

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.

$\theta =$ rad [2]