1-12 (d) Calibration sensitivity = m (slope calibration curve)
analytical sensitivity = m/σ

The analytical sensitivity depends on the error in the measurement made at a particular concentration.

Calibration Curve

\[ y = 6.70E-02x + 3.00E-02 \]

(i) the slope \( m = 6.70 \times 10^{-2} \) signal units/ppm
(ii) \( m/\sigma = 3.9, 18, 50, 84, 110, 110 \) per ppm
(iii) Skip
(iv) LOD = \( \frac{3\sigma_{\text{blank}}}{m} = \frac{3(0.0079)}{6.70 \times 10^{-2}} = 0.35 \text{ ppm} = 350 \text{ ppb} \)
6-1 (e) photoejection of an electron from the surface of a metal
(f) lowest energy state
(g) promotion of electron from ground state to excited electronic state
(h) band of emission from a hot, glowing object
(i) emission of light from excited state where spin of electron has not changed relative to the ground state
(j) same as (i) except spin has "flipped"

6-5 \[ \nu = \frac{c}{\lambda} = \frac{3.00 \times 10^8 \text{ m/s}}{1.09} = 2.75 \times 10^8 \text{ m/s} \]

\[ \lambda = \frac{c}{\nu} = \frac{3.00 \times 10^8 \text{ m/s}}{5.1 \times 10^{14} \text{ Hz}} = 589 \times 10^{-9} \text{ m} \]

Frequency unchanged when light passes through cell

\[ \lambda = \frac{\nu}{\nu'} = \frac{2.0 \times 10^8 \text{ m/s}}{5.1 \times 10^{14} \text{ s}^{-1}} = 410 \text{ nm} \]

6-6 Snell's Law \[ n_D = \frac{\sin 30}{\sin 11.9} = 2.42 \]

6-7 \[ E = h\nu = \frac{hc}{\lambda} \]

\[ \frac{E_1}{E_2} = \frac{\lambda_2}{\lambda_1} = 3.0 = \frac{779 \text{ nm}}{\lambda_1} \]

\[ \lambda_1 = 260 \text{ nm} \]