# 16. Superposition

**16.1 Stationary waves**

**16.2 Diffraction**

**16.3 Interference**

**16.4 Two-source interference patterns**

**16.5 Diffraction grating**

*(a)* explain and use the principle of superposition in simple applications

*(b)* show an understanding of experiments that demonstrate stationary waves using microwaves, stretched strings and air columns

*(c)* explain the formation of a stationary wave using a graphical method, and identify nodes and antinodes

*(d)* explain the meaning of the term diffraction

*(e)* show an understanding of experiments that demonstrate diffraction including the diffraction of water waves in a ripple tank with both a wide gap and a narrow gap

*(f)* show an understanding of the terms interference and coherence

*(g)* show an understanding of experiments that demonstrate two-source interference using water, light and microwaves

*(h)* show an understanding of the conditions required if two-source interference fringes are to be observed

*(i)* recall and solve problems using the equation **λ = ax/D** for double-slit interference using light

*(j)* recall and solve problems using the formula ***d* sinθ = *n*λ** and describe the use of a diffraction grating to determine the wavelength of light (the structure and use of the spectrometer are not included).

**Paper 1 Questions**

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**Paper 2 Questions**











