

Question			Expected response	Max mark	Additional guidance
10.	(b)	(iii)	$(\sin \theta = \frac{m\lambda}{d} \text{ so if } d \text{ is greater then})$ angle θ will be smaller (1) Smaller angle more difficult to measure accurately/greater <u>percentage</u> uncertainty. (1)	2	Accept: maxima are closer together (1) Smaller distance between maxima more difficult to measure accurately/greater percentage uncertainty. (1)
11.	(a)		$n = \frac{\sin \theta_1}{\sin \theta_2}$ (1) $2.42 = \frac{\sin 49.0}{\sin \theta_2}$ (1) $\theta_2 = 18.2^\circ$ (1)	3	Accept: 18, 18.17, 18.172 Accept: $\frac{n_2}{n_1} = \frac{\sin \theta_1}{\sin \theta_2}$ (1) $\frac{2.42}{1} = \frac{\sin 49.0}{\sin \theta_2}$ (1) $\theta_2 = 18.2^\circ$ (1)
	(b)		$\sin \theta_c = \frac{1}{n}$ (1) $\sin \theta_c = \frac{1}{2.42}$ (1) $\theta_c = 24.4^\circ$ (1)	3	Accept: 24, 24.41, 24.407
	(c)		more (sparkle) (1) Critical angle for moissanite is smaller than for diamond (1) (Total internal) reflection more likely (with moissanite). (1)	3	Look for this statement first - if incorrect or missing then (0 marks). Critical angle for moissanite is smaller than for diamond can be shown by calculation.