

10. According to Planck and Einstein the frequency of the emitted photon is given by

$$E_{\text{initial}} - E_{\text{final}} = h f$$

We were given the difference in energy between the two states as 4.00×10^{-19} J, so if we divide both sides of the equation by h we can solve for the frequency.

$$f = (E_{\text{initial}} - E_{\text{final}}) / h$$

$$f = (4.00 \times 10^{-19} \text{ J}) / (6.626 \times 10^{-34} \text{ J s})$$

$$f = 6.04 \times 10^{14} \text{ Hz}$$