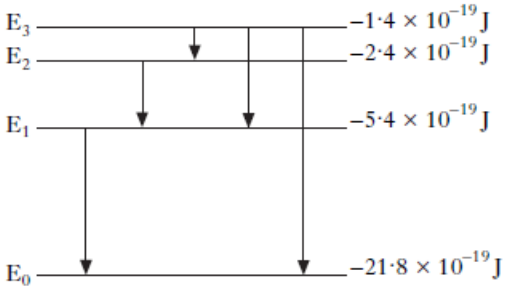
Unit 2 – Particles & Waves
Section 7 - Spectra

2007 **17.** The diagram represents some electron transitions between energy levels in an atom.



The radiation emitted with the shortest wavelength is produced by an electron making transition

A E_1 to E_0

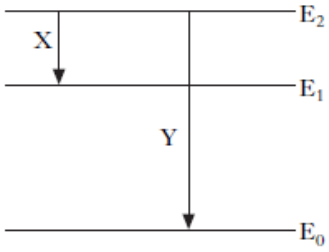
B E_2 to E_1

C E_3 to E_2

D E_3 to E_1

E E_3 to E_0.

2008 **17.** Part of the energy level diagram for an atom is shown.



X and Y represent two possible electron transitions.
Which of the following statements is/are correct?

I Transition Y produces photons of higher frequency than transition X.

II Transition X produces photons of longer wavelength than transition Y.

III When an electron is in the energy level E_0, the atom is ionised.

A I only

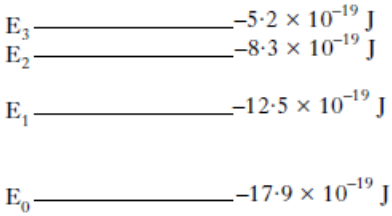
B I and II only

C I and III only

D II and III only

E I, II and III

2010 **15.** The diagram represents some of the energy levels for an atom of a gas.



White light passes through the gas and absorption lines are observed in the spectrum.

Which electron transition produces the absorption line corresponding to the lowest frequency?

A E_3 to E_2

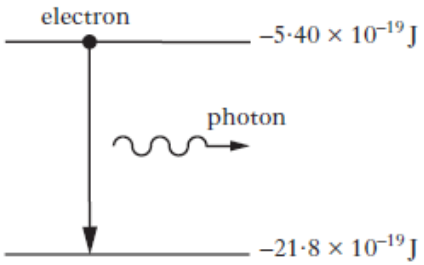
B E_2 to E_3

C E_1 to E_0

D E_0 to E_1

E E_0 to E_3

2012 **17.** In an atom, a photon of radiation is emitted when an electron makes a transition from a higher energy level to a lower energy level as shown.



The wavelength of the radiation emitted due to an electron transition between the two energy levels shown is

A $1{\cdot}2 \times 10^{-7}$ m

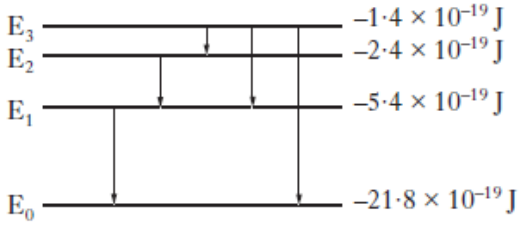
B $7{\cdot}3 \times 10^{-8}$ m

C $8{\cdot}2 \times 10^{6}$ m

D $1{\cdot}4 \times 10^{7}$ m

E $2{\cdot}5 \times 10^{15}$ m.

2015 **18.** The diagram represents some electron transitions between energy levels in an atom.



The radiation emitted with the shortest wavelength is produced by an electron making transition

A E_1 to E_0

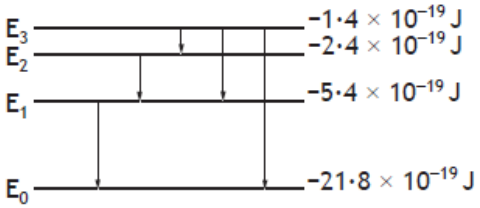
B E_2 to E_1

C E_3 to E_2

D E_3 to E_1

E E_3 to E_0.

2015 **16.** The diagram represents some electron transitions between energy levels in an atom.



The radiation emitted with the shortest wavelength is produced by an electron making transition

A E_1 to E_0

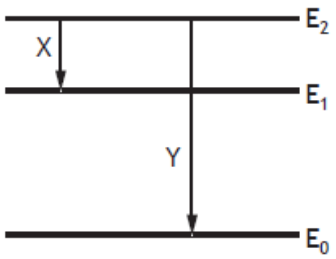
B E_2 to E_1

C E_3 to E_2

D E_3 to E_1

E E_3 to E_0.

2016 16. Part of the energy level diagram for an atom is shown



X and Y represent two possible electron transitions.

A student makes the following statements about transitions X and Y.

I Transition Y produces photons of higher frequency than transition X

II Transition X produces photons of longer wavelength than transition Y

III When an electron is in the energy level E_0, the atom is ionised.

Which of the statements is/are correct?

A I only

B I and II only

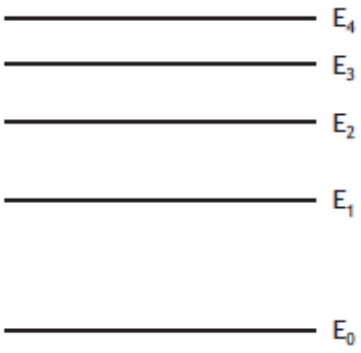
C I and III only

D II and III only

E I, II and III

2019 19. When light passes through the outer layers of the Sun certain frequencies of light are absorbed by hydrogen atoms, producing dark lines in the spectrum.

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



The number of absorption lines in the spectrum caused by the transition of electrons between these energy levels is

A 4

B 6

C 9

D 10

E 20.