		1
<b>4(a)(ii)</b>	more than 30		1
<b>4(b)</b>	iron	reason can only score if iron is chosen	1
	because it can be magnetised (and demagnetised) easily		1
<b>Total</b>			<b>4</b>

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question	answers	extra information	mark
<b>5(a)</b>	<b>D</b>		<b>1</b>
<b>5(b)(i)</b>	total internal reflection shown		<b>1</b>
	2 or 3 reflections only		<b>1</b>
<b>5(b)(ii)</b>	<b>R U S T</b>	<p>correct order</p> <p>allow <b>2</b> marks for two in correct place</p> <p>allow <b>1</b> mark for one in correct place</p>	<b>3</b>
<b>Total</b>			<b>6</b>

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question	answers	extra information	mark
<b>6(a)</b>	converging	accept convex	1
<b>6(b)</b>	3	allow <b>1</b> mark for substitution into the correct equation ie $\frac{3}{1}$ or $\frac{15}{5}$	2
<b>6(c)</b>	bigger upright virtual	accept magnified	1 1 1
<b>Total</b>			<b>6</b>

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question	answers	extra information	mark
<b>7(a)</b>	360	allow <b>1</b> mark for correct length used ie 1.2 m	3
	Newton-metre or Nm	allow <b>2</b> marks for substitution into correct equation - ie $300 \times 1.2$ allow <b>1</b> mark only for an answer 240	1
<b>7(b)</b>	the force is applied further from the pivot		1
	which causes an increased moment to act on the steel bar		1
	and therefore an increased force acts on the tree stump		1
<b>Total</b>			<b>7</b>



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<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>8(a)</b>	force		<b>1</b>
<b>8(b)</b>	5	allow <b>1</b> mark for substitution into correct equation ie $\frac{50}{10}$	<b>2</b>
<b>8(c)</b>	the same as/equal to	accept =	<b>1</b>
<b>Total</b>			<b>4</b>

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question	answers	extra information	mark
9(a)	so the results can be compared fairly	fair test is insufficient	1
9(b)	J L M	all 3 required and no other	1
9(c)(i)	for a given current the number of paper clips increases by the same factor as the number of turns  plus a mathematical explanation using the data eg a current of 1 A with 10 turns picks up 3 clips, a current of 1 A with 20 turns picks up 6 clips		1  1
9(c)(ii)	30	allow 1 mark for showing correct use of figures eg 20 turns x 5 = 100 turns	2
9(c)(iii)	check the new data/repeat the experiment  to identify any anomalous results  then reconsider the prediction / hypothesis in the light of new evidence		1  1  1
<b>Total</b>			<b>9</b>

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<b>question</b>	<b>answers</b>	<b>extra information</b>	<b>mark</b>
<b>10(a)</b>	X-rays are ionising <b>or</b> X-rays kill / damage cells	accept cause cancer	1
	any stray X-rays are absorbed by the screen		1
	which reduces the radiation dose to the radiographer		1
<b>10(b)</b>	medical records / X-ray records		1
	of people with cancer		1
<b>10(c)</b>	a CT scan gives a 3D image		1
	therefore the image can be observed from different directions		1
<b>Total</b>			<b>7</b>

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<b>11</b>			
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.			
<b>0 marks</b>	<b>Level 1 (1-2 marks)</b>	<b>Level 2 (3-4 marks)</b>	<b>Level 3 (5-6 marks)</b>
No relevant content.	There is a brief explanation of how a current is caused to flow in the starter motor circuit.	There is some explanation of how a current is caused to flow in the starter motor circuit.	There is a clear and detailed explanation of how a current is caused to flow in the starter motor circuit.
<b>examples of the physics points made in the response</b>  current flows through the coil / electromagnet  magnetic field produced  (short side of) iron bar attracted to electromagnet  contacts pushed together (by iron bar)  starter motor circuit completed  current flows through starter motor  <b>or</b>  p.d. across starter motor		<b>extra information</b>    accept electromagnet switches on	
<b>Total</b>			<b>6</b>