Ultraviolet Light and Molecular Change Worksheet

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

Ultraviolet Light and Molecular Change

Question 1

Choice (1)

The threshold is evaluated for each individual photon in the model.

Question 2

At constant speed, shorter wavelength means greater frequency. Photon energy increases with frequency.

Question 3

Choice (1)

Ultraviolet lies at shorter wavelengths and higher frequencies than infrared.

Question 4

The number of photons arriving each second changes, affecting total energy per second. The energy of an individual photon stays fixed at that wavelength.

A Model Molecular Change

Question 5

Choice (1)

P provides 6.62×10^{-19} J per photon. The other values are below 5.00×10^{-19} J.

Question 6

$5.00 - 4.97 = 0.03$ in the table's units. The gap is 0.03×10^{-19} J, or 3×10^{-21} J.

Question 7

Choice (1)

P has 300 nm and 6.62×10^{-19} J per photon. R has 600 nm and 3.31×10^{-19} J per photon.

Question 8

Increasing the number of photons can increase intensity, but each R photon still has 3.31×10^{-19} J. That remains below the one-photon threshold.