2 Fig. 2.1 gives information on three lines observed in the emission spectrum of hydrogen atoms.

wavelength / nm	photon energy / 10^{-19} J
656	3.03
486	.....
1880	1.06

Fig. 2.1

(a) Complete Fig. 2.1 by calculating the photon energy for the wavelength of 486 nm.

[2]

(b) Fig. 2.2 is a partially completed diagram to show energy levels of a hydrogen atom.

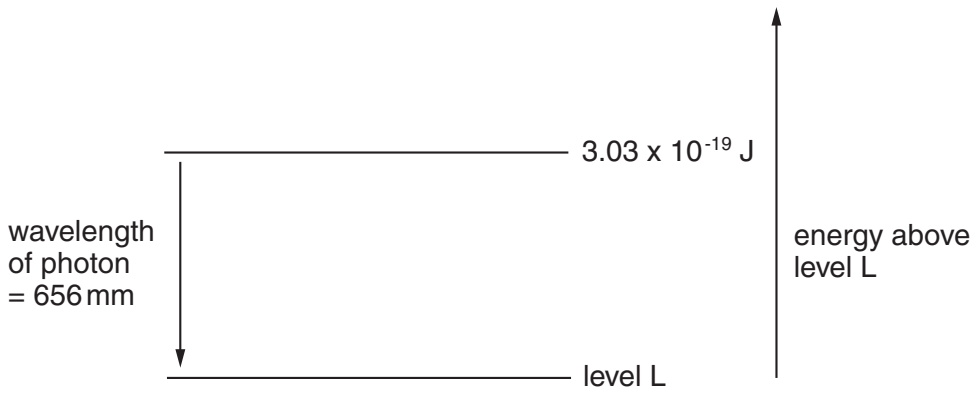

Fig. 2.2

On Fig. 2.2 draw one further labelled energy level, and complete the diagram with arrows to show the energy changes for the other two wavelengths. [3]

[Turn over