Session 10 worksheet

\[ C = 3.00 \times 10^8 \text{ m/s} \quad h = 6.626\,2 \times 10^{-34} \text{ J-s (or J/Hz)} \]

Definitions

1. Define wavelength and what is its symbol?

2. Define amplitude?

3. Define frequency

4. What is the wave equation?

Wavelength Calculations

1. What is the wavelength of a \( 1.28 \times 10^{17} \) Hz wave?

2. What is the frequency of a \( 7.43 \times 10^5 \) m wave?
3. What is the frequency of a 2,600 cm wave?

4. What is the wavelength of a $4.34 \times 10^{15}$ /s wave?

5. What is the wavelength of 109.6 MHz wave?

6. What is the energy of a $7.66 \times 10^{14}$ Hz wave?

7. What is the frequency of a $1.31 \times 10^{-22}$ J wave? What is its wavelength?

8. What is the wavelength of a $7.65 \times 10^{-17}$ J wave?
9. What is the energy of a 9,330 cm wave?

10. What is the wavelength of a $1.528 \times 10^{-13}$ J wave?

Energy transition

1. What are excited and ground states?

2. What happens when electrons absorb energy?

3. What happens when electrons emit energy?

4. What equation is used to quantize electron energy?
5.

When a hydrogen atom undergoes a transition from $E_3$ to $E_1$, it emits a photon with $\lambda = 102.6$ nm. Similarly, if the atom undergoes a transition from $E_3$ to $E_2$, it emits a photon with $\lambda = 656.3$ nm. Find the wavelength of light emitted by an atom making a transition from $E_2$ to $E_1$. 