Wavelength and Frequency Worksheet

Scoring guide · one credit per question · review written work against each rubric

Wavelength and Frequency

Question 1

Choice (2)

At constant wave speed, $\lambda = c/f$. Doubling f halves λ.

Question 2

640. nm × (10^{-9} m/nm) = 6.40 × 10^{-7} m.

Question 3

$\lambda = c/f$ = (3.00 × 10^{8} m/s) ÷ (1.50 × 10^{8} s^{-1}) = 2.00 m.

Question 4

Choice (3)

All electromagnetic waves travel at c in vacuum.

Light for Optical Sensors

Question 5

Choice (2)

525 nm lies between 400 and 700 nm.

Question 6

A has the highest frequency because it has the shortest wavelength, 365 nm. At constant c, $f = c/\lambda$.

Question 7

525 nm = 5.25 × 10^{-7} m. f = (3.00 × 10^{8} m/s) ÷ (5.25 × 10^{-7} m) = 5.71 × 10^{14} Hz.

Question 8

Choice (3)

B has a shorter wavelength than C, so B has a higher frequency at the same wave speed.