



F14

Physical Chemistry_Chpt_One_Properties of Gases

30/100 Think you
25-11-21
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1st Exam-paper E

Q1: Circle the right answer for all of the following:

(50 points)

1: If a gas has polar particles then the difference between the volume of this gas is:

Answer: a) $V_{Real} > V_{Perfect}$ b) $V_{Real} < V_{Perfect}$ c) $V_{Real} = V_{Perfect}$ d) $V_{Real} \neq V_{Perfect}$

2: A gas occupies 60×10^3 ml at $150^\circ C$ and 760 mmHg pressure. What would be its volume at STP?

Answer: a) 38.7 ml b) 38.7 dm³ c) 38.7 L⁻¹ d) 38.7 dm³

3: Calculate the weight of H₂O gas (18 g.mol⁻¹) in a 5 L cylinder at 10×10^2 kPa and 373 K.

Answer: a) 29.40 g mol⁻¹ b) 29.40 g c) 29.40 mol d) 29.40 kg

4: Calculate the density of H₂O placed in a 22400 mL cylinder at 10^5 Pa and $0^\circ C$.

Answer: a) 0.804 kg L⁻¹ b) 0.804 g L⁻¹ c) 0.804 g d) 0.804 L⁻¹

5: According to Graham's law the heaviest gas is?

Answer: a) H₂O b) CH₄ c) NH₃ d) Cl₂

6: A tank contains a certain amount of gas at 10^5 Pa. The gas is transferred to another tank 40 dm³ with pressure of 200×10^3 Pa. What should be its volume?

Answer: a) 80 L b) 80 Pa L c) 80 Pa dm³ d) 80 L⁻¹

7: According to Boyle's law the pressure of a gas is inversely proportional with?

Answer: a) p b) T c) R d) V e) n

8: The difference between real and ideal gas, that the real gas interested in?

Answer: a) V & p b) V & T c) p & n d) T & p

9: It can follow the direct proportional between temperature and pressure through the law of

Answer: a) Van der Waal b) Graham c) Charles d) Gay-Lussac

10: The behaviour of real gas is ideal when the value of Z is equal to

Answer: a) $V_m < V_m^0$ b) $V_m > V_m^0$ c) $V_m = V_m^0$ d) $V_m \neq V_m^0$

Q2: The following data have been observed for 800 mg of nitrogen gas at 273 K. Calculate the best value of the

molar mass of N ₂ .	p/10 ⁵ Pa	0.750	0.500	0.200	(25 points)
V/dm ³	3.0	4.5	7.0		

Q3: A perfect gas undergoes isothermal compression, which reduces its volume by 1.80 dm³. The p₁ and V₁ of the gas are 2×10^2 kPa and 2.14 dm³, respectively. Calculate the p_{original} of the gas in (i) bar, (ii) torr. (25 points)

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Best wishes

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Q1 15/50

$$Q_2 \quad m = \frac{800 \text{ mg}}{1000} = 0.8 \text{ g}$$

$$n = \frac{m}{M} = \frac{0.8}{14} \quad N = 14$$

$$N_2 = 14 \times 2 = 28 \text{ g/mol}$$

$$\frac{P_1}{n_1} = \frac{P_2}{n_2}$$

$$Q_2 \quad \frac{5}{25}$$

$$Q_2 \quad V_1 = 1.80 \text{ dm}^3, \quad V_2 = 2.14 \text{ dm}^3$$

$$P_1 = ? \quad , \quad P_2 = 2 \times 10^2 \text{ dm}^3$$

$$P_1 \times V_1 = P_2 \times V_2$$

$$P_1 \times 1.80 = 2 \times 10^2 \times 2.14$$

$$P_1 = \frac{4.28 \times 10^2}{1.80}$$

$$P_1 = 2.38 \times 10^2 \text{ Kpa}$$

This is not V_i

$$Q_2 \quad \frac{10}{25}$$