

Optics

Specification reference	Checklist questions	
3.3.2.1	Can you define path difference and coherence?	<input type="checkbox"/>
3.3.2.1	Can you explain interference and diffraction using a laser as a source of monochromatic light?	<input type="checkbox"/>
3.3.2.1	Can you describe Young's double-slit experiment?	<input type="checkbox"/>
3.3.2.1	Can you describe the use of two coherent sources or the use of a single source with double slits to produce an interference pattern?	<input type="checkbox"/>
3.3.2.1	Can you explain fringe spacing using the equation $w = \frac{\lambda D}{s}$?	<input type="checkbox"/>
3.3.2.1	Can you describe the production of an interference pattern using white light?	<input type="checkbox"/>
3.3.2.1	Can you describe safety issues associated with using lasers?	<input type="checkbox"/>
3.3.2.1	Can you describe and explain interference produced with sound and electromagnetic waves?	<input type="checkbox"/>
3.3.2.1	Can you explain how our knowledge and understanding of the nature of electromagnetic radiation has changed over time?	<input type="checkbox"/>
3.3.2.1	Have you carried out an investigation of interference effects using the Young double-slit experiment and the diffraction grating?	<input type="checkbox"/>
3.3.2.2	Can you describe the appearance of the diffraction pattern from a single slit using monochromatic and white light?	<input type="checkbox"/>
3.3.2.2	Can you describe how the width of the central diffraction maximum varies with wavelength and slit width?	<input type="checkbox"/>

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3.3.2.2	Can you describe the diffraction pattern when light is shone on a plane transmission diffraction grating at normal incidence?	<input type="checkbox"/>
3.3.2.2	Can you derive $d\sin\theta = n\lambda$?	<input type="checkbox"/>
3.3.2.2	Can you suggest some applications of diffraction gratings?	<input type="checkbox"/>
3.2.2.3	Can you calculate the refractive index of a substance using $n = \frac{c}{c_s}$?	<input type="checkbox"/>
3.2.2.3	Can you recall that the refractive index of air is approximately 1?	<input type="checkbox"/>
3.2.2.3	Can you recall and use Snell's law of refraction ($n_1\sin\theta_1 = n_2\sin\theta_2$) for a boundary?	<input type="checkbox"/>
3.2.2.3	Can you explain total internal reflection using $\sin\theta_c = \frac{n_2}{n_1}$?	<input type="checkbox"/>
3.2.2.3	Can you explain fibre optics, including the function of the cladding?	<input type="checkbox"/>
3.2.2.3	Can you explain material and modal dispersion?	<input type="checkbox"/>
3.2.2.3	Can you explain the principles and consequences of pulse broadening and absorption?	<input type="checkbox"/>