Tracking Original Air in a Model Sensor

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

Tracking Original Air in a Model Sensor

Question 1

The removed fraction is 60%, so 40% of the oxygen remains. No oxygen enters with the added nitrogen. The total particle count returns to its original value, giving 0.40 × 21% = 8.4% oxygen.

Question 2

Choice (1)

The second cycle leaves 40% of the oxygen remaining after the first. The total particle count is restored, so 0.40 × 8.4% = 3.36%.

Question 3

Each cycle restores the same total number of gas particles, and the final volume and temperature are the same. In the ideal gas model that gives the same total pressure even when some oxygen has been replaced by nitrogen.

Question 4

It takes two cycles because 8.4% is above 5% and 3.36% is below. Measure the oxygen fraction or measure oxygen partial pressure and total pressure to find the fraction.