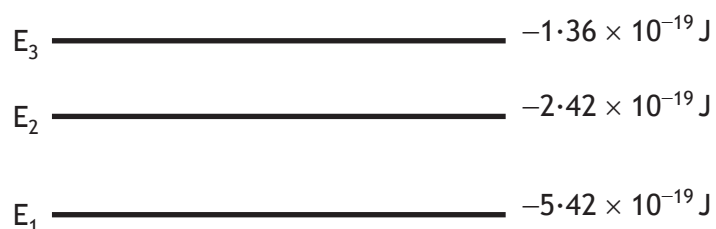


6. The visible spectrum of light emitted by a star is observed to contain a number of dark lines. The dark lines occur because certain wavelengths of light are absorbed when light passes through atoms in the star's outer atmosphere.

The diagram shows some of the energy levels for a hydrogen atom.



- (a) For the energy levels shown in the diagram, identify the electron transition that would lead to the absorption of a photon with the highest frequency.

1

- (b) An electron makes the transition from energy level  $E_1$  to  $E_3$ . Determine the frequency of the photon absorbed.

3

*Space for working and answer*



\* X 7 5 7 7 6 0 1 1 6 \*