The absorbance of a $2.31 \times 10^{-3}$ M solution of some compound is 0.822 at 266 nm. What is the value of $\varepsilon$ at this wavelength if the cell path length is 1.00 cm?

$$A = \varepsilon \frac{b}{c}$$

$$\varepsilon = \frac{A}{bc} = \frac{0.822}{(1.00)(2.3 \times 10^{-5})} = 3.56 \times 10^4$$

What value of absorbance corresponds to 40% transmittance? If a 0.0100 M solution shows 40% transmittance at some wavelength, what will be the percent transmittance at this wavelength for a 0.0200 M solution? If the path length is 1.00 cm, what is the optical density (absorbance) of each solution?

$$A = \log \frac{1}{T}$$

$$A = \log \frac{1}{0.4} = 0.5979$$

$$\varepsilon = \frac{4}{bc} = \frac{3.979}{(1.00)(0.01)} = 39.79$$

$$A = (39.79)(1.00)(0.02) = \log \left( \frac{1}{0.4} \right)$$

$$T = 0.16 \Rightarrow 16\%$$

$$A = 0.3979 \text{ and } 0.7958$$