

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

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.....[2]

(b) Laser light of wavelength 500nm is incident normally on a diffraction grating. The resulting diffraction pattern has diffraction maxima up to and including the fourth-order maximum.

Calculate, for the diffraction grating, the minimum possible line spacing.

line spacing = m [3]

(c) The light in (b) is now replaced with red light. State and explain whether this is likely to result in the formation of a fifth-order diffraction maximum.

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.....[2]

[Total: 7]