

Question Number	Answer	Mark
14a	<p>Calculates θ (using tan) (1)</p> <p>Calculates d using $\frac{1}{\text{number of lines per m}}$ (1)</p> <p>Use of $n\lambda = d\sin\theta$ (1)</p> <p>$\lambda = 6.3 \times 10^{-7} \text{ m}$ (1)</p> <p><u>Example of calculation</u></p> <p>$\tan \theta = \frac{0.500 \text{ m}}{1.690 \text{ m}}$, therefore $\theta = 16.5^\circ$</p> <p>$d = \frac{1}{450,000} = 2.22 \times 10^{-6} \text{ m}$.</p> <p>$\lambda = \frac{d\sin\theta}{n} = \frac{(2.22 \times 10^{-6} \text{ m})(\sin 16.5^\circ)}{(1)} = 6.31 \times 10^{-7} \text{ m}$</p>	4
14b	<p>(Waves from the different slits meet and) superposition/interference takes place (1)</p> <p>(Bright dots are where) waves are in phase (1)</p> <p>(Superposition/interference) is constructive (1)</p>	3
14c	<p>White dot at O (1)</p> <p>Spectra seen (either side of O) (1)</p>	2
Total for question 14		9