

Diffraction - Mark Scheme

Q1.

Question Number	Answer	Mark
	<p>C is the correct answer (The diffraction grating is set up so that it is parallel to the screen)</p> <p>A is not the correct answer as θ is calculated by taking measurements of diffraction grating to screen distance and the distance between bright dots then using trigonometry</p> <p>B is not the correct answer as the diffraction grating should be perpendicular to the laser light beam</p> <p>D is not the correct answer as the distance between the bright dots is best measured using a metre rule</p>	(1)

Q2.

Question Number	Answer	Mark
	<p>B is the correct answer as $n\lambda = d\sin\theta$, and reducing d would increase $\sin\theta$ if n and λ remain the same.</p> <p>A is not the correct answer as this would result in the maxima being closer together</p> <p>C is not the correct answer as this would have no effect on the distance</p> <p>D is not the correct answer as this would result in the maxima being closer together</p>	(1)

Q3.

Question Number	Answer	Mark
a	Waves spread out (as they pass through the gap) (1)	(2)
	Each point on the wave(front) acts as a source of new/secondary wave(let)s (1)	
b	Maximum intensity halfway between A and B (by eye) (1)	(3)
	Central maximum broader than other maxima (by eye) (1)	
	Central maximum greater than twice the height from zero intensity (by eye) of other maxima (1)	