



# **Mark Scheme (Final)**

Summer 2018

Pearson Edexcel International GCSE  
In Physics (4PH0) Paper 2PR

Question number	Answer	Notes	Marks
2 (a)	work (done) = force $\times$ distance (moved);	allow rearrangements and standard symbols e.g. $W = F \times d$	1
(b)	dimensionally correct substitution;  correct evaluation;  unit;  e.g. (W =) $275\,000 \times (0.163 - 0.008)$ (W =) 42 600  joules / J	allow force multiplied by any distance unit conversion error or POT error loses the evaluation mark e.g. 4 262 500, 4262.5 mark independently  allow $275 \times 15.5$ allow 43 000, 42 630, 42 625  allow kJ  42.6(25) kJ scores 3 marks	3

Total for Question 2 = 4 marks

Question number	Answer	Notes	Marks
8	<p>any six from:</p> <p>MP1. excessive exposure is caused by high intensity or high amplitude or long period of exposure;</p> <p>MP2. <b>radio waves (probably) don't</b> cause harm to human bodies;</p> <p>MP3. microwaves can cause (internal) heating of body (cells);</p> <p>MP4. IR can cause surface burns to skin;</p> <p>MP5. visible can cause vision impairment;</p> <p>MP6. UV can cause <u>skin</u> cancer;</p> <p>MP7. x-rays can {mutate/kill} cells inside the body;</p> <p>MP8. gamma can {mutate/kill} cells inside the body;</p>	<p>ignore references to devices references to advantages <b>unqualified 'damage' as it</b> is in the stem of the question</p> <p>allow tissue for cells throughout</p> <p><b>not 'sunburn'</b></p> <p>allow blindness, damage to fovea/retina</p> <p>allow sunburn ionise cells / DNA damages eyes/cornea, blindness causes cataracts cause skin aging</p> <p>allow ionise cells / DNA causes radiation poisoning causes cancer</p> <p>allow ionise cells / DNA causes radiation poisoning causes cancer</p> <p>if no specific parts of the EM spectrum are referred to, a max. of 1 mark can be awarded for any/all of the acceptable forms of damage</p>	6

Total for Question 8 = 6 marks