

- 6 (a) State what is meant by *diffraction* and by *interference*.

diffraction:

.....

interference:

.....

[3]

- (b) Light from a source S_1 is incident on a diffraction grating, as illustrated in Fig. 6.1.

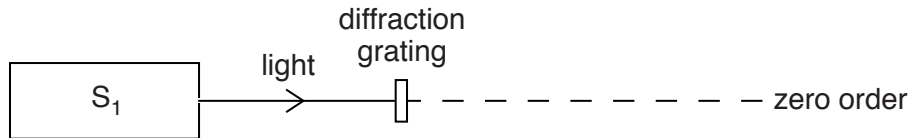


Fig. 6.1 (not to scale)

The light has a single frequency of 7.06×10^{14} Hz. The diffraction grating has 650 lines per millimetre.

Calculate the number of orders of diffracted light produced by the grating. Do not include the zero order.

Show your working.

number = [3]

- (c) A second source S_2 is used in place of S_1 . The light from S_2 has a single frequency lower than that of the light from S_1 .

State and explain whether more orders are seen with the light from S_2 .

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.....[1]