

- 7 (a) State what is meant by the *diffraction* of a wave.

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[2]

- (b) A pair of distant stars is being observed through a telescope with an aperture of 12.0 cm. The stars emit light with a wavelength of 550 nm.

- (i) Explain what is meant by the *Rayleigh criterion* for the resolution of the two stars as observed through the telescope.

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[2]

- (ii) State and explain the effect of having a smaller aperture on the resolving power of the telescope.

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[1]

- (iii) Calculate the minimum angular separation θ , between the stars that allows them to be just resolved by the telescope.

$$\theta = \dots \text{rad} [2]$$