

Chapter 17

Question 17.1

The amplification factor in this instance refers to the ratio between the energy associated with the one action potential (5×10^{-11} J) that was triggered and the energy of the photon that has triggered it ($hc/\lambda = 6.626 \times 10^{-34}$ J s $\times 2.998 \times 10^8$ m s⁻¹/420 nm = 1.99×10^{-25} J m /(4.20×10^{-7} m) = 4.7×10^{-19} J).

Consequently, the amplification factor in this case is 5×10^{-11} J/ 4.7×10^{-19} J = 1.06×10^8 =

106,000,000.