



F8

Physical Chemistry_Chpt_One_Properties of Gases

20/100 Twenty only

25-11-21
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University of Mustansiriyah MOAM 1st Semester-2021

Department of Chemistry 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 dm^3 c) 38.7 L^{-1} d) 38.7 dm^3

3: Calculate the weight of H_2O 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 H_2O 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) H_2O b) CH_4 c) NH_3 d) Cl_2

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

Answer: a) 80 L b) 80 Pa L c) 80 Pa dm^3 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 .	$p/10^5 \text{ Pa}$	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 dm^3 . The p_i and V_f of the gas are 2×10^2 kPa and 2.14 dm^3 , 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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غاز مثالي يخضع لضغط

1) $n = \frac{m}{M}$

$$PV = nRT = \frac{800}{28} \times 0.082 \times 273 = 283 \text{ mol}$$

2) 5.739 mol

3) 455 mol

Q2 $\frac{5}{25}$

3) $\frac{P1}{V1} = \frac{P2}{V2}$

Q3 $\frac{0}{25}$

width	3.0	4.2	1.8
height	0.150	0.200	0.250

Q4 A perfect gas undergoes isothermal compression, which reduces its volume by 1/10. The initial P and V of the gas are 1.0 bar and 2.0 dm³, respectively. Calculate the pressure of the gas in (i) bar, (ii) pascals.

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