Chemistry Gas Laws Practice

Choose one answer per question. Circle A, B, C, or D.

1. Which temperature scale belongs in the ideal gas equation PV = nRT?
   A. Kelvin
   B. Celsius
   C. Fahrenheit
   D. Any temperature scale

2. An ideal gas in a sealed syringe is compressed slowly while its temperature stays the same. How does its pressure change?
   A. It remains the same
   B. It decreases
   C. It increases
   D. It falls to zero

3. Which pair of quantities varies directly according to Charles’s law for a fixed amount of gas?
   A. Pressure and volume
   B. Volume and kelvin temperature
   C. Pressure and number of moles
   D. Volume and molar mass

4. Two containers hold ideal gases at equal pressure and temperature. One contains three times as many moles as the other. What is its volume compared with the other container’s?
   A. Nine times as large
   B. The same size
   C. One-third as large
   D. Three times as large

5. In PV = nRT, what does n represent?
   A. Number of liters of gas
   B. Amount of gas in moles
   C. Mass of gas in grams
   D. Number of kinds of gas in the container

6. An ideal gas occupies 2.40 L at 150 kPa. If its volume increases to 3.60 L at constant temperature, what is the new pressure?

A. 100 kPa
B. 225 kPa
C. 90 kPa
D. 150 kPa

7. A flexible container holds 1.80 L of gas at 300 K. At fixed pressure, what volume does the same gas occupy at 350 K?

A. 3.15 L
B. 1.54 L
C. 1.85 L
D. 2.10 L

8. An ideal gas in a sealed rigid vessel starts at 84 kPa and 280 K. What is its pressure at 350 K?

A. 84 kPa
B. 67 kPa
C. 105 kPa
D. 154 kPa

9. A gas-law calculation gives a temperature of 313.15 K. What is this in degrees Celsius?

A. 40.00 °C
B. 586.30 °C
C. 313.15 °C
D. −40.00 °C

10. A vessel contains helium, neon, and argon. At the same temperature, their partial pressures are 24 kPa, 31 kPa, and 16 kPa. What is the total pressure?

A. 23.7 kPa
B. 55 kPa
C. 40 kPa
D. 71 kPa

11. An ideal gas occupies 2.40 L at 100 kPa and 300 K. For the same amount of gas, what volume results at 120 kPa and 360 K?

A. 2.88 L
B. 2.00 L
C. 2.40 L
D. 3.46 L

12. An ideal gas is at 249.4 kPa and 300 K. Using R = 8.314 L·kPa/(mol·K), what is n/V to three significant figures?

A. 1.00 mol/L
B. 0.100 mol/L
C. 10.0 mol/L
D. 0.0100 mol/L

13. A gas is collected over water. The mixture pressure is 102.0 kPa and the water vapor pressure is 2.8 kPa. What is the dry gas’s partial pressure?

A. 36.4 kPa
B. 104.8 kPa
C. 102.0 kPa
D. 99.2 kPa

14. Ideal gases X and Y have molar masses of 16 and 64 g/mol. At equal temperature and pressure, how fast does X effuse through the same small opening compared with Y?

A. Twice as fast
B. Four times as fast
C. Half as fast
D. At the same rate

15. Under which conditions do particle volume and intermolecular attractions generally cause the greatest departures from ideal gas predictions?

A. High temperature and very low density
B. Low pressure and high temperature
C. High pressure and low temperature
D. Low pressure with very large spacing between particles