

Waves

Past Paper Answers AQA Physics GCSE

Question	Answers	Extra information	Mark
1	both answers correct  virtual  diminished	answers may be in either order  allow a description of diminished (eg smaller / reduced)	1
2	any two correct lines drawn from the top of the object, passing through the lens and traced backwards  image drawn in the correct position and with the correct orientation	allow construction lines that are not dashed allow 1 mark for two correct lines drawn from the top of the object, passing through the lens BUT not traced backwards  mark only scores if first two marks score	2  1

3	(increasing the object distance) decreases the image distance more rapidly at small (object) distances / more gradually at larger (object) distances	do not accept inversely proportional	1
4	$\frac{(2.2 - 1.4)}{2}$ <p>uncertainty = (±) 0.4 (cm)</p>	<p>allow</p> $\frac{1.9 + 1.7 + 2.2 + 1.4}{4} = 1.8 \quad (1)$ $(2.2 - 1.8 = ) (\pm) 0.4 \text{ (cm)} \quad (1)$	1  1
5	<p>only red is transmitted by the filter</p> <p>red is absorbed by the (blue) object</p> <p>(so) no light is reflected by the (blue) object</p>		1  1  1

6	<p>any one from:</p> <ul style="list-style-type: none"> <li>• (sun) tan</li> <li>• energy efficient lamps</li> </ul>	<p>allow</p> <ul style="list-style-type: none"> <li>• (invisible) security coding</li> <li>• detecting forged bank notes</li> <li>• kill microbes</li> <li>• attract insects</li> <li>• sterilise (surgical) equipment</li> <li>• cause the body to produce vitamin D</li> <li>• increasing the growth rate of plants</li> <li>• water purification</li> </ul>	1								
7	$3 \times 10^{-7} \text{ m}$		1								
8	$3.0 \times 10^8 = \text{frequency} \times 3 \times 10^{-7}$ $\text{frequency} = \frac{3.0 \times 10^8}{3 \times 10^{-7}}$ $\text{frequency} = 1 \times 10^{15} \text{ (Hz)}$	<p>allow ecf from question 05.2</p>	<p>1</p> <p>1</p> <p>1</p>								
9	<table border="0" style="width: 100%; text-align: center;"> <thead> <tr> <th style="width: 50%;">Wave</th> <th style="width: 50%;">Name</th> </tr> </thead> <tbody> <tr> <td style="border: 1px solid black; padding: 5px;">Wave E</td> <td style="border: 1px solid black; padding: 5px;">Infrared</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">Wave F</td> <td style="border: 1px solid black; padding: 5px;">Visible light</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">Wave G</td> <td style="border: 1px solid black; padding: 5px;">X-rays</td> </tr> </tbody> </table> <p>all three lines correct for 1 mark</p>		Wave	Name	Wave E	Infrared	Wave F	Visible light	Wave G	X-rays	1
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<b>10</b>	in a transverse wave, the oscillations / vibrations are perpendicular to the direction of energy transfer	allow direction of wave travel for direction of energy transfer	<b>1</b>
	in a longitudinal wave, the oscillations / vibrations are parallel to the direction of energy transfer		<b>1</b>